

# NOTE TO USERS

This reproduction is the best copy available.

**UMI**<sup>®</sup>



PSYCHOLOGISM, SEMANTICS AND THE SUBJECT MATTER OF LOGIC

By

DAVID M. GODDEN, B.A.(HONS.), M.A.

A Thesis

Submitted to the School of Graduate Studies

in Partial Fulfilment of the Requirements

for the Degree

Doctor of Philosophy

McMaster University

© Copyright by David M. Godden, April 2004

PSYCHOLOGISM, SEMANTICS AND THE SUBJECT MATTER OF LOGIC

DOCTOR OF PHILOSOPHY (2004)  
(Philosophy)

McMaster University  
Hamilton, Ontario

TITLE: Psychology, Semantics and the Subject Matter of Logic

AUTHOR: David M. Godden, B.A. (Hons.) (Wilfrid Laurier University)  
M.A. (York University)

SUPERVISOR: Professor Nicholas Griffin

NUMBER OF PAGES: x, 353

## Abstract

Despite a pronounced rejection of psychologism at the turn of the previous century, contemporary epistemology has witnessed its pervasive return. This inquiry seeks to contribute to a philosophical resolution of the psychologism debate, not by defending anti-psychologism against its historical and contemporary objectors, but by offering a perspective from which a viable anti-psychologism might be articulated.

Psychologism about logic is a family of views asserting a dependency of logic on psychology. Typically, such a dependence jeopardizes the objectivity and necessity of logic. Frequently, this dependency is established through the metaphysical claim that the subject matter of logic is psychological in nature.

Metaphysical accounts of logic explain its status and foundation in terms of its subject matter. Standard accounts have portrayed the subject matter of logic as a class of mental entities (ideas), abstract entities, or concrete, particular entities. Following a review of Frege's critique of psychologism (the first option), I consider historical representatives of the two remaining alternatives: Frege's Platonism and Mill's empiricism. Witnessing the failings of each of these theories, I turn to a positivistic account which provides logic with a linguistic, rather than a metaphysical, foundation.

As an alternative to metaphysical accounts, I consider the view that logic has no subject matter. I argue that metaphysical accounts of logic may be equivalently expressed as theses concerning the semantics of the logical lexicon. Specifically, the question of psychologism may be seen as the question of how to properly explain the semantics of the logical lexicon. I engage Quine's response to positivistic accounts of logic, arguing that his naturalised holism misconstrues logic's function in theory and its foundation. I suggest that a pragmatic account of logic, focussing on the linguistic function of logical expressions in our language, may provide a viable alternative for explaining the nature and foundation of logic.

## Acknowledgements

I would like to gratefully acknowledge the contributions and guidance of my supervisor Prof. Nicholas Griffin, as well as the two other members of my supervisory committee Dr. Rockney Jacobsen and Prof. David Hitchcock. My frequent afternoon conversations with Nick were undoubtedly the most enjoyable part of the research and composition process, and I will definitely miss them. It was through those conversations that the argument of this thesis matured. Further, Nick's mirthful remarks could always lift my spirits. My thanks also to Rocky, for his sympathetic and constructive insight, especially with chapter 4, which he always offered even though I know he disagrees with many of my own views. Rocky has been teacher and role-model to me since my undergraduate days at Wilfrid Laurier, and I was both fortunate and delighted to work with him on my dissertation. Finally, I extend my thanks to David for his devotion and his careful reading of my thesis. I only realised the extent of David's devotion to his graduate students when I received his comments on one of my chapters on Christmas day! David's questions were always insightful and would often take me weeks to answer. His comments clarified and strengthened the argument of this dissertation, and were especially valuable in chapters 1 and 3. I hope that my future in philosophy will allow me to remain in contact with each of you.

I would also like to thank the members of my examining committee: my external examiner Dr. Rob Stainton (University of Western Ontario), as well as my two internal examiners Dr. Greg Moore (Mathematics), and Dr. Lee Brooks (Psychology).

In addition, special thanks are due to Prof. Wil Waluchow, for his unceasing support of my efforts, and to Prof. Samantha Brennan (University of Western Ontario) whose kindness helped support me through my last year of study. Also, I would like to thank Dr. Stuart Shanker (York) for providing the initial catalyst for this inquiry.

Over the course of my graduate studies, I have had the good fortune of being able to cultivate a fertile set of relationships with scholars in the field of Informal Logic and Argumentation Theory. I would like to thank all the members of this academic community for their welcoming accommodation of my endeavours in this field.

Mostly though, I would like to express my enduring thanks for the support and understanding of my family: to my parents, especially, who shared with me every disappointment and every triumph, every set-back and every accomplishment, without ever losing faith; and to Robyn Bluhm who knows, better than anyone, what this project meant to me. Finally I want to give special thanks to Dr. William Martin, for his eternal hospitality, and his enlightened conversation. He remains a source of inspiration to me through his unwavering determination, his devotion to the canon, and his grasp of tradition and the individual talent.

Lastly, I am grateful for the friends I have made at McMaster; I hope that each of you may fulfil your dreams. To David and Elizabeth, Brian and Kiersten, Rashmi and Tim, I wish you all the best and will think of you often.

Research for this thesis was made possible by a doctoral fellowship (#752-2000-1279) from the Social Science and Humanities Research Council of Canada, as well as scholarships from Ontario Graduate Scholarship and McMaster University.

## Table of Contents

Abstract	iii	
Acknowledgements	iv	
Introduction - The Contemporary Revival of Psychologism		
I.1	Psychologism, Past and Present	1
I.2	Psychologism Today: The Contemporary Attitude	3
I.3	The Contribution of the Present Work	7
I.4	Course of the Inquiry to Follow	8
Chapter 1 - The Nature of Psychologism		
1.1	Defining the Concept of Psychologism: Context and Approach	15
1.2	The Bias of “Psychologism”	17
1.3	Generic Psychologism	18
1.3.1	Generic Psychologism: An Initial Definition	18
1.3.2	Generic Psychologism Revised	20
1.3.3	The Relation Between Psychology and Philosophy	22
1.3.4	Psychologism in Epistemology and Logic	23
1.4	Psychologism in Semantics	28
1.4.1	Metaphysical Psychologism	28
1.4.1.1	The Nature of a Subject Matter	29
1.4.1.2	Psychologism and the ‘No Subject Matter’ Thesis	32
1.4.2	Philosophical Interest of Metaphysical Psychologism over Logic	36
1.4.3	Referential Psychologism	39
1.4.4	Philosophical Interest of Referential Psychologism about Logic	42
1.4.5	Entailments Between Metaphysical and Referential Psychologism	43



1.4.6	Theoretical Implications of the Equivalence of MP and RP	45
1.4.7	Meaning, Reference and Psychologism	46
1.5	Reductive Psychologism	50
1.5.1	Psychologism as a Reductive Thesis	50
1.5.2	Strategies for Rejecting MP and RP	54
1.5.3	Psychologism and the Prescriptive Function of Logic	55
1.5.4	Qualified Referential Psychologism	57
1.5.5	The Problem with Qualified Referential Psychologism	59
1.5.6	The Essential Normativity of Logic Revisited	62
1.5.7	Psychologism Essential versus Exhaustive	65
1.5.8	Strong versus Weak Psychologism	66
1.6	Psychologism and Naturalism	69
1.6.1	Naturalism in Contemporary Epistemology	69
1.6.2	Psychologism and its Relation to Naturalism	73
1.6.2.1	Inferring Psychologism from Naturalism (EN* ⊢ EP*)	76
1.6.2.2	Inferring Naturalism from Psychologism (EP* ⊢ EN*)	79
1.6.3	The Relation of Psychologism to Naturalism: Implications	79
1.6.4	Varieties of Psychology and Varieties of Psychologism	82
1.6.5	Defining Psychologism in a Climate of Naturalism	84
1.7	“Psychologism”: A Working Definition	94

## Chapter 2 - Frege's Anti-Psychologism

2.1	Frege's Semantic Approach to Psychologism	101
2.2	Frege on the Subject Matter of Logic	104
2.2.1	Semantics, Truth and the Nature of Logic	104
2.2.2	The Nature of Truth	107
2.2.3	Thoughts	108
2.2.4	Semantic Psychologism	109

2.2.5	The Nature of Ideas	114
2.2.6	Ideas as the Subject Matter of Logic	116
2.3	The Subject Matter of Logic	117
2.3.1	Psychology Reduces Everything to the Subjective	117
2.3.2	The Relation of Logical Psychologism to Subjective Idealism	118
2.3.3	Objective, Scientific Knowledge	120
2.3.4	Understanding and Communication	123
2.3.5	Ideas are Semantic Epiphenomena	124
2.3.6	Physiological Psychology	126
2.3.7	On Thoughts as the Products of Thinking	131
2.3.8	The Nature and Properties of Thought	134
2.4	The Foundations of Logic	137
2.4.1	The Laws of Inference	137
2.4.2	The Relation Between Logic and Truth	138
2.4.3	The Relation Between Justification and Cause	139
2.4.4	Boundary Stones	140
2.4.5	The Laws of Logic Versus Laws of Thinking	141
2.4.6	The Nature and Foundation of Rules of Inference	145
2.4.7	The Nature of Proof and the Representative Function of Logical Laws	147
2.4.8	The Actual Role of Psychology	154
2.5	The Problems with Frege's Picture of Logic	158
2.5.1	Judgement Stroke	158
2.5.2	Geometry	159
2.5.3	The Most Mysterious Process of All	162
2.5.4	The Connection Between an Expression and its Sense	164
2.5.5	Platonism and the Third Realm	168
2.6	The Subject Matter of Logic Revisited	170

## Chapter 3 - Mill's Empiricist Alternative

3.1	From Platonism to Empiricism	173
3.2	On Interpreting Mill	175
3.3	Mill on the Nature of Logic	176
3.3.1	Mill's Epistemological Framework and the Domain of Logic	176
3.3.2	Mill on Logic as the Art and Science of Reasoning	180
3.4	Logic as the Science of the Operations of the Understanding	182
3.5	Mill on the Contribution of the Science of Reasoning to the Art of Reasoning	185
3.6	Logical Precepts: Rules of Evidence or Rules for the Estimation of Evidence?	187
3.6.1	The Precepts of Logic are Justified by Psychology	189
3.6.2	Logical Precepts are Rules for the Estimation of Evidence	189
3.6.3	Logical Precepts are Rules of Evidence	193
3.7	Logic as the Science of Evidence and Proof	198
3.7.1	The Relation Between Logic and Truth	199
3.7.2	Objects of Judgements as the Subject Matter of Logic	201
3.7.3	Mill's Rejection of Conceptualism	201
3.7.4	Mill's Anti-Psychologism	205
3.8	Mill on the Ultimate Justificatory Foundations of Valid Ratiocination	207
3.8.1	The <i>Dictum de Omni et Nullo</i> : Mill's Rejection of Platonism	207
3.8.2	Mill's Rejection of Conventionalism	210
3.8.3	Transitivity of Co-existence: The Empirical Foundations of Logic	215
3.8.4	Mill on the Empirical Foundations of Syllogistic Inference	217
3.8.5	Non-Contradiction and Excluded Middle: Mill's Return to Psychologism	220
3.9	Consequences of Mill's Position	222
3.9.1	Empirical Foundations and the Status of Logic	222
3.9.2	Mill on the Nature of Inference	222
3.10	Conclusion	224

## Chapter 4 - Quine: From Analyticity to Naturalistic Holism

4.1	Introduction: Analyticity and Necessity	229
4.2	Empiricism and the Necessity of Logic	232
4.3	The Concept of Analyticity in Logical Positivism	237
4.3.1	The Subject Matter of Analytic Propositions	237
4.3.2	Analyticity, Necessity and Deduction	242
4.4	Quine's Critique of the Positivist Program in Logic	245
4.5	Quine on the Concept of Analyticity	252
4.5.1	Analyticity is Explained via Meaning	252
4.5.2	Meaning is Explained via Synonymy	253
4.5.3	Closing the Intensional Route to Explaining Synonymy	254
4.5.4	Closing the Extensional Route to Explaining Synonymy	256
4.5.5	Conclusions of Quine's Argument Against the Concept of Analyticity	257
4.6	Semantic Holism	259
4.6.1	Quine's Holistic Model of Belief Revision	260
4.6.2	The Unique Status of Observation Statements	264
4.6.3	Epistemological Consequences of Quine's Holism	268
4.6.4	Holism and the Analytic	269
4.6.5	Quine's Holistic Foundations of Logic: Minimum Mutilation and Entrenchment	273
4.7	From Holism to Psychologism	279
4.7.1	From the Failure of Reductionism to Naturalism	280
4.7.2	From Observation Sentences to Sensory Stimulation	284
4.7.2.1	A Chomskian Objection to Stimulus Meaning	286
4.8	Arguments Against Quine on the Concept of Analyticity	289
4.8.1	In Honour of the Defence of a Dogma	290
4.8.2	Using Observation to Define Analyticity	291
4.8.3	A Dogma Worth Defending	294

4.9	Arguments Against Quine on Holism and the Foundations of Logic	297
4.9.1	The Shallow Inconsistency of Quine’s Revisability Doctrine	297
4.9.2	The Deep Inconsistency of Quine’s Revisability Doctrine	301
4.10	Departmental Boundaries within the Corporate Body	309
Chapter 5 - Conclusion: Logic Without a Subject Matter		
5.1	Psychologism: Its Nature and Controversy	313
5.2	Sources of Psychologism	318
5.3	Strategies for Denying Psychologism	321
5.3.1	Lessons from Frege	322
5.3.2	Lessons from Mill	325
5.3.3	Lessons from Positivism	327
5.3.4	Lessons from Quine	329
5.4	From Semantics to Pragmatics: Denying the Subject Matter Thesis	333
5.5	Directions for Further Research	337
	Appendix I: Definitions of “Psychologism”	339
	Bibliography	345

## Introduction

## The Contemporary Revival of Psychologism

## §I.1 - Psychologism, Past and Present

Recent scholarship on the topic indicates that the thesis of psychologism, once derided and considered the bane of any philosophical theory, is now considered a plausible thesis, if not a necessary component of any feasible epistemology.

This, at least, is the picture painted by authors such as Kusch, who writes, “[a]s the [twentieth] century draws to a close, naturalism seems again the viable option it was one hundred years ago, and thus it does not seem too pretentious to suggest that our century will perhaps one day be called ‘the century of the rise and fall of antinaturalism’ ” (1995, 1). Similarly, Jacquette observes that there is a “peaceful coexistence of new varieties of psychologism with the anti-psychologistic heritage of Frege and Husserl in the current analytic philosophical climate” (1997b, 319). Yet, barely a century ago, the prevailing attitude towards psychologism can be marked with Brentano’s famous description that “[‘psychologism’] is a word which has lately come into use and when it is spoken many a pious philosopher- like many an orthodox Catholic when he hears the term Modernism - crosses himself as though the devil himself were in it” (1874, Appendix XI; 1995, 306). Brentano’s metaphor captures a time when experimental psychology was just starting to become a recognized science in Europe. Yet, as Kusch (1995) observes, it had yet to be established as its own academic discipline. Rather, during this time, chairs in academic philosophy (particularly in Germany)

were being repeatedly and increasingly replaced with experimental psychologists (Kusch 1995, 122-127). This situation produced a great deal of animosity, if not open conflict, which perhaps peaked with a 1913 petition circulated in Germany and signed by over 107 philosophers, Husserl among them, urging that experimental psychologists be given their own academic offices, or at least that they vacate those in Philosophy departments (Kusch 1995, 190-193). The institutional separation between philosophy and psychology, Kusch argues, was only brought about by the Great War (Kusch 1995, 123 and Chapter 8.) According to Kusch, the First World War produced a confluence of social, political, economic and ideological changes in Germany which resulted in the adoption of a phenomenological, rather than a psychological or otherwise systematic approach to philosophy. "Put in a nutshell," Kusch writes, "both academic pure philosophy and experimental psychology had to cope with, and accommodate to, an intellectual environment that was hostile to science, rationality and systematic knowledge" (1995, 211).

As Sober writes then, "while the psychologists were leaving, philosophers were slamming the door behind them" (1978, 165). Following this turbulent time (during the inter-war years and following the Second World War), while the philosopher's animosity towards psychologism remained, a degree of complacency also took hold. By the 1930's, some degree of suspicion had arisen with regard to this complacency, as may be seen in Hönigswald's 1931 warning that

people protest ... that there is no longer any need to be on the defensive

against 'psychologism' these days. That it's like kicking in an open door. They allege that psychologism is dead, and that anyone who revives the 'psychologism struggle' overlooks the real issues which confront philosophy today ... But, however resolutely one averts one's gaze from psychologism, it has not yet been overcome. (Hönigswald 1931, 4; as translated by and quoted in Kusch 1995, 121)

These prescient words may well capture the sentiments towards psychologism that remain in some strands of philosophy to this day. But the irony of the remark remains. Having once slammed the door to psychology, philosophers sought to keep their discipline free of psychology by kicking it in. And so, as Philip Kitcher wrote, "psychology re-entered epistemology quietly" (1992, 59) - but it did so through the front door.

#### §I.2 - Psychologism Today: The Contemporary Attitude

Contemporary philosophers, though, have often behaved as though the door separating philosophy from psychology was hermetically sealed. Particularly among analytic philosophers (the heirs of the semantic tradition), Frege's celebrated arguments against psychologism are taken as a timelessly sound refutation. Indeed Shanker goes so far as to claim that "the very foundation of analytic philosophy...[is] the principle that logic and psychology are *categorically* divorced from one another" (1998, 65). This is the tradition that Baker and Hacker likely have in mind when they describe the contemporary attitude towards psychologism by saying, "it [is] commonplace among philosophers in this [the



twentieth] century to contrast logic with psychology.... It is now an uphill battle for a philosopher to argue that psychology or even philosophy of mind has any proper place in the philosophy of logic. Frege's philosophical heirs have had a total victory in the campaign which he initiated" (1989, 80-81). Anti-psychologism, they add, is virtually ingrained into the curricular dogmas of the Western analytic tradition (*ibid.*). Anti-psychologism, then, is often taken for granted by some within the philosophical community, and because of this the arguments concerning psychologism have ceased to be studied as they once were. As such, Frege's arguments, and the concerns which motivated them, may be widely celebrated, but they are less widely understood. Just as the content of the psychologistic thesis has become blurry and vague, so too have the arguments surrounding it become clouded and obscured by the mists of time and memory.

Indeed sometimes they are forgotten altogether. Perhaps the contemporary attitude towards psychologism is best captured by Notturno's description that "[m]any contemporary philosophers, well aware of the stigma associated with 'psychologism', continue to denounce theories as psychologistic despite their acceptance of the epistemological and metaphysical planks traditionally thought essential to and definitive of the psychologistic platform. It would, perhaps, be more apt to say that what these philosophers oppose is not psychologism, but 'psychologism'" (Notturno 1985, 11). As to whether this acquiescence is due to deliberation or distraction, Notturno does not speculate. But the point remains that Frege's seal on the door between philosophy and psychology is not what it once was. No seal is

hermetic, and even if a lock has no key, it may still be picked or forced.

Against this, there are those who have been resolutely working away at Frege's lock, and some who have, instead, simply lifted the door from its hinges. Arguments in support of psychologism come from a variety of fields within the overall philosophical geography. Most notably perhaps, Quine's linguistic concerns led him to advocate a version of naturalized epistemology which has subsequently been widely taken up in American analytic philosophy. With words that echo J.S. Mill (1865/1867; ch. XX; 1979, 359), Quine, in his landmark (1969) essay "Epistemology Naturalized", proclaimed that "Epistemology in its new setting ... is contained in natural science as a chapter of psychology" (83). (Notably, the full original title for this essay was 'Epistemology Naturalized: Or the Case for Psychologism'.<sup>1</sup>)

Nor is it merely linguistic concerns that have informed a revival of psychologism. Many within epistemology argue that epistemic concepts such as justification must be explained naturalistically, and that psychological facts comprise a significant and essential component of this naturalistic explanation. In this vein, Kornblith writes,

It can no longer be denied that certain psychological elements must enter into epistemological theorizing. ... An adequate theory of justification must ... take account of the psychological connections among beliefs. The question thus facing contemporary epistemologists is no longer, 'Is the proper theory of

---

<sup>1</sup> as Kusch (1995, 11) and Jacquette (1997b, 318) remind us.

knowledge psychologistic or apsychohistoric?', but rather, 'How much psychology must we allow into our epistemology?' (Kornblith 1982, 241).

Also, within the practice of psychology, pressure has come from those who have taken up Locke's battle cry that "God has not been so sparing to Men to make them barely two-legged Creatures, and left it to *Aristotle* to make them Rational" (1689, IV, xvii, §4; 1975, 671). As Chomsky has done with the topic of language and language acquisition, some psychologists have argued that our ability to learn logic as we do necessarily relies on some tacit, innate set of abilities or faculties. Admittedly, the concern with psychologism involves not the manner by which we come to know logical or philosophical concepts, but rather the theoretical foundations upon which they rest. Yet, while the issue of innateness is not what is primarily at issue, it is not merely claimed that our innate faculties explain our - ultimately intuitive - ability to understand logical notions such as validity and necessity. Additionally, the concepts and relations of logic themselves are construed as products of this innate faculty. On such an account, logic itself becomes dependent on the structure of the human mind, which governs its structure and provides its foundations. Thus, for example, Macnamara (1986, 1-10) claims that our 'logical intuition' is the ultimate foundation and ground of our more formalized, technical or philosophical notions of validity and necessity.

In yet another respect, scholars such as Kusch advocate, and have adopted, a sociological approach to the study of epistemology. Kusch claims that the proper methodology for the study of psychologism (or of any other philosophical thesis) is historical

and sociological, not theoretical and analytic (or rational). Recently, Kusch has argued that the psychologism debate has been “abandoned rather than resolved” (1995, 277) and abandoned for reasons that are sociological rather than philosophical.

### §I.3 - The Contribution of the Present Work

In the present work I seek to make a contribution to the philosophical resolution of the psychologism debate. The contemporary revival of psychologism as a philosophically viable doctrine should prompt theorists to suspend their business, and take note of their philosophical bearings. First, theorists should take notice of those changes in the epistemological climate and theoretical landscape which have given rise to this resurgence. What has changed that makes psychologism seem philosophically lucrative once again? Further, the revival of psychologism should cue theorists to reconsider those arguments originally launched against it. Do these concerns still present a relevant and sufficient objection to the philosophical solvency of psychologism as a theoretical venture? Should these initial concerns no longer raise any objection to psychologism, its contemporary revival gives us a chance to consider how we ought to proceed in our philosophical endeavours. How does philosophy properly conduct its business according to a psychologicist methodology? On the other hand, should these concerns remain legitimate, the contemporary revival of psychologism offers an occasion to restate our core values while revising our philosophical business-plan. What strategy might be used in articulating a viable anti-psychologism which is better suited for the contemporary philosophical climate? In general,

the contemporary revival of psychologism presents an opportunity to find some philosophical resolution to the psychologism debate.

A philosophical resolution to this debate is desirable for more than the bureaucratic segregation of academic disciplines. As Shanker writes, “if the failure to distinguish between logic and psychology induces one to misconstrue the nature of logical truths, so, too, *pari passu* does it undermine one’s understanding of psychological explanation” (Shanker 1998, 65). In light of Shanker’s claim, it might be added that a resolution to the psychologism debate would contribute significantly to a clarification of the nature of thought and inference, and to the specification of a coherent methodology for the philosophical study of thinking. Most importantly perhaps, a philosophical treatment of the problem of psychologism must directly address the Foundational Question: What is the foundation of logical necessity? And, as Kant has observed, this question is intimately related to the debate regarding the distinction between the analytic and the synthetic - a distinction which Quine argues is vacuous and ought to be given up. In fact, Kant thought these issues so central to Philosophy that, in his *Prolegomena to any Future Metaphysics*, he proclaimed their treatment to be the primary task of any philosophy. For Kant, treatments of these issues are the “only credentials” required of philosophers who, in the absence of such credentials, are “solemnly and legally suspended from their occupations” (1783, Preamble §5; 1977, 22-23).

#### §I.4 - Course of the Inquiry to Follow

Roughly, the course of the inquiry to follow is this. The first chapter deals with the

concept of psychologism. In it I attempt to stipulate a definition of “psychologism” which is philosophically interesting in terms of both its theoretical controversy and its historical accuracy. The project of arriving at this definition is largely synthetic, and involves a survey of the literature on the topic of psychologism. I undertake a systematic presentation of the concept of psychologism by considering the plethora of conceptions in circulation (see Appendix I) and demonstrating the relations among them. In doing this, (i) I provide a generic definition of psychologism which locates the philosophical and controversial aspects of all forms of psychologism, and allows the multitude of versions of psychologism to be organized under its rubric. Also, (ii) I demonstrate the equivalence of two prevalent versions of psychologism (metaphysical and referential), and show how they have commonly lead to a third, reductive, version of psychologism. Further, I separate the thesis of psychologism from those adjacent theses with which it has been historically enmeshed. Specifically, (iii) I distinguish psychologism from naturalism, demonstrating which additional assumptions are required to derive each from the other. Finally, (iv) I argue that the two theses must be defined independently of one another, and that the failure to do so can seriously prejudice the psychologism debate. These four points constitute a significant contribution to the literature on the nature of psychologism and the way in which it should be defined. In this way, I locate a family of psychologistic theses, isolating one as the topic for the remainder of the inquiry.

Importantly, in fixing the concept of psychologism, I place specific and significant limitations on the scope of this inquiry. To begin with, I here consider only the thesis of

psychologism with respect to logic. This is not to say that I do not find psychologism in other domains (especially epistemology) to be worthy of consideration; it is simply that they are beyond the means of the present study. Further, my considerations of psychologism are limited to those forms which construe psychology as an empirical science. Other forms of psychologism, especially transcendental psychologism, are similarly beyond the means of the present work. Again, in eliminating these considerations from the present work I do not deem them to be unworthy of study. Rather, questions such as (i) whether Kant's account of logic is psychologistic, and (ii) whether the epistemological problems which typically accompany psychologism may be solved simply by claiming that psychology is a transcendental rather than an empirical science are both deserving of our utmost attention, and worthy of additional inquiry.

Lastly, my consideration of psychologism as a philosophical thesis leads me to the theoretical methodology which I employ in the remainder of the inquiry. Specifically, I argue that psychologism may be formulated as a metaphysical thesis concerning the subject matter of logic, or, equivalently, as a semantic thesis concerning the referents of the logical lexicon. These two issues - the subject matter of logic and the semantics of logical terms - serve as a leitmotiv for the remainder of the inquiry. Additionally, the equivalence of the metaphysical and the semantic formulations of psychologism indicates that psychologism may be treated linguistically. That is, psychologism may be diagnosed as a thesis concerning how the semantics for the logical lexicon ought to be given. As such, a philosophical remedy for

psychologism may be found by providing that semantics independently of psychological considerations.

I hope that, by considering psychologism in a semantic, rather than a metaphysical light, treatment options which were once obscured from view might become visible. Specifically, I hope that the idea that logic may not treat of any subject matter whatsoever becomes more plausible when we are able to more clearly see semantic alternatives which provide for the unique epistemic and modal properties of logic without making those properties a product of any referential function of the logical lexicon. By considering the issue of psychologism in a linguistic, rather than a metaphysical light, I hope to show that logic need not be distinguished from the sciences according to its subject matter, but may instead be distinguished according to the unique linguistic function of logical principles.

Having stipulated a definition of “psychologism” I proceed to consider some of the historical arguments surrounding it. The second chapter considers Frege’s anti-psychologism. I begin with a review of Frege’s conception of psychologism as the thesis that the subject matter of logic is our ideas. This is followed by a systematic exposition of Frege’s arguments against this thesis. While many of Frege’s arguments on this point are well known, there are two original contributions to be found in this chapter. The first contribution is the recognition of an ambiguity in Frege’s characterization and treatment of psychologism. Since Frege’s anti-psychologistic arguments run throughout his philosophical career, and thus often pre-date his (1891) division of a judgeable-content into a sense and a reference, it is often difficult to



determine whether Frege's arguments are properly read as rejecting psychologism of sense or referential psychologism. The second contribution (§2.4.7) is an argument against Philip Kitcher's (1979) account of Frege's conception of the nature of a proof. Having considered Frege's arguments against psychologism, I proceed to identify Frege's solution to psychologism, and the epistemological problems he saw as following from it. Finally I locate a series of problems in Frege's solution to these problems. Frege offers a metaphysical solution to the linguistic problem of explaining the semantics of logical and arithmetical terms. He does this by postulating a 'third realm' of abstract entities - Thoughts - which are the senses of our declarative sentences and the bearers of truth-values. Thoughts, according to Frege, are the proper subject matter of logic. Yet, Thoughts present a set of epistemological problems all of their own - problems which seem just as insuperable as those presented by psychologism itself.

The problems resulting from Frege's postulation that the subject matter of logic is a set of abstract entities suggest that its subject matter might better be conceived of as the concrete particular objects of everyday experience. In the third chapter, I consider Mill's empiricist alternative to Frege's Platonism. This chapter provides what is perhaps the most extensive treatment of Mill's account of the nature of logic and its foundations to date. Mill's account of the foundations of logic has been variously read both as overtly psychologistic, and as obviously anti-psychologistic. I provide a reading of Mill which explains the textual origins of both views, while showing that neither successfully overcomes the epistemological

problems presented by psychologistic accounts of logic. In his psychologistic moments, Mill considered the subject matter of logic to be the mental operations of reasoning and inference, and because of this Mill insisted that the prescriptive components of logic were somehow dependent on the psychological science of these mental operations. In his anti-psychologistic moments, Mill considered the subject matter of logic to be not a realm of abstract, insensible objects, but to be those objects which we see and touch in our everyday experience. While this answer solves some of the epistemological problems surrounding Frege's Platonism, it fails to place logic on a foundation capable of supporting its necessary character.

The fourth chapter considers a more explicitly linguistic solution to the foundation of the principles of logic. Here I explore the view that the principles of logic are analytic truths. On this view, the subject matter of logic is neither a set of abstract entities, nor those objects of everyday experience. Instead, logic is said to be about the meanings of our terms. Having set forth this position, I proceed to give a detailed exposition of Quine's arguments against it, followed by a description of Quine's own position of semantic holism coupled with epistemological naturalism. Following my exposition of Quine's theory, I launch a set of original arguments against it. If correct, these arguments make a considerable contribution to the theory of the foundations of logic (and semantics more generally). While Quine's position overcomes the mistake of construing meanings as metaphysical entities, his holism is plagued by a pair of inconsistencies which mark a series of pervasive errors in his overall theory. Specifically, Quine's naturalistic holism fails to acknowledge the unique linguistic

function of certain expressions in a theory, and the special connections obtaining between individual statements in a theory which result therefrom. As such, Quine's holism fails to recognize the unique epistemic and modal status which any theory must accord to the truths of logic. The recognition of these failures suggests a strategy by which the semantics of logical principles might better be explained.

The last chapter takes stock of the arguments presented in the inquiry. I remind readers of the epistemological problems posed by psychologism in logic, and claim that Frege's anti-psychologistic arguments remain justified. I then turn to the project of formulating an anti-psychologistic business-plan which promises to be feasible and competitive in the current philosophical climate. Reflecting on the failings of the semantic alternatives considered in the earlier chapters, I set forth a preliminary set of criteria which any semantic theory hoping to avoid the epistemological trappings of psychologism must meet. This is followed by a more speculative section, in which I explore a pragmatic approach to the semantics of logical principles. Such an approach avoids psychologism by denying that logic has any subject-matter, and instead seeks to explain the meaning and epistemic status of logical principles in terms of their linguistic function. These explorations are of a tentative nature, and are offered only as a research opportunity for the philosophical venture-capitalist. I conclude by suggesting directions for future research on the question of psychologism, particularly in those areas marked by the limitations of the present inquiry, and as suggested by a pragmatic approach to the semantics of logical principles.

## Chapter 1

## The Nature of Psychologism

## §1.1 - Defining the Concept of Psychologism: Context and Approach

Notturmo has recently observed that “for the past one hundred and fifty years, ‘psychologism’ has been used as an umbrella term to cover a multitude of philosophical sins, both metaphysical and epistemological” (1985, 9) and that “the meaning of the term has remained systematically obscure” (*ibid.*). Nor is Notturmo alone in this view. Kusch (1995, 4) echoes Notturmo’s judgement, finding concurrence in the words of Skorupski who calls psychologism “a far from clear doctrine” (1989, 164; as cited in Kusch 1995, 4), and Scarre who writes that psychologism is “an exceedingly hazy doctrine” (1989, 11; as cited in Kusch 1995, 4). It would seem, then, that the first task of any philosophy having business with psychologism is to fix the meaning of the term for the purposes of investigation.

The main work of this chapter, then, is synthetic. It will involve attempting to treat a wide variety of candidates for the definition of “psychologism” (most of which have some degree of currency, either historical or contemporary) in a systematic way. The hope is that we will arrive at a definition of psychologism that is interesting (i.e., one that is at least *prima facie* coherent, plausible, contestable, and having adherents), along the way situating psychologism in relation to its adjacent theses. The purpose of this chapter is two-fold:

- (i) to supply a stipulative definition of “psychologism” for the purposes of analysis and evaluation in the remainder of this inquiry; and

- (ii) to separate the thesis of psychologism as thus stipulated from those theses with which it has been historically enmeshed.

Fulfilling the first objective will also serve as a survey of the literature on the topic of psychologism. Fulfilling the second objective will allow me to locate the psychologistic thesis in the theoretical terms in which I shall deal with it in this dissertation. That is, it will allow me to bring my theoretical methodology to bear on the topic of psychologism. In so doing, it is the overall aim of this dissertation to provide some philosophical resolution to the psychologism debate, or to at least demonstrate that the thesis remains one of philosophical controversy - a controversy which ought not to be 'abandoned.'

Given the fact that it is regularly observed that "psychologism" may not indicate a single, well-defined concept with crisp edges, whose usage remained uniform and uncontroversial throughout its history, my account of the nature of psychologism will be stipulative. That said, I seek to provide an account that will prove to be distinctly relevant not only to historical cases which one might argue are paradigmatically psychologistic, but also to contemporary cases which are viewed as viable philosophical positions. That is, I hope for both historical and theoretical significance and relevance. So, in considering the notion of psychologism, I attempt to distinguish its central and controversial aspects from those with which it has been historically enmeshed. I do this first by starting with a very general notion of psychologism. From this I proceed to systematically consider the variations upon it, reasons for, and consequences of this general notion, in the attempt to isolate those genuinely controversial aspects of it.

## §1.2 - The Bias of “Psychologism”

It is perhaps best to acknowledge at the very outset that “psychologism” is frequently used with a pejorative connotation. In fact, there can be little doubt that “psychologism” has, more often than not throughout its history, been used in a derogatory sense. In the heyday of analytic philosophy, on more than one occasion, it has been asserted that psychologism is by definition a mistaken view. For instance, as Jacquette observes (1997b, 314), Pap invited this inference when he defined “psychologism” as “the tendency to confuse *logical* issues with *psychological* issues” (1958, 435; emphasis added). Similarly, as Notturmo observes (1985, 23), Carnap defined “psychologism” as “the wrong interpretation of logical problems in psychological terms” in the Glossary to his *Logical Foundations of Probability* (1962, 581). Further, throughout the history of the debate surrounding psychologism, there has been a great deal of inflammatory rhetoric surrounding the topic. Jacquette, for instance, observes that “the rise in antipsychologism is in part a chapter in the rhetoric of philosophy” (1997b, 313) characterized by “a great deal of psychologism-bashing” (1997b, 314). In light of this, there is reason to suggest that “psychologism” is a term whose very meaning is prejudiced in favour of anti-psychologism as a philosophical theory. The theorist wishing to make a contribution to the debate in an unbiased manner, then, must be sensitive to this matter so as to not prejudice the outcome of inquiry.

It might even be suggested that the very term “psychologism” be foregone in favour of some other term having less of a pejorative connotation, so as to not bias any pursuant philosophical inquiry. For the time being, though, I will resist this move, until the relationship

between psychologism and its adjacent theses have been more clearly specified. That said, I will seek to supply a non-pejorative account of psychologism, and to recognize the theoretical presuppositions imbedded in the very notion, so as to not prejudice the inquiry to follow.

### §1.3 - Generic Psychologism

#### §1.3.1 - Generic Psychologism: An Initial Definition

Despite the fact that the concept of psychologism has been called inherently vague, there is a general consensus that “ ‘psychologism’ is intended to connote ... the use of psychological methods in philosophical and scientific investigations” (Notturmo 1985, 9). Similarly Cussins holds that “a psychologistic doctrine is a doctrine which requires psychology in order to answer a philosophical question. The rejection of psychologism is the rejection of the philosophical relevance of psychology” (Cussins 1987, 126). By contrast then, psychologism is any thesis that affirms the relevance of psychology to philosophical inquiry.<sup>1</sup>

---

<sup>1</sup> I will not attempt to give intensional definitions of either “philosophy” or “psychology”, or to give a theoretical account of these concepts. I feel that these notions have an intuitive clarity that is sufficient for the purposes of my investigation.

Indeed, I am not confident that there would be any consensus on any definitions which might be offered. Further, I feel that any controversy in this area would be, for the most part, a red herring to the real questions at issue.

Below in §1.6.4 I claim that the nature and controversy of the psychologistic thesis may be in part a function of the character of psychology. I proceed (§1.6.4 and §1.7) to limit my consideration of psychology to that of a natural science. Beyond this, I do not think that the arguments of my dissertation hang on any particular characterizations of philosophy or psychology.

Finally, I think that, since the psychologistic thesis requires that philosophy be somehow distinguished from psychology, the burden of providing adequate accounts of them falls to the advocate of psychologism (see my §1.3.3).

That said, I will make a few general remarks about how I construe psychology and philosophy. I understand philosophy and psychology to be disciplines which may be variously characterized according to their subject matter, their methodology, their

This thesis I will call Generic Psychologism [GP], a preliminary formulation of which may be stated as follows: *psychology is relevant to philosophical inquiry*.

Clearly though, such an unqualified definition is unsatisfactory. The view that psychology is somehow relevant to philosophy may be interpreted so as to render it relatively innocuous. After all, there is good reason to think that the results of psychology may sometimes be philosophically relevant, under certain circumstances. For example, supposing that it falls within the purview of philosophy to provide an account of human nature (which might include, e.g., a theory of rationality), the psychological fact that people sometimes hold inconsistent beliefs, the fact that people sometimes do what they know they ought not to do, the fact that people often fail to see the immediate implications of their beliefs and commitments, these psychological facts become philosophically important. Facts such as these may well count as evidence for the conclusion that humans are not perfectly rational beings. So long as Generic Psychologism is read as the thesis that *psychology is somehow relevant to philosophical inquiry*, it does not seem philosophically objectionable. To deny this thesis is to claim that psychological facts are never philosophically relevant, and such a position, as we have just seen, is decidedly implausible.

So without some further qualification, without some additional specification of the

---

theoretical lexicon, etc. (I do not then characterize them as a class of entities which may form the subject matter for some discipline.) In general, I consider philosophy and psychology as disciplines which (usually) investigate some subject matter, rather than as a subject matter to be investigated. That said, the nature of the subject matter (if any) under investigation may well contribute to shaping the theories and methods by which it is investigated.



manner in which psychology is philosophically relevant, the claim that psychology is relevant to philosophy need not be a controversial view. In fact, as it stands there is no reason whatsoever to call such a view 'psychologistic'. The unqualified claim that psychology is relevant to philosophy does not succeed in effectively distinguishing two competing views. Seeing that no one would plausibly deny it, such a claim of relevance cannot be seen a topic of philosophical interest; nor can it be seen as capturing the meaning of "psychologism" whatsoever.

### §1.3.2 - Generic Psychologism Revised

On the other hand, Generic Psychologism may be easily revised so as to produce philosophical controversy. What is perhaps the most obvious modification picks up on Cussins's claim that psychology is required for philosophical inquiry (*op. cit.*). This thesis might be expressed as follows:

[GP] (def'n): Generic Psychologism is the thesis that psychology is necessary for philosophical inquiry.

The thesis that psychology is not just relevant to - but is required for - philosophy brings out the controversial aspects of psychologism. With the claim that psychology is necessary for philosophy, Generic Psychologism asserts that the discipline of philosophy is somehow dependent on psychology, and it is this dependency that is the source of theoretical controversy. The controversy of psychologism does not lie in the claim that a psychological

fact might count as evidence in some philosophical argument. Rather, the controversial dependency asserted by psychologism claims that philosophical inquiry cannot proceed - indeed it cannot even begin - unless the results of psychological investigation are on record.

So the rejection of GP does not deny the philosophical relevance of psychology. Rather, while admitting that psychology may be relevant to philosophy, it denies that philosophy is dependent upon psychology. To capture this idea, I frequently use expressions like “the *philosophical dependence* on psychology,” or “psychology is *required for* philosophy”. By these phrases, I mean to indicate the thesis of GP just defined.

While psychologism asserts some form of dependence of philosophy on psychology, the denial of psychologism denies this relationship of dependency. In claiming that psychology is not necessary for philosophical inquiry, anti-psychologism asserts the independence of philosophy from psychology.

By conceiving of GP as a thesis which asserts a dependency relation - rather than a relevance relation - between philosophy and psychology, it would seem that we have here a preliminary characterization of psychologism that begins to capture its philosophical controversy and interest. Importantly, Generic Psychologism remains general in at least two respects. First, it is *generic* in the sense that it does not specify the *nature* of the philosophical dependence on psychology. That is GP does not explain why or how the dependency of philosophy on psychology arises, and there may be a variety of reasons offered to support the asserted dependency. Second, it is *unspecified* because it does not specify the philosophical *domain* which is the location of the philosophical dependence on psychology. That is, GP

does not specify which parts or branches of philosophy are dependent on psychology. These two points promise further means for refining our concept of psychologism as a philosophically interesting thesis. But before pursuing these conceptual 'leads', an important consequence of Generic Psychologism deserves recognition.

### §1.3.3 - The Relation Between Psychology and Philosophy

According to Generic Psychologism, psychologism is a thesis about the relationship between psychology and philosophy. Psychologism asserts a dependence of philosophy on psychology. As such, the very intelligibility of the psychologism thesis depends on the fact that psychology and philosophy may be categorically distinguished. As Cussins writes: "The clarity of the charge of psychologism requires that the distinction between philosophy and psychology be made clear" (Cussins 1987, 125). This point has not only theoretical, but historical significance.

Historically, as George has observed (1997, 214), it would be anachronistic to describe any theory that predates the separation of philosophy and psychology into distinct, if not independent, disciplines as either psychologistic or anti-psychologistic.

Theoretically, the issue of whether it is, in fact, possible to categorically distinguish philosophy from psychology becomes crucial. If philosophy and psychology are not somehow distinguishable, then the thesis of psychologism becomes trivially true - and hence philosophically uninteresting. As such, the manner in which the disciplines are to be distinguished also becomes a matter of philosophical importance. This is especially so since any possible account of the philosophical dependence on psychology will be a function of the

features that initially define and distinguish the disciplines.

This distinction may be established in any of several ways. For example, as Notturmo did above, philosophy and psychology might be distinguished methodologically. That is, for Notturmo, the philosophical relevance of psychology was established through “the use of psychological methods in philosophical ... investigations” (Notturmo 1985, 9). If Notturmo’s psychologism is to be a controversial thesis, then it must be at least possible to conceive of philosophy as having some non-psychological method. Alternately, philosophy and psychology might be distinguished according to their subject matter. In the sections to follow, several strategies for distinguishing philosophy from psychology which nevertheless allow for the philosophical dependence on psychology will be considered.

The important point to observe at this juncture is the inherently unstable relationship between psychology and philosophy that is required by psychologism. The very intelligibility of the psychologistic thesis presupposes that philosophy and psychology must be somehow distinguished. That is, we must be able to understand or describe the two disciplines as distinct from one another. The distinction between them may be a strong, categorical segregation or something weaker. (For example, it might be a distinction of part and whole, or merely a cultural separation, or even a terminological difference to be reduced and / or eliminated.) Yet, the assertion of the psychologistic thesis must hold that there is, nevertheless, some intricate, if not intimate, relationship between the two.

#### §1.3.4 - Psychologism in Epistemology and Logic

Let us now return to the question of what aspects of psychologism might be the source

of philosophical controversy. Since most every philosopher would be willing to admit that psychology is sometimes relevant to philosophy, it would seem that the controversial aspect of Generic Psychologism results from the view that at least some kinds of philosophical inquiry are not dependent (logically, methodologically, or otherwise) upon psychology - that is, that some regions of philosophy are completely independent of any psychological investigation. This suggests another revision to Generic Psychologism. Such a revision may be made by specifying the branch of philosophy to which the dependence on psychology is asserted. In this manner, Sober sought to identify the feature common to all psychologistic theories as follows: " 'Psychologism' denotes a family of views, all tending to downplay or deny distinctions between epistemology and logic on the one hand and psychology on the other" (1978, 165-66).<sup>2</sup> In light of this, psychologism might be seen as the thesis that *psychology is necessary for epistemology and logic*. This thesis asserts the dependence of certain branches of philosophy on psychology. Since psychology is required for epistemology and logic, progress in these disciplines is consequent to, and dependent upon, the results of psychological investigation.

The denial of this claim is the categorical claim that logic and epistemology are completely independent of psychology. As we saw earlier, opponents of psychologism need not deny that psychology is somehow relevant to epistemology or logic. Psychological facts

---

<sup>2</sup> Indeed, Notturmo adopts a remarkably similar (and un-attributed) preliminary definition when he writes "we will denote by 'psychologism' a family of views, all tending to deprecate or deny distinctions between epistemology and metaphysics on the one hand and psychology on the other" (Notturmo 1985, 19).

may well contribute to an account of whether or not humans are perfectly rational beings, and an account of human rationality may contribute to epistemology. Similarly, opponents of psychologism need not deny that we frequently come to hold beliefs as a result of the processes of judgement and inference, or even that our real reasons for accepting a claim are causally related to our holding the corresponding belief. (That we do not surrender a belief in the face of evidence to the contrary shows that we do not really have as our current support for the belief the reasons supported by the contradicted evidence.) In this respect, psychology may well be relevant to epistemology and even to logic. Rather, what anti-psychologism denies is the thesis that psychology is required for epistemology or logic. For example, anti-psychologism may deny that psychological facts contribute to an account of the nature of logical relations (e.g., consistency and consequence) or epistemic relations (e.g., evidence and justification). Again here, what is at issue is not the question of whether psychology is somehow relevant to philosophy, but whether philosophical questions may be answered independently of psychological considerations.

Next, it should be also observed that we have here the conjunction of two theses. These might be called epistemological and logical psychologism respectively, and may be stated as follows:

[EP] (def'n): Epistemological psychologism is the thesis that psychology is necessary for epistemology.

[LP] (defn): Logical psychologism is the thesis that psychology is necessary for logic.

Several comments regarding these theses are in order. First, notice that the nature of the dependence of epistemology and logic respectively on psychology is left unstated. As such, EP and LP remain generic in their formulations; they do not indicate those features of psychology, epistemology or logic that might explain or account for the relation of dependence that is asserted to hold between them. In subsequent sections, specific versions of these theses will be considered which specify the nature of, and reason for, the dependence of philosophy and its sub-disciplines on psychology.

Secondly, it is important to recognize the relationship between these last two strands of psychologism. While Epistemological Psychologism is a consequence of Logical Psychologism, it alone does not entail Logical Psychologism. Consider that, since logic supplies the meaning of such concepts as necessary consequence, logic is necessary for epistemology. It follows that if logic is dependent on psychology in these respects, then so is epistemology. On the other hand, if psychology is not required for epistemology then it is not required for logic. Problematically though, the refutation of LP, taken on its own, is not a sufficient reason for the rejection of EP. After all, there may be some regions of epistemology that do not depend exclusively on logic - e.g., the determination of the truth-value of individual, or logically independent, contingent statements.

Logical Psychologism has been the source of the most controversy over the history of the psychologism debate. As such, it will be the primary focus of investigation through the

subsequent chapters of my inquiry into the topic of psychologism.<sup>3</sup> This represents an important limitation to my overall study. I will not be concerned with questions of whether epistemological concepts such as evidence and justification can be explained independently of psychological considerations. Rather I will limit my investigation to the question of whether specifically logical concepts such as validity, consequence and necessity (or necessary truth) can be explained independently of psychology. That said, the answer to this question will have some bearing on the overall character of epistemology. For instance, our epistemological account of justification will depend in part on whether the foundation of basic logical principles such as non-contradiction are properly explained independently of psychological facts, or whether those psychological facts are relevant to an explanation of basic logical principles. Similarly, if logical necessity is dependent on psychological contingencies, then the application of logical necessity in epistemological areas and problems, will reflect those same contingencies. As such, an anti-psychologistic foundation of logical necessity will offer epistemology theoretical resources which may well contribute to a more general account of the nature of justification. Indeed, if logic even partly informs or contributes to our notion of justification, and the proper account of logic is anti-psychologistic, then any general account of justification cannot be wholly psychologistic.

---

<sup>3</sup> Importantly, often the issue of psychologism in logic is seen alongside the issue of whether mathematical truths are dependent on psychological facts. This is true not only historically but in contemporary theory. Historically, logicism sought to reduce the truths of arithmetic (if not all of mathematics) to logic. Despite the inviability of the logicist project, the truths of mathematics are typically held to have a degree of necessity and objectivity that is not founded on, or explained by, the operations of the mind, or by any other set of contingent facts.



Instead, there will be certain logical features of our notions of evidence, warrantedness and the acceptability of theory and argument which are explained independently of psychological factors.

The foregoing discussion has yielded the insight that the controversial aspects of psychologism are found when it is construed as a dependence thesis, not a relevance thesis. A further specification of the domain of this dependence may more precisely locate the source of theoretical controversy in the psychologistic thesis. These specifications work by isolating those realms of philosophical inquiry that are thought to be either (i) impervious to contingencies of any sort (logic) or (ii) impervious to contingencies of a particularly psychological sort (epistemology).

Having isolated several controversial versions of psychologism, a crucial question remains to be asked. What is the nature of the philosophical dependence on psychology? What reasons support the claim that psychology is required for philosophical or logical inquiry? By considering these questions, we will hopefully be brought still closer to those aspects of psychologism that are philosophically objectionable, controversial or problematic.

#### §1.4 - Psychologism in Semantics

##### §1.4.1 - Metaphysical Psychologism

One way to establish the philosophical dependence on psychology might be to claim that they both study the same subject matter, viz. psychological entities. Such a claim might be called Metaphysical Psychologism [MP], a preliminary formulation of which might run as follows: *philosophy and psychology have the same subject matter.*

While the claim that the subject matter of philosophy and psychology is the same appears to capture the central claim of psychologism at an intuitive level, it actually overstates the commitments of psychologism. One plausible way of interpreting such a thesis is to read it as claiming that the domains of philosophy and psychology are co-extensive. A consequence of this is that if something is studied by psychology then it is also studied by philosophy. But psychologism need not claim that philosophy studies the whole of psychology. To establish the dependence of philosophy on psychology, the subject matters of the two disciplines need not be coextensive. Rather, what metaphysical psychologism needs is the claim that the subject matter of philosophy is psychological in nature - that the subject matter of philosophy is contained within, or is a proper part of, the subject matter of psychology. Thus Metaphysical Psychologism is better defined as the thesis that *for any entity, x, if x is an element of the subject matter of philosophy then x is an element of the subject matter of psychology*. As I will argue below (§1.5.7) the view that some essential part of the subject matter of philosophy is psychological in nature is sufficient to establish the psychological dependence of philosophy. As such, the present thesis might best be understood as Strong Metaphysical Psychologism.<sup>4</sup>

#### §1.4.1.1 - The Nature of a Subject Matter

Several clarifications are in order here. First, to say that a discipline investigates a subject matter is to claim that there exists a group of entities which are studied by that

---

<sup>4</sup> The Strong version of this thesis is worth considering as I take it to be both historically relevant (§1.4.2) and to inform the formulation of psychologism as a reductive thesis (§1.5.1).

discipline. Further, it is to claim that these entities (normally) pre-exist the discipline which studies them, and have a nature which is independent of that discipline. This is not only an existential claim, but a metaphysical one which claims that the nature of the entities forming the subject matter of a discipline are normally independent of the statements made about them (either in that discipline or elsewhere). The discipline, in turn, is conceived of as the science of those entities which comprise its subject matter. The purpose of such a science is typically to ascertain the nature of the entities comprising its subject matter as well as the laws governing the behaviour of, or relations among, those entities. So, to say that a discipline investigates a subject matter is ontologically committing in important ways.

On this point, it admittedly may sound odd to speak of the ‘entities’ that compose the subject matter of philosophy (particularly certain sub-disciplines of philosophy, e.g., logic). To accommodate this, the term “entity” will have to be read in a very broad sense, to include not merely objects (entities in the narrow sense) but also processes, properties, universals, propositions, logical relations, rules of inference, and other ‘entities’ of this sort. The claim of psychologism, then, would be the claim that entities of this sort are psychological in nature.

This clarification also speaks to a second point. One might be tempted to think that that the mere fact that philosophy studies psychological entities is not sufficient to establish the dependence of philosophy on psychology (i.e., that MP is not sufficient to establish GP). By analogy, one might object that diamonds are a natural kind which are studied in independent ways by geology, chemistry and gemology. Thus, when considered only in the respect of their study of diamonds, these disciplines appear to have the same subject matter

but nevertheless to remain independent of one another. On my account, though, the claim that these disciplines have the same subject matter is to construe their subject matter too narrowly. By the subject matter of a discipline, and by the 'entities' composing that subject matter, I mean more than the things - i.e., objects - which are studied by that discipline. In addition to these objects, I understand the subject matter of a discipline to include the properties of those objects, the relations that obtain between them, and even the laws describing (and perhaps governing) these objects and the changes they may undergo. So, looking at our analogy if one claims that the discipline of gemology is independent of chemistry because it studies the aesthetic and economic properties of diamonds, and that these properties are not a function of the chemical properties of diamonds, this is to claim that the subject matter of diamond-gemology is not the same as the subject matter of diamond-chemistry. Despite the obvious truth that both disciplines study diamonds, they study different aspects (or properties) of diamonds, and the difference(s) between these properties explain(s) the independence of the respective disciplines. On the other hand, if the geological properties of diamonds are a function of their chemical properties, then the geological study of diamonds is dependent on the chemical study of them, and this dependence is explained by the subject matter of these disciplines. As such, even disciplines which have very different goals and methods may be dependent on one another. For example, if the aesthetic properties of diamonds turn out to be a function of their chemical properties, then the gemology of diamonds will be dependent on the chemistry of diamonds even though the goals of chemistry may only be descriptive while the goals of gemology may be to produce diamonds of the best

aesthetic quality possible. In this way, the discipline of agriculture is dependent on the discipline of organic chemistry.

To apply this point to the relation between psychology and philosophy, I construe the subject matter of psychology not only as a class of psychological states, but also as the properties of these states, the relations that obtain among them and the processes they undergo. So to claim that logic studies a species of non-psychological properties and relations is to deny that the subject matter of logic is psychological in nature, even if one asserts that these non-psychological properties and relations pertain to psychological states and processes. Such a move effectively denies Metaphysical Psychologism, and it is in doing so that Generic Psychologism is also denied.<sup>5</sup> On the other hand, (on the assumption that it makes sense to speak of psychological entities as having logical properties) if the logical properties of psychological states and processes are explained as being a function of their psychological properties, then logic will have a subject matter which is psychological in nature, and this will explain the dependency between them.

#### §1.4.1.2 - Psychologism and the 'No Subject Matter' Thesis

Secondly, as it presently reads, our definition of Metaphysical Psychologism comes out as true even in the event that philosophy treats of no subject matter. Yet the claim that

---

<sup>5</sup> This is not to say that such a move leaves one in an entirely comfortable position. Rather, several pressing questions may be asked of the proponent of such a move. For instance, how does one explain the non-psychological properties of a set of entities whose nature is otherwise completely explained psychologically? Regrettably, I must leave for another occasion the question of whether this is an adequate response to psychologism.

philosophy (or some sub-discipline thereof) does not have any proper subject matter in the ontologically committing sense described above - i.e., that it does treat of any class of pre-existing entities whose nature is given independently of any statements made about them - cannot properly be seen as a trivially true case of Metaphysical Psychologism.

Rather, Metaphysical Psychologism must be read as an existential and not merely a universal thesis. Psychologism does not merely assert that all philosophical entities (if there are any such things) are psychological entities. Instead, Metaphysical Psychologism claims that there are psychological entities, and some of these exhaust the proper subject matter of logic. This must be seen as the proper interpretation of the claim that the subject matter of philosophy is psychological in nature - that the subject matter of philosophy is contained within, or is a proper part of, the subject matter of psychology.

To do otherwise, interprets the denial that philosophy treats of a subject matter as a proof of Metaphysical Psychologism. Yet the denial that philosophy treats of any subject matter should not count as a proof of Metaphysical Psychologism. Quite the opposite for, since philosophy treats of no subject matter, it precisely cannot be the case that it treats of a subject matter that is psychological in nature. Instead of a proof of psychologism, the denial that philosophy treats of a subject matter should be interpreted as a denial of Metaphysical Psychologism.

To accommodate this, the definition of Metaphysical Psychologism will have to be revised to incorporate the claim, implicit in psychologism, that philosophy treats of an actual subject matter. This revision may be accommodated by conjoining the universally quantified

conditional in the above definition with an existential thesis that philosophy treats of some subject matter. Strong Metaphysical Psychologism may then finally be defined as:

[MP<sub>s</sub>] (def'n): There exists an entity,  $y$ , such that  $y$  is an element of the subject matter of philosophy, and for any entity,  $x$ , if  $x$  is an element of the subject matter of philosophy then  $x$  is an element of the subject matter of psychology.

By adopting some terminological conventions MP<sub>s</sub> may be formalised as follows: Let SM(S) be the subject matter of some subject (or discipline), S, where the subject matter is construed as a set of entities. Let Ph be the discipline of philosophy and Py be the science of psychology, both construed as a discipline-specific lexicon. Properly speaking, a discipline is the investigation of a subject matter through a (set of) normative practice(s). While recognizing this, I use a linguistic criterion to identify such normative practices and to distinguish different disciplines from one another. As such, I categorize a discipline according to its discipline-specific lexicon. This lexicon will include all and only those terms that are specific or essential to the discipline in question (e.g., the theoretical, methodological, technical, and specialized terminology). I assume that there is a relatively unproblematic way of specifying such a list, or at least, of coming to some agreement as to what should be on the list.<sup>6</sup> When quantified over all entities, MP<sub>s</sub> may be formalised as:

---

<sup>6</sup> Admittedly, these are only ways of characterizing a discipline at some specific time. Neither the vocabulary list defining a discipline nor the set of entities that constitute its subject matter are conceived of as being fixed or closed beyond that specified time

[MP<sub>s</sub>] (def'n):  $(\exists y y \in \text{SM}(\text{Ph})) \ \& \ (\forall x (x \in \text{SM}(\text{Ph}) \rightarrow x \in \text{SM}(\text{Py})))$

Notice that this unspecified formulation of Metaphysical Psychologism can be modified (by a mechanically definable substitution process) so as to express psychologism over any sub-discipline of philosophy. This permits for the narrowing of the thesis to those areas of philosophy thought to be especially immune from, or vulnerable to psychological considerations. For instance, motivated by the thought that logic properly treats of psychological states and the rational operations (i.e., mental processes) involved in the formation, maintenance and revision of beliefs, Strong Metaphysical Psychologism over

---

period. Instead of being static, disciplines are open to discoveries and new developments. These developments may effect alterations in the subject matter of a discipline, and the jargon used to denote and to describe that subject matter. It should be acknowledged that while both of these methods of characterizing a discipline are problematic, they are nevertheless common.

A second common way of characterizing a discipline (at some time) is by identifying it with a list of statements. This approach has not been adopted, because it is inevitable that some of the terms used in these sentences are not specific or unique to the discipline in question. For instance, the sentence "I believe that, if any normal person comes into my room, he will see the same chairs and tables and books and papers as I see, and that the table which I see is same as the table which I feel pressing against my arm" occurs in Russell's epistemological text *The Problems of Philosophy* (1). Yet Russell's desk [i.e., the table] is not itself part of the subject matter of epistemology, and the expression "Russell's desk" is not part of the epistemological jargon. Since it is desirable to characterize a discipline as specifically as possible, it is best to attempt to do this according to a lexicon of terms as opposed to a set of statements.

Finally, and perhaps most importantly, it should be observed that, in the case of psychologistic theses discussed here, if there is any responsibility to specify the manner in which the entities or jargon essential to a discipline are to be determined, this task falls to the advocate of psychologism. In the event that these disciplines cannot be adequately characterized, the very intelligibility of the psychologistic thesis (or relevant variation thereof) falls into question. As such, what I say here need be no more or less precise than what the advocate of psychologism asserts in his or her thesis.



logic [MP<sub>L</sub>] may be defined as:

[MP<sub>L</sub>] (def'n): There exists an entity, *y*, such that *y* is an element of the subject matter of logic, and for any entity, *x*, if *x* is an element of the subject matter of logic then *x* is an element of the subject matter of psychology.

$$(\exists y y \in \text{SM}(\text{L})) \ \& \ (\forall x (x \in \text{SM}(\text{L}) \rightarrow x \in \text{SM}(\text{Py}))) \ ^7$$

#### §1.4.2 - Philosophical Interest of Metaphysical Psychologism over Logic

There can be no doubt that MP<sub>L</sub> has been widely held in the history of philosophy, or that it is the source of significant philosophical controversy.<sup>8</sup> For instance, George (1997, 216) reminds us that, in the *Treatise* (1739) Hume felt that “the sole end of logic is to explain the principles and operations of our reasoning faculty, and the nature of our ideas” (1978, xv). Importantly, Hume expressed this view nearly a century before experimental psychology started to become widely established in Europe, suggesting that this view is likely a carry-over from the days before logic and psychology were properly segregated as unique disciplines.

Yet this is precisely the view that remained in place more than a century later as evidenced by Mill’s *A System of Logic* (1843), where logic is defined as “the science which treats of the operations of the human understanding in the pursuit of truth” (1843, Intro. §3;

---

<sup>7</sup> Using the same substitution process, a parallel definition could be provided for Metaphysical Psychologism over epistemology (MP<sub>E</sub>).

<sup>8</sup> These points will only be briefly introduced at this juncture for the purposes of motivating further inquiry. They are discussed extensively in forthcoming chapters.

1973, 6).<sup>9</sup> As such, it may not be an exaggeration to label this the traditional picture of logic, which Baker and Hacker describe as follows. “The established tradition was to view inference as the primary subject matter of logic. Inferences were thought to be sequences of judgements (propositions, thoughts), and judgements to be built up out of concepts or ideas” (Baker and Hacker 1989, 75). Since these were all viewed as mental entities, it was natural to suppose that psychology, the new science of the mind, would treat of these same entities.

It is this picture that lies at the root of Mill’s oft-cited dictum that “[s]o far as ... [logic] is a science at all, it is a part, or branch, of Psychology; differing from it, on the one hand as a part differs from the whole, and on the other, as an Art differs from a Science” (1865/1867, Ch. xx; 1979, 359). Mill’s justification for the claim arises directly from the claim that logic and psychology have the same subject matter - namely inference.

Moreover, the claim that the subject matter of logic is psychological in nature gives rise to many significant problems in epistemology and the philosophy of logic. Most obviously, if logic is a branch of psychology, then they share the same ultimate foundations (however those foundations are to be explained). That is to say, the foundation of logic is dependent upon certain factual characteristics of human psychology. If the subject matter of logic is psychological in nature, psychological states become the bearers of such logical properties as validity (and hence truth). Similarly, relations of consequence also hold between

---

<sup>9</sup> It will be argued in chapter 3 that, while it does capture his view that the purpose of logic is the guidance of thought, this quotation represents but one aspect of Mill’s position on the subject matter of logic. That said, this passage and the one immediately following capture those aspects of Mill’s position as it is commonly characterized, and forms the position generally attributed to Mill.

psychological states, and as such a certain class of evidential relations also pertain to psychological states. Not only are psychological entities the bearers of these logical properties, but these properties and relations themselves are explained in terms of the relevant features of these psychological entities. Thus the nature and foundation of logical relations are dependent on the facts of human psychology.

Claims of this sort, may easily be seen as limiting the domain of applicability of logic, and hence as an impediment to any account of logic as objective and universal. If the laws of logic are dependent on facts of human psychology, then what is to say that they describe and regulate the ultimate features of some objective universe (be it physical, metaphysical, conceptual or linguistic), and not merely the flow of human ideas? That is, what is to say that the laws of logic do not change when we move beyond the realm of human psychology? Moreover, since the facts of human psychology are typically seen as contingent - indeed they are typically seen as changing over the course of history at the level of both the individual and the species - the necessity of logic is also significantly threatened. Since the laws of logic are dependent on a changing set of contingent facts, what is to be made of the claim that these laws nevertheless mark the path of truth and necessity?

Questions such as these suggest the level of philosophical controversy that is instigated by the claim of metaphysical psychologism over logic. Let us now return to the question of what reasons might plausibly inform the claim of generic psychologism that philosophy is dependent on psychology.

## §1.4.3 - Referential Psychologism

Aside from claiming that the subject matter of philosophy is psychological in nature, there is perhaps another reason to think that psychology is necessary for philosophy. Instead of making metaphysical claims about the nature of philosophical ‘entities’, one might instead adopt a position regarding the semantics of the philosophical vocabulary. Cussins, for instance, writes that “Referential psychologism holds that psychological processes, activities and abilities constitute the entities referred to in some (apparently) nonpsychological part of our language or thought [i.e., philosophy]” (Cussins 1987, 127). Colloquially, one might render this as the claim that the entities referred to by some philosophical vocabulary are psychological in nature (i.e., they are part of the subject matter of psychology). More specifically, a preliminary definition of Referential Psychologism [RP] might be the thesis that *any entity referred to within the philosophical lexicon is part of the subject matter of psychology*. As with the metaphysical version of psychologism above, this might be considered the Strong version of Referential Psychologism, and is similar to MP in its historical relevance and in that it informs the formulation of psychologism as a reductive thesis.<sup>10</sup> MP and RP represent two different strategies for defining psychologism in the literature. MP is formulated in terms of the subject matter of a discipline, while RP is formulated in terms of the referents of terms in a lexicon.<sup>11</sup>

---

<sup>10</sup> Again, I will argue below (§1.5.7) that the psychological dependence of philosophy may be established by the weaker thesis that some entity to which philosophy necessarily refers is also referred to within psychology.

<sup>11</sup> In §1.4.5 I demonstrate that these two versions of psychologism are equivalent.

As with Metaphysical Psychology, Referential Psychology may be taken to apply specifically to some philosophical sub-discipline. Thus for instance, Toulmin defines “primitive psychologism” as referential psychologism over the vocabulary of logic, writing that “Primitive psychologism ... [is] the view that statements in logic are about actual mental processes” (Toulmin 1958, 86). Engel offers a similar definition when he writes, “Psychologism in general is the thesis according to which logic describes the actual psychological processes of reasoning” ([1989] 1991, 292). Before attempting to express referential psychologism over these sub-disciplines, it is important to note another parallel between referential and metaphysical versions of psychologism highlighted by Toulmin’s and Engel’s definitions.

Like Metaphysical Psychology, Referential Psychology contains the implicit claim that philosophy (or some relevant branch thereof) refers to an *actual* set of entities. Thus Referential Psychology cannot be expressed as a universal claim. Rather, imbedded in the psychologistic view is the existential claim that philosophical discourse refers to some set of actual entities, and it is these entities that are psychological in nature. Also similarly to Metaphysical Psychology, the claim that philosophical vocabulary is not referential cannot be accepted as proof of psychologism. Rather, to deny that the philosophical vocabulary is referential (perhaps it performs some other linguistic function like expressing a norm or rule) is to deny psychologism. Since the philosophical vocabulary does not refer to anything whatsoever, it cannot refer to psychological things, and this is to deny Referential Psychology. So, as with Metaphysical Psychology, the definition of Referential

Psychologism must be revised to include the existential claim that there are entities to which the philosophical vocabulary refers. Incorporating this revision, a final definition of Strong Referential Psychologism [RP<sub>s</sub>] is the following.

[RP<sub>s</sub>] (def'n): There exists some entity,  $y$ , such that some term in the philosophical lexicon refers to it, and any entity referred to within the philosophical lexicon is part of the subject matter of psychology.

Using the notational conventions introduced above, let us add another.  $R$  is the two place referential relation, which maps an entity,  $x$ , onto a term within the lexicon of some discipline,  $S$  (which is itself construed as a lexicon). More colloquially, we might treat the referential relation as roughly synonymous with the 'aboutness' relation that a discipline  $S$  is about the entity  $x$ . For the sake of precision I will speak only of the referential relation. So " $RSx$ " may be read as " $x$  is referred to by some term in the lexicon of  $S$ ", or as "the lexicon of  $S$  contains some term which refers to the entity  $x$ ".  $RP_s$  may now be formalised as follows:

[RP<sub>s</sub>] (def'n):  $(\exists y RPhy) \ \& \ (\forall x (RPhx \rightarrow x \in SM(Py)))$

As with MP, RP may be specified to a specific philosophical discipline by a substitution process. So, for example, Strong Referential Psychologism about logic [RP<sub>L</sub>] may be defined as:

[RP<sub>L</sub>] (def'n): There exists some entity,  $y$ , such that some term in the logical lexicon refers to it, and any entity referred to within the logical lexicon is part of the subject matter of psychology.

$$(\exists y \text{ RLy}) \ \& \ (\forall x (\text{RLx} \rightarrow x \in \text{SM}(\text{Py}))) \quad ^{12} \ ^{13}$$

#### §1.4.4 - Philosophical Interest of Referential Psychologism about Logic

As with MP<sub>L</sub>, RP<sub>L</sub> may be seen as the site of significant and familiar philosophical controversies. For instance, if logical terms refer to psychological entities then the foundations of logic again become dependent on psychology. Now though, the dependence of logic on psychology is not explained by the claim that logical entities are psychological in nature. Rather it is that the propositions of logic are about psychological entities, and as such logical truths are dependent on the truths of psychology. Since these truths of psychology are descriptions of psychological facts, logic becomes dependent on facts about human psychology. Moreover, the truths of logic will have the same ultimate status as those psychological truths. So if the truths of psychology are contingent, then so are the truths of

---

<sup>12</sup> Admittedly, as with the general definition of Referential Psychologism, the success of this definition rests on whether an adequate criterion can be supplied for properly specifying the relevant lexicon (i.e., the logical lexicon in this case). One way of capturing the uniquely logical lexicon might be found in Tarski's thesis that logical notions are those whose semantics are invariant under all permutations of the domain - that is, whose semantics do not change under all one-to-one transformations of a domain onto itself (Tarski [1966] 1986; see also Sher, 1991).

<sup>13</sup> Using the same substitution process, a parallel definition could be provided for Strong Referential Psychologism about epistemology (RP<sub>E</sub>).

logic. As with Metaphysical Psychologism, this presents an obvious obstacle to any account of the objectivity and necessity of logic. Further, if the truths of psychology may be known only after some kind of empirical inquiry, then the truths of logic may only be known *a posteriori*, indeed subsequently to some psychological investigation.

This cursory sketch may be seen as a preliminary indication that Metaphysical Psychologism and Referential Psychologism have similar consequences. Both challenge the picture of logic as a system of universal and necessary truths which are objective and independent of any contingent facts - especially facts about human psychology. In the next section, it will be shown that the resemblance between Metaphysical and Referential psychologism is more than just apparent and coincidental.

#### §1.4.5 - Entailments Between Metaphysical and Referential Psychologism

One of the central theses of this dissertation, and one that informs the philosophical methodology herein, is the claim that psychologism may be treated as a semantic thesis (or a collection of semantic theses). The epistemological problems associated with psychologism may be seen as consequences of particular (collections of) semantic theories, and the diagnosis and treatment of these epistemological problems may be handled at the semantic level. So there is a close relationship between semantics and the problem of psychologism, and this is the first occasion where this connection may be seen.

My claim is that MP and RP are logically equivalent; they are two different ways of expressing the same basic idea (or thesis). Metaphysical Psychologism makes a claim about the subject matter of a discipline, while Referential Psychologism makes a claim about the



referents of the vocabulary of that discipline. MP holds that the subject matter of philosophy is psychological in nature. RP holds that the referents for names and the extension(s) of philosophical predicates, relations and functions are selected from the domain of the referents of psychological terms. Given certain assumptions, it may be shown that RP may be derived from MP and vice-versa.

To show the relationship of mutual entailment that holds between these theses, it must be assumed that psychological entities are the subject matter of psychology by definition. The only other assumption that need be made may be colloquially stated as the claim that the subject matter of a discipline (or subject) is just whatever it is that the relevant discipline is about. More technically, this assumption states that

[SMD]        A term in the lexicon of some subject, S, refers to something, x, just in case that something (whatever it is) is part of the subject matter of S.

Let us call this supposition the Subject Matter Doctrine [SMD]. SMD may be formalised as follows:

SMD         $\forall S \forall x (RSx \leftrightarrow x \in SM(S))$

Notice that SMD is neutral with respect to many adjacent topics of philosophical debate (e.g., realism or anti-realism in either metaphysics or semantics). Normally SMD would be expressed with respect to some particular discipline in which one takes a specific interest. The

SMD for philosophy, then, may be formalised as follows:

$$\text{SMD(Ph)} \quad \forall x (\text{RPh}x \rightarrow x \in \text{SM(Ph)})^{14}$$

With these assumptions, it is possible to show the relation of mutual entailment between Metaphysical Psychologism and Referential Psychologism.<sup>15</sup> As has already been mentioned, since the definitions of Metaphysical and Referential Psychologism and the Subject Matter Doctrine have been formulated in a generic way, the logical equivalence of these two versions of psychologism may be shown to hold also for any given sub-discipline of philosophy (e.g., logic or epistemology) merely by systematically and thoroughly substituting the appropriate subject name (“L” or “E” respectively) in place of “Ph” throughout.

#### §1.4.6 - Theoretical Implications of the Equivalence of MP and RP

Having established that MP and RP are logically equivalent, several observations are in order. First, psychologism itself is not inherently a metaphysical or a semantic thesis. Generically, it is a thesis about the dependence of philosophy (or some branch thereof) on psychology, and this dependence may be established in a variety of ways. (Here we have

---

<sup>14</sup> By a substitution process similar to those described above, SMD may be formulated for any discipline, particularly any sub-discipline of philosophy (e.g., epistemology or logic).

<sup>15</sup> That this derivation can be easily demonstrated should be evident by seeing the theses collected together as is shown below.

MP	$(\exists y y \in \text{SM(Ph)}) \ \& \ (\forall x (x \in \text{SM(Ph)} \rightarrow x \in \text{SM(Py)}))$	(def'n)
SMD(Ph)	$\forall x (\text{RPh}x \rightarrow x \in \text{SM(Ph)})$	(assumption)
RP	$(\exists y \text{RPh}y) \ \& \ (\forall x (\text{RPh}x \rightarrow x \in \text{SM(Py)}))$	(def'n)

considered two standard and equivalent ways.)

Secondly, the resemblance of the controversies presented by this pair of doctrines is not a matter of coincidence. Rather, MP and RP have the same consequences, and if one of them poses a problem so will the other.

Finally, the equivalence of these two theses serves to vindicate the treatment of psychologism as a semantic thesis. Indeed, as I will argue in chapter 2, this is precisely the way in which Frege approached the issue, and provides the framework for his solution to the problems he associated with psychologism. Since psychologism itself is neither a metaphysical nor a semantic thesis, the decision to treat it as one or the other turns on practical rather than theoretical concerns.

#### §1.4.7 - Meaning, Reference and Psychologism

To this point, we have considered one way in which the semantics for a discourse might be dependent on psychology. If the objects denoted within that discourse are psychological in nature, and reference plays a role in our explanation of linguistic meaning, then the meaning of that discourse cannot be explained independently of psychology and Referential Psychologism results.

Standardly, the reference of an expression is seen as connected to its meaning.<sup>16</sup> One way to explain the meaning of an expression is by ostension: by listing the objects denoted by names and falling under concepts. This might be seen as a referential or extensional theory of

---

<sup>16</sup> Though some have held that the extension of some terms does not contribute to, or form a part of, their meaning at all (e.g., J.S. Mill).

meaning, where the meaning of an expression is given by the object(s) for which it stands. Similarly, one way of explaining the meaning of a statement is to give its truth conditions, and these are given with reference to the fact or state of affairs described by (or corresponding to) that statement.<sup>17</sup> Accounts of this kind might be called extensional explanations of meaning.

Yet there are alternatives to the extensional theory of meaning. For instance, it might be asked whether the extension of a term is exhaustive of its meaning, or whether it merely contributes to it.<sup>18</sup> And if the object of an expression is not exhaustive of its meaning then there must be something else that contributes to it. Frege (1892) calls this the sense (*Sinn*) of an expression, and distinguishes this from its reference (*Bedeutung*). In addition to these terms, I will also use the terms “content” and “object” to indicate the sense and reference of an expression respectively. I take these terms to respectively mark the intensional and the extensional aspects of the meaning of an expression.

Having marked the distinction between the content and the object of an expression,

---

<sup>17</sup> One way to explain the nature of facts or states of affairs is to treat them as special kinds of complex objects. When speaking of the “object” or “referent” of an expression, then, I mean to include facts. Importantly, Frege saw the referent of a statement (that is, of a Thought) not as a fact but as a truth-value, and truth-values themselves were explained as special kinds of objects.

<sup>18</sup> Frege provides a classic articulation of this problem in his 1892 paper “On Sense and Reference”. His argument therein might be summarized in the following way. Suppose that the referential account of meaning is correct and exhaustive. On the assumption that the expressions “the morning star” and “the evening star” designate the same object, then the identity claim “The morning star is the evening star” ought to be analytic and (thus) uninformative. That is, it ought to be of the same form as “The morning star is the morning star.” But clearly claims of the form “a=b” are different from claims of the form “a=a”; in particular, the former are informative in a way that the latter are not. From this, Frege concludes that there must be something beyond the reference of an expression that contributes to its meaning. This he calls the expression’s *sense*.

there appears another way in which psychology may become controversially relevant to the semantics of a discourse. Referential psychologism asserted that the referents of a discourse were psychological in nature. But, even if one were to give a non-psychological account of the objects of a discourse, one's semantics might still have an irreducibly psychological element just so long as one maintained that the meaning of that discourse could not be completely explained extensionally, and that the contents of that discourse were psychological in nature.

Indeed, some theorists have defined "psychologism" as a thesis asserting that the contents of linguistic expressions are psychological in nature. One might call this thesis the Psychologism of Sense. For example, Ben-Menahem has written that "psychologism is a much more specific error than linking philosophy with psychology: it represents a theory of meaning based on private ideas" (1988, 124). Similarly, Brockhaus writes that psychologism is "roughly the thesis that the meanings of words are mental entities" (1991, 494). Indeed, as will be seen in chapter 2, Frege's characterization of psychologism as the claim that "a [T]hought ... is something psychological like an idea" ([1897] 1979, 143) amounts to Psychologism of Sense. A more specific version of Psychologism of Sense identifies the sense of a linguistic expression with a psychological entity. This thesis might be expressed as follows:

[PofS](defn): There exists some entity, *s*, which is the sense of some term in the lexicon of some discipline, *S*, and the sense of any term in *S* is part of the subject matter

of psychology.

So long as the contents of some lexicon are psychological in nature, the explanation of the meaning of the terms and expressions using that lexicon would be dependent on psychology, and generic psychologism would be true. As such, Psychologism of Sense might be generically expressed as the thesis that *psychology is necessary for explaining the sense (or content) of some philosophical lexicon*. The generic formulation of Psychologism of Sense asserts the dependence of any explanation of sense (i. e., meaning) on psychology, while not specifying the nature of this dependency, or the reasons underlying it.

More generally, so long as there is *some* component (be it extensional, intensional, or otherwise) which is both inherently psychological and contributes essentially to the explanation of the meaning of the expression(s) in question, it follows that the meaning of that expression cannot be explained independently of psychology, and some version of Generic Psychologism obtains. So, when considering psychologism as a semantic thesis, it is important to realise that Referential Psychologism represents only one form or version of a more general psychologistic thesis according to which questions of semantics are dependent on psychology. Drawing on the formulations used earlier, one might offer a generic formulation of psychologism in semantics as follows.

[SP](defn): Semantic Psychologism is the thesis that psychology is necessary for explaining the semantics of some philosophical lexicon.

That is, Semantic Psychologism asserts that psychology is required for the explanation of the meaning of some philosophical lexicon - that the semantics of a discourse cannot be explained independently of psychology. As with the earlier generic formulations of psychologism, SP is general in several respects. First, it is *unspecified* in that the particular philosophical lexicon whose semantics is psychologically explained is not specified (though this may be done by substitution). Secondly, it is *generic* in that those features of the theory of semantics which establish the dependence upon psychology are not specified. As such, either a psychological account of reference (the objects of a lexicon), or a psychological account of sense (the content of a lexicon) meet the definition of Semantic Psychologism. To deny SP is to maintain that the semantics of some lexicon may be given independently of psychology.

## §1.5 - Reductive Psychologism

### §1.5.1 - Psychologism as a Reductive Thesis

To this point, it has been observed that there are both metaphysical and semantic reasons for accepting the dependency thesis asserted by Generic Psychologism. Metaphysically, it might be claimed that the subject matter of philosophy (or some branch thereof) is supplied by psychology. Semantically, it might be asserted either that the referents, or the contents of philosophical terms are psychological entities. Further, it has been demonstrated that, on the assumption of a reasonably innocuous doctrine about the subject matter of a discipline [SMD], Metaphysical Psychologism is a form of Semantic Psychologism, and is logically equivalent to Referential Psychologism. These observations suggest still another way of characterizing psychologism. Instead of formulating

psychologism as either a metaphysical or a semantic thesis, psychologism may be formulated as a reductive thesis. That is, psychologism may be formulated as a thesis which asserts that philosophy simply reduces to psychology.

The reductive aspect of psychologism was recognized from the very early stages of its philosophical discussion, and remains part of its conception to this day. For instance, it was articulated by Husserl's teacher Carl Stumpf, who wrote in his *'Psychologie und Erkenntnistheorie'* (1892):

“‘psychologism’ ... [is] the reduction of all philosophical research in general, and all epistemological enquiry in particular, to psychology” (Stumpf 1892, 468; as cited in Kusch 1995, 103 ).

Nor was Stumpf the only author to make such a connection. Notturmo writes that “Fries and Beneke can be characterized as holding that such scientific and philosophical disciplines are, in the more contemporary sense, *reducible* to ... psychology” (Notturmo 1985, 12). Finally, Pandit identifies and contrasts two principal strands of psychologism, methodological and reductive. Of the latter, Pandit writes:

By ... [‘reductive psychologism’] I intend to refer to the traditional concept of psychologism as a reductionist doctrine according to which logic and philosophy must be founded on, and in effect reducible to, the laws of psychology. (Pandit 1971, 86)

One rhetorical advantage of formulating psychologism as a reductive thesis is that a certain degree of generality may be achieved in doing so. Firstly, reductive psychologism may



be formulated in an unspecified way, so as to claim either that all of philosophy, or some specific sub-discipline of it, reduces to psychology. Yet, even with this generality, the reductive thesis locates the controversial kernel of psychologism: the claim that philosophy is dependent on psychology. To see this, consider that a denial of the reductive thesis would involve the claim that philosophy (or some part thereof) does not reduce to psychology, but is instead (at least partly) independent of it.

Finally, while characterizing the nature of philosophy's dependence on psychology (i.e., Generic Psychologism), the reductive thesis need not identify the ultimate reason for the reduction - i.e., the features of the discipline that warrant the reduction, and ultimately explain the nature of the reductive relationship between the disciplines. The reductive thesis may be specified either as a thesis about a philosophical subject matter, or the referents of philosophical terms, or indeed about any other intrinsically philosophical feature. Yet, this feature - whatever it is - need not be specified within the reductive thesis. Because of this, psychologism expressed as a reductive thesis suggests both a semantic and a metaphysical formulation, while remaining neutral between them.

That said, a standard formulation of the reductive thesis is as a semantic thesis. Pascal Engel, for instance, gives the following definition for "psychologism": "The view that the laws and truths of logic are reducible to laws or truths of human psychology" ([1989] 1991, 376). Similarly, George identifies several varieties of psychologism, the first of which is the "*eliminative psychologism* of Locke and his followers, whose aim it was to replace logic with the empirical investigation of inferential habits" (1997, 237). Of the rest, George says that "a

common element in all but the eliminative variety is their reductionism, namely of logical relations to psychological ones" (*ibid.*). In these formulations, it is the semantic features of the discipline that are the locus of the reduction. It is the truths, laws and relations of logic that are dependent upon certain facts of human psychology, and are reducible to certain claims about those psychological facts.

So the question of the psychological dependence (or independence) of philosophy may be construed as a question of reducibility, and this reducibility is often conceived as primarily semantic. Indeed, a marked degree of comprehensiveness is afforded by selecting the semantic features of philosophy as the locus of reduction over any other disciplinary features that might be the subject of reduction. To see this, suppose it is claimed that some other set of features of the discipline of philosophy are the locus of reduction. (Take for instance Notturmo's claim (1985, 9) that it is the methodological features of the two disciplines which establish either their dependence or independence.) So long as it may be established that those other features (be they metaphysical, methodological or whatever) may be systematically related to, or captured within, the vocabulary and discourse of philosophy, any alternative form of reductionism could be formulated as a semantic thesis. To use our example, so long as the methodology of a discipline is expressible as a linguistic practice, it may be articulated in a set of principles and statements involving some discipline-specific jargon of which the particularly methodological terms would be a proper subset. Thus the question of methodological reduction becomes a question of semantic reduction. That is, the question of whether the methodology peculiar to philosophy reduces to

psychology becomes the semantic question of whether those particularly methodological principles and statements are reducible to principles and statements in psychology. Again then, the claim that psychologism may be treated semantically (as a collection of semantic theses) is corroborated by the formulation of psychologism as a reductive thesis.

#### § 1.5.2 - Strategies for Rejecting MP and RP

The fact that psychologism may be formulated as a reductive thesis is not merely informative in regards to the controversial aspects of psychologism (the dependency of philosophy on psychology), it is also instructive in suggesting a strategy for its refutation. If psychologism claims that philosophy reduces to psychology, then its denial involves the claim that (some part of) philosophy is essentially irreducible. So one way to reject psychologism is to claim that philosophy does not reduce to psychology because there is some essentially philosophical feature (be it semantic, metaphysical, methodological or what have you) that is not present in psychology. Since philosophy is not reducible in this respect, it is also independent from psychology in this respect. Indeed, we may formulate the denials of both Metaphysical and Referential Psychologism as claims that the philosophical disciplines do not reduce to psychology.

For instance, one way to reject Metaphysical Psychologism would be to show that there is at least one entity that is a part of the subject matter of philosophy but which is not a part of the subject matter of psychology. That is, it must be shown that:

$$[\sim MP'] \quad \exists x (x \in SM(Ph) \ \& \ x \notin SM(Py))$$

Similarly, to reject Referential Psychologism, it could be shown that philosophy is about at

least one thing that is not referred to in psychology. This may be formulated as:

$[\sim RP"] \quad \exists x (RPhx \ \& \ \sim RPyx)$  <sup>19</sup>

This rejection strategy has been widely adopted, and frequently accepted as successful over the historical course of the psychologism debate.

### §1.5.3 - Psychologism and the Prescriptive Function of Logic

We have just seen that the first, and perhaps most obvious, response to psychologism as a reductive thesis is to deny that any such reduction is possible on the grounds that certain logical properties are simply irreducible. Among the more prevalent properties asserted to be irreducible are the normative (i.e., prescriptive and evaluative)<sup>20</sup> features of logic.<sup>21</sup>

---

<sup>19</sup> NB These are not the only ways to deny metaphysical and referential psychologism. Another strategy would be to deny that philosophy (or some relevant sub-discipline) treats of any subject matter, let alone a psychological one. This strategy is discussed later.

<sup>20</sup> I distinguish at least two senses of normativity. One is an evaluative sense in which “prescriptive” is opposed to “descriptive”. The other is a constitutive sense in which “normative” is contrasted with “naturalistic”. This allows for normatively informed descriptions which nevertheless do not have prescriptive elements (though they may well have prescriptive consequences). These two senses are related but independent. For example, a constitutive set of norms may have prescriptive consequences which produce an evaluative set of norms. I am concerned only with normativity in its former sense in this section, since, typically, it has been in this first sense that logic’s irreducibility to psychology is explained.

<sup>21</sup> Importantly, the prescriptive qualities of logic are not the only features of it which have been considered to be irreducible to psychology. Jacquette (1997b, 321-329) considers the following list of properties which have been claimed to be distinct to logic and irreducible to psychology: i) exactness, ii) *a prioricity*, iii) prescriptivity, iv) universality, v) that logic is discovered, vi) that logic is theoretically basic, vii) objectivity of the objects studied, and viii) objectivity of the discipline itself. In each case, Jacquette argues that, unless one begs the question against psychologism, one cannot maintain that any of these properties are irreducible to psychology.

The discussion which follows is limited to the prescriptive aspects of the

For instance, Herbert Feigl writes that:

Ever since Frege's and Husserl's devastating critiques of psychologism, philosophers should know better than to attempt to reduce normative to factual categories. It is one thing to describe the actual regularities of thought or language; it is an entirely different sort of thing to state the rules to which thinking or speaking *ought* to conform. (Feigl 1963, 250; cf. Philipse 1989, 58)

Notice that Feigl's remark not only conceives of psychologism as a reductive thesis, but Feigl further conceives of the mistake of psychologism as kind of category mistake - a fallacy of reduction akin to the naturalistic fallacy (Phlipse 1989, 58). That is, the irreducible feature of logical discourse is its *essential* normativity.

To this day, this move is frequently seen as sufficient to reject psychologism. For instance, Jacqueline writes:

If logic ... studies patterns of inference from thoughts to thoughts, then it has appeared to some theorists that logic is a branch of psychology that can best be understood in terms of the most advanced psychological science. Against this psychologistic view of logic, antipsychologistic opponents have argued that logic is not a descriptive theory of how we actually think, but a

---

disciplines. I do not speculate as to whether analogous conclusions to the ones which I make hold for the other properties suggested by Jacqueline.

prescriptive account of how we ideally ought to think. (Jacquette 1997a, v)<sup>22</sup>

Yet, not all authors share the view that such a move is sufficient to contradict psychologism. Haack, for example, takes the descriptive / prescriptive contrast to mark the boundary between strong and weak versions of psychologism. Strong psychologism, she defines as the view that “logic is descriptive of mental processes (it describes how we *do*, or perhaps how we *must*, think)” (Haack 1978, 238), while weak psychologism is defined as the view that “logic is prescriptive of mental processes (it prescribes how we *should* think)” (*ibid.*). What considerations would determine whether this prescriptive thesis is philosophically interesting or controversial?

First, it is important to note that the prescriptive thesis attempts to deny the complete reducibility of logic to psychology. Moreover, while it typically grounds this denial on the claim that logic has some irreducible and essential property (usually normativity), it does not deny that logic and psychology treat of the same subject matter. That is, it does not deny that the subject matter of logic is psychological in nature (i.e., mental processes).

#### §1.5.4 - Qualified Referential Psychologism

For this reason, Carnap calls such a view ‘qualified psychologism’, and describes it as follows. “Still clinging to the belief that there must somehow be a close relation between logic and thinking, they say that logic is concerned with correct or rational thinking” (Carnap 1950, §11; 1962, 39; as cited in Toulmin 1958, 86). The idea behind such a view is something like

---

<sup>22</sup> It should be noted that Jacquette himself does not hold this view (1997b, 323-324).

this. While philosophy does indeed treat of an actual subject matter which is psychological in nature, philosophy is only concerned with this subject matter in a limited way. That is, philosophy is only concerned with a limited range of the properties of this subject matter (e.g., the normative ones). Such a view might be called Qualified Referential Psychologism and may be defined as follows:

[QRP] (defn): Qualified Referential Psychologism asserts Referential Psychologism (conjoined) with the following qualification: there exists at least one property or feature of the entities referred to in the psychological lexicon which is exclusively of philosophical interest.<sup>23</sup>

Similarly, this qualification may be specified as the metaphysical claim that there exists at least one property or feature of the subject matter of philosophy which is exclusively of philosophical interest. When this qualification is conjoined with MP it would produce Qualified Metaphysical Psychologism [QMP]. For example, it might be claimed that while logic is concerned with correct or rational thought, psychology, by contrast, is concerned with thought in all of its forms.

---

<sup>23</sup> Notice that, as with previous definitions, QRP has been formulated in a generic way so that a mechanical substitution process will permit QRP to be formulated over any sub-discipline of philosophy. Also an equivalent definition could be provided in metaphysical terms.

### §1.5.5 - The Problem with Qualified Referential Psychologism

As was mentioned initially QRP has been advanced as a rejection of psychologism, and the rationale for this employment of QRP might be explained as follows. The implicit claim in QRP is not merely that philosophy has a limited interest in a psychological subject matter, but rather that this limited interest is exclusive to philosophy. The implication, with such a view is that those properties of philosophical interest are somehow not psychological in nature, but are exclusive to philosophy. As such, philosophy cannot be reduced to psychology, and philosophy is not dependent on psychology at least in this respect.

Indeed, even Haack, who admits that her ‘weak psychologism’ is indeed a form of psychologism, claims that it avoids the epistemological problems historically associated with psychologism. She writes, “on the weak psychologistic view, though thought is applicable to reasoning, the validity of argument consists in its truth-preserving character; it is in no sense a psychological property” (Haack 1978, 241). That is, it would seem that Haack maintains that a weakly psychologistic view allows for the independence of logical laws from psychological considerations and contingencies.

Yet, Haack’s conclusion in this matter is not precisely certain. Consider Haack’s ‘weak psychologism’ as a version of Qualified Referential Psychologism about Logic [QRP<sub>L</sub>]. J.S. Mill seemed to affirm such a claim when he wrote, “I conceive it to be true that Logic is not the theory of Thought as Thought, but of valid Thought; not of thinking, but of correct thinking” (1979, 359). Despite this, Mill immediately proceeded to say that logic “is not a Science distinct from, and coordinate with, Psychology. So far as it is a science at all, it is



a part, or branch of Psychology; differing from it, on the one hand as a part differs from the whole, and on the other, as an Art differs from a Science” (*ibid.*). That is, just as Referential Psychologism<sub>L</sub> leads to Logical Psychologism, so, it seems, does Qualified Referential Psychologism<sub>L</sub>.

To see that this move is insufficient to make inert the problematic elements of psychologism, one need only to consider the question: What are the norms of logic to be founded upon? To this question, Mill proceeded to answer that the “theoretic grounds [of logic] are wholly borrowed from Psychology, and include as much of that science as is required to justify the rules of the art” (*ibid.*). That is, QRP<sub>L</sub> is an insufficient answer to the problem of psychologism, because, as Shanker says, “to say that the laws of logic are prescriptive does not rule out that they form a subset of psychology’s descriptive laws of thinking” (Shanker 1998, 84). Similarly, consider Frege’s remarks in his (1918) essay “The Thought.” There Frege writes:

The word ‘law’ is used in two senses. When we speak of moral or civil laws we mean prescriptions, which ought to be obeyed but with which actual occurrences are not always in conformity. Laws of nature are general features of what happens in nature, and occurrences in nature are always in accordance with them. ([1918] 1977, 1)

Now, if we were to understand the above position correctly to be a refutation of psychologism, then we would expect Frege to claim that the laws of logic are of the former, prescriptive sort. Yet, Frege continues:

It is rather in this [latter] sense that I speak of laws of truth. Here of course it is not a matter of what happens but of what is. From the laws of truth there follow prescriptions about asserting, thinking, judging, [and] inferring. (*ibid.*)

For Frege, as for Mill, the essential matter is not whether logic is essentially normative or prescriptive. Both Mill and Frege would have affirmed that it is. Rather, what is at the nub of the issue is what it is that justifies logical laws as normative laws. As Philipse writes: “The issue is not whether logic is a normative discipline, but what kind of science provides normative logic with its theoretical basis. And the mistake of psychologism is not that it tries to deduce *ought* from *is*, ... [its] mistake is that it conceives [of] this *is* as a factual *is*, and thus makes the norms of logic dependent on facts” (Philipse 1989, 62). For Frege, as for Mill, the normative laws of logic derive from some other set of descriptive laws - the question at issue is: “What kind of laws are these?” Or, as Frege so aptly reminds us: “What is the subject matter of these basic laws?” And, to say that they are the laws of thought may not be entirely helpful. As Frege went on to write:

But there is at once a danger here of confusing different things. People may very well interpret the expression ‘law of thought’ by analogy with ‘law of nature’ and then have in mind general features of thinking as a mental occurrence. And so they might come to believe that logic deals with the mental processes of thinking and with the psychological laws in accordance with which this takes place [as with, e.g., Referential Psychologism]. ([1918] 1977, 1)

So, for Frege, the problem with psychologism is not that it denies that logic has a prescriptive function. Instead, the problem is that the standards which inform and constitute the laws of logic are a function of the subject matter of those laws. According to QRP<sub>L</sub>, this subject matter is still conceived of as psychological in nature and as having contingent properties which determine the character of logical norms.

#### §1.5.6 - The Essential Normativity of Logic Revisited

By considering psychologism as a reductive thesis, and by relating this to the claim that logic is an essentially normative, prescriptive discipline, we have started to approach the core problematic aspect of psychologism. It would seem that the problem is not *whether* logic has a prescriptive function, but rather what the *foundation* of this prescriptive function is. As a result of considerations like these, Philipse distinguishes psychologism from a reductive thesis and anti-psychologism from the claim that philosophy (logic in this case) is essentially prescriptive. Philipse writes:

Psychologism does not necessarily identify the description of regularities of thought with stating the rules to which thinking ought to conform, as Feigl suggests [in the quote considered above §1.5.3]. Rather it distinguishes the two and then affirms a relation between them, viz. that the former is the theoretical basis of the latter. Nor does psychologism necessarily '*reduce* normative to factual categories'... the mistake of psychologism is not that it *defines* evaluative categories in *descriptive* terms. Its error rather consists in thinking that the defining expression of the evaluative definition relevant to

logic contains *factual* categories. Although its categories are non-normative, they are not factual. In this sense, the mistake of psychologism *did* consist in the attempt to reduce normative to *factual* categories. (Philipse 1989, 62-63)

The core of the psychologistic thesis, then, does not have to do with whether or not logical laws have a normative or descriptive character. Indeed, both psychologism and anti-psychologism may consistently maintain that they have both. As such, the claim that logical laws are essentially normative does not, and cannot serve as the basis for an effective refutation of psychologism. The source of the debate seems, instead, to be the foundation upon which the normativity of logical laws rests. That is, the fundamental question has not to do with the character of logical laws, so much as their subject matter. And, as Philipse observes above, this metaphysical thesis may be expressed in semantic terms, as a thesis regarding the components required to define logical principles. These two questions, regarding the subject matter of logic and regarding the foundation of logical laws are the primary foci of discussion in the chapter to follow.

In response to this type of consideration, Carnap provides a second strategy for responding to the psychologistic claim that philosophy (or some branch thereof) reduces to psychology, and so is dependent upon it. Carnap begins by rejecting the strategy attempted by Qualified Referential Psychologism, writing:

The characterisation of logic in terms of correct or rational or justified belief is just as right but not more enlightening than to say that mineralogy tells us how to think correctly about minerals. The reference to thinking may just as

well be dropped in both cases. Then we say simply: mineralogy makes statements about minerals, and logic makes statements about logical relations.

(Carnap 1950 §11; 1962, 39; as quoted in Toulmin, 86)

In the end, then, Carnap denies psychologism by denying - rather than qualifying - Referential Psychologism. Here, what Carnap denies is that logic treats of a psychological subject matter. Instead of inference (or some other mental process) the subject matter of logic is logical relations. Further, it is because logic has a subject matter that is different from psychology - and this subject matter is fundamentally non-psychological in nature - that logic does not reduce to psychology. It would seem, then, that the only way to safely insulate the foundations of logic from psychological contingencies is to assert the position that Haack defines as anti-psychologism: the claim that “logic has nothing to do with mental processes” (Haack 1978, 238).

In summary, we have seen that, while psychologism may be instructively treated as a reductive thesis, not all approaches to denying this reduction are sufficient in avoiding the problem of epistemological relativism prompted by psychologism. Claims that logic is essentially prescriptive are consistent both with psychologistic and anti-psychologistic accounts of the foundations of those norms, and it is the foundations of those norms which is the controversial element of psychologism. Further, if the foundation of the prescriptive character of logic is conceived of as a function of its subject matter, then the only way to safely deny the reductive or controversial aspects of psychologism is to deny that the subject matter of logic is psychological in nature.

## §1.5.7 - Psychologism Essential versus Exhaustive

There is a second major consequence of looking at psychologism as a reductive thesis. As a reductive thesis, psychologism claims that philosophy (or some branch thereof) reduces to psychology, and because of this (the relevant branch of) philosophy is dependent on psychology. But, the dependence of philosophy on psychology (i.e., Generic Psychologism) need not be the result of a complete reduction of the former to the latter. Indeed, philosophy may be dependent on psychology just so long as some necessary component of philosophy is reducible to psychology.

In a metaphysical context, psychologism does not need to claim that the subject matter of philosophy is a proper part of psychology (and as such completely reduces to it). Rather, the dependence of philosophy on psychology is established by the weaker claim that psychology makes an essential and ineliminable contribution to the subject matter of philosophy. The contribution of psychology does not have to be complete or exhaustive, only unavoidable. Put another way, it need not be claimed that the subject matter of philosophy is entirely psychological in nature; rather, it need only be claimed that the subject matter of philosophy is essentially psychological in nature - that some essential part of the subject matter of philosophy is psychological in nature. The qualification that the part be essential is required in order to ensure that the innocuous aspects of generic psychologism, which assert only that psychology is sometimes relevant to philosophy, are avoided.

Yet, the Strong version of Metaphysical Psychologism considered earlier claimed that the subject matter of philosophy is completely psychological in nature - that all philosophical

entities are psychological entities. This thesis is certainly historically relevant. For example, Mill may be read as having argued that the subject matter of logic is completely psychological in nature, and Beneke argued that the discipline of philosophy completely reduces to psychology. Yet, while it is historically interesting, theoretically this type of thesis may be overly strong. For this reason, I have called such versions of psychologism “Strong”.<sup>24</sup>

As we saw above, to deny Strong Metaphysical Psychologism one need only claim that there is some element of the subject matter of philosophy which is not psychological in nature. Such a denial would assert only a partial independence of philosophy from psychology. Philosophy would only be independent of psychology in respect of those philosophical elements whose natures are not psychological. Typically though, anti-psychologistic thinkers such as Frege have not argued for a partial independence of philosophy from psychology; rather, they have argued for the complete, or essential, independence of philosophy from psychology. In denying the philosophical dependence on psychology, anti-psychologism asserts that *all* the *core* business of philosophy (i.e., philosophy in all of its essential respects) may be conducted independently from psychological considerations. (Indeed, as will be seen in the next chapter, this is the position for which Frege argued even when responding to Strong versions of psychologism in logic.)

#### §1.5.8 - Strong versus Weak Psychologism

With these considerations in view, it is worthwhile to modify the formulations of

---

<sup>24</sup> Those generic versions of psychologism which assert the philosophical relevance of psychology (e.g., GP, EP, LP and SP) are articulated in a such way as to allow for both strong and weak interpretations while remaining neutral between them.

Metaphysical and Referential Psychologism so as to allow for the weaker versions indicated therein. Beginning with the metaphysical version of psychologism, Weak Metaphysical Psychologism could be expressed as follows:

[MP<sub>w</sub>](def'n):            There exists an entity, x, such that x is a necessary part of the subject matter of philosophy, and x is also part of the subject matter of psychology.

More colloquially, it might be said that Weak Metaphysical Psychologism asserts that some essential component of the subject matter of philosophy is psychological in nature.<sup>25</sup> Similarly, Weak Referential Psychologism may be defined as follows:

[RP<sub>w</sub>] (def'n):            There exists an entity, x, such that philosophy necessarily refers to x, and x is also referred to within psychology.

MP<sub>w</sub> and RP<sub>w</sub> share two important similarities with their stronger counterparts. Both MP<sub>w</sub> and RP<sub>w</sub> are unspecified in the sense that their scope may be narrowed so as to identify some particularly interesting philosophical discipline (e.g., epistemology or logic) by a process of

---

<sup>25</sup> I am content to remain reasonably neutral or liberal when it comes to the specification of such a modally qualifying expression. Admittedly, much hangs in the balance concerning how such a qualification is actually spelled out. I suggest that these two offerings might be acceptable on similar grounds since, on standard accounts of essence, an essential property of something is a property which is necessarily true of it.



substitution. Also, as with the stronger versions of these theses,  $MP_w$  and  $RP_w$  are logically equivalent. The inter-derivability of these theses may be demonstrated by invoking the Subject Matter Doctrine introduced above.

Again, these weaker versions still establish the dependency of philosophy on psychology (i.e., Generic Psychologism) and as such remain centres of philosophical controversy. Yet they do not go so far as to claim that philosophy is completely reducible to psychology. Rather, they work by claiming that some essential element of philosophy is psychological in nature.

Admittedly, such a definition will only succeed on the assumption that some acceptable account of what is essential to philosophy may be specified. Moreover, should these versions of psychologism be at issue, the question of exactly which elements are essential to philosophy and exactly how those elements are to be determined will be a matter of considerable debate. (Perhaps it is for this reason that both the advocates and the denouncers of psychologism have argued for the strong versions of their respective positions. Usually it is claimed either that philosophy is completely dependent on psychology or that it is completely independent of it.) It might be suggested that the essential elements of philosophy are those entities which are part of the subject matter of philosophy by definition - part of the very concept of philosophy. Alternately, a rhetorical strategy for the advocate of psychologism might be to assert that all and only those features of philosophy which have been claimed to be irreducible to psychology are somehow reducible. The point remains, though, that since the claim that psychology is sometimes relevant to philosophy is not controversial, and does not establish the dependence

of philosophy on psychology, it is crucial to the very formulation of the psychologistic thesis that some acceptable account of what is essential to philosophy can be specified.

## §1.6 - Psychologism and Naturalism

### §1.6.1 - Naturalism in Contemporary Epistemology

In the preceding sections, we have considered several specific reasons why it might be argued that psychology is necessary for philosophy. First, if the subject matter of philosophy is inherently psychological in nature, then one would have good reason to think that philosophical questions are answered by the results of psychological inquiries. Equivalently, if the referents of the philosophical lexicon are given by psychological entities, then philosophical truths depend on psychological discoveries. Alternately, if the content of philosophical expressions are psychological in nature, then the philosophical enterprise and the truths therein are dependent on psychological facts. Indeed, if the meaning of the philosophical lexicon is at all explained psychologically, then the business of philosophy cannot be conducted independently of psychology. As if these were not enough, there is yet another reason that is commonly offered in support of the claim that psychology is required for philosophy. Specifically, this consideration claims that psychology is required by epistemology.

Recall the generic thesis of epistemological psychologism which asserts that psychology is necessary for epistemology. That is, the primary business of epistemology cannot be conducted independently of the results of psychological investigation. Now, what reason might there be to justify such a claim? Well, if it were thought that epistemological

properties and relations of justification were ultimately and properly explained by some subset of psychological features, epistemology would clearly depend on psychology. Yet this claim marks a recent turn in the road of epistemology. Indeed, this turn not only appears on many epistemological maps, but it is part of the widely travelled trade-route that accounts for most of today's epistemological commerce; much epistemological freight is now routed along this road.

The last half-century has witnessed a profound and pervasive shift in the theoretical and methodological suppositions informing epistemological enquiry. Hilary Kornblith captures this shift with his claim that “[r]ecently, epistemology has taken a psychological turn. It is now widely believed that questions about the justification of belief cannot be answered independently of questions about a belief's causal ancestry” (1982, 238). This type of view is commonly called a “causal theory of knowledge”,<sup>26</sup> and its central thesis is that causal processes related to belief states are necessary for epistemological theory.

Weak versions of causal epistemology claim that the epistemic properties of beliefs cannot be entirely accounted for without some reference to the causal processes connected to those belief states. That is, causal processes form a necessary component of any acceptable epistemology. Stronger versions claim that the epistemic properties of beliefs may be completely explained without looking beyond the causal processes connected to them, either because those causal processes are sufficient to explain the epistemological properties of

---

<sup>26</sup> I will use the term “causal epistemology” synonymously with the more common expression “causal theory of knowledge”.

belief, or because the epistemological properties of beliefs are equivalent to their causal properties. In either case, the strong version of causal epistemology claims that the study of causal processes is exhaustive of epistemological inquiry. As such, epistemology becomes dependent on, or reducible to, natural science.

Not only is the causal theory of knowledge typically presented as a form of naturalism,<sup>27</sup> but it is commonly identified with psychologism. In this regard, Kornblith writes that “psychologistic theories [of knowledge] are those which hold that a belief is justified just in case its presence is due to the workings of the appropriate sort of belief forming process”(Kornblith 1982, 242) where a belief forming process is construed as “the causal chain which leads to the production of a belief” (*ibid.*; see also Kitcher 1979, 243). Here Kornblith advances a strong version of causal epistemology where questions of justification are equated with and reduced to questions about the psychological processes producing a belief state. “The justification conferring processes of psychologised epistemology are nothing more than those processes which accord with the epistemic rules of psychologistic theories”

---

<sup>27</sup> There are two principal types of naturalism - ontological and epistemological (Bezuidenhout (1996, 744) (following Hatfield, 1990) calls these metaphysical and methodological respectively.) Ontological naturalism is a thesis about the kinds of things that exist in the universe. It asserts that the only kinds of things that genuinely exist are the objects of natural science. As such, ontological naturalism may lead to reductionism. Epistemological naturalism, on the other hand, is a thesis about the proper explanation of epistemic concepts (e.g., justification), and may lead to psychologism.

Depending on one's understanding of epistemological naturalism, the causal theory of knowledge may not be sufficient to establish naturalism. If one understands naturalism to mean that naturalistic terms are not merely essential to an explanation of epistemic concepts, but that naturalistic concepts provide a complete account of epistemic ones, then the weak version of causal epistemology will not establish epistemological naturalism.

(Kornblith 1982, 242).<sup>28</sup> Accordingly, concepts central to epistemology such as justification (and hence evidence) are explained in psychological terms. On such a picture, the business of the epistemologist is not independent of psychology. In fact, it is not at all clear that there is any separate business exclusive to epistemology, which instead seems to be a franchise

---

<sup>28</sup> It might seem as though Kornblith's analysis here leaves open the possibility that a certain priority may be given to the epistemic rules of psychologistic theories, thus making psychologised epistemology not entirely dependent on empirical investigation of belief-forming processes.

But such an approach is, in principle, not consistent with naturalised epistemology. Rather, Kornblith claims that the causal processes leading to the production of a belief supply both the necessary and the sufficient conditions for determining the justifiability of that belief (*op. cit.*). According to Kornblith, and other naturalists, the naturalized foundations of epistemology *replace* any normative foundations we once, and incorrectly, thought epistemology to have. Except for truth, there are no epistemological properties of belief states which may be explained independently of the causal processes involved in arriving at true beliefs. Now, it just so happens that there is a certain accordance, or correspondence, with certain belief-forming processes and those epistemic rules which we mistakenly thought had a non-natural epistemic foundation. The fact of this accordance retains the epistemic 'goodness' of many old inference patterns and beliefs resulting from therefrom.

Further, the claim that you cannot pick out those causal processes which mark epistemically virtuous beliefs or inferences without first having some notion of what those epistemic virtues are contributes significantly to a criticism of Kornblith's position, and others similar to it. In eschewing normative accounts of justification and evidence, the naturalist claims that she can get by with truth as the only real independently definable epistemic virtue. But an objection to this is that there are other epistemically relevant relations (e.g., relevance, necessity, sufficiency) which contribute to our notion of justification which are actually involved in determining which causal processes will be selected as epistemically significant. So an objection to Kornblith's position claims that any accordance between epistemic rules and 'justification conferring processes' is actually established by a prior, and non-natural account of those epistemic rules and virtues. Kornblith cannot accept such a position consistently with his naturalism.

Further, if such a position is true, the anti-naturalist may proceed to ask the following question: if you already have an account of epistemic rules and virtues, what do the causal processes contribute? Indeed in strongly anti-naturalist positions, it simply does not make sense to speak of 'justification conferring processes', and it is false to claim that psychological states are the bearers of epistemic properties.

operation of psychology. Because of this, the philosopher may simply clear his inventory of epistemological stock, and replace it wholesale with the newest psychological product to adorn the shelves and shopwindows. Indeed, while he is at it, the philosopher might as well change the sign hanging over his door as well.

#### §1.6.2 - Psychologism and its Relation to Naturalism

This type of naturalism has become one of the primary motivating forces behind the contemporary revival of psychologism. Many authors take psychologism to be roughly equivalent to some version of naturalized epistemology, or at least a direct consequence of it. Perhaps the most renowned contemporary advocate of epistemological naturalism is Quine, who (for similar but distinct reasons than those introduced above) advertises that “Epistemology in its new setting ... is contained in natural science as a chapter of psychology” (1969, 83). (Quine’s position is discussed at length in chapter 4.) Yet, despite the close historical, theoretical and commercial relationship between naturalism and psychologism, neither thesis on its own entails the other.

To see this, consider a modification of the generic thesis of epistemological psychologism[EP], which explains the epistemological dependence on psychology as we have just done. Consider Bezuidenhout’s definition of epistemological psychologism as the thesis that “the epistemological properties of beliefs or judgements depend on the psychological processes which are responsible for those beliefs or judgements” (Bezuidenhout 1996, 743).

Notice that there are actually two strands of psychologistic thought at work in Bezuidenhout’s definition. First, on the assumption that beliefs and judgements are

psychological states or operations, the assertion that beliefs or judgements are the bearers of epistemic properties fits the definition of Metaphysical Psychologism [MP<sub>e</sub>] already discussed. Second, there is the additional claim that those epistemological properties depend on psychological occurrences. It is this second strand of psychologistic thought which is of interest to us at this juncture. This latter form of EP might be expressed as follows:

[EP\*]            Epistemological properties are a function of psychological processes.

As a functional thesis, EP\* asserts the generic psychologistic thesis that epistemological properties are dependent on psychological processes. It follows from EP\* that psychology is necessary for epistemology (i.e., EP). At the same time, EP\* is generic in the sense that it does not specify the precise nature of this functional relationship. In its strongest form, EP\* asserts that epistemological properties result from psychological processes - that is, that there is some universal law-like relation (e.g., causality) between psychological processes and epistemological properties. A weaker version might claim that there is a non-arbitrary, but nevertheless non-determinate, statistical correlation between psychological processes and epistemological properties. Functional theses are normally interpreted to assert something more than a mere correlation founded only on coincidence. This law-like relationship may be founded on an underlying causal structure, or on some other feature of the two domains, and in its stronger versions, EP\* may be interpreted as an explanatory thesis claiming that epistemological properties are properly explained in terms of psychological processes.

Finally, the claim that epistemological properties are a function of psychological processes allows for interpretations on which the latter provide either a complete or only a partial explanation of the former.

In a similar way, the central idea of epistemological naturalism [EN] (as discussed above) may be captured in the claim that the epistemological properties of beliefs or judgements depend on the natural (usually causal) processes which are responsible for those beliefs or judgements (cf. Bezuidenhout 1996, 743). Again, separating the functional thesis from the metaphysical thesis, we get:

[EN\*] Epistemological properties are a function of natural (usually causal) processes.

On a normal understanding of natural processes as causal processes, EN\* asserts more than a merely functional thesis. Rather, EN\* is an explanatory thesis which asserts that the proper explanation of epistemological properties is causal (or at least that the proper explanation of epistemological properties requires some discussion of causal processes). That is, EN\* asserts a causal dependence of epistemological properties on natural processes. Also, since EN\* allows for interpretations on which natural processes are the sole determining factor providing an exhaustive explanation of epistemological properties, or interpretations on which they are merely contributing factor, EN\* is general enough to capture both the strong and weak forms of naturalism (discussed above).



## §1.6.2.1 - Inferring Psychologism from Naturalism (EN\* ⊢ EP\*)

With these two theses in hand, the question of the relationship between epistemological psychologism and epistemological naturalism, may now be formulated as a question concerning the relationship between EP\* and EN\*. Yet obviously EP\* and EN\* are not equivalent; nor is one the direct consequence of the other. Rather, psychologism [EP\*] follows from epistemological naturalism [EN\*]<sup>29</sup> only if two additional claims are also accepted: one about the nature of psychology, and a second about the explanatory relevance of psychology. Let us consider the relevance thesis first.

In order for psychologism to follow from epistemological naturalism it must be assumed that psychology is a natural science. This assumption, which could be called the Empirical Psychology Thesis [EPT] may be expressed as follows:

[EPT] Psychology is a natural, empirical science which studies psychological states and processes.

The claim that psychology is a natural science has consequences concerning the nature of its subject matter. As a natural science, psychology studies the natural world. So psychological states are natural states, and psychological processes are natural (usually causal) processes that obtain between psychological states. A claim of this sort is required to derive

---

<sup>29</sup> In the remainder of this section I will use the general terms “naturalism” and “psychologism” to indicate the specific theses EP\* and EN\* just defined.

psychologism from naturalism because, it must be established that both the subject matter and the methodology of psychology is of the same kind as that of the natural sciences. If psychological states and processes were not a kind of natural states and processes, then no psychological consequences would follow from any connection established between natural processes and epistemological properties. Further, it must be assumed that psychology studies a natural subject matter in fundamentally the same way as the natural sciences. Were psychology to be classified as a non-empirical science (say, an *a priori* science), then the discoveries of natural science would not be relevant to it. Indeed, Bezuidenhout (1996) argues that this is precisely the form that psychologism should take. If psychology proceeds independently of natural science, then the truth of psychologism would be independent of the truth of naturalism.

That said, psychology today is typically seen as an empirical science, whose methods and foundation are no different than those of any other scientific practice and body of knowledge. Psychology itself, even folk-psychology, is typically seen as a (pseudo-)scientific theory, whose function and success rests on its ability to predict and explain human behaviour (whether at the personal, or sub-personal level). Psychological entities such as beliefs and desires are understood to be natural entities, having the same place in the causal chains of the universe as extra-mental natural entities. They are seen as subject to the same laws of cause and effect, and their arising and succession are thought to be completely explicable solely with reference to these causal laws. Even those who argue that there are some special properties of psychological entities (e.g., intensional, semantic, epistemic, alethic, representational or

logical properties), commonly argue that these properties are supervenient on the underlying, and universal causal framework, and as such, may be completely identified with them and explained by them.

The second assumption that must be made in inferring psychologism from epistemological naturalism is that psychology supplies the relevant set of natural processes capable of explaining epistemological properties. This thesis might be called the Relevance of Psychology Thesis [RPT], and may be expressed as follows.

[RPT] If epistemological properties are a function of natural (usually causal) processes then the relevant natural (i.e., causal) processes are psychological processes.

Basically, [RPT] asserts the epistemological relevance of psychology.<sup>30</sup> Such a move is required since naturalism may be true, and psychologism may nevertheless be false, just so long as *some* causal processes are epistemically relevant, but not the psychological ones. For

---

<sup>30</sup> Importantly, the relevance will vary depending on whether we are dealing with strong or weak versions of psychologism. For strong versions only causal processes will be involved in explaining epistemological properties. This thesis might be stated as: "If epistemological properties are a function of natural (usually causal) processes then all the relevant natural (i.e., causal) processes are psychological processes." Yet, for weaker versions causal processes will not provide an exhaustive explanation, but they will form a necessary or essential component to any explanation. This thesis might be expressed as: "If the epistemological properties are a function of natural (usually causal) processes then some natural (i.e., causal) process necessary for explaining epistemological properties is a psychological process."

psychologism to be follow from naturalism, a special class of natural processes must be epistemically relevant: the cognitive ones.<sup>31</sup>

#### §1.6.2.2 - Inferring Naturalism from Psychologism (EP\* ⊢ EN\*)

Psychologism [EP\*] entails naturalism [EN\*], on the other hand, only on the assumption that psychology is an empirical science (i.e., EPT). This claim is required because, as we have just seen, were psychological states transcendental, or ideal states instead of natural ones then psychologism could be true without entailing naturalism. A relevance thesis, on the other hand, is not required, since implicit in psychologism is the claim that the epistemically relevant states are psychological ones (i.e., RPT is already implicit in EP\*). Also, on the assumption of EPT, naturalism is simply a generalised implication of psychologism. So the thesis that psychology is a natural science is required for both derivations, while the assumption of the relevance of psychology is only required to derive psychologism from naturalism.

#### §1.6.3 - The Relation of Psychologism to Naturalism: Implications

Having established the relationship between psychologism and naturalism, several observations are in order. First, the refutation of psychologism is not sufficient for the denial of epistemological naturalism. After all, if psychology is not a natural science, then psychologism is not even relevant to the truth of naturalism. But even on the assumption that psychology is a natural science, the epistemological naturalist may survive an attack on

---

<sup>31</sup> By a cognitive process, I mean those psychological processes that are causally involved in the production and maintenance of the doxastic states of epistemic agents.

psychologism by claiming that it is not the psychological aspects of beliefs and judgements that compose the epistemically relevant processes, but rather that it is some other type of natural process that obtains between them. Only those epistemological naturalists also committed to the epistemic relevance of psychology [RPT] will be defeated by a refutation of psychologism.

That said, it is commonly held that there is a close relationship between epistemological naturalism and psychologism, and both the relevance and the empirical nature of psychology are widely accepted particularly amongst epistemological naturalists. Indeed, the closeness of the association between these two doctrines is explained to a significant degree by this fact. Finally, both epistemological naturalism and psychologism of this sort share yet another incriminating similarity. As was observed when setting out the definitions, both theories hold that the bearers of epistemic properties are belief *states*.<sup>32</sup> Since belief states are commonly held to be psychological states, this goes a long way to explain the acceptability of the relevance thesis [RPT] and the naturalists' commitment to it. More importantly, if the bearers of epistemic properties are psychological states, then the subject matter of epistemology is psychological in nature. Thus epistemological naturalism is but a short step from metaphysical psychologism as well.

In light of this, it would be rather difficult to accept epistemological naturalism, as

---

<sup>32</sup> Kitcher is explicit about this when he articulates the following as one of four claims that he considers characteristic of what he calls "traditional naturalism". "The epistemic status of a [belief] *state* is dependent on the processes that generate and sustain it" (1992, 75; emphasis added).

defined above, only to deny psychologism (or vice versa). The naturalized trade routes of epistemology quickly lead across the psychological border. An epistemological naturalist wishing to deny epistemological psychologism would have to deny either the relevance or the empirical nature of psychology, and doing either is tantamount to driving on the wrong side of the psychological road. (While possible, it is best done only when the road is empty, for any traffic will be driving in the other direction!) Given this relationship between the two doctrines the contemporary revival of psychologism as a theoretically viable doctrine may be seen as due, in a large part, to the recent prevalence of causal or otherwise naturalized epistemology. That said, it is just as important to recognize that epistemological naturalism is only one kind of argument offered in support of psychologism. As such, a refutation of epistemological naturalism is by no means sufficient to categorically reject psychologism. On the other hand, the psychologistic epistemologist wishing to deny naturalism must deny that psychology is an empirical science, and as such must also drive on the wrong side of the psychological road.<sup>33</sup>

So if psychologism has taken to cashing its theoretical cheques on the accounts of epistemological naturalism, then a demonstration of the bankruptcy of naturalist program in epistemology ought to provoke a considerable re-evaluation of the solvency of psychologism, let alone its viability as an ongoing venture. While an audit of this magnitude is well beyond

---

<sup>33</sup> That is not to say that this cannot be done, or that it is wrong to do so. After all, it is commonly known that the British - an otherwise sensible people - regularly drive on the wrong side of the road. The only point is that this is *our* practice; it is not the practice *here*. Recall, though, Bezuidenhout's (1996) position (mentioned above) wherein she advocates a non-naturalist account of psychology.

the scope of the present inquiry, two important points remain to be made.

#### §1.6.4 - Varieties of Psychology and Varieties of Psychologism

The first point has to do with the acceptance of the thesis that psychology is a natural science. While it must be admitted that the conception of psychology which currently prevails is that of an empirical, experimental science, this was not always the case. Psychology has been variously conceived of as a transcendental science, and as a rationalistic, introspective science. The point here is that one's conception of psychology will inform one's notion of the nature of psychologism (Cussins 1987, 127).

For instance, Notturmo observes that “[t]he historical relationship between psychologism and introspectionism is strong” (1985, 12). This may be explained by the fact that “[n]ineteenth-century German psychology viewed introspection as *the* appropriate method of inquiry, and proceeded in large measure by training subjects in the vernacular of the psychologist's pet theory and bidding them to introspect” (Sober 1978, 169). As such, “psychologism” has even been defined in terms of introspective psychology, the rationale for which appears in Abbagnano's entry for “psychologism” in the 1967 *Encyclopaedia of Philosophy*. Abbagnano describes this rationale as follows: “The only instrument philosophical inquiry had at its disposal is self-observation (or introspection) and ... there is no way to establish any truth other than by reducing it to the subjective elements of self-observation” (Abbagnano 1967, 520; as quoted in Notturmo 1985, 12). In this context, Beneke articulated a fully-developed psychologistic position, claiming that “[k]nowledge of our self, i.e., psychological knowledge, is the central starting point; it is the basis of all other

philosophical knowledge. What is more, all other philosophical knowledge can only be gained through this [psychological] knowledge” (Beneke 1833, 14; as quoted in Kusch 1995, 101). Now, while the connection between introspectionism and psychologism may have an explanation, the question remains: is it material to the philosophically controversial aspects of psychologism?

Notturmo answers this question by saying that “the ground of psychologism is neither a commitment to introspectionism nor, ironically, even a commitment to the primacy of psychological methods of inquiry” (Notturmo 1985, 15). According to Notturmo, the controversial aspects of psychologism arise not as a result of the kind of psychology that is advanced - psychology may be introspectionist, experimental, behaviourist, neurological, cognitive, or even transcendental. The problems of psychologism (if any) result not from some psychological method or technique, but instead from the very nature of psychology itself. Psychology, under any conception, is the study of the human mind, and the problematic aspects of psychologism arise from the dependency that is asserted to hold between philosophical topics and facts about the structure or operations of human minds.

That, in any event, is the strongly anti-psychologistic position. According to the anti-psychologist, independence from the human mind is one of the required features of the objectivity aimed at within philosophy. For instance, the foundation and necessity of logical laws is mind-independent, and these properties, as well as the laws themselves, are determinable independently from psychological inquiry.

While recognizing this as the anti-psychologistic position, it must be acknowledged



that our conception of psychology will determine our idea of the nature of psychologism (Cussins 1987, 127) and may well affect any controversial consequences psychologism is capable of producing. For instance, suppose that psychology is an *a priori*, transcendental science capable of discovering the rational laws which necessarily govern any and all minds capable of thought. If the laws of psychology are somehow universally necessary and determinable *a priori*, then several of the epistemological consequences of psychologism previously identified as problematic are arguably avoided. Yet, it is beyond the scope of the present inquiry to determine whether a position like the one just described (e.g., Kant's) is psychologistic in any controversial respect. So, for the purposes of this inquiry, I limit my conception of psychology to that of a natural science; that is I assume EPT. I hasten to add that such an assumption should neither jeopardize nor limit the significance of my inquiry. As I have already noted, not only is it a commonplace today that psychology is an empirical science, but each of the positions discussed in the remaining chapters accepts this assumption also.

#### §1.6.5 - Defining Psychologism in a Climate of Naturalism

The second point to observe at this juncture concerns the way psychologism ought to be defined in the contemporary climate of epistemological naturalism. Given the theoretical proximity of psychologism and naturalism, it is especially crucial that these theses be defined and treated independently. Perhaps an even more important point, though, is that one cannot be defined in such a way that the other is assumed to be true. Particularly, psychologism cannot be defined in such a way that its denial asserts the truth of epistemological naturalism.

To illustrate these points, consider the following definition of psychologism due to Hilary Kornblith.

[KP] (def'n): "Psychologism is the view that the processes by which we ought to arrive at our beliefs are the processes by which we do [in fact] arrive at our beliefs" (Kornblith [1985] 1994, 9).<sup>34</sup>

Given the preceding discussion of causal epistemology, the motivation behind Kornblith's definition should be obvious. Since the nature of justification is properly explained in terms of the processes by which we arrive at (and perhaps maintain or revise) our beliefs, the correct explanation of which beliefs we ought to have, and why we ought to have them, is to be given in terms of those belief-forming processes. On the assumption of such a picture, psychologism is just the thesis that we can study those processes by which we ought to form our beliefs simply by studying the processes by which we actually do form our beliefs (i.e., Kornblith's definition). Or, to put it more generally, we can study justification psychologically; we can do epistemology just by doing psychology.

Having said that the motivation behind Kornblith's definition might be clear, it should quickly be added that the definition itself is far from clear. For instance, how ought we to understand the identity claim it ascribes? To see the problem posed by this question, observe

---

<sup>34</sup> Importantly, this definition appears in the popular and widely distributed reader *Naturalizing Epistemology* (MIT Press, 1994) in which some of the most seminal and sympathetic papers on the topic have been collected.

that it is exceedingly difficult to ascertain how Kornblith's definition ought to be quantified and formalised. As such, Kornblith's definition may well be so irreparably vague as to be deemed incoherent.

But, there is a more significant (perhaps even insidious) problem with KP. To see this problem, notice first that Kornblith's use of the term "ought" in his definition lacks a context in which it can be provided with any substantive content. Presumably, this usage may be explained as an attempt to define psychologism without reference to any particular set of evaluative norms or standards. Yet, considering that it is precisely the foundation of those norms that is at issue in the psychologism debate, this is *prima facie* unsatisfactory. What might Kornblith plausibly mean by "ought" here? A reasonable answer is that the processes by which we ought to arrive at our belief are those processes which produce in us rationally justified, true beliefs.<sup>35</sup> On such a reading, Kornblith's Psychologism is

[KP'] (def'n): "Psychologism is the view that the processes by which we ... [arrive at rationally justified true beliefs] are the processes by which we do [in fact] arrive at our beliefs" (Kornblith [1985] 1994, 9).

---

<sup>35</sup> Note that such an answer is neutral between naturalist and non-naturalist epistemologies (though perhaps the non-naturalist might seek to supply some additional criterion). The difference between naturalism and non-naturalism is not the standard of justification itself, but rather the way in which the notion of justification is properly explained. As Kornblith writes, "Causal theorists of knowledge do not deny that knowledge is some sort of justified true belief; they merely give a non-standard account of what it is for a belief to be justified. They claim that a belief is justified just in case it is caused by a reliable process" (Kornblith 1994, 132).

More generally, the point here is that the beliefs which we ought to have will be determined by their epistemic properties. So the processes by which we arrive at the beliefs which we ought to have will be the processes appropriately associated with whatever beliefs have those desirable epistemic properties. By invoking the idea of epistemological properties, and associating these to belief forming processes, KP begins to resemble the more recognizable thesis of epistemological psychologism EP\*. Yet, before exposing the problems inherent in Kornblith's definition undermining this resemblance and the overall suitability of the definition, consider the problems surrounding its quantification.

While there is no clear or obvious way of quantifying Kornblith's definition, many plausible attempts result either in a trivial truth or a trivial falsehood concerning whether or not we have any rationally justified true beliefs.

For instance, consider:

*For any belief p, and any person a and any process P, if a comes to believe p by process P, then a ought to come to believe p by P.*

But this definition is obviously false. After all, we come to believe every belief by some process or other, regardless of whether the belief is true or false, justified or unjustified, known or unknown. So it is quite plain that there are a great number of beliefs that we have that we ought not to have. Each of those beliefs we arrived at by some process, and each of these processes are processes by which we ought not to have arrived at the corresponding belief. (For this reason we cannot read Kornblith's identity claim as a bi-conditional either.) Nor does it do any good to reverse the antecedent and the consequent of our conditional to

produce the following:

*For any belief p, and any person a and any process P, if a ought to come to believe p by process P, then a comes to believe p by P.*

The problem with this is that there are many beliefs that we ought to believe - and hence ought to come to believe by some process - that we nevertheless fail to come to believe whatsoever. The mere fact that we ought to believe something is no guarantee that we will indeed come to believe it. Perhaps, then, the following revision will be helpful:

*For any belief p, and any person a and any process P, if a ought to come to believe p by P then, if a comes to believe p at all, a comes to believe p by P.*

While overcoming earlier problems, this definition fails because it is trivially false. It amounts to the claim that we have no false or unjustified beliefs; yet obviously we do. Recall that, for the causal epistemologist, the process by which we ought to arrive at a belief is the very thing that justifies that belief. So the revised definition amounts to the claim that, if there is a justification for a belief, p, and anyone, a, in fact comes to believe p, then a is justified in believing p. Yet, the fact is that people have all kinds of beliefs for which they have no justification or only a bad one. More importantly, some of those beliefs are indeed justifiable. That is, a justification exists for those beliefs - or in the terms of the causal epistemologist, there is a process by which one ought to have reached that belief. The problem with this definition, then, is this: the mere fact that a justification exists for a belief (even when that justification is explained as a belief forming process) does not guarantee that I will reach that belief in such a way that I am justified in believing it.

So, on some quantifications, Kornblith's psychologism comes out as trivially false. On the other hand, some quantifications make Kornblith's definition trivially true. For instance, consider that the denial of Kornblith's psychologism [KP'] is:

~[KP']: It is not the case that the processes by which we arrive at rationally justified, true beliefs are the processes by which we do in fact arrive at our beliefs.

At first gloss, this thesis appears to deny that we have any rationally justified, true beliefs. One way, then, of reading the denial of Kornblith's thesis might be as follows:

~[KP'']: It is not the case that, for any belief, *p*, if *p* is rationally justified and true and was arrived at by some process *P*, then that process *P* was the process by which we in fact arrived at *p*.

From this, it would appear that the person wishing to deny Kornblith's thesis must hold that we have *no* beliefs that are both true and rationally justified. To do otherwise would be to lapse into immediate contradiction. After all, surely if we have at least *one* rationally justified, true belief, we *must* have arrived at it *somehow*. How could this process (whatever it is) *not* be the process by which we *in fact* arrived at that belief?

Yet, the fact that we have rationally justified, true beliefs does not even count as evidence for psychologism, let alone count as sufficient proof for psychologism. The denial

of psychologism has nothing to do with *whether* all of our beliefs are true or justifiable; rather it has to do with *what* makes our beliefs true, and *how* they are justified.

The problem with Kornblith's definition of "psychologism" is not due to any lack of charity in the reading, and it is not the result of any hidden ambiguity in the term "process".<sup>36</sup> Rather, it is the presence of this term itself that is the source of the problem. Kornblith attempts to define psychologism purely in terms of the processes by which we arrive at beliefs of a certain kind - the kind we ought to hold. So, whether one asserts or denies Kornblith's Psychologism, one is left making claims about the processes by which we (ought to) come to our beliefs.<sup>37</sup> This realization points to a hidden assumption at work in Kornblith's definition - an assumption which is not only the actual site of Kornblith's psychologism, but which is also the real source of controversy in Kornblith's definition.

On the surface, KP merely asserts the trivial truth that *the processes resulting in epistemically meritorious beliefs are (a subset of) our actual belief-forming processes*. This thesis is neither controversial nor psychologistic. Yet, on the additional assumption that epistemic properties are explained in terms of belief-forming processes, one gets the familiar psychologistic claim that epistemology is a description of these actual mental processes. Let

---

<sup>36</sup> For example, it is not due to any ambiguity between a logical as opposed to a psychological process.

<sup>37</sup> Admittedly, since it is difficult to coherently banish the vagaries from Kornblith's definition (e.g., determining how to quantify it), it is just as difficult to determine how to properly negate it. That said, both elements of Kornblith's definition (both the sides of its identity claim or the antecedent and the consequent of its universally quantified conditional, etc.) are formulated in terms of the processes involved in the formation of beliefs.

us call this Kornblith's Assumption [KA]:

[KA](def'n): The proper explanation of epistemic properties is given in terms of belief-forming processes of some sort.

Without this presupposition, Kornblith's Psychologism [KP] is not even recognizable as a version of psychologism. To see this, suppose that Kornblith's Assumption [KA] is false. If KA is false, then the processes by which we arrive at beliefs would be irrelevant to their epistemic merit, and so we could not even pick out the beliefs which we ought to have on the basis of the process by which we arrived at them. Rather, the beliefs which we ought to have would be determined by their epistemic properties (e.g., truth and rational justification). In this light, Kornblith's Psychologism [KP] is reduced to the trivial truth that, if we have any rationally justified true beliefs, we arrived at them somehow. Not only is this claim not psychologistic, it is not controversial whatsoever. So, in order to read Kornblith's definition [KP] as a philosophically interesting thesis, we must already accept KA.<sup>38</sup>

Worse still is that even negations of KP seem to take their place in the logical space

---

<sup>38</sup> NB: I do not here attempt to raise arguments against the naturalist theory of justification, or attempt to show that the claim [KA] that *the proper explanation of epistemic properties is given in terms of belief-forming processes of some sort* is false. (I do take KA to be a central tenet of naturalist accounts of justification.) Rather, my aim here is to show that Kornblith's definition of "psychologism" presupposes that KA is true. I then claim that Kornblith's *definition* of "psychologism" is unacceptable, not because naturalism is false, but because psychologism and naturalism must be defined independently of one another.



demarcated by the truth of KA. The point here is that in denying KP, one is left in the position of asserting KA - and it is KA that is the real source of controversy. The denial of KP claims that *the processes resulting in epistemically meritorious beliefs are not among our actual belief-forming processes*, so epistemology cannot be descriptive of psychology. Rather, one must specify some *other* set of processes (other than the actual ones) which produces epistemically desirable beliefs. As such, since the denial of Kornblith's Psychologism still involves making a claim about how we (ought to) arrive at beliefs, it still holds that the subject matter of epistemology is some set of processes by which we arrive at beliefs - we just have to sort out which processes and which beliefs. (It is precisely when the denier of Kornblith's thesis attempts to do this that he runs into trouble.) So even the denier of Kornblith's psychologism is left in the position of claiming that epistemic properties are given in terms of some kind of belief-forming processes.

Yet a strongly anti-psychologistic position denies that mental processes have *any* relevance to logic whatsoever. Recall Haack's definition of anti-psychologism as the claim that "logic has nothing to do with mental processes" (1978, 238). Kornblith's definition simply does not allow one to take up a strongly anti-psychologistic position in relation to it. Rather, it localizes the psychologism debate around belief forming processes, a position which is inherently psychologistic. In the next chapter we will see that Frege identifies this as the mistake of confusing logical laws - which are properly seen as laws of truth - with the laws of taking-to-be-true. To this Frege objects that "[a] derivation from these laws, an explanation of a mental process that ends in taking something to be true, can never take the

place of proving what is taken to be true” ([1918] 1977, 2; cf. [1897] 1979, 146; [1884] 1980, vi). So, on Frege’s view, the psychological process by which we arrive at any belief is irrelevant to how the content of that belief is to be justified. Moreover, it does not even make sense, on a strongly anti-psychologistic view, to talk about the *logical* processes by which we *in fact* arrive at some belief. Logical relations are evidentiary relations, and they do not *represent* - nor are they *embodied in* - processes by which we arrive at beliefs (see my §2.4.7). But, reasonable attempts to negate Kornblith’s definition do not seem to allow one to formulate the anti-psychologistic thesis that “logic has nothing to do with mental processes” (Haack, *op. cit.*). So beyond the initial oddity of Kornblith’s definition lurks the more sinister presumption that [KA] the proper explanation of epistemic properties is given in terms of some sort of belief-forming processes.

So far, we have considered two theses which assert some version of KA. Epistemological Psychologism [EP\*] claims that the epistemological properties are a function of psychological processes. Epistemological Naturalism [EN\*], on the other hand, asserts that the epistemological properties are a function of natural (usually causal) processes. Yet, if Kornblith’s definition is not to presuppose the very thesis at issue [EP\*], it must be supposed that KP presumes that the processes responsible for epistemological properties are natural processes [EN\*]. That is, the only way to intelligibly interpret Kornblith’s definition of psychologism without having it completely beg the question is to suppose that epistemological naturalism is true. So, in affirming that [KA] the proper explanation of epistemic properties is given in terms of processes of some sort, even the denier of KP is

affirming epistemological naturalism.

Yet, as has already been noted, epistemological naturalism is but a short step from psychologism. Indeed, as remarked at the beginning of this section, many naturalists (accepting both the epistemological relevance [RPT] and empirical nature of psychology [EPT]) hold that epistemological naturalism leads directly to psychologism. For instance, Kornblith writes that, in place of epistemic rules and principals, “a psychologistic theory of knowledge is characterized by a description of a set of justification-conferring processes” (Kornblith 1982, 239). Similarly, Kitcher writes that “On the psychologistic account [of knowledge], we suppose that the question of whether a person’s true belief counts as knowledge depends on whether or not the presence of that true belief can be explained in an appropriate fashion. The difference between an item of knowledge and mere true belief turns on the factors which produced the belief (thus the issue revolves around the way in which a particular mental state was generated)” (Kitcher 1979, 243). As such, a definition of psychologism which presupposes epistemological naturalism is no more neutral than one which presupposes epistemological psychologism itself.

### §1.7 - “Psychologism”: A Working Definition

At the beginning of this chapter, I set two goals. The first goal was to distinguish the thesis of psychologism from those theses with which it has been historically enmeshed. This project has only been partially completed. The second of these goals was to supply a stipulative definition of “psychologism” for the purposes of analysis and evaluation in the remainder of this inquiry.

The general form of psychologism is the claim that psychology is *relevant* to philosophical inquiry. This general thesis needs refinement, so as to render it controversial and philosophically interesting. In general, such a refinement involves the claim that philosophy is somehow dependent on psychology. Two such refinements involve the specification of the manner and the domain of that dependence. As regards to the domain, it was observed that the controversial aspects of psychologism emerge with the isolation of those realms of philosophical inquiry that are thought to be either (i) impervious to contingencies or any sort (logic) or (ii) impervious to contingencies of a particularly psychological sort (epistemology). The manner of the philosophical dependence on psychology may be established in a number of ways. For example, it might be claimed that the subject matter of philosophy is psychological in nature, or equivalently that the referents of philosophical terms are psychological entities. Alternately, it might be claimed that the explanation of the semantics of some philosophical lexicon is dependent on psychological considerations (e.g., the contents of philosophical expressions are psychological in nature). In these respects, it should be recognized that “psychologism” denotes a family of individual but related theses asserting the philosophical dependence on psychology.

On the other hand, psychologism may be distinguished from several adjacent theses. Firstly, psychologism is not inherently connected with any particular conception of the discipline of psychology; rather, it may have introspectionist, transcendentalist or experimentalist forms. Also psychologism should be distinguished from the claim that philosophy completely *reduces* to psychology - a claim which establishes an especially strong

version of psychologism. Rather, psychologism need only claim that psychological considerations are essential to philosophy, not that they are exhaustive of it. On a related point, by showing that the prescriptive function of logic is consistent with both psychologism and anti-psychologism, anti-psychologism was separated from the claim that logic is *essentially* normative. This afforded the additional insight that it is not the prescriptive nature of logical laws so much as the *foundation* upon which these laws rest which is at issue in the psychologism debate. Finally, the relation between psychologism and epistemological naturalism was specified. It was claimed that while the two doctrines are commonly held to be roughly equivalent, this is only due to the fact that it is commonly held both that psychology is a natural science and that it studies properties which are epistemically relevant. Yet, in spite of their contemporary proximity, I argued that the two theses must be kept separate, and that each must be defined in a way that is neutral with respect to the other. While there are other adjacent theses that still await investigation and analysis, I am now in a position to stipulate the version of psychologism that will be the topic of inquiry and evaluation for the remainder of this inquiry.

As I have previously argued, the generic claim that philosophy is dependent on psychology is sufficient to generate controversy and hence to be of philosophical interest. Yet, the version of psychologism which will be the topic of the remainder of this investigation will be considerably narrower. As such, the definition I offer at this juncture will serve more as a limitation of the domain of my study than as a characterization of the nature of psychologism.

In the first place, I will limit my investigation to specifically naturalist versions of psychologism. That is, I will consider only those versions of psychologism which also accept that psychology is a natural science [EPT]. In doing so, I must simply bracket off considerations of versions of psychologism which claim that psychology is an *a priori*, or transcendental science. Yet, since such views are not commonly held in the contemporary philosophical and psychological community, I do not feel that this should limit the importance of the investigation which follows.

Further, I will only consider psychologism over the domain of logic. For the purposes of this inquiry, I consider logic to be a branch of philosophy dealing with necessary consequence. While I recognize a plurality of different logics, I do not here consider probabilistic logic, inductive or non-monotonic logics, or other specialized or deviant logics. Instead, I have in mind the first-order predicate logic used to formalize deductive validity. This represents a further limitation on my treatment of the topic.

Previously, it was observed that logic and epistemology represent two controversial philosophical domains with respect to psychologism. Commonly, epistemology is thought to be impervious to psychological contingencies, while logic is supposed to be impervious to contingencies of any sort whatsoever. That said, on the assumption that logical relations are a species of evidentiary relations, there is a close relation between psychologism in the two domains. Resolving the question of logical psychologism in the affirmative is sufficient to establish epistemological psychologism, while resolving it in the negative is necessary to deny epistemological psychologism. As such, logical psychologism is a matter of theoretical

interest. Moreover, it is undoubtedly a matter of historical interest, and perhaps represents the locus of the philosophical controversy over psychologism.

So the version of psychologism with which I will be concerned in the remainder of this inquiry claims that logic is dependent on empirical psychology. This version of Logical Psychologism may be defined as follows:

[LP\*](def'n): Empirical psychology is necessary for logic.

Of particular interest will be the various attempts to establish or deny the logical dependence on empirical psychology. Traditionally, the issue of logical psychologism was thought to hang on questions concerning the nature of logic's subject matter. It was the subject matter of logic which was thought to determine the foundation and character of logical laws. Over the course of the inquiry to follow, I show how claims about the subject matter of logic have been treated as theses concerning the proper semantics of logical terms and expressions.

This becomes a central theme of chapter 2 which discusses Frege's arguments against psychologism. In explicating his arguments against psychologism, I explore Frege's treatment of the view that the subject matter of logic is psychological in nature. In doing this, I distinguish psychologism from particular theses regarding the nature of psychological entities, e.g., mentalism. It is observed that Frege diagnoses psychologism as a semantic thesis, which produces unacceptable epistemological consequences. Frege's primary arguments against psychologism rely on his rejection of what he calls the "idealist theory of

knowledge” ([1897] 1979, 143). I consider this as a combination of two theses, subjective idealism (metaphysical subjectivism) and epistemological subjectivism, and locate psychologism in relation to each of these theses. Not only is Frege’s diagnosis of psychologism semantic, so also is his treatment of the ‘philosophical disease.’ I further consider Frege’s constructive theory as a reply to psychologism, and his account of the subject matter and foundation of logical laws. In considering his semantic theory offered in reply to psychologism (and the problems that reside therein) I observe several presuppositions which are shared between Frege’s view and those of his psychologistic adversaries. Specifically, each holds that logic must treat of some subject matter, and that the question of psychologism is to be decided by the specification of the nature of that subject matter. This discussion anticipates the alternative solution explored in chapter 5, that logic treats of no subject matter whatsoever.





## Chapter 2

## Frege's Anti-Psychologism

## §2.1 - Frege's Semantic Approach to Psychologism

This chapter considers Frege's treatment of psychologism in logic: his characterization of the psychologistic thesis, the problems he associated with it, and his proposed solution. It will be argued that, while Frege's solution may not be altogether successful, his approach is indeed the right one and present and future treatments of psychologism are best guided by Frege's efforts. Frege's contribution to the debate surrounding psychologism may still serve as a landmark - a boundary stone - by which we may continue to take our philosophical bearings.

It has been written that Frege's primary contribution to modern philosophy was epistemological, and that he was primarily concerned with the foundational problems of objectivity and certainty (Currie 1982, 12-13; 1989, 414). As such, it has been argued, the features such as 'rigour', 'clarity' and the 'sharp delimitation of concepts' which have come to characterize Frege's thought, were valued by him "not for their own sake ... [but only] insofar as they contributed to the security of ... knowledge" (Currie 1982, 12). Frege's own writings suggest otherwise, and seem to indicate that Frege valued clarity and rigour not only because they reveal the foundational structure of a body of knowledge, but also because they reveal its relational structure. "The aim of proof," Frege wrote, "is, in fact, not merely to place the truth of a proposition beyond all doubt, but also to afford us insight into the

dependence of truths upon one another” (1884, §2; 1980, 2). Clarity and rigour make apparent the organizational structure of a body of knowledge, and as such their value extends beyond their ability to secure a body of knowledge. Yet no matter how we see them as related, a concern for foundational and epistemological problems, as well as a rigorous attitude, remain characteristic of Frege’s thought and his approach to philosophy.

Nor are these the only remarkable features of Frege’s thought. Perhaps a more outstanding characteristic is to be found in his methodology. Frege approached, and sought to find the resolution of, these epistemological and foundational problems at a “pre-epistemological, semantic level” (Coffa 1991, 74). In Frege’s time, the discipline of logic included what we might now call (following Engel, [1989] 1991) the philosophy of logic. Coffa writes that, for Frege, “‘logic’ was our semantics, a doctrine of content, its nature and structure, not merely its ‘formal’ fragment” (Coffa 1991, 64). As such, “Frege’s goal went far beyond what we now call formal logic, and into semantics, meanings, and contents, where he found the ultimate foundation of inference [and] validity ...” (Coffa 1991, 65).

Regarding Frege’s treatment of psychologism, three important points will be made in this section: Frege’s approach was semantic; his solution was semantic, and the problems that arise for Frege’s solution originate in his semantic theory. In the first place, Frege ultimately conceived of the psychologistic thesis as a semantic one - that of Semantic Psychologism over the domain of arithmetic and logic. Frege repeatedly approaches the matter of psychologism

through the question, “What is the proper subject-matter of logic?”<sup>1</sup> Yet, Frege’s approach to answering this metaphysically oriented question is to first re-formulate it as a question concerning the nature of the contents of logical principles. This methodological attitude has been identified by several authors as the ‘linguistic turn’ in Frege’s writing, a turn which has been argued to mark the birth of analytic philosophy. Dummett, for instance, writes that in §62 of Frege’s *Grundlagen* (1884) “an epistemological problem, with ontological overtones, is ... converted into one about the meanings of sentences” (1991, 111-112). Monk describes this passage similarly, saying that “Frege begins by asking about the nature of number and ends by asking instead about the meanings of sentences concerning number words” (Monk 1996, 3). Thus, Frege framed the question of psychologism as a question concerning the proper semantics of logical and arithmetical terms, and his arguments against psychologism have the following general form: the problematic and unacceptable epistemological

---

<sup>1</sup> Here, a brief digression regarding Frege’s logicism is in order. I have said that Frege frames the question of psychologism as a question concerning the semantics of logical and arithmetical terms. Yet all too often, Frege appears to address only the latter semantic question (e.g., Frege 1884, and 1894). But it must be remembered that in view of his logicism, Frege would not have drawn any distinction between the subject matter of arithmetic and the subject matter of logic itself.

This thesis is articulated in *The Foundations of Arithmetic* where Frege argues, “The present work will make it clear that even an inference like that from  $n$  to  $n + 1$ , which on the face of it is peculiar to mathematics, is based on the general laws of logic, and that there is no need of special laws for aggregative thought” (1884, iv; 1980, iv). Rather, Frege held that arithmetical terms could be defined exhaustively in the terms of logic, and that arithmetical laws were reducible to, or derivable from, logical laws. As such, the underpinnings of arithmetical knowledge are the same as those of logic itself, and, similarly, the subject matter of arithmetic is the same as that of logic itself.

consequences of psychologism both indicate, and follow from, a mistaken semantics. This leads to the second point. Frege replied to psychologism by supplying a semantic thesis profoundly different from those of his psychologistic contemporaries. In this way, Frege thought that the epistemological problems produced by psychologism could be overcome. Yet, despite its differences, Frege's own semantic theory nevertheless shared several crucial presuppositions with the psychologistic theories. Specifically, implicit in the very question "What is the proper subject-matter of logic?" is the assumption that logic must treat of *some* subject matter. It was presuppositions like this one, shared between both psychologistic and anti-psychologistic accounts of logic that would eventually produce the fatal flaws in Frege's reply to psychologism - a reply that is, otherwise, widely seen as overcoming the problems of psychologism.

## §2.2 - Frege on the Subject Matter of Logic

### §2.2.1 - Semantics, Truth and Nature of Logic

What then is the subject matter of logic? William and Martha Kneale begin their seminal work *The Development of Logic* (1962) with the following claim concerning the subject-matter of logic: "Logic is concerned with the principles of valid inference" (1). Baker and Hacker flesh out this claim with the following picture:

The established tradition was to view inference as the primary subject-matter of logic. Inferences were thought to be sequences of judgements (propositions, thoughts), and judgements to be built up out of concepts or

ideas. ... The notions of concepts, judgements, and inferences were the basic concepts in the philosophical discussion of logic. The general nature of logic was taken to depend on the nature of these entities. (Baker & Hacker 1989, 75)

This is precisely the picture of logic that is embraced by J.S. Mill (see next chapter), and it is the picture that Frege would have inherited. If he did not accept it himself, this picture undoubtedly influenced his approach to the topic, and it is the view to which he would have been responding. Accepting, for the moment, that the subject-matter of logic is (valid) inference, how did Frege conceive of the nature of concepts, judgements and inferences? Frege describes the nature of judgement as follows: “Inwardly to recognize something as true is to make a judgement” ([1879-1891] 1979, 7). Two important features of this picture deserve mention.

First, Frege conceived of judgements and inferences as inward psychological acts. As such, if judgements and inferences *themselves* are conceived of as the subject matter of logic, then Frege’s account is obviously psychologistic. But, according to Frege, not everything about a judgement is psychological in nature. A judgement is the psychological act of recognizing *something* as being true. This thing which is recognized as true in the act of judgement is called the content of a judgement (or a ‘judgeable-content’). And, according to Frege, the contents of judgements are not psychological. It is by distinguishing the act from the content of a judgement that Frege insulates his account from referential and metaphysical

psychologism.<sup>2</sup>

The second noteworthy feature of this picture is that Frege conceived of judgements and inferences as inherently connected with truth. Frege writes, “To make a judgement because we are cognisant of other truths as providing a justification for it is known as *inferring*.” ([1879-1891] 1979, 3). Yet, while judgements are concerned with the ‘simple’ relation between a judgeable-content and truth, inferences are concerned with the truth-functional relations *between* judgeable-contents. That is, when we make inferences we are concerned with the consequences of certain truths, or with the evidence or justification offered by some judgeable-contents to others. “And this,” Frege writes, “is where epistemology comes in. Logic is concerned only with those grounds of judgements which are truths. ... There are laws governing this kind of justification, and to set up these laws of valid inference is the goal of logic” (*ibid.*). Inferential relations are truth-preserving relations, and since the goal of logic is to supply the laws of valid inference, logic is inherently related to truth. The subject matter of logic, then, is truth, at least insofar as truth can be captured in relations of evidence, justification and consequence.

---

<sup>2</sup> For the purposes of the discussion to follow, I want to leave these ‘things’ that are recognized as true in a judgement as undetermined as possible. For the time being, then, I will simply adopt Frege’s own terminology of “judgeable-content”, which he later abandoned. Later in the chapter I will refine the notion and replace the terminology.

Frege introduced the term “judgeable-contents” in the opening sections of the *Begriffsschrift* (1879, §§2 - 4; 1967, 11-13). On May 24, 1891, Frege wrote a letter to Husserl saying, “What I used to call a judgeable content is now divided into thought and truth-value” (1980, 63), thus indicating that he had abandoned the term by that point.

## §2.2.2 - The Nature of Truth

For Frege, then, the laws of logic are intimately connected with truth. In fact, Frege goes so far as to write that “the laws of logic are nothing other than an unfolding of the content of the word ‘true’” ([1879-1891] 1979, 3). As such, an understanding of Frege’s views on the nature and subject matter of logic, requires an understanding of his views on truth. For Frege, the notion of truth is “primitive and simple” ([1897] 1979, 129). Any attempt to define “truth” would be circular, “for in a definition certain characteristics would have to be specified. And in application to any particular case the question would always arise whether it were *true* that the characteristics were present” ([1918] 1977, 4). As such, truth is indefinable ([1918] 1977, 3), and irreducible ([1897] 1979, 129) to other, more basic notions. Furthermore, “being true is not a sensible, perceptible, property” ([1918] 1977, 5). While we may know certain propositions to be true on the basis of sensory information, the truth or falsity of a proposition is not a sensible property of the proposition. (Otherwise, we would know the truth-value of each and every statement merely by being acquainted with the statements themselves.) In fact, not only is truth not a *sensible* property, properly speaking, it is not a property (in the usual sense of the word) whatsoever. While the surface grammar of the word “true” makes it appear as though truth is a property, prefixing a declarative sentence with the phrase “It is true that ...” does not change the sense of the statement ([1918] 1977, 6). Furthermore, truth is objective and independent of our beliefs and opinions about it. “What is true is true independently of our recognizing it as such” ([1897-1891] 1979, 2).



This is perhaps the most important property of truth, for it makes truth independent from acts of judgement, and thus independent of psychological considerations. In summary, “the content of the word true is *sui generis* and indefinable” ([1918] 1977, 4).

### §2.2.3 - Thoughts

Having seen Frege’s account of the nature of truth, it remains to consider what exactly Frege might mean by what I have called a ‘judgeable-content’. What is the nature of that ‘thing’ which we recognize as true in a judgement? For Frege, “the only thing that raises the question of truth at all is the sense of sentences” ([1918] 1977, 4), and these Frege calls “thoughts” ([1897] 1979, 131).<sup>3</sup> “Without offering this as a definition, I call a ‘thought’ something for which the question of truth can arise at all. ... So I can say: thoughts are the senses of sentences” ([1918] 1977, 4-5). Frege offers the “laws of nature, mathematical laws, [and] historical facts” as three examples of types of Thoughts ([1897] 1979, 129).

For Frege, the answer to the question “What is the subject matter of logic?” will take the form of an account of the nature of Thought. Throughout the discussion that follows Frege continually makes use of the term “Thought”. Yet, for the time being, I am content to

---

<sup>3</sup> For Frege ‘thought’ is a technical notion, and ought to be distinguished from any of the psychological activities or entities that we normally indicate with our everyday use of the term “thought.” In order to avoid any ambiguity, I make the following terminological distinction. Following others (e.g., Currie, 1989), I use the term “Thought” to indicate Frege’s technical concept, and as a translation of his term “*Gedanke*”, while retaining the usual sense for the word “thought”, which is a translation of “*Vorstellung*.” (When quoting translated material, I leave the text as it appears in the original translation.)

leave the nature of these Thoughts, for the most part, unspecified. As will be demonstrated, Frege's account of the nature of Thought contributes significantly to his semantics and, thus, to his solution to the problems he identified in the psychologistic approach to logic and arithmetic. For the time being it is enough to recognize that, for Frege, Thoughts are the senses of sentences and the proper bearers of truth and falsity. Indeed, their nature will be determined in all crucial respects by these two factors.

#### §2.2.4 - Semantic Psychologism

It is beyond dispute that Frege reviled psychologism, a position he once described as "a widespread philosophical disease" ([1894] 1972, 337), and that he advanced arguments against versions of psychologism in circulation at the end of the nineteenth century.

Further, there can be no doubt that psychologism in the domain of logic and arithmetic was the primary target of Frege's attack. The most straightforward version of this sort of psychologism is the metaphysical thesis that the subject matter of logic and arithmetic is something psychological like the mental operation of inference. Seen in this way, the target of Frege's critique is Metaphysical Psychologism - the thesis that the subject matter of philosophy (in this case logic) is psychological in nature (namely inference).

Yet, Frege does not construe psychologism as a metaphysical thesis, and the problems that he detects with psychologism are not metaphysical ones. Rather, Frege addresses his critical arguments to the semantic thesis that the meaning of our arithmetical and logical terms is given by something psychological (like ideas), and the problems that he detects with this

thesis are epistemological. There can be little doubt that Frege conceived of psychologism as a semantic thesis, and that his arguments can be safely interpreted as attempting to refute Semantic Psychologism - the view that the semantics for some region of discourse cannot be explained independently of psychological considerations.

But, it is a more delicate problem to determine whether Frege conceived of psychologism as a thesis about the referents or the senses of a lexicon (i.e., Referential Psychologism or Psychologism of Sense). According to the first thesis, the referent of an expression is itself psychological in nature, while according to the second thesis the content of an expression which determines its referent (i.e., its sense) (J. Katz 1998, xxvi) is psychological in nature. This problem is especially delicate because Frege's anti-psychologistic arguments span his entire philosophical career, while his division of the content of a judgement into its two components of sense and reference was only introduced in the early 1890's. So, in treating the subject matter of logic as the contents rather than the acts of judgements, Frege does not specifically isolate either Psychologism of Sense or Referential Psychologism as the target of his critique.

Rather, it seems that Frege argues against both theses and Frege's positive theory provides an anti-psychologistic account of both the sense and the reference of an expression. Again consider Frege's treatment of the subject matter of logic as the content and not the act of judgement. This view about the subject matter of logic makes the claim that logic is about one thing rather than another, and as such is a claim concerning the referents of logical

principles. We have already shown that metaphysical theses concerning the nature of a subject matter can equivalently be expressed as theses concerning the referents of a lexicon. As such, the view that the subject matter of logic is the content of a judgement is a claim opposing Referential Psychologism over the logical lexicon.

Yet, if the subject matter of logic is the content of a judgement, and a judgeable-content consist of two parts - a Thought (sense) and a truth-value (reference) - then Frege's anti-psychologistic position is best seen as an argument against both Psychologism of Sense and Referential Psychologism.

Regarding Psychologism of Sense: consider Frege's (1897) claim that "Psychological treatments of logic arise from the mistaken belief that a thought (a judgement as it is usually called) is something psychological like an idea" ([1897] 1979, 143). Frege is unequivocal in his view that Thoughts are not the referents of sentences, but instead supply their sense. "The thought, accordingly, cannot be the reference [*Bedeutung*] of the sentence, but must rather be considered as its sense" ([1892] 1952, 62). Indeed, earlier in the 1897 paper Frege wrote that "[t]he sense of an assertoric sentence I call a thought" ([1897] 1979, 131). So, from the psychologistic thesis that Thoughts are like ideas come the two corollaries that (i) the senses of sentences are ideas and that (ii) ideas are truth-bearers. These semantic claims are the main targets of Frege's critique of psychologism. It is from these two theses, Frege argues, that unacceptable (indeed contradictory) epistemological consequences follow. Indeed, Frege's solution to the epistemological problems he identifies with psychologism is to provide an

entirely new theory of meaning, according to which the senses of expressions are explained by positing a class of abstract, objective entities whose nature is entirely non-psychological. So, it would seem that at least one strand of Frege's anti-psychologism is directed against the Psychologism of Sense.

At other times, though, Frege seems to argue against Referential Psychologism. As we will see over the course of the chapter, Frege frequently identifies psychologism with a kind of idealism according to which the objects referred to in a lexicon are treated as mental entities. Further, one of Frege's principal objections against psychologism is that it fails to provide an adequate account of the nature of truth. Yet, according to Frege, truth is a feature of the reference of an expression, not its sense. (Indeed according to Frege, truth-values are the referents of declarative sentences.)<sup>4</sup> Thus Frege writes, "It is the striving for truth that drives us always to advance from the sense to the reference [*Bedeutung*]" ([1892] 1952, 63), and Frege seems unequivocal in his claim that the laws of logic are the laws of truth. This strand of Frege's anti-psychologism defends the claim that the subject matter of logic and arithmetic is not dependent on psychology. Further, it highlights an important assumption in Frege's overall treatment of the topic. For Frege, logic has to have a subject matter; it has to

---

<sup>4</sup> Even if one did not hold such an eccentric position, but preferred instead the view that some fact or state-of-affairs was the referent of a declarative sentence, it would still be the case that the truth-value of an expression would be determined by its object, not its content. The truth-conditions of the expression would be given in terms of whether or not the state-of-affairs corresponding to the statement in fact obtained in the world.

refer to objects of some kind, and the question of psychologism is resolved by determining the nature of these objects. Frege does not consider the possibility that they do not refer to a class of objects. Considerations of this sort mark the strand in Frege's anti-psychologism that specifically addresses itself to Referential Psychologism.

There is, though, an important connection between the sense of an expression and its reference, and hence between the two strands of psychologism criticized by Frege. Thoughts, as we just saw, are semantic entities with two defining characteristics: they are the senses of sentences and the proper bearers of truth and falsity.<sup>5</sup> Yet, what is the sense of an expression? The sense of an expression is that aspect of its meaningful content which determines its reference (Katz 1998, xxvi).<sup>6</sup> Thus Frege writes, "to the sign [i.e., linguistic symbol] there corresponds a definite sense, and to that in turn a definite reference [*Bedeutung*]" ([1892] 1952, 58). Seen another way, given that the reference of a statement is a truth-value, to say that the sense of the sentence is the bearer of its truth-value is to say that the sense of a sentence is the bearer of its reference. That is, by determining the reference of a statement, the sense of that statement 'carries' its reference along with it. Since it is the sense of the statement which brings us to its reference, it is through a statement's sense that we determine

---

<sup>5</sup> Admittedly, these semantic features have consequences that will prompt Frege to give a metaphysical account of Thought and its nature.

<sup>6</sup> Frege recognizes other aspects of the expressive (or meaningful) content of sentences (e.g., its tone) ([1918] 1977, 10), but these are semantically inert and Frege is not concerned to explain them independently of psychology (see my §2.4.8).

its truth.

It would seem, then, that Frege conceives of the subject matter of logic as both the sense and the reference of logical expressions. At times he calls the laws of logic laws of truth, and at other times laws of Thought. Further, Frege's anti-psychologism encompasses both aspects of this subject matter, sense and reference. As such, it is perhaps best to revert to Frege's old terminology when describing his anti-psychologism. It seems that Frege is opposed to any account of a 'judgeable-content' which makes either of its aspects dependent on psychology. For this reason, I am content to construe Frege's anti-psychologistic position as a position denying the more general thesis of Semantic Psychologism - the view that the semantics for some region of discourse cannot be explained independently of psychological considerations. Semantic Psychologism may be the result either of Referential Psychologism or of Psychologism of Sense, depending on whether one holds an extensionalist or an intensionalist account of meaning.

In general, then, Frege's anti-psychologism is a rejection of any account which makes the subject matter of logic dependent on psychology. In this regard, a central thesis against which Frege argues is the thesis that Thoughts are like ideas. Before considering the consequences of this thesis it is important not only to understand what Frege understood by "idea", but also to appreciate how easy it would have been to adopt such a thesis.

#### §2.2.5 - The Nature of Ideas

Frege understood the term "idea" to indicate a completely mental, psychological

entity. On Frege's account, ideas are part of "an inner world, distinct from the outer world, a world of sense-impressions, of creations of ... [the] imagination, of feelings and moods, a world of inclinations, [and] wishes" ([1918] 1977, 13). Ideas, as a kind of object or thing, belong to the content of a particular persons' consciousness ([1918] 1977, 14), and are strikingly different from most things in the outer world. In the first place, ideas are not independent of their owner either in respect of their existence or of their nature (*ibid.*). "It is just so much the essence of any one of my ideas to be a content of my consciousness, that any idea someone else has is, just as such, different from mine" ([1918] 1977, 15). Ideas, then, are completely individual; "no two men may have the same idea" (*ibid.*), and it is not possible to compare the ideas of any two individuals (*ibid.*). Because ideas are essentially individual, they are essentially subjective. Nor are ideas detectable by the five senses; rather they are completely insensible (*ibid.*), and, hence, are known exclusively by introspection. As such, ideas are completely epistemically private.

This is Frege's picture of the nature of psychological entities, and this picture informs his subsequent anti-psychologistic arguments. The specific version of Semantic Psychologism against which Frege takes issue is the semantic thesis I will call mentalism. According to mentalism, our words stand for ideas which are their meanings. These ideas are completely and essentially individual, subjective and epistemically-private. Mentalism, then, may be stated as follows:



M (def'n): Mentalism is the thesis that the meanings of our terms are subjective, epistemically-private ideas.

Importantly, Mentalism should be interpreted as neutral with respect to the sense / reference distinction. That is, Mentalism does not claim that meaning is properly explained either extensionally or intensionally. Rather, it claims that the meaning of a word - however it is established - is an idea.

#### §2.2.6 - Ideas as the Subject Matter of Logic

Given that this is the nature of ideas, it might seem rather odd that ideas could ever have been supposed to be the subject matter of logic - a universal, and universally objective science. An appreciation of the attractiveness of such a thesis begins when we notice that the subject matter of logic was traditionally conceived as (valid) inference, and the parts thereof (judgements, concepts and the like). And, as Baker and Hacker have already reminded us, on such an account “the general nature of logic was taken to depend on the nature of these entities” (Baker & Hacker 1989, 75).

From this beginning, it is but a short step to psychologism. The psychologistic logicians accepted the picture according to which “the subject-matter of logic is concepts, judgements, and inferences, [but] they held that these entities are all psychological or mental [in nature], and hence subjective” (Baker & Hacker 1989, 77). Nor is it difficult to see how one could take such a step. After all, even on Frege’s account, judgements and inferences are mental acts. And as Mill argued, since psychology is the science of the mental, the study of

these acts falls clearly within the domain of psychology. We will see that one of Frege's primary and permanent contributions to the psychologism debate was an insistence on the distinction between the act and the content of a judgement.

### §2.3 - The Subject Matter of Logic

#### §2.3.1 - Psychologism Reduces Everything to the Subjective

Frege's primary argument against mentalism claims that it results in metaphysical subjectivism - indeed subjective idealism. Here, Frege argues against the thesis that the subject matter of logic and arithmetic (indeed of any of the physical sciences) is ideas. It would seem that Frege argues against a form of Referential Psychologism here, claiming that the sciences (including logic and arithmetic) are not about our ideas of things; rather the sciences are about the things themselves. So, the terms of our sciences cannot refer to our ideas, but must refer to objects. On the other hand, if it is in fact the case that our words name ideas, and that ideas are essentially private, subjective, individual mental or psychological phenomena, then it follows that linguistic and epistemological objects are also subjective mental phenomena.

Frege's argument against this view takes the form of a *reductio ad absurdum*. Frege writes, "If number were an idea, then arithmetic would be psychology. But arithmetic is no more psychology than, say, astronomy is. Astronomy is concerned, not with the ideas of the planets, but with the planets themselves, and by the same token the objects of arithmetic are not ideas either" (1884 §27; 1980, 37). According to Frege, the proper subject matter of our

discourse, and the objects of our knowledge, are extra-mental objects in the real world having existence independently from our mind and thoughts about them. Because of this, any semantics which fails to account for this fact, must be mistaken. Simply, because subjective idealism is a mistaken metaphysical thesis, so is mentalism of reference a mistaken semantic one.

Problematically, since it is the semantics of our philosophical (i.e., logical) discourse that is at issue in the psychologism debate, Frege's *reductio* seems to beg the question against the psychologistic logician when it invokes common sense realism. Surely, the psychologist could reply, the attitude of common sense realism is motivated by the assumption of an anti-psychologistic semantics in the first place. Nor is this the only interesting observation to be made regarding Frege's initial argument.

### §2.3.2 - The Relation of Logical Psychologism to Subjective Idealism

Mohanty (1989) recognizes that mentalism of reference was the target of Frege's (1894) review of Husserl's *Philosophie der Arithmetik*, writing, "Frege accused the psychologistic logician of reducing everything to subjective ideas" (1989, 1). Yet, Mohanty continues, "reducing *everything* to subjective ideas ... [is] subjective idealism, and that is not *eo ipso* psychologism" (*ibid*). Mohanty then proceeds to distinguish between the two theses in the following way.

The following may suffice to show that psychologism does not necessarily amount to subjective idealism. A psychologistic philosopher may believe,

consistently, that there are indeed mind-independent, objective realities. He may even further hold that we do have knowledge of this objective reality. What he must hold is that such knowledge is made possible not only through the structure of the reality that is known but also through the structure of the mind that knows. (Mohanty 1989, 1-2)

That is, psychologism need not be committed to a psychological account of the objects of our knowledge. Rather, psychologism (in this case epistemological psychologism) must instead claim that our knowledge of these mind-independent objects is somehow dependent on psychology. The core of the psychologistic thesis is the assertion that psychological facts are necessary for philosophical (in this case epistemological) inquiry. As Mohanty argues, “Psychologism ... is not an ontological thesis. It is an epistemological thesis, which traces back all epistemological questions to some aspects of psychology. It need not have to hold, however, that everything is nothing but mental representations” (Mohanty 1989, 2). In light of this, Frege’s initial argument against an idealist account of the objects of our knowledge does not seem to hit the mark of psychologism, and its success seems to rest on issues that are not indigenous to psychologism itself.

To make Frege’s arguments on this point work against psychologism, Frege must *also* attribute to the idealist the view that the meanings of our expressions are given extensionally, and that these referents are ideas. Seen in this light, Frege may be taken to be arguing against a version of Referential Psychologism which claims that the referents of the terms of our

science are ideas. While it remains true that Frege's objections to a mentalist account of reference hinge on metaphysical considerations, these considerations are indigenous to psychologism in that they concern the nature of the subject matter of a science. According to Frege, the subject matter of science, and of scientific knowledge, is not our ideas of things, but the things themselves. Because of this, mentalism combined with an extensionalist approach to the question of meaning is mistaken, and leads to both metaphysical and epistemological subjectivism.

It is important to recognize that Frege did not merely claim that mentalism had unacceptable metaphysical consequences. Indeed, these were by no means the most objectionable implications of mentalism for Frege. Rather, Frege argued, it was the epistemological consequences of mentalism that were most objectionable. These additional arguments are congruent with Mohanty's point, and with the generic definition of psychologism, that the problematic aspects of psychologism arise from philosophy's dependence on psychology.

### §2.3.3 - Objective, Scientific Knowledge

According to Frege, it is not merely metaphysical subjectivism that results from mentalism. Epistemological subjectivism is a second consequence, and the implications of this are just as detrimental. That is, a further consequence of the mentalist theory of semantics is that it precludes the possibility of a science as we usually understand it; it precludes the possibility of objective, scientific knowledge. As Baker and Hacker write, "[p]sychologism

made it unintelligible that there could be an intersubjective science of logic (because of the acknowledged impossibility of sharing ideas)” (1989, 78), which by nature are individual, subjective and epistemically private.

In the first place, epistemological subjectivism is a consequence of the metaphysical subjectivism considered above. After all, Frege argued, if the objects of knowledge are ideas, then there can be no common knowledge. “There is no science common to many, on which many could work, but perhaps I have my science, a totality of thoughts whose owner I am, and another person has his” ([1918] 1977, 17). Each scientist is “concerned with [the] contents of his own consciousness” which become the very subject matter of each individual science (*ibid.*). This subjectivism results in psychologism, because the subjective objects of knowledge are also essentially psychological. Thus Frege writes, “if the idealist theory of knowledge is correct then all the sciences would belong to the realm of fiction. ... this new science would be a branch of psychology” ([1897] 1979, 130).

There is, though, another way that epistemological subjectivism might result from mentalism. Suppose that it is not the actual objects of knowledge (the referents of our terms) that are given a mentalist interpretation. Suppose instead the weaker thesis that it is merely the senses of our expressions that are to be interpreted mentalistically. According to Frege, epistemological subjectivism still results, because it would still be impossible for two people to contradict one another. Contradiction would be impossible because “a contradiction occurs only when it is the very same thought that one person is asserting to be true and another to

be false” ([1897] 1979, 133). Yet, if the senses of our expressions are ideas, then, even if the objects of knowledge are not subjective and private, the content of that knowledge would be. As such, a common body of knowledge about those real, extra-mental objects would remain impossible.

Frege describes the epistemological situation that results from a mentalist semantics with the following analogy. “No contradiction between ... two sciences [e.g., scientific theories or the opinions of individuals] would then be possible, and it would really be idle to dispute about truth; as idle, indeed almost as ludicrous, as for two people to dispute whether a hundred-mark note were genuine, where each meant the one he himself had in his pocket and understood the word ‘genuine’ in his own particular case” ([1918] 1977, 17). Genuine knowledge and genuine dispute require not only that we share access to the objective entities that constitute objects of knowledge, but also that we share access to the objective entities which constitute the contents of knowledge. Mentalism denies either or both of these requirements.

Against each of these cases, Frege launches a *reductio* argument which uses as a premise the fact that we do indeed have objective knowledge. Our disputes over the truth or falsity of statements are genuine disputes, and given this mentalism is to be rejected because it cannot account for the fact that we have such knowledge.

Furthermore, the objectivity of our knowledge is derivative upon the objectivity of truth itself. Indeed, by dispensing with that objectivity, Frege argues, we are dispensing with

the very notion of truth itself. “There would be no science, no error, and no correction of error; properly speaking, there would be nothing true in the normal sense of the word” ([1897] 1979, 133). The fact is, ideas are not properly constituted in such a way that they are fit to be the bearers of truth. It is because of this that they can not be either the objects, or the conveyors, of knowledge.

#### §2.3.4 - Understanding and Communication

The final epistemological consequence of mentalism occurs at the intersection between epistemology and semantics - the theory of understanding and communication. According to Frege, mentalism cannot provide a coherent account of understanding and communication, and, as a consequence, is an unacceptable semantic theory. Here too, Frege’s argument takes the form of a *reductio*, and begins with the factual premise that people do communicate, and understand each other (at least most of the time).

On the mentalist model of semantics, understanding could only occur when two interlocutors share the same idea.<sup>7</sup> This is the only way allowed for by the theory itself of establishing that two communicators are talking about the same thing. Yet, the theory itself precludes such an event from ever occurring. Since ideas are essentially individual and subjective, since “no two men [can] have the same idea” ([1918] 1977, 15), communicational understanding is theoretically impossible. As Wittgenstein would later observe,

---

<sup>7</sup> The mentalist theory of understanding holds regardless of an intensional or extensional approach to the explanation of meaning.



communication on the mentalist model, becomes a process of my trying to show you the beetle in my box, and your trying to show me the beetle in your box. Understanding becomes a matter of trying to guess at the beetles in each other's boxes.

Indeed, it is not merely the individuality of ideas that raises a problem for mentalism - that ideas are epistemically private is an independent problem. Suppose, for a moment, that it were indeed possible for two people to share the same idea. The question now becomes, what are the criteria by which one could judge, and justify a judgement, that understanding had occurred? Again, according to mentalism, the answer is that two people who understand each other share the same idea. Thus, in order to determine whether understanding has occurred, it is not only required that communicators be able to share the same idea, but also that they are able to know that they share the same idea. To know that understanding has occurred, one must be able to compare the ideas of the relevant interlocutors. But, if ideas are essentially epistemically private, any such comparison is theoretically impossible. Yet, according to Frege's *reductio*, we do indeed communicate successfully, and understand one another (at least much of the time). As a result, mentalism is an unviable semantic theory. Importantly, Frege's arguments here succeed even if we suppose that it is not the objects of knowledge, but merely the senses of our expressions that are to be interpreted as subjective, epistemically private ideas.

### §2.3.5 - Ideas Are Semantic Epiphenomena

Frege's arguments against mentalism extend beyond the claim that mentalism produces

unacceptable metaphysical and epistemological consequences. It is not just that ideas cannot properly serve as either the objects or the contents of knowledge. Rather, it seems that there is a problem with the claim that ideas play any semantic role whatsoever. Ideas, according to Frege, are semantically irrelevant.

In an argument reminiscent of Descartes' *Meditations*,<sup>8</sup> Frege rejects the thesis that each meaningful word or phrase need be accompanied by an idea which supplies the content or sense of the expression. As with many of his arguments against psychologism, Frege's argument has the form of a *reductio ad absurdum*, and begins with the implicit premise that we can know some very definite things about the size of the Earth and its distance from the sun (e.g., we are further from the sun than we are from the moon and the sun is much larger than the Earth.) Yet, Frege argues, "there is not the slightest doubt that we can form no idea of our distance from the sun"(1884 §59; 1980, 70); similarly, "even so concrete a thing as the Earth we are unable to imagine as we know it to be" (1884, §60; 1980, 71). That is, certain

---

<sup>8</sup> In *Meditation VI*, Descartes argues that "On the other hand, if I want to think about a chiliagon, I certainly understand that it is a figure consisting of a thousand sides, just as well as I understand that a triangle is a figure consisting of three sides, yet I do not imagine those thousand sides in the same way, or envisage them as if they were present. And although in that case - because of force of habit I always imagine something whenever I think about a corporeal thing - I may perchance represent to myself some figure in a confused fashion, nevertheless this figure is obviously not a chiliagon. For this [imagined] figure is really no different from the figure I would represent to myself, were I thinking of a myriagon or any other figure with a large number of sides. Nor is this figure of any help in knowing the properties that differentiate a chiliagon from other polygons" (1641 *Med VI*; 1993, 48). (See also *Meditation II*: Descartes' discussion of why we cannot know the essence of material substance via the imagination.)

epistemically relevant aspects of the objects of our knowledge are wholly unrepresented by our ideas of them. As such, the content of our knowledge cannot be represented by, let alone justified by means of, any concomitant ideas. As Frege put it, “time and time again we are led by our thought beyond the scope of our imagination, without thereby forfeiting the support we need for our inferences” (*ibid.*).

From this Frege draws two conclusions which categorically distinguish the meaning of an expression from any idea that may accompany or be evoked by that expression. First, “even if every word calls up some sort of idea in us ... this idea need not correspond to the content of the word” (1884, §59; 1980, 70). In fact, in many cases the idea cannot even contribute to, let alone correspond with, the content of the word. Second, since the sense of a term is not captured by any accompanying idea, the having of some concomitant idea is not a necessary condition for an expressions having meaningful content. “That we can form no idea of its content is therefore no reason for denying all meaning to a word, or for excluding it from our vocabulary” (1884, §60; 1980, 71). Since our understanding exceeds our imagination, ideas not only bear no resemblance to the meaning of a term or expression, they do not contribute to it whatsoever. They are, at best, epiphenomenal to it.

#### §2.3.6- Physiological Psychology

A variant of the psychologistic thesis we have been considering is the view that retains the mentalist claim that the meanings of our words are psychological entities (i.e., ideas), but qualifies this with the further claim that the method of psychology is physiological (as opposed

to, say, introspectionist). As such, ideas remain psychological entities, but are interpreted as being essentially physical.

For Frege, such a qualification is of no argumentative merit in the attempt to redeem the philosophical integrity of referential psychologism. Instead, Frege argues, “physiological psychology provides us with the most striking case of this slide into [subjective] idealism because its realistic point of departure stands in such sharp contrast to it” ([1897] 1979, 144). Frege’s arguments against this variant of mentalism appear in his 1897 text “Logic”, and are presented below.

According to what I will call “physiological psychologism”, ideas still serve as the meanings of our terms, and the contents of our judgements. Ideas, in and of themselves, are still understood to have the usual properties: they are instantiated in the minds of particular individuals, and as such are essentially subjective, and their owner stands in a uniquely privileged epistemic relation to them. But, in order to try to reform ideas into a metaphysically more respectable class of entity, they are given a physiological interpretation. That is, ideas are considered to be physical entities, and the processes relating ideas are physical processes. So, while ideas remain mental, psychological entities, the mind is not a separate, distinct substance with a non-physical essence. In fact, ideas are scientific entities. As such, it is supposed that we can make what is essentially subjective and individual objective and public. Because ideas are physical psychological phenomena, they are public, measurable phenomena that may be included in a respectable science. In that respect, they are no longer epistemically

private, and need not be known exclusively by introspection. Rather, they may be included among the objects of science, in just the same way as all other everyday physical objects, and in all the ways that ideas (when given an exclusively mental interpretation) cannot.

That is, as Frege writes, we seek to make the nature and processes of ideation more intelligible by interpreting ideation as the result of the activity of “nerve fibres and ganglion cells” ([1897] 1979, 144). Given that these are physical entities and objects of scientific knowledge, “we do not hesitate to take it for granted ... that ganglion cells and nerve fibres are objective and real” (*ibid.*). Hence, it would appear that all of the problems arising from a particularly mentalist interpretation of ideas vanish. Yet Frege argues, the problems have not disappeared, they are merely obscured from our view. And so long as the referents or the senses of our expressions remain *ideas* - that is, so long as we retain some version of semantic psychologism - it does not matter what interpretation we supply regarding the *nature* of those ideas, all the epistemological problems remain.

Frege argues that the problems come clearly into view when we ask ourselves: how are we to understand the supposedly objective notions of “ganglion cells” and “nerve fibres” ([1897] 1979, 144)? These concepts, too, must be interpreted as *ideas* (albeit physical ones). (Whatever idea we have of physical at this point I am not sure!) So, as Frege remarks, all we are left with now is “ideas of nerve fibres, ideas of ganglion cells, [and] ideas of stimuli” (*ibid.*) - and these are the very things that “we start[ed] off with the intention of explaining” (*ibid.*). Moreover, it does not matter whether we insist that even the ideas of ganglion cells

and nerve fibres are to be understood physically. Let us grant that there are no non-physical entities, ideas included. The point still remains that the meanings of our terms, including “nerve fibre”, “ganglion cell” and “physical”, are some remote, microscopic, albeit physical, occurrence inside the brain of each individual thinker. There is no *a priori* guarantee that the same physical occurrence will be attached to the same ‘idea’ (defined as propositional content) even within a single individual, let alone between several individuals. Moreover, it would be impossible to even make such a comparison.

In fact, even on such a physicalist interpretation, either the referents or the senses (or both) of our meaningful expressions remain completely subjective. “In this way,” Frege comments, “realism itself cuts off the branch on which it was sitting” ([1897] 1979, 144). “Now everything is dissolved into ideas, and as a result the earlier explanations themselves become illusory. Anatomy and physiology turn into fictions” (*ibid.*), not necessarily because the objects of knowledge have been reduced to subjective ideas, but because the bodies of knowledge themselves have been reduced to a collection of essentially subjective ideas.

Moreover, physiological phenomena (i.e., physiological states and processes) are natural phenomena (i.e., natural states and processes), and as such they are governed by natural laws. So, they have natural, not epistemological or semantic properties. For instance, it does not make sense to call a physiological state or process true, even if that state is a psychological one. As Frege argues, “They are no more true than they are false; they are simply processes, as an eddy in the water is a process” ([1897] 1979, 144). (Hence Frege’s

resolution to study the contents and not the acts of judgement.) Such physiological states simply obtain or do not obtain, but even false thoughts can be thought, and so may obtain. Nor does it make sense to say that one physiological state can count towards the truth of another, let alone follow from, or entail another physiological state. Relations of consequence and evidence do not properly pertain to psychological phenomena conceived as physiological phenomena, any more than they pertain to psychological phenomena conceived of as exclusively mental. So, logical relations (of consequence) and epistemological relations (of evidence) do not properly apply to psychological phenomena, no matter how these phenomena are interpreted.

By providing a physical interpretation to the psychological phenomena that are meant to supply the senses of our meaningful expressions and utterances, the physiological psychologist sought to make ideas respectable by providing them with the publicity and objectivity of objects in the physical world. The problem is that the epistemically required properties of objectivity, mind independence, etc. are not recovered by giving ideas a physicalist interpretation. In the first place, problems for communication and understanding remain, even if we allow for a physicalist interpretation whereby ideas, being objects of natural science, are no longer essentially private. It may, nevertheless, be objected that ideas remain *effectively* private. The process of understanding and successful communication would still require that some sort of identity be established between the psychological states of individual interlocutors. But the fact is that as human beings we are not equipped to track such changes.

Instead, we would be left in the unenviable position of trying to make inferences about - that is, trying to make guesses about - the inner microscopic physiological processes of our interlocutors on the basis of their macroscopic observable behaviour.

Not only that, but such an account also provides a remarkably wanting account of the nature and rules of inference. For, according to the physiological psychologist, the relations among our ideas (including the logical relations!) are to be given a physiological explanation.

#### §2.3.7 - On Thoughts as the Products of Thinking

Having considered Frege's arguments against the view that Thoughts are ideas, there remains still another option for the psychologistic logician. On this view, Thoughts, whatever they are, are viewed as the products of the psychological processes of thinking. Such a view does not advance a thesis regarding the psychological *nature* of Thoughts, so much as a thesis regarding their psychological *origin*. Moreover, the nature of Thought (whatever it may be), is to be given in accounting for its origin. So, even if the meaningful contents of our expressions are not themselves mental, psychological objects, they can nevertheless be explained as arising from psychological processes.

Like the view considered above, this view was popular amongst physiological psychologists, who felt that, providing a naturalist account of the origins of Thought would help to de-mystify its nature, and rehabilitate it into an entity suitable for a properly empirical science. For example, Karl Vogt pronounced in his (1847) *Psychological Epistles* that "the brain secretes thought, just as the liver secretes bile" (as quoted in Passmore 1957, 34).



The most obvious problem with the view that Thought is a product of thinking is that it quickly leads to the view that Thoughts are like ideas. So, if thinking is understood as a subjective, psychological process that takes place in the individual then it would seem only natural that the products of these processes would retain such distinguishing properties. But, as we have seen, for Frege Thoughts cannot coherently be said to be ideas, and have properties like essential subjectivity and epistemic privacy. Rather, since all those who (correctly) understand some proposition must be related to the same Thought, Thoughts must be objective, and independent of individual thinkers. This *reductio* is the first argument that Frege launches against the view that Thoughts are the products of thinking ([1879-1891] 1979, 7).

There remains, though, the option of insisting that Thoughts are the products of thinking, but claiming that they do not resemble the processes of their production in the ways described above. This revised view asserts that while the content or nature of a Thought is not contingent on psychological facts, it still remains that the existence of a Thought is. Yet, as the product of a psychological process, Thoughts are subject to generation, and this Frege finds incoherent. "Now if thoughts only came into existence as a result of thinking, or if they were constituted by thinking, then the same thought could come into existence, cease to exist, and then come into existence again, which is absurd." ([1897] 1979, 137). In addition, the same Thought would have to exist simultaneously in two different locations (i.e., in the minds of two different people). Again, such an account is incapable of making Thoughts objective

and independent of the psychology of individual thinkers. Notice, that while it is absurd for Thoughts to have such a transient existence, there is no difficulty in producing an explanation whereby thoughts have such properties (although such an explanation might have to speak of thought types as opposed to thought tokens).

On Frege's view, the absurdity of this view follows from the nature of truth, and the relationship between Thought and truth. Were the same Thought to come to be and pass away, questions would remain regarding its truth, even after the Thought itself had vanished with the thinking. Thoughts would be invented or produced rather than discovered, and their truth would be (in part) a function of their invention. The truth of a Thought would be relative to its having been thought. But, Frege insists, "we must remind ourselves, it seems, that a proposition no more ceases to be true when I cease to think of it than the sun ceases to exist when I shut my eyes" (1884, vi; 1980, vi). Just as the thinking of a proposition does not make it true, neither does the truth of a proposition require that it be thought. Truth is completely independent of our beliefs, and, in general, of our mental and psychological states altogether. "In order to be true, thoughts ... not only do not need to be recognized by us as true: they do not have to have been thought by us at all. ... [T]houghts, if true, are not only true independently of our recognizing them to be so, but that they are independent of our thinking as such" ([1897] 1979, 133). Thus, as Frege concludes, "We cannot regard thinking as a process which generates thoughts" ([1897] 1979, 137).

No less than the previous views, then, this view is met with Frege's scorn. For Frege,

Thoughts, as the bearers of truth, are objective and independent of individual mental processes. As such, they cannot arise from, or be the products of psychological processes. “[Just] as I do not create a tree by looking at it or cause a pencil to come into existence by taking hold of it, neither do I generate a thought by thinking. And still less does the brain secrete thoughts, as the liver does gall” ([1897] 1979, 137).

### §2.3.8 - The Nature and Properties of Thought

Over the course of the preceding discussion, we have seen Frege reject several answers to the question “What is the subject-matter of logic?”. I now turn to Frege’s own answer to this question.

It has already been said, that Frege’s answer takes the form of an account of the nature of Thought. To this point, we have been treating Thoughts as the senses of sentences, and the proper bearers of truth and falsity. Moreover, I have asserted that the nature of Thoughts will be determined in all crucial respects by these two factors. We are now in a position to add a few more definite constraints on Frege’s account of the nature of Thought. Frege’s account will have to overcome each of the difficulties observed in the accounts considered and rejected to this point.

In the first place, Frege claims that Thoughts can be neither individual psychological entities, nor particular objects of experience - “thoughts are neither things in the external world nor ideas” ([1918] 1977, 17). This, in itself, is enough to raise yet another problem for Frege. After all, Frege has not denied that Thoughts are things, just that they are either

subjective mental things or particular objective things. Yet, there seems to be no ‘ontological place’ remaining for Thoughts. With no empty seat at the ontological table and so many epistemological mouths to feed, the place has been set, and Frege is bound to pull up an extra chair. As Frege writes, “A thought belongs neither to my inner world as an idea, nor yet to the external world, the world of things perceptible by the senses” ([1918] 1977, 26). Rather, Frege insists, “[a] third realm must be recognized. Anything belonging to this realm has it in common with ideas that it cannot be perceived by the senses, but it has it in common with things that it does not need an owner so as to belong to the contents of his consciousness” ([1918] 1977, 17). The ontological mortgage may be high on this estate, so let us consider what epistemological leverage is gained.

That Thoughts are imperceptible by the senses is, on Frege’s account, a consequence of the relationship between Thoughts and truth. For Frege, “anything the senses can perceive is excluded from the realm of things for which the question of truth arises. Truth is not a quality that answers to a particular kind of sense impressions. ... [B]eing true is not a sensible, perceptible, property” ([1918] 1977, 5).<sup>9</sup> Nor is this the only consequence of the relation between Thoughts and truth.

That Thoughts are the bearers of truth, for Frege, requires that they be permanent and

---

<sup>9</sup> This argument seems to miss the obvious objection that, just because truth is insensible, it does not follow that the truth-bearer itself need be insensible - just that one specific property of that truth-bearer be insensible.

unchanging. The nature of truth, is such that truth-bearers, whatever they are, are either true or false and not both. Also, once the truth-value of a truth-bearer has been established, it is fixed permanently and not subject to change. Because truth itself is permanent, and not subject to change, the realm of Thought is “timeless, eternal, [and] unvarying” ([1918] 1977, 27), as indeed are Thoughts themselves. Moreover, to whatever degree a Thought is not categorically either true or false, it is not a complete Thought (*ibid.*); a Thought cannot be vague or ambiguous in any respect that might affect its truth-value. Finally, it is because Thoughts are true or false independently of our beliefs about them that they do not require owners like ideas. Thoughts are independent of thinkers, because the truth or falsity of a thought is (normally) independent of thinkers. Lastly, “a fact is a thought that is true” ([1918] 1977, 25).

That Thoughts are the senses of assertoric sentences, on the other hand, requires that Thoughts be objective - indeed, Thoughts are universal. Since each person who grasps and affirms Pythagoras’ Theorem must be said to understand and make judgements about *the same* thing (whatever it is), Thoughts are the same for all thinkers. So, “Thought is in essentials the same everywhere: it is not the case that there are two different kinds of laws of thought depending on the objects thought about” (1884, iii; 1980, iii). To understand a Thought is to grasp it,<sup>10</sup> and, since Thoughts are independent of thinkers, “What is grasped

---

<sup>10</sup> For Frege, understanding is the process of grasping a Thought. This process remains unexplained in Frege’s philosophy (indeed, he calls it “perhaps the most

... is already there and all we do is take possession of it” ([1897] 1977, 137).

Finally, given that Thoughts are the senses of declarative sentences, they are not only the contents of understanding and judgement but of communication. Yet, in and of themselves, Thoughts are imperceptible. The communication of Thoughts occurs, according to Frege, when people “bring about changes in the common external world, and these are meant to be perceived by someone else, and so give him a chance to grasp a thought and take it to be true” ([1918] 1977, 29). Language, then, is required as the sensible vehicle by which Thoughts are communicated. “[A] sentence *expresses* a thought,” ([1918] 1977, 5) and thereby makes it perceptible. “The thought, in itself imperceptible by the senses, gets clothed in the perceptible garb of a sentence, and thereby we are enabled to grasp it” (*ibid.*). This, then, is roughly the picture that Frege gives us concerning the nature of Thoughts.

## §2.4 - The Foundation of Logic

### §2.4.1 - The Laws of Inference

To this point, Frege’s anti-psychologistic arguments have treated the claim that the subject matter of logic is psychological in nature. Frege interpreted this claim semantically as being a claim about the psychological nature of Thoughts - i.e., the claim that Thoughts are like ideas. Interpreted in this way, psychologism is a claim about the subject matter of logic which adversely affects any account of the objects or the contents of the expressions of

---

mysterious process of all” ([1897] 1979, 145), and Frege seems to think that this is a matter for psychology to explain.

logic.

Frege, though, has a second set of arguments against psychologism which does not focus directly on the nature of the subject matter of logic. Rather, these arguments focus on the nature and foundation of logical laws which hold for that subject matter. The central claim of this second set of arguments is that any psychologistic conception of logic cannot offer an acceptable account of the nature of the laws of logic and the rules of inference.

Psychologism, in Frege's view, begins with the claim that Thoughts are like ideas. This position has distinctive effects on any accompanying account of the laws of Thought. According to the psychologistic logician, "logical laws ... [are] descriptions of patterns of human thinking" (Baker & Hacker 1989, 83). Indeed, Frege goes so far as to define an idea as such. "An idea," he writes, "... is what is governed by the psychological laws of association" (1884 §27 fn; 1980, 37 fn). Importantly, this functional definition of ideas does not rely on any specific account of the nature of ideas beyond the basic claim that they are psychological entities. Instead, the defining feature of ideas is the laws which govern them, and these laws are psychological.

#### §2.4.2 - The Relation Between Logic and Truth

Yet, according to Frege, it is precisely this feature of ideas that is problematic for any psychologistic account of logic. The primary problem is that psychological laws are causal (or cognitive) laws, and these laws are not properly connected to the truth.

For Frege, inferences are judgements made on the basis of the knowledge of other

truths, and the rules of valid inference are truth-preserving. The laws of logic and inference, then, are inherently truth-preserving. But there is nothing about causal laws that is inherently truth-preserving. “The causes which merely give rise to acts of judgement do so in accordance with psychological laws; they are just as capable of leading to error as of leading to truth; they have no inherent relation to truth whatsoever; they know nothing of the opposition of true and false” ([1879-1891] 1979, 2). Rather, causal laws can account for both correct and incorrect judgements, valid and invalid inferences. In this vein, Frege remarks that, “error and superstition have causes just as much as correct cognition. Whether what you take for true is false or true, your so taking it comes about in accordance with psychological laws” ([1918] 1977, 1-2).

#### §2.4.3 - The Relation Between Justification and Cause

Because causal laws cannot discriminate judgements according to their truth and inferences according to their validity, they are incapable of capturing evidentiary relations. “Although each judgement we make is causally conditioned, it is nevertheless not the case that all these causes are grounds that afford justification.” ([1879-1891] 1979, 2). As such, according to Frege, the causal process by which one comes to accept a belief could never constitute reasons or evidence for the acceptability of that belief. Indeed, the only result - the only effect - of causal laws is the acquisition of a belief, not its truth or its justification. Hence, “a derivation from these [psychological] laws, an explanation of a mental process that ends in taking something to be true, can never take the place of proving [that] what is taken to be



true [is, in fact, true]” ([1918] 1977, 2). Any account of the truth of a Thought cannot significantly rely on any causal facts about the process by which that Thought is believed or known. Indeed, for Frege, “[i]n order to be true, thoughts ... not only do not need to be recognized by us as true: they do not have to be thought by us at all” ([1897] 1979, 133). Because the truth of a Thought is entirely independent of our thinking, so too is any proof, justification, evidence or reasons for the truth of that Thought. Moreover, insofar as the acceptability of a Thought is a function of its truth, so too must our notion of acceptability be entirely free and independent of psychological considerations.

#### §2.4.4 - Boundary Stones

The most profound problem, then, with a psychologistic account of logical laws is a fundamental misconception of the nature of truth which lurks in the very kernel of the theory. Frege describes this basic error as the identification of truth with taking-to-be-true.

Thus in the end truth is reduced to individuals’ taking something to be true.

All I have to say to this is: being true is different from being taken to be true, whether by one or many or everybody, and in no case is to be reduced to it.

There is no contradiction in something’s being true which everybody takes to be false. I understand by ‘laws of logic’ not psychological laws of takings-to-be-true, but laws of truth. (1893, xv-xvi; 1964, 13)

Again we find that the problem with psychologism is that it makes truth subjective and relative to the psychological states of individuals. But truth has no such dependence, and this is the

inspiration behind what is perhaps Frege's most memorable, if not celebrated, remark in his philosophical corpus. "If being true is thus independent of being acknowledged by somebody or other, then the laws of truth are not psychological laws: they are boundary stones set in an eternal foundation, which our thought can overflow, but never displace" (1893, xvi; 1964, 13).<sup>11</sup> Because of this, Frege draws a categorical distinction between logic and psychology. "In order to avoid any misunderstanding and prevent the blurring of the boundary between psychology and logic, I assign to logic the task of discovering the laws of truth, not the laws of taking to be true or thinking. The meaning of the word 'true' is spelled out in the laws of truth" ([1918] 1977, 2). Again, this declaration expresses the thesis that the proper subject matter for logic is truth, and not the entities of psychology. Logical relations capture truth-preserving relations, and psychological relations neither contribute to, nor are relevant to, truth-preserving relations.

#### §2.4.5 - The Laws of Logic Versus Laws of Thinking

Nor is this the extent of the problems for a psychologistic account of the laws of logic. Frege identifies several additional consequences of such a picture that demonstrate the

---

<sup>11</sup> The word translated as "thought" in this quotation is "Denken" not "Gedanken". In German, the passage reads: "*Wenn so das Wahrsein unabhängig davon ist, dass es von irgendeinem anerkannt wird, so sind auch die Gesetze des Wahrseins nicht psychologische Gesetze, sondern Grenzsteine in eine ewigen Grunde befestigt, von unserm Denken überfluthbar zwar, doch nicht verrückbar.*" ([1893] 1962, xvi).

Thus, for Frege, it is the psychological acts of thinking which may overflow the boundary stones of truth.

incoherence of identifying the laws of logic with laws of thinking. As Baker and Hacker observe, there are two different readings of the thesis that the laws of logic are “descriptions of patterns of human thinking” (1989, 83). On the first reading, the laws of logic are culturally relative, and on the second, they are laws of nature.<sup>12</sup> I will discuss each reading separately.

(i) - Cultural Relativism

One way of understanding the thesis that the laws of logic are laws of human thinking is to combine it with the view that human thinking is not universal, but that it is culturally relative. On this view, the laws of logic are completely contingent, “historical and anthropological generalizations” which may be “subject to evolutionary development” and vary with both history and culture (Baker & Hacker 1989, 83).

Frege argues against this view by asserting that it quickly leads to the consequence that the laws of logic are not universal, but that they too would vary with both history and culture. Not only are the laws of logic made dependent on contingent facts about human psychology, but these facts are entirely capable of changing. Against this, Frege launches a *reductio* argument, which invokes the premise that the laws of logic are not subject to change in this way. And such a premise is not to be given up, since truth itself is not subject to

---

<sup>12</sup> Interestingly, Baker and Hacker seem to neglect the option that the laws of logic are universals. If the laws of logic consisted of a description of the universal patterns of human thinking, they need not vary over cultures, yet they need not have the status of laws of nature. They might just be universally true by circumstance. Presumably this weaker option would be just as objectionable as the claim that the laws of logic are natural laws.

change as a result of cultural or historical circumstance. To give up this premise, according to Frege, is to concede that

in proving Pythagoras' theorem we should be reduced to allowing for the phosphorus content of the human brain; and astronomers would hesitate to draw conclusions about the distant past, for fear of being charged with anachronism - with reckoning twice two as four regardless of the fact that our idea of number is a product of evolution and has a history behind it. It might be doubted whether by that time it had progressed so far. How could they profess to know that the proposition  $2 \times 2 = 4$  had already held good in that remote epoch? Might not the creatures then extant have held the proposition  $2 \times 2 = 5$  [to be true], from which the proposition  $2 \times 2 = 4$  only evolved later through a process of natural selection in the struggle for existence? Why, it might even be that  $2 \times 2 = 4$  is itself destined in the same way to develop into  $2 \times 2 = 3$ ! *Est modus in rebus, sunt certi denique fines!*<sup>13</sup> (1884, vi-vii; 1980 vi-vii)

(ii) - Laws of Nature:

Another way of understanding the thesis that the laws of logic are laws of human

---

<sup>13</sup> This appears to be a partial quotation from Horace, *Satires* (I, 1, 106) which Beaney translates as "There is moderation in all things; there are, in short, fixed limits" (Beaney 1997, 88). The full sentence in Horace reads: *Est modus in rebus, sunt certi denique fines; Quos ultra citraque nequit consistere rectum.*

thinking is to combine it with the view that such laws are universal to all human beings. On this reading, logical laws are “the natural laws of mental phenomena” and, being laws of nature, are “independent of time and culture ... universally at all times and places” (Baker & Hacker 1989, 83). It might at first appear that this reading fares better than the first. The universality and cultural and historical invariance of the laws of nature seem to insulate this second view from the defects of the first.

Yet, according to Frege, the view that the laws of logic are the natural laws of thinking cannot supply them with an adequate foundation. In the first place, as we have seen, natural, causal laws account equally for irrationality and error as they do for rationality and correct judgement. So, only a subset of those natural laws, those that produce correct or rational Thought could constitute logical laws. Yet, these additional criteria are not germane to any naturalistically defined category of thoughts. This view is also subject to the further criticism that it reduces the truth to what is taken to be true by a naturalistically defined species of thinkers.

Finally, Frege argues that such a view still allows for the possibility that there might yet be another species of rational creature in the universe, whose thinking is governed by an entirely different set of natural laws completely inconsistent with our own. Thus Frege writes

But what if beings were ... found whose laws of thought flatly contradicted ours and therefore frequently led to contrary results even in practice? The psychological logician could only acknowledge the fact and say simply: those

laws hold for them, these laws hold for us. I should say: we have here a hitherto unknown type of madness. (1893, xvi; 1962, 14)

Because it allows for this possibility, the thesis that laws of logic are laws of nature still permits for the possibility of different and mutually inconsistent logics, amongst which we cannot adjudicate. As such, it too allows for logical relativism, and is, in this respect, no better off than the thesis of cultural relativism considered above.

#### §2.4.6 - The Nature and Foundation of Rules of Inference

The last problem Frege raises affects both of these interpretations, and so is generally addressed to the thesis that logical laws are laws of thinking. On Frege's account, the laws of logic have a dual character ([1918] 1977, 1), being both descriptive and prescriptive. In the descriptive sense, the laws of logic are descriptive of the relations that obtain between and among the entities that constitute the subject matter of logic. This descriptive aspect is primary. The prescriptive authority of logical laws is a consequence of their descriptive function - that is, of their subject matter.

Frege objects to any view which asserts that the subject matter of the laws of logic is thinking, claiming that such a view cannot properly account for the prescriptive character of logical laws and rules of inference. Currie summarizes this argument as follows:

For if the laws of logic were taken to be descriptive laws of thought, that is, laws which govern how thinking actually occurs - we would have no right to use logic as a standard for judging between good and bad arguments. When

we come to an example of illogical thinking, we do not want to pronounce it as contrary to an empirical regularity, but rather as an example of bad judgement or irrationality. (Currie 1982, 143)

On a psychologistic account, the prescriptive aspects of logical laws are founded on descriptive generalizations about human thinking. As such, the normative function of logic is undermined, because thinking in violation of logical laws merely makes one an abnormal thinker - and this is not always a bad thing. Nor is it any grounds for correction. Indeed, when a natural law is observed to be violated we change the law so as to account for the observed anomaly. Yet, when a law of logic is violated we do not change the law, rather we rightly declare that a mistake has occurred, and set about to correct the mistaken instance. Normal patterns of thinking are no grounds for the prescriptively normative function of logical laws and rules of inference.

Instead, the proper subject matter for logic is truth, and only this constitutes a foundation capable of supporting the genuinely normative character of logical laws. As Frege writes, "From the laws of truth, there follow prescriptions about asserting, thinking, judging, [and] inferring" ([1918] 1977, 1). So, it is not merely a misconception regarding the nature of truth that is espoused by the psychologistic account of the laws of logic and the rules of inference. Additionally, psychologism also contains a consequent misconception of the nature of logical laws and rules of inference.

## §2.4.7 - The Nature of Proof and the Representative Function of Logical Laws

Accordingly, for Frege, the laws of logic do not represent either patterns of human thinking, or laws of thinking in any sense; nor ought they to. Indeed, they are categorically distinct from, and entirely independent of, psychology. Because of this, Frege writes, “the logician does not have to ask what course thinking naturally takes in the human mind. What is natural to one man may well be unnatural to another. ... The logician need fear nothing less than to be reproached with the fact that his statements do not accord with how we think naturally” ([1897] 1979, 146).

In a letter to Husserl dated 30 October to 1 November 1906, Frege expands on this point, describing how many of their contemporaries fail to grasp the subject matter of the logical apparatus provided in his concept script [*Begriffsschrift*]. As a result of this, Frege claims that many logicians had failed to appreciate its significance.

It seems to me that logicians still cling too much to language and grammar and are too much entangled in psychology. This is apparently what prevents them from studying my conceptual notation, which could have a liberating effect on them. They find that my conceptual notation does not correctly represent mental processes; and they are right for this is not its purpose at all. If it occasions entirely new mental processes, this does not frustrate its purpose. Apparently it is still thought to be the task of logic to study certain mental processes. Logic really has no more to do with them than with the movements



of celestial bodies. It is in no sense part of psychology. (1980, 67)

This is perhaps a crucial passage in Frege's thought. For many epistemological consequences rest on the strength one attributes to Frege's assertion that his conceptual notation does not represent mental processes and nor does it seek to.

On a weak reading of this claim, Frege is asserting that the logical calculus of the *Begriffsschrift* provides us with a correct way of thinking, and that, even if this correct way of thinking is entirely new to us, that does not frustrate his purpose. Here, the calculus of the *Begriffsschrift* does indeed represent some kind of mental processes - the correct ones. Alternately, a stronger way to understand this claim is to read Frege as asserting that, in designing the logical calculus of the *Begriffsschrift*, he does not seek to make any modification to our thinking processes whatsoever, because any such processes are logically and epistemologically irrelevant. On this stronger reading, the logical calculus of the *Begriffsschrift* does not represent mental processes whatsoever.

According to Philip Kitcher (1979), the operative word in the passage of Frege's letter to Husserl cited above is "new" - the subject matter of logic remains mental processes, but logic describes *ideal* mental processes, the ones we ought to have. In attributing the weaker reading of this passage to Frege, Kitcher proceeds to attribute to him a psychologistic account of the nature of proof and justification.

Kitcher justifies his reading of Frege by offering a more general characterization both of Frege's overall argument against psychologism and of the relationship of logic to

psychology. According to Kitcher,

What Frege objects to again and again in his published and unpublished writings, is the confusion of the *descriptive* science of our mental processes of inference with the *normative* science of those processes. The former, psychology, studies the way in which trains of reasoning actually occur; the latter, logic, tells us how they *ought* to occur. (Kitcher 1979, 246)

As has already been observed, the subject matter of logic on such a picture remains mental processes, and thus Kitcher argues that Frege is properly read as endorsing what Kitcher describes as “the traditional conception of proof” (Kitcher 1979, 247). Kitcher describes the nature of a proof on the traditional conception as follows:

Proofs are distinguished by the kind of knowledge they produce. The connection between proofs (as sequences of symbols) and knowledge is made by considering processes of proving, that is, psychological activity which occurs in the minds of mathematicians [and other thinkers]. When we prove a proposition we engage in a special type of activity which generates a distinctive type of knowledge. The written proof can be seen as a public record of the [psychological] activity. Hence we can characterize proofs in terms of their correspondence with special kinds of psychological processes and we can distinguish the processes in question in terms of the special type of knowledge they produce. (Kitcher 1979, 243)

So, according to the traditional conception, proofs are a sequence of psychological events or states which may be expressed symbolically but need not be. When they occur properly, these psychological processes result in knowledge, and are both governed by and describable in terms of logical laws. Furthermore, because he takes Frege to hold that the subject matter of logic is inference, Kitcher finds that Frege is likewise committed to the traditional conception of proof. Kitcher writes, "Frege's connection of knowledge with the mental process of inference is exactly that envisaged by the traditional conception of proof: the nature of the process which produces a belief is crucial to the epistemic status of the belief; hence it is important that the inferences we make conform to the laws of logic" (Kitcher 1979, 246). Yet, in being committed to the two claims that the epistemic (or logical) status of a proposition is dependent on the way that it is proved, and that the nature of a proof is to describe a(n ideal) psychological process, Kitcher claims that Frege's account of proof "rests on ... a *psychologistic* account of knowledge" (Kitcher 1979, 243).

It must be recognized that the claim that the logical or epistemic status of a proposition is inherently related to the psychological process by which the concomitant belief state is produced is indeed quintessentially psychologistic. Kornblith, for instance, describes a psychologistic account of knowledge as follows:

[P]sychologistic theories [of knowledge] are those which hold that a belief is justified just in case its presence is due to the workings of the appropriate sort of belief forming process. Psychologistic theories are thus committed to a

certain interest in the process by which beliefs are formed. (Kornblith 1982, 242)

Similarly, Kitcher offers the following description of the psychologistic account.

On the psychologistic account [of knowledge], we suppose that the question of whether a person's true belief counts as knowledge depends on whether or not the presence of that belief [in the mind] can be explained in an appropriate fashion. The difference between an item of knowledge and mere true belief turns on the factors which produced the belief (thus the issue revolves around the way in which a particular mental state was generated). (Kitcher 1979, 243)

By implication, then, Kitcher attributes the above account of knowledge to Frege as well.

According to Kitcher, the above psychologistic account of knowledge is not only consistent with Frege's account of the nature of proof (1979, 246-47) and not within the scope of Frege's criticisms of psychologism (1979, 247-48), but it is indeed presupposed by Frege's own reform of logic (1979, 245). As such, Kitcher claims that Frege is committed to a psychologistic account of logic, and even that he explicitly endorses it on occasion.

The question then is whether or not Frege really does accept the traditional account of proof, and whether he is thus committed to the psychologism that follows therefrom. We have already seen that Frege rejects any account of logic on which logic is descriptive of actual mental processes. According to Frege, the psychological laws (be they causal, or associationistic, or what have you) governing the succession of mental states are not amenable

to a logical interpretation. As we have seen, Frege provided two central reasons for his rejection of such an account.

The first reason that Frege gives is that “Error and superstition have causes just as much as correct cognition. Whether what you take for true is false or true, your so taking it comes about in accordance with psychological laws” ([1918] 1977, 1-2). That is, such psychological laws could not distinguish cognitive processes that result in correct inference and judgement from those that do not. So far, such a rejection is consistent with Kitcher’s reading of Frege; after all, according to Kitcher logic does not describe *all* mental processes, only the ‘good’ ones that result in true judgement and correct inference.

Frege’s second reason for rejecting such a picture, though, casts some doubt on the accuracy of Kitcher’s reading of him. According to Frege, even by concentrating solely on those mental processes that result in correct judgement, we fail to mark the distinction between the laws of truth and the laws of taking-to-be-true. Thus, Frege writes (in the passage immediately following the one previously cited), “A derivation from these laws [of logic so construed], an explanation of a mental process that ends in taking something to be true, can never take the place of proving what is taken to be true” (*ibid.*). Here, it would seem that Frege claims that even those mental processes by which we correctly infer the truth of some proposition are not the proper subject matter of logic, and as such are not properly construed as explaining the nature of proof.

Rather, a proof is related to the truth of a proposition, not our appreciation of it; the

proof of a proposition *establishes* its truth, not the apprehension of that truth. And, as we have seen, Frege argues that the laws of truth are completely independent of the laws of thinking, because “In order to be true, thoughts ... not only do not need to be recognized by us as true: they do not have to have been thought by us at all” ([1897] 1979, 133). Thus, the nature of a proof is not a description of any mental process, including whatever process accompanies or results in the realization of the truth. Rather, the nature of a proof is to establish the truth of a proposition, and this is (normally) independent of any psychological considerations, including those championed by Kitcher.

Indeed, Frege could not be more explicit in his denial of the interpretation given to him by Kitcher when he makes the following warning to his reader. “But above all we should be wary of the view that it is the business of logic to investigate how we actually think and judge when we are in agreement with the laws of truth” ([1897] 1979, 146). Accordingly, Frege cannot be understood as advocating the traditional conception of proof attributed to him by Kitcher. Instead, the strongest claim that can be made of Frege in this respect is that the laws of logic have consequences, and some of these are prescriptive for epistemic activities. Thus, Frege writes, “From the laws of truth there follow prescriptions about asserting, thinking, judging [and] inferring” ([1918] 1977, 1). The nature of a proof, though, is explained in terms of the laws of truth, not the laws of taking-to-be-true, and as such proofs are logical not psychological in nature. Indeed, the laws of logic are described completely independently of psychological considerations, and so proofs do not function to represent

psychological processes whatsoever.

#### §2.4.8 - The Actual Role of Psychology

We have just seen that, for Frege, ideas cannot perform any of the logical or epistemological duties required of them by the psychological logician. Ideas cannot serve either as the objects or as the contents of knowledge without bringing about complete epistemological subjectivism, and thus bankrupting our notion of truth (which, for Frege, is essentially objective). Similarly, ideas cannot serve as the senses of our meaningful expressions without making communication and understanding *a priori* impossible, and hence bringing about the ruin of our notion of objective knowledge of the truth. Finally, the relations among ideas cannot function as the basis for our concepts of relations of evidence or of logical consequence, because the causal relations which obtain between ideas are not properly connected to the truth.

That said, Frege does not deny that having ideas, the psychological or cognitive processes of ideation are *somehow* relevant to the grasping of Thought. That is, Frege does not deny the unqualified and hence innocuous version of Generic Psychologism, which claims that psychology is somehow relevant to logic. Indeed, Frege seems to claim that these psychological processes are necessary for knowledge and understanding. Frege writes, “I do not mean in the least to deny that without sense impressions we should be as stupid as stones, and should know nothing either of numbers or of anything else; but this psychological proposition is not of the slightest concern to us here.” (1884 §105 fn; 1980, 115 fn). What

Frege denies, then, is the claim that these psychological facts are relevant in either a logical or an epistemological way. (Rather, they may perhaps be relevant in, e.g., a causal way.) In this way, Frege denies the controversial psychologistic thesis that logic is dependent on psychology.

For Frege, Thoughts have psychological features, characteristics, and properties.<sup>14</sup> But, none of these properties are relevant to the manner in which a Thought is either the bearer of truth or falsity, or constitutes the sense of our meaningful expressions. As such, whatever psychological properties Thoughts have, they are not among the essential properties of Thoughts, and can contribute nothing whatsoever to any account of the logical or epistemological properties of, or relations among, Thoughts.

Three examples merit specific mention here. First, Frege has no qualms admitting that “the [expressive] content of a sentence often goes beyond the thought expressed by it” ([1918] 1977, 10). Specifically, differences between natural languages may contribute to the expressive content of a statement, in a way that is not semantically relevant, so that “the same thought can be worded in different ways” ([1897] 1979, 142). These ‘extra features’ of statements, Frege sometimes calls the “clothing of the thought”, or the “verbal husk” of the Thought (*ibid.*). While such features may contribute to the force or tone of an expression,

---

<sup>14</sup> For instance, Frege held both that Thoughts are grasped and that the grasping of a Thought is a psychological process. Thus, that a Thought is grasped by a thinker is a psychological property of that Thought. Indeed, Frege goes so far as to identify all such ‘psychological’ properties of Thoughts as inessential to their nature ([1918] 1977, 28).



and may change the rhetorical effect of an utterance, they do not contribute to the sense of the expression, and have no effect upon, or relevance to, the truth-value of the expression. That is to say, such 'extra features' have no effect on determining the reference of the expression, and as such are not part of its sense. On the contrary, they are semantically inert.

A second example for Frege is the example of the psychological acts of thinking - judgement and inference.<sup>15</sup> Having distinguished the act from the content of a judgement, Frege claims that it is only the content of a judgement (i.e., a Thought) that is the bearer of truth or falsity, and that the truth or falsity of a judgement is (in normal cases) independent of any act of judgement. Similarly with inference: the validity<sup>16</sup> of an inference has to do with, and arises out of, relations between the contents of the judgements that compose the inference, and not as a result of the psychological act of drawing the inference itself. Thus, while Frege concedes that, "It may of course, serve some purpose to investigate the ideas and changes of ideas which occur during the course of mathematical thinking" (1884, vi; 1980,

---

<sup>15</sup> Indeed, Frege seems to suggest that the mistake of thinking that particularly linguistic features of our expressive contents are logically significant arises from the mistake of taking the subject matter of logic to be thinking. He writes: "Of course if we see the task of logic to be that of describing how men actually think, then we shall naturally have to accord great importance to language. But then the name of logic is being used for what is really only a branch of psychology. This is as if one imagined that one was doing astronomy when one was developing a psycho-physical theory of how one sees through a telescope. In the former case, the things that are the proper concern of logic do not come into view any more than in the latter case do the problems of astronomy" ([1897] 1979, 143).

<sup>16</sup> Here I use the term "validity" to mean the truth-preserving properties of the inference.

vi), Frege denies that the results of any such investigation could be relevant to the business of the logician. “[P]sychology should not imagine that it can contribute anything whatever to the foundation of arithmetic. To the mathematician as such these mental pictures, with their origins and their transformations, are immaterial” (*ibid.*)

The third, and perhaps more problematic example for Frege is understanding - or the grasping of a Thought. Frege concedes that the grasping of a Thought is a mental process in just the same respect as he considers judgement and inference to be mental processes ([1897] 1979, 145). “But,” Frege replies, “just because it is mental in character we do not need to concern ourselves with it in logic. It is enough for us that we can grasp thoughts and recognize them to be true; how this takes place is a question in its own right” (*ibid.*). Not only is this not a question for the logician, its answer of no (logical) interest either. Instead, it is inessential to the nature and properties of Thought, and, as such, is irrelevant to the philosophical projects of logic and epistemology. Frege even goes so far as to identify those accidental properties of Thoughts as those associated with the Thought’s being grasped. “A property of a thought will be called inessential if it consists in, or follows from, the fact that this thought is grasped by a thinker” ([1918] 1977, 28).

It is because none of the accidental, psychological properties and relations of Thoughts are logically or epistemologically relevant that Frege invokes the first of his three “fundamental principles” at the end of the Introduction to his *Foundations of Arithmetic*: “always to separate the psychological from the logical, the subjective from the objective”

(1884, x; 1980, x). So, in invoking this maxim, Frege does not deny that psychological processes are involved in, and perhaps even (causally) necessary for our logical operations with Thoughts. “Logic has the task of isolating what is logical, not, to be sure, so that we should think without having images, which is no doubt impossible, but so that we should consciously distinguish the logical from what is attached to it in the way of ideas and feelings” ([1897] 1979, 142).

Frege, then, does not deny the innocuous but apparently psychologistic thesis that psychology is somehow relevant to logic; he does not deny that Thoughts have any psychological properties. Rather, Frege denies the controversial thesis that psychology is inherently relevant to the business of logic in such a way as to make logic dependent on it. He denies the thesis that Thoughts have any psychological features or relations that contribute to an account of their nature as truth-bearers, or as the senses of assertoric sentences.

## §2.5 - The Problems with Frege’s Picture of Logic

Having considered Frege’s arguments against psychologism, and his constructive alternative to it, it remains to consider the objections that might be lodged against this account. Nor are these objections scarce or insignificant.

### §2.5.1 - Judgement Stroke

Some preliminary objections may be noted. The first is that Frege’s repudiation of psychologism does not seem to be complete. Indeed, many objectors, both historical and contemporary, have observed that Frege’s inclusion of the assertion stroke (or judgement

stroke) in his *Begriffsschrift* (§2) is a lapse into psychologism. (See, for example, Russell to Frege, 12.12.1904 (Frege 1980, 169), Jourdain to Frege, 15.1.1914, (Frege 1980, 78), and Picardi 1996, 310.) After all, since a judgement is a mental act according to Frege, whether or not a Thought is judged to be true or false (whether that Thought is asserted) ought to have no bearing on the logical relations of the Thought. Since it was only these logical relations that Frege sought to formalize in the *Begriffsschrift*, the judgement stroke seems superfluous, and its inclusion in the calculus mistaken.

#### §2.5.2 - Geometry

There is, though, another more pervasive problem in Frege's logicist project. Frege's logicist project sought to establish a strictly logical foundation for arithmetic. But, as several scholars have pointed out (e.g., Philip Kitcher, 1979; Picardi 1996, 315; Cohen 1998, 63), Frege never attempted to give a logicist account of geometry. As such, the complete reduction of all mathematics to logic was not possible, in Frege's mind.

For purposes of conceptual thought we can always assume the contrary of some one or other of the geometrical axioms, without involving ourselves in any self-contradictions when we proceed to our deductions, despite the conflict between our assumptions and our intuition. The fact that this is possible shows that the axioms of geometry are independent of one another and of the primitive laws of logic, and consequently are synthetic (1884 §14; 1980, 20-21).

The axioms of geometry are synthetic because their negation does not produce a contradiction. As such, it is not possible to reduce them to the purely analytic propositions of logic. The foundations of geometry are not logical but intuitive. Because of this, geometry is, in part, built upon the structure of the human understanding, and its foundations are not independent of psychological facts. For this reason, Frege claims that geometrical truths are not universal. “For other rational beings it [geometry] might take some form quite different from that in which we know it. ... Yet there is something objective in it [geometry] all the same; everyone recognizes the same geometrical axioms, even if only by his behaviour, and must do this if he is to find his way about in the world” (1884 §26; 1980, 35). The ultimate justification for geometrical truths rests on the agreement of human beings in their geometrical judgements, and this is based upon the correspondence of our geometrical axioms with the way the world happens to be. These, in turn, are in part a result of psychological facts describing the structure of the human understanding, combined with the practical realities of our having to engage with the world. In this respect, geometry is not universal, but remains, in some sense, objective. The objectivity of geometry lies in the fact that it is the same for all rational agents whose understanding is like ours. But, unlike mathematics and logic, geometry is not objective in the sense that it is a freestanding structure independent of human minds.

In light of this, it has been argued by some that it was only Frege’s logic and not his epistemology that can be properly read as anti-psychologistic (Cohen 1996, 65). More persuasively, Philip Kitcher argues that Frege’s epistemology “presupposes ... a psychologistic

account of knowledge” (1979, 245). According to Kitcher, Frege remains fundamentally Kantian, and retains Kant’s thesis that there are three sources of knowledge. “Sensory perception yields a posteriori knowledge; conceptual analysis and pure intuition provide a priori knowledge, the former giving knowledge of analytic truths, the latter giving knowledge of synthetic a priori truths” (1979, 252). Again, this would mean that Frege argued only against logical and not epistemological psychologism.

Others have interpreted Frege to be refuting only a particular version of psychologism: naturalism. In this vein, Currie writes “Frege rejected the whole programme of naturalism, with its empirical account of logic and mathematics, its genetic approach to concepts, and its construal of thinking as the having of ideas or mental pictures” (1989, 414). According to this second reading, psychology is construed exclusively as an empirical or experimental (and hence a posteriori) science. Hence, a Kantian, intuitionistic account of synthetic a priori truths is not, in and of itself, psychologistic on Frege’s conception. On this interpretation, Frege rejected both logical and epistemological psychologism for the same reasons - not because of their psychological features, but because of their naturalistic ones.

Regardless of the interpretation one gives, Frege’s account of geometry seems to indicate an anomaly in his theory, and represents a feature of his thought that stands in need of explanation. Particularly, it challenges us to determine what, exactly, were those features of psychologism that Frege found objectionable, and to isolate the reasons and motivations behind Frege’s objections.

## §2.5.3 - The Most Mysterious Process of All

We have just observed that Frege does not deny that we are acquainted with Thoughts by a psychological process. In this respect, psychology is relevant, and indeed necessary, to any (causal) explanation of our relations with objects of the ‘third realm.’ While it might appear that the psychologistic claim that logic depends on psychology follows from concerns such as these, Frege dismisses this consequence by claiming that nothing pertaining to the grasping of a Thought constitutes anything essential about that Thought. That is, we can explain all of the logical, semantic and epistemological properties of Thoughts without any reference to the processes by which they come to be grasped by human minds. Nevertheless, this process of grasping Thoughts is itself in dire need of some explanation.

It would seem that some explanation of how we come into relations with Thoughts is required in order to explain how we know, understand or ‘grasp’ them. Yet, to name this relation is not to explain it. Given the nature of Thoughts (see my §2.3.8) we cannot know them by sensation, or by introspection, or by any of the other ways we normally know things. Not only are Thoughts very different kinds of entities than we are, they are very different kinds of entities from most of the things we may normally be said to know. It would seem that we have very few properties in common with Thoughts, which might help to explain how it is that we come to grasp them. How can an eternal, unchanging, causally inert object interact with a human mind which is situated in space and time?

Frege seems to try to explain this relation by claiming that thoughts have psychological

properties which allow them to be grasped by us ([1918] 1977, 28). Yet, the thesis that Thoughts have any psychological properties whatsoever (whether inessential or otherwise) is problematic, and seems inconsistent with Frege's view that Thoughts are objective entities inhabiting a realm which is "timeless, eternal, [and] unvarying" ([1918] 1977, 27). On the other hand, if we suppose that Thoughts have absolutely no properties in common with us - psychological or otherwise, including the property that they are grasped by us - how is our acquaintance with them to be explained? In this respect, Frege's postulation of Thoughts as a special class of semantic entities faces many of the same problems faced by other versions of dualism and Platonism.

While Frege is aware of this concern, his response to it is theoretically disappointing, and not likely to satisfy these standard objections to Platonism. In brief, Frege takes our understanding of language as evidence that we must grasp Thoughts somehow, and (since the grasping is a psychological process) Frege delegates the problem of explaining how we come to do this to the psychologists.

But still the grasping of [a Thought] ... is a mental process! Yes, indeed, but it is a process which takes place on the very confines of the mental, and which for that reason cannot be completely understood from a purely psychological standpoint. For in grasping [a Thought] ... something comes into view whose nature is no longer mental in the proper sense, namely the thought; and this process is perhaps the most mysterious of all. ([1897] 1979, 145)



Problematically, this is the limit of Frege's own account of how we come to grasp Thoughts. He does not feel under any obligation to supply such an explanation, because this is a job for psychologists and is of no concern for philosophy. "It is enough for us that we can grasp thoughts and recognize them to be true; how this takes place is a question in its own right" ([1897] 1979, 145). Indeed, philosophers need not be concerned even by the fact that no adequate explanation has ever been provided, and nor does any seem forthcoming in the foreseeable future. We are able to know *a priori* that this natural psychological process *must* occur, and we may be satisfied in that knowledge. Not only does this problem seem to embody the most insoluble features of cartesian dualism, but Frege's answer seems to retain the worst features of cartesian rationalism. Nor is this the only problem generated by Frege's postulation of an abstract, 'third realm' of Thoughts.

#### §2.5.4 - The Connection Between an Expression and its Sense

Frege's postulation of a realm of abstract entities which supply the senses of our linguistic expressions successfully insulated the meaningful contents of those expressions (at least insofar as they are concerned with the truth) from the contingencies of psychology and the empirical world. Not only are Thoughts themselves anti-psychological in nature, but so is the connection between a Thought and its object. While Frege does not explain how the connection between a Thought and its object - between the sense and the reference of an expression - occurs, one of the benefits afforded by the 'third realm' is that this connection seems to be an intrinsic part of the Thought itself. Since it is an essential feature of Thoughts

that they are the bearers of truth, and a truth-value is the object (i.e., reference) of a Thought, the connection between the sense and the reference of a statement is part of the essence of the Thought itself.<sup>17</sup> So, while the ontological rent in the third realm may be high, an address

---

<sup>17</sup> Frege's position on the connection between the sense and the reference of an expression is not entirely transparent. In "Sense and Reference" Frege claims that "The regular connection between a sign, its sense and its reference [*Bedeutung*] is of such a kind that to the sign there corresponds a definite sense and to that in turn a definite reference [*Bedeutung*]..." ([1892] 1952, 58), but Frege never really elaborates on how this correspondence relation is established. Typically, Frege is interpreted to claim that the sense of an expression determines its reference (e.g., Katz 1998, xxvi).

But, the position that the sense of an expression alone determines its referent seems to create a problem for Frege's account of meaning. Since the referent of a Thought is a truth-value, it follows that the truth-value of a Thought is determined by the Thought alone. Yet, the truth-value of many Thoughts seems also to depend on the obtaining of certain facts - certain contingent features of the world which we determine empirically.

Frege seems to deprive himself of recourse to the common-sense answer that the relationship between a Thought and a truth-value is mitigated by a realm of facts or states of affairs which are themselves the referents of our declarative expressions. Frege does not claim that the referent of a Thought is a state of affairs; rather he says that it is a truth-value. So it would seem that the only option open to him is to claim that the Thought alone does not determine its referent. But, to the best of my knowledge, Frege nowhere discusses any *other* factors which contribute to the determination of the referent of a sense. So we are left in an interpretive vacuum. A sensible interpretation is that the obtaining of a certain state of affairs contributes to the determining of the referent of a Thought. But, in the cases of smaller units of language (e.g., concepts and objects), no extra factor beyond the sense of an expression seems required to determine its referent. Indeed, Frege goes so far as to claim that "a fact is a thought that is true" ([1918] 1977, 25), which seems to imply that there is no 'extra metaphysical layer' separating the sense and reference of a true declarative sentence, and contributing to the determination of a particular reference by some sense.

The point that I wish to make at this juncture is this. If the connection between the sense and the referent of an expression cannot be explained without recourse to psychology (e.g., the psychological features of a sense), then any anti-psychologistic benefits afforded by postulating an abstract realm of senses is completely nullified. I

therein seems to present many semantic benefits. Specifically, the semantics of our language may be given independently of psychology - or so it would seem.

But, to fully rid our semantics of psychological considerations, it is not just the connection between sense and reference that must be explained independently of psychology. In addition, the connection between a linguistic expression and its corresponding sense must be explained in a psychologically independent way. So, according to Frege, what is the nature of the connection between declarative sentences and Thoughts? According to Frege, a sentence *expresses* a thought. But on Frege's picture, the expressive relation is a psychological relation. Language itself is an objective, public and non-mental collection of signs (phonemes or graphemes). Similarly Thoughts are non-mental and objective. But, in being other-worldly, Thoughts are not public. As such, the relations human agents have with Thoughts are not public either. So, while our use of the linguistic symbolism is a public activity, the connections that language users draw between linguistic expressions and Thoughts are subjective, individual and private; indeed they are completely psychological.<sup>18</sup>

Just as the grasping of a Thought is a psychological phenomenon, so is the use of language to express some particular Thought.

---

further take it that Frege, in postulating the realm of senses, took it for granted that the relation between a sense and its referent could be so explained without involving any psychological considerations.

<sup>18</sup> I do not hold that Frege explicitly endorses such a view. Rather, I argue below that such a view is the only one consistent with the remainder of Frege's overall position.

For Frege, the connection between a sign and its sense does not - indeed cannot - occur at a general level; rather the bond between a sign and its sense is established in the minds of individual thinkers. This is the *only* place that such a bond could be established, since Thoughts do not come with linguistic labels attached to them. Nor do words come with any directions for locating their proper sense in the third realm. There is no essential connection between a word and its sense. As such, despite the fact that Thoughts are not psychological entities like ideas, Frege is no better off than Locke is when it comes to explaining the *connection* between words and their meanings.

There are really two problems with Locke, and Frege only recognizes one of them. The first is that meanings *themselves* can't be psychological in nature - Thoughts can't be ideas. But the second problem in Locke is that the *connection* between an expression and its meaning cannot be established psychologically. Frege does not even see this problem, and as such he makes no effort to avoid it. After all, even if the meaning is public, if the connection is epistemically private, then interlocutors are still left to guess at something they will never be able to determine empirically.

So, while the semantics of Thoughts may be given independently of psychology on Frege's account, psychology still plays an essential and ineliminable role in a Fregean explanation of the semantics of linguistic expressions. It would seem, then, that despite the inexplicable benefits afforded by a postal code in the 'third realm,' Frege's metaphysical solution cannot bar the door to psychologism. Nor is this the last problem generated by

Frege's postulation of the 'third realm.'

### §2.5.5 - Platonism and The Third Realm

We have seen that Frege's solution to his semantic problem of providing an adequately objective account of sense and truth, was metaphysical. Frege postulated a 'new' species of semantic objects that embodied the semantic and epistemological features he required. As Baker and Hacker observe, though, such a solution is not now considered the viable option it once was.

For the 'postulation of abstract entities' is now viewed as a *prima facie* intellectual crime, and hence an advocate of any form of Platonism must discharge the task of proving that no other more economical philosophical explanation is available. Times have changed. So too have the implications of the word 'Platonism'. (1989, 76-77)

Baker and Hacker observe two basic philosophical problems with Frege's proposed, Platonistic resolution to the problematic epistemology of psychologism.

First, Baker and Hacker observe that Frege's reification of the subject matter of logic does indeed succeed in insulating the propositions of logic from "the possibility of empirical disconfirmation" (1989, 87). "But," they persist, "if the basic truths of logic are grounded in apprehension of relations among abstract entities, the possibility of their being refuted seems to re-emerge. How can one dismiss the possibility that the eyes of the mind might be subject to hallucination or that [a] fresh 'logical experience' might compel a revision to the

fundamental truths of logic” (1989, 88)? The problem seems to be that, for all its attempts to avoid such an option, Frege’s account cannot overcome an *experiential* account of our knowledge of the truths of logic. While the foundation may not be an empirical (i.e., sensory) experience, it is an experience nevertheless - albeit a rational or intuitive one. As a result, it seems subject to disconfirmation on experiential grounds.

The second problem is directly related to the first. Not only are logical truths, as conceived by Frege, subject to experiential disconfirmation, but they seem to be vulnerable to an experientially-based relativism as well. Baker and Hacker write that “a determined relativist could argue that there is a discrepancy between what is truly self-evident and what Frege took to be the fundamental truths of logic” (1989, 88). That is, to cast the ultimate foundations of the truths of logic in self-evidence is not entirely to escape the clutches of intuition. While self-evidence may not be directly related to the constitution of our understanding - that is, to some rational faculty - it nevertheless has a distinctly psychological component. Just as Locke objected to Descartes that his “innate ideas” did not seem innate in the minds of “children and idiots”, neither is the self-evidence of a proposition a feature of the proposition itself (Unlike, for instance, the logical truth of a proposition, where its denial results in contradiction.) Rather, the self-evidence of a proposition seems to be, at least in part, dependent upon (a function of) the psychological attributes of the person (or mind) to which the proposition either is, or is not, self-evident. The same proposition might be self-evident to some and not to others.

The general point of both of these objections is that Frege's solution does not offer any method of adjudication between our logic and any "hitherto unknown form of madness" (Baker and Hacker 1989, 88).

## §2.6 - The Subject Matter of Logic Revisited

It has been suggested (e.g., Baker and Hacker, 1989) that many of the problems identified in Frege's account of logic are the result of presuppositions that he shared with his psychologistic contemporaries. The most important of these presuppositions is the view that logic must treat of some subject matter, and that the way to distinguish the truths of logic from those of other disciplines was on the basis of that subject matter (Baker and Hacker, 1989, 89).

I have argued that Frege's overall approach to psychologism was semantic. Yet, he ultimately prescribes a metaphysical remedy for what he determinedly sought to treat as a semantic ailment. I agree with Baker and Hacker in their assessment that it was Frege's view that logic must treat of some subject matter that led him to the metaphysical position of having to postulate a new 'third realm' of abstract, semantic objects. It was his view that one must "distinguish logical propositions from others in virtue of their content" (Baker and Hacker 1989, 90), that pushed Frege to offer an essentially realist semantics based on this new species of semantical artifacts. Yet, while Frege did not see any other options, alternative treatments will be the topic of discussion in chapter 5.

First though, it is worth turning to a more empirical account of the subject matter of

logic. Given that the majority of the problems in Frege's solution to the problems of psychologism arise directly from his postulation of a realm of abstract entities - Thoughts - which serve as the senses of sentences and as the bearers of truth, it seems prudent to explore alternatives to such an account which are founded on a more familiar type of entity - namely those found in everyday experience. To assess the prospects of a more empirical account of the semantics of our logical and arithmetical terms, we now turn to an investigation of the position of J.S. Mill.





## Chapter 3

## Mill's Empiricist Alternative

## §3.1 - From Platonism to Empiricism

One of the central problems associated with a Fregean account of the nature and subject matter of logic has its origins in the metaphysical features of such a picture. Frege identified the epistemological problems that followed from a psychologistic account of logic and arithmetic, and sought to provide a semantic approach to their diagnosis and treatment. Yet, while Frege's remedy overcomes the problems of epistemic relativism that follow from psychologism, the treatment may be just as debilitating as the disease itself. Having demonstrated that a mentalist (or psychological) account of the subject matter of logic invariably led to epistemic relativism and an impoverished account of truth, Frege looked to other available semantic options. But Frege's vision of these alternative choices was limited by the fact that he shared with his psychologistic adversaries the view that logic had to treat of *some* subject matter (Baker & Hacker 1989, 89). So the only remaining task for Frege was that of identifying a domain suitably immune from the contingencies of psychology so as to insulate the logical operation of proof and epistemic relations such as justification and evidence from relativism. Convinced that the epistemic objectivism he desired could only be supported by a metaphysically realist foundation, Frege posited a Platonist semantics. Yet this Platonist solution raised independent and equally problematic mysteries in epistemology. Most specifically, the processes involved in the rudimentary task of understanding everyday

language become completely opaque on a Platonist account. Frege himself confessed that grasping a Thought was “the most mysterious process of all” ([1897] 1979, 145). Indeed, the metaphysical and epistemological costs of philosophical real estate in abstract neighbourhoods like the ‘third realm’ tend to overshadow any epistemological or semantic benefits promised therein. In light of difficulties such as these, it is prudent to consider those alternatives considered by thinkers with a more rigorously empiricist metaphysical attitude.

The first alternative to Frege’s Platonist semantics that is perhaps worth considering is John Stuart Mill’s (1806-1873) physicalist semantics. Mill belonged to the generation of logicians immediately preceding Frege, and his two major works on logic - *A System of Logic* ([1843/1872] 1973) and *An Examination of Sir William Hamilton’s Philosophy* ([1865/1867] 1979) - predated Frege’s own work. Indeed, Frege specifically considered Mill’s account of the semantics of our number terms and was unequivocal in his condemnation of this kind of physicalist semantics. Nevertheless there are several features of Mill’s account that make it worthy of our consideration.

In the first place, Mill specifically addresses the metaphysical problems associated with the postulation of abstract objects as the referents of our logical and number terms. Indeed, Mill’s empiricism constrains him to work within the realm of the sensible regarding both the objects and the origins of our knowledge. In this respect, Mill’s approach is congruent with contemporary approaches which eschew both intuitive and abstract metaphysical foundations for our logical and arithmetical knowledge.

Secondly, Mill's discussion of the nature and subject matter of the propositions of logic invokes a version of the distinction between analytic and synthetic propositions. Yet because he characterized analytic propositions as "merely verbal 'truths'" incapable of conveying 'new' information, and thought that the proper task of logic was the advancement of knowledge, Mill rejected the account of logical propositions as exclusively analytic. In place of this, Mill attempted to offer a strictly empirical foundation for general truths (including the principles of logic) as grounded in the concrete features of sensory experience. Despite Mill's rejection of the position that the principles of logic are analytic truths, his discussion of it anticipates the positivistic account of logic which is the topic of discussion in chapter 4.

Beyond all of these considerations, there remains a significant and unresolved question in the interpretation of Mill's account of the nature and subject matter of logic: Is Mill's account of logic psychologistic? And, if it is not, is Mill successful in escaping the epistemological and foundational problems associated with psychologism? It is to these questions that we will first turn.

### §3.2 - On Interpreting Mill

Though there is remarkably little debate on the topic, there is some disagreement in the literature concerning whether Mill's account of logic is psychologistic. In his "Introduction" to Mill's *System of Logic* (1973, xxi) R.F. McRae observes that Mill's account has been described as "an attempt to expound a psychological system of logic within

empiricist principles” (Hartman 1967, 14). Similarly, Shanker (1998, 82-87), Macnamara (1986, 13), and Posy (1997, 260) determine that Mill’s philosophy of logic is psychologistic. On the other hand, McRae himself (1973, xxiv), along with authors such as Kneale and Kneale (1962, 377) and G.P. Baker (1988, 174) insist that Mill rejected psychologism.

There may well be a case to be made on either side of this debate, as Mill’s position on the subject matter of logic, and its relationship with psychology is - even at the best of times - neither transparent nor unequivocal. That said, there are respects in which Mill’s position is decidedly psychologistic. The important question to be answered, though, is whether Mill’s account of logic overcomes the epistemological problems of relativism and subjectivism that Frege identified with any position that made the laws of truth dependent on contingent facts about human psychology.

### §3.3 - Mill on the Nature of Logic

#### §3.3.1 - Mill’s Epistemological Framework and the Domain of Logic

To appreciate Mill’s account of the subject matter and the corresponding foundations of logic, we must first be familiar with Mill’s general epistemological framework. In general, Mill’s epistemology is empiricist and foundationalist. For Mill, there are two basic ways by which we come to know truths: intuition and inference. He writes: “[t]ruths are known to us in two ways: some are known directly, and of themselves; some through the medium of other truths. The former are the subjects of Intuition, or Consciousness; the latter, of Inference” (1843/1872, Intro. §4; 1973, 6). This view displays two characteristic features of

foundationalism: (i) those truths known by intuition cannot be justified with reference to other known truths (i.e., they cannot be known on the basis of a knowledge of other truths) and (ii) truths known by intuition become the foundation, on the basis on which all other truths are known. Truths known by intuition are “known antecedently to all reasoning” (1843/1872, Intro. §4; 1973, 7), and form “the original data, or ultimate premises of our knowledge” (*ibid.*). Because of this, truths known purely by intuition are a necessary component of any body of knowledge. As Mill argues, since in the case of inferred knowledge “[o]ur assent to the conclusion ... [is] grounded on the truth of the premises, we could never arrive at any knowledge by reasoning, unless something could be known antecedently to all reasoning” (*ibid.*). Mill’s empiricism is to be found in his doctrines that all of the truths which may be known directly by intuition are particular truths, and that the substantive ones are known on the basis of experience.

Mill’s foundationalism significantly shapes his account of logic. Specifically, while we may be certain of those truths known by intuition, they are beyond the scope of logic. Mill writes: “Whatever is known to us by consciousness [i.e., intuition], is known beyond possibility of question [i.e., it is certain and indubitable]. ... No science is required for the purpose of establishing such truths; no rules of art can render our knowledge of them more certain than it is in itself. There is no logic for this portion of our knowledge” (*ibid.*). As such, logic concerns only those truths known through inference, on the basis of other truths. Mill writes,

The province of logic must be restricted to that portion of our knowledge which consists of inferences from truths previously known; whether those antecedent data be general propositions, or particular observations and perceptions. Logic is not the science of Belief, but the science of Proof, or Evidence. In so far as belief professes to be founded on proof, the office of logic is to supply a test for ascertaining whether or not the belief is well grounded. With the claims which any proposition has to belief on the evidence of consciousness [i.e., intuition], that is, without evidence in the proper sense of the word, logic has nothing to do. (1843/1872, Intro. §4; 1973, 9; see also 1843/1872, II.i.1; 1973, 158, where Mill offers a similar description of “the peculiar problem of the Science of Logic”.)

Not only is the domain of logic thus limited to a certain fragment of human knowledge, but its function regarding this fragment is restricted also. The function of logic is to supply a set of rules of art for the estimation of evidential relations supporting this body of inferred knowledge.

The purpose of logic, according to Mill, is inherently practical; it has an epistemological value. Since Mill takes inference to be the principal subject of logic (1843/1872, I.i.1; 1973, 19), an understanding of Mill’s conception of logic must appreciate Mill’s view of the nature of inference. According to Mill, “inference in the proper acceptation of the term, [consists in] those [cases] in which we set out from known truths, to arrive at

others really distinct from them” (1843/1872, II.i.3; 1973, 162). Thus, Mill holds that logic is involved in the advancement of knowledge. Because it is involved in the advancement of knowledge, the purpose of logic is not merely to *preserve* (or, to use Mill’s word, “conduct”) truth; rather the function of logic is to *establish* truth (i.e., the truth of individual, contingent propositions). It is in this context that Mill distinguishes between a ‘Logic of Consistency’ (or Formal Logic) and a ‘Logic of Truth’ (1843/1872, II.iii.9; 1973, 208). For Mill, logic is properly conceived of as a Logic of Truth, and, as such, logical rules include any rule of evidence or justification - at least insofar as these rules have a role in inferring one proposition from other propositions.

According to Mill, then, “Logic ... is the entire theory of the ascertainment of reasoned or inferred truth” (1843/1872, II.iii.9; 1973, 206). Mill takes reasoning to be synonymous with inference (1843/1872, II.i.3; 1973, 162), which divides into two kinds: Induction and Ratiocination or Syllogism (*ibid.*).<sup>1 2</sup> “Induction is inferring a proposition from propositions

---

<sup>1</sup> Here, Mill seems to treat Ratiocination as coextensive with Syllogism. At other places, Mill makes the weaker claim that “syllogism is the general type [of ratiocination]” (1843/1872, II.i.1; 197, 158).

<sup>2</sup> According to Mill, in addition to Induction and Ratiocination “there is a third species of reasoning, which falls under neither of these descriptions, and which, nevertheless, is not only valid, but is the foundation of both of the others” (1843/1872, II.i.3; 1973, 162). While Induction is “reasoning from particulars to generals” (*ibid.*), and Ratiocination is “reasoning from general to particulars” (*ibid.*) this third species of reasoning appears to be reasoning from particulars to particulars - which encompasses all inference (1843/1872, II.iii.4; 1973, 193) and seems to have the form of reasoning by analogy (see 1843/1872, II.iii.3, 1973, 186-192; 1843/1872, II.iii.7, 1973, 202). Mill describes this “universal type of the reasoning process” as follows: “Certain individuals



less general than itself, and Ratiocination is inferring a proposition from propositions *equally or more general*" (*ibid.*). Typically we would call Ratiocination by the more familiar name of deduction, and at times Mill does so himself (e.g., 1843/1872, II.iv.1; 1973, 209; 1843/1872, II.iv.4; 1973, 214). According to Mill, then, the Science of Logic includes not only the study of deductive inference, but also the study of inductive inference. In addition to holding that logic is not merely the Logic of Consistency, but is properly seen as the Logic of Truth, we will see that Mill has an additional reason for including induction within the Science of Logic (§3.8.3). Importantly, Mill's picture of logic is considerably broader than logic more narrowly understood as the study of necessary consequence. Since the present inquiry is only concerned with the nature and justification of the foundations of logic narrowly construed, I limit my discussion of Mill's account of the foundations of logic to considerations which pertain directly to the foundations of the ratiocinative portion of logic.

### §3.3.2 - Mill on Logic as the Art and Science of Reasoning

Mill begins his *System of Logic* by accepting Archbishop Whately's (1787 - 1863) view that "Logic ... comprises the science of reasoning, as well as an art, founded on that science" (1843/1872, Intro. §2; 1973, 4). The discipline of logic as a whole, Mill calls the Science of Logic (see, e.g., 1843/1872, II.i.1; 1973, 158), and it divides completely into the

---

have a given attribute; an individual or individuals resemble the former in certain other attributes; therefore they resemble them also in the given attribute" (1843/1872, II.iii.7; 1973, 202).

Art and the Science of Reasoning. Mill agrees with Whately that each of these two components is required to achieve the purpose of logic, which Mill describes as follows: “[t]he sole object [i.e., objective] of Logic is the guidance of one’s own thoughts” (1843/1872, Intro. §3; 1973, 6).

According to Mill, the art of reasoning and the science of reasoning make separate but individually necessary contributions to the overall purpose of logic. One of the places where Mill describes the object of logic in terms of the individual contributions of these two components is in the following passage.

Our object, then, will be to attempt a correct analysis of the intellectual process called Reasoning or Inference, and of such other mental operations as are intended to facilitate this: as well as on the foundation of this analysis, and *pari passu* with it, to bring together or frame a set of rules or canons for testing the sufficiency of any given evidence to prove any given proposition.

(1843/1872, Intro. §7; 1973, 12; see also 1843/1872, Intro. §2; 1973, 4)

The general division of labour within the discipline of logic seems to be this. The art of reasoning provides rules of evidence which serve to guide our thoughts; it is in accordance with these rules that we ought to reason. The science of reasoning, on the other hand, provides an analysis of mental processes. Indeed, the science of reasoning is “a part, or a branch, of Psychology” (Mill, 1865/1867, Chap. xx; 1979, 359). Crucially, since the art of reasoning is somehow founded on the science of reasoning, the art of reasoning which fulfils

the prescriptive function of logic is somehow dependent on psychology.

So, for Mill, the laws of logic are rules or precepts which are normative or prescriptive in character, and whose purpose is to guide our thoughts. Importantly, though, the claim that logic is prescriptive is not on its own sufficient to overcome the charge of psychologism (see my §§1.5.3 - 1.5.6). Instead, such a claim merely gives rise to two further questions. First, what is the subject matter of logical rules; what do logical rules govern? Second, what are the ultimate foundations, or justifications, for the prescriptive norms of logic? For Mill, the answer to the second question will be influenced by the degree to which the science of reasoning contributes to the rules of its corresponding art. This, in turn, will be influenced by Mill's account of the subject matter of logic.

### §3.4 - Logic as the Science of the Operations of the Understanding

Mill's view that logic is comprised of the art and science of reasoning, and that "[t]he sole object [i.e., objective] of logic is the guidance of one's thoughts" (*op. cit.*) commits him to two decidedly psychologistic theses. The first, which we have been discussing, is the dependence thesis of Generic Psychologism: that psychology is necessary for logic. The second is Metaphysical Psychologism: that the subject matter of logic is psychological in nature. In order to appreciate the various problems arising from Mill's adherence to the dependence thesis, one must appreciate the consequences of the metaphysical thesis, and the manner in which psychology studies mental states and processes.

In Mill's view, "Reasoning, or Inference [is] the principal subject of logic" (1843, I.i.1;

1973, 19). In his *Examination of Sir William Hamilton's Philosophy* Mill places reasoning alongside conception (concept formation) and judgement, claiming that “the[se] three psychological processes ... constitute the operations of the Intellect” (1865/1867 Chapt. xx; 1979, 348). Repeatedly in the Introduction of *A System of Logic* Mill may be found claiming that logic necessarily involves the analysis of mental processes (1843/1872, Intro. §7; 1973, 12-16). Indeed, Mill goes so far as to *define* logic as “the science which treats of the operations of the human understanding in the pursuit of truth” (1843/1872, Intro. §3; 1973, 6). Yet, those same mental processes are the subject matter of psychology.

In addition to studying mental processes, psychology also studies those laws which determine the succession of mental states. According to Mill, “[t]he subject ... of Psychology is the uniformities of succession, the laws ... according to which one mental state succeeds another, [i.e.,] is caused by, or at least, is caused to follow, another” (1843, VI.iv.3; 1974, 852). In general, there are two such laws. The first is Hume’s law that sensory impressions excite ‘faint copies’ of themselves in the mind called ideas. The second is that the excitement of an idea by some other mental state is governed by the Laws of Association (*ibid.*). (As such, the second law is really not an individual law, so much as the entire class of the Laws of Association - whatever these turn out to be.) Taken together, Mill calls Hume’s law and the laws of association the ‘Laws of the Mind’, and they are unquestionably psychological in character. Importantly, in being causal laws (if only at a psychological level), Hume’s law and the Laws of Association determine the succession of *any* series of mental states, regardless

of any epistemological connections which might obtain between those states. That is, the succession of one state by another is completely determined by, and explained in terms of, these psychological laws. Indeed, Mill claims that there is no third, special kind of law pertaining exclusively to the operations of the mind involved in inference. Rather, “the general laws of association prevail among these more intricate states of mind” (1843/1872, VI.iv.3; 1974, 856).<sup>3</sup>

Finally, Mill contends that psychological laws may only be discovered experimentally. He writes: “These simple or elementary Laws of Mind have been ascertained by the ordinary methods of experimental inquiry; nor could they have been ascertained in any other manner” (1843/1872, VI.iv.3; 1974, 853). Thus not only is the subject matter of the Science of Reasoning psychological in nature, but if the Science of Reasoning involves ascertaining the Laws of the Mind, it is dependent on psychology not only for its subject matter but also for its methodology. Further, to whatever extent the Art of Reasoning is dependent on the Science of Reasoning, it too will be dependent on psychology with respect to its subject matter and methodology.<sup>4</sup>

---

<sup>3</sup> Among these “more intricate states of mind” Mill includes not only cognitive states and processes (e.g., inference) but also emotive states and processes (e.g., desire).

<sup>4</sup> Since Mill considered inductive reasoning to be part of logic, Mill would hold that the methodology of experimental psychology is part of logic. Yet, if one is concerned solely with the logic of necessary consequence, Mill’s position obviously makes the psychologistic assertion that logic is dependent on psychology with respect to its methodology.

On Mill's account the science of reasoning is a branch of psychology whose subject matter and methodology are provided exclusively by psychology. As such, the kinds of things discussed above are the kinds of things that the science of reasoning is capable of contributing to logic. Yet, Mill also claims that the art of reasoning is somehow founded on the science of reasoning - that logical principles are somehow dependent on psychology. Further, Mill is not entirely clear on the contribution which the science of reasoning makes to its corresponding art, or the manner in which the rules of logic are 'founded' on psychology. Yet, the nature and status of logical principles will be significantly determined by their relationship to the psychological facts and Laws of the Mind provided by the science of reasoning.

### §3.5 - Mill on the Contribution of the Science of Reasoning to the Art of Reasoning

There are times when Mill wants to restrict the contribution which the psychological science of reasoning makes to its corresponding art. For instance, Mill writes that "[while] it is necessary that the logician should analyse the mental processes with which logic is concerned[,] ... Logic has no interest in carrying the analysis beyond the point at which it becomes apparent whether the operations have in any individual case been rightly or wrongly performed" (1843/1872, Intro. §7; 1973, 13). Here, it would seem that the only contribution psychology makes to logic is to provide "the analysis of the mental process which takes place whenever we reason" (Mill 1843/1872, Intro §2; 1973, 4), while the art of reasoning alone provides "the rules ... for conducting the [reasoning] process correctly" (*ibid.*). On this

picture, not only is the extent of this analysis of mental processes limited to whatever is required for the purposes of the art of reasoning (1843/1872, Intro. §7; 1973, 13 ), but the science of reasoning does not contribute to the formulation of the rules of evidence which guide reasoning. As such, the prescriptive elements of logic appear to be completely independent of its psychological aspects.

Yet, this is not the only picture Mill offers of the contribution of psychology to logic. In other places, Mill asserts that the dependency of logic on psychology is far greater. For instance, Mill writes that

[a] right understanding of the mental process itself, of the conditions it depends on, and the steps of which it consists, is the only basis on which a system of rules, fitted for the direction of the process, can possibly be founded. (1843, Intro. §2; 1973, 4)

Here, Mill may be read as claiming that psychology actually contributes to the normative project of logic by shaping the rules which direct the proper conduct of these mental processes. On this account, something about the psychological nature of mental processes affects or shapes the rules which guide them. The reasoning informing such a view might look something like this: since the rules of logic direct reasoning processes, the nature of these processes actually shapes the precepts which direct them. On this interpretation of Mill's position, while the epistemic principles which justify logical rules might be independent of psychology, the rules of logic themselves are not independent and would be stated differently

were they directing *other* processes. So, the contribution of psychology to logic is not limited to an analysis of mental processes; rather, the rules for the direction of reasoning must somehow be founded on psychological facts about processes involved in reasoning.

In still other places, Mill goes beyond the claim that the science of reasoning shapes the way in which logical rules must be stated if they are to direct reasoning processes. At times, Mill goes so far as to say that “Its [the Science of Logic’s] theoretic grounds are wholly borrowed from Psychology, and include as much of that science as is required to justify the rules of the art.” (Mill 1865/1867, Chap. xx, 1979, 355). Here, Mill does not merely assert that psychological facts about the nature of mental processes somehow inform the statement of logical rules. Rather, Mill claims that psychology is involved in the *justification* of the rules of logic, and provides their *theoretic grounds*. On this picture, the rules of logic are in no way independent from psychology which shapes not only how they are stated, but provides the theoretic grounds from which their justification is derived.

While it may not be possible to provide a definitive interpretation of Mill as holding one of these views over the others, it is important to recognize the strains of psychologism which they share, and the epistemological and interpretive problems associated with each interpretation.

### §3.6 - Logical Precepts: Rules of Evidence or Rules for the Estimation of Evidence?

According to Mill, the principles of logic are “rules...for conducting the [reasoning] process correctly” (1843/1872, Intro §2; 1973, 4). Further, Mill takes reasoning to be a



(human) mental process, and he holds that the science which analyzes our mental processes is psychology. In accepting this picture, Mill holds that “Logic ... comprises the science of reasoning, as well as an art, founded on that science” (1843.1872, Intro §2; 1973, 4) and, since the science of reasoning is a branch of psychology, logic is somehow dependent on psychology. No matter how strongly this dependence thesis is interpreted, it creates problems for the remainder of Mill’s position. Consider the various options associated with the interpretative positions discussed above (§3.5).

In the following sub-sections, I consider three accounts of the nature and foundation of logical precepts which mark increasing levels of independence from psychology. On the first account, psychological facts are involved in the justification of the principles which distinguish good inferences from bad ones. On the second scenario, the standards which distinguish good inferences from bad ones are justified independently from psychology, but the application of these standards in the task of guiding our thought must reflect the factual details of how our thoughts actually proceed. That is, facts about the nature and operation of psychological processes are required in order to formulate the rules of logic in such a way as to allow the mind to be guided by them. On the last account, the rules of logic are formulated completely independently of any psychological considerations. Not only are the rules of logic justified completely independently of any psychological considerations, but the articulation of these rules need not reflect any facts concerning the nature or operation of thought and inference.

### §3.6.1 - The Precepts of Logic are Justified by Psychology

Suppose we interpret the dependence thesis as the strong claim that psychology provides the theoretic grounds involved in the justification of rules of logic. Since the function of logic is to prescribe certain progressions of thoughts over others, and since *every* succession of mental states is determined by, and explained in terms of, psychological laws, the precepts of logic can only be a subset of psychological laws. Further, on this strong picture, the very principles involved in the selection of one sub-set of psychological laws over another (i.e., the justification of logical principles) is itself justified by psychological considerations. Such a view would clearly suffice to relegate logicians to the departmental offices of psychology. While it is certainly contestable that Mill held such a strong view, I claim that the weaker ones are no better.

### §3.6.2 - Logical Precepts are Rules for the Estimation of Evidence

Suppose, instead, a weaker view on which the precepts of logic are justified independently of psychological considerations. Perhaps, when in the pursuit of truth, the operations of the understanding may be described and classified according to a set of principles and properties which are not ultimately psychological, and it is these properties which ultimately justify the proper separation of reasoning processes into correct and incorrect instances. One might interpret Mill as moving in this direction when he claims that “Logic ... is the science of the operations of the understanding which are subservient to the estimation of evidence: both the process itself of advancing from known truths to unknown, and all other

intellectual operations in so far as [they are] auxiliary to this” (1843/1872, Intro. §7; 1973, 12). Here, the principles of logic might be thought of as rules for the estimation of evidence.

This scenario differs from the first in the following respect. On this scenario logical principles are justified independently of psychological considerations. That is, there is a set of non-psychological principles which separates good reasoning from bad. On this option logic exclusively studies those operations of the understanding involved in the estimation of evidence, and the precepts of logic are prescriptions for these acts of estimation. That is, the precepts of logic are not rules of evidence, but are rules for the estimation - or recognition - of evidence (i.e., the rules by which the mind correctly apprehends evidential relations). The difference between a rule of evidence and a rule for the estimation of evidence is analogous to Frege’s distinction between a law of truth and a law-of-taking-to-be-true. A rule of evidence prescribes when one proposition (or set of propositions) is (sufficient) evidence for another; rules of evidence may be seen as describing evidential relations. By contrast, a rule for the estimation of evidence is something which the mind follows when it correctly apprehends an evidential relation; it does not describe evidential relations, but relations between those mental states where evidential relations are correctly apprehended.

Importantly, such an interpretation may not be altogether foreign to Mill’s overall position. In order that logic fulfil its function of guiding our thoughts in the pursuit of the truth, the precepts of logic must somehow apply to our estimation of evidence. As such, those precepts must reflect at least some of the psychological features of thoughts - namely,

those by which the recognition of evidence occur. Yet, on such a view, it is not at all clear that the precepts for the estimation of evidence can be formulated independently of psychological considerations.

The first problem facing Mill on this scenario echoes the problem he faced on the first scenario: it reduces the precepts of logic to a sub-set of psychological laws. Even if it is supposed that logical principles have a prescriptive character, so long as the purpose of logic is to guide our thoughts, the merit of the normative character of logic is mitigated by our ability to think in accordance with logical precepts. That we *ought* to think in a certain way implies that we *can* think in that way. Yet, the ways in which we *can* think are exhaustively described by the laws of psychology. As such, in so far as Mill is committed to the 'ought implies can' premise, the *only* prescriptive function of logic can be to select some subset of patterns of thinking.

So, even on the supposition that there is some set of principles, justified independently of psychology, which distinguish good inferences from bad ones, so long as our thought is to be guided by these principles, they must serve to indicate some law which the mind can follow. Yet, the only laws which the mind can follow are given by the psychological Laws of the Mind. As such, the principles of logic must function as selection principles which distinguish certain progressions of thought - those which are involved in the correct apprehension of evidence - from those progressions of thought do not result in the correct apprehension of evidence. The prescriptivity of logic on such a picture would be something

like this: to think correctly, follow these successions of thought rather than those. Further, the 'rules' which the mind actually follows in *thinking according to the precepts of logic* are the Laws of the Mind (or some subset thereof). Whatever the mind does when it thinks correctly is described according to psychological laws. So, if logic is to direct the mind in thought, it must do so by means of those laws in accordance with which the mind *actually* thinks. It is for this reason that psychological facts pertaining to the nature and operation of thought must inform the articulation of the precepts of logic.

While the difference between correct and incorrect thinking may not be marked by categorical differences among the Laws of the Mind, the precepts of logic must, nevertheless, be articulated in terms of these psychological laws. On this picture, patterns of correct thinking are a subset of the patterns of thinking, and these are exhaustively described by psychology. As such, while the selection principles would be independent of psychology, the precepts of logic would not be. Rather, because they are involved in guiding our thoughts, and the direction of our thoughts is solely determined by psychological laws, the precepts of logic could only be a subset of those psychological laws.

The second problem with this scenario is interpretive. Mill does not claim that logic has a proprietary interest in the rules for the estimation of evidence. Instead, Mill proceeds to assign the same task to the psychologist, claiming: "Psychologists will always have to inquire, what beliefs we have by direct consciousness, and according to what laws one belief produces another; what are the laws, in virtue of which one thing is recognized by the mind

either rightly or erroneously, as evidence of another thing' (1843, VI.iv.3; 1974, 856).<sup>5</sup> The second problem with this option, then, is that Mill asserts that it is the task of psychology to determine the laws which the mind follows in the apprehension of evidential relations. If the rules of logic have the character of rules by which the mind thinks correctly, then these rules cannot but be a subset of the laws by which the mind thinks, and it is the task of psychology to determine all of these laws.

So, even if we grant Mill the claim that there is some set of non-psychological principles by which we separate those successions of thoughts by which we correctly apprehend evidential relations from those successions of thoughts by which we fail to do so, Mill is still committed to the view that logical rules are a sub-set of psychological laws. It would seem, then, that, on the assumption that logic is to provide rules for the estimation of evidence, Mill is committed to a view whereby the rules of inference are a subset of the laws of association and that the precepts of logic are indeed a species of psychological laws.

### §3.6.3 - Logical Precepts are Rules of Evidence

On the first two scenarios, the contribution of the science of reasoning to the art of reasoning results in the position that the rules for correct thinking are a subset of psychological laws. Yet, there may be some reason to suspect that Mill wanted to limit the contribution of the science of reasoning even further. For instance, Mill writes that the notion

---

<sup>5</sup> Here, Mill seems to relegate not only logic, but all of epistemology in general to psychology.

of evidence is not explained in terms of something which produces a belief. Instead, Mill claims:

By evidence it is not meant anything and everything which produces belief.

There are many things which generate belief besides evidence. A mere strong association of ideas often causes a belief so intense as to be unshakable by experience or argument. Evidence is not that which the mind does or must yield to, but that which it ought to yield to, namely, that, by yielding to which, its belief is kept conformable to fact. (1843/1872, III.xxi.1; 1973, 564)

Perhaps Mill is here suggesting that the precepts of logic are not rules for the estimation of evidence - they are not a subset of laws in accordance with which beliefs are produced by prior mental phenomena - but are instead rules of evidence.

Suppose, then, that there is some set of properties of thoughts which are non-psychological in nature, and that it is these non-psychological properties of thoughts which provide the theoretic grounds on which the rules of logic are justified. (Perhaps these might be thought of as the semantic, logical, epistemic or evidentiary properties of thoughts.) Suppose further that logic has an exclusive and proprietary interest in these logical or epistemic properties of thoughts, and that the precepts of logic are articulated completely independently of any consideration of how thoughts *actually* proceed.

On this scenario, when in the pursuit of truth the operations of the understanding may be described according to a set of laws (be they prescriptive or descriptive) which are

fundamentally different in kind from the psychological laws just given. Perhaps the disciplines of logic and psychology can be distinguished by saying that psychology studies only the causal relations that obtain between psychological states, while logic studies the evidentiary relations that obtain between those same states.<sup>6</sup> Perhaps the rules of evidence guiding our estimation of evidence are categorically different from merely associative laws, and perhaps it is the proprietary task of the logician to study just those rules. On this scenario, what is given up is the 'ought implies can' premise which states that the precepts of logic must be formulated in such a way that they can guide our thoughts. Instead, the precepts of correct thinking are formulated independently of any considerations of how thought actually proceeds.

While this scenario grants the highest degree of independence of the art of reasoning from the science of reasoning, it raises two significant problems for Mill: the first is theoretical, and the second is interpretive.

The theoretical problems arising from this scenario become apparent when we consider the following questions: How are psychological entities the bearers of non-psychological properties? How is it that psychological states and processes are the bearers of logical and epistemic properties, in such a way that one of them *necessarily* follows from another, or in such a way that one of them is *validly inferred* from another? If beliefs are indeed psychological states then they are exclusively governed by psychological laws (which

---

<sup>6</sup> That is, on the naturalistic and psychologistic supposition that relations of evidence can and do hold between natural, psychological states.



in Mill's case are Hume's law plus the laws of association). If we want to claim that logical or epistemic relations *also* hold between these psychological states, and that these special relations cannot be explained in terms of the psychological properties of these psychological states, then Mill must explain how this special class of properties attaches to psychological states. Insofar as Mill is committed to the view that the subject matter of logic is reasoning or inference, and that these are psychological processes involving psychological states, Mill faces this theoretical problem.

The move to the claim that the logical and epistemic properties of thoughts may be specified independently of psychological considerations also gives rise to a second, interpretive, problem. In making this move, Mill must admit that the nature of belief and inference cannot be completely explained psychologically. Yet, Mill *never* makes this claim. Moreover, by hypothesis, the very properties of psychological states in which the art of reasoning takes a unique interest are those about which the science of reasoning can tell us nothing. Indeed, if it is only these special logical and epistemic properties and relations in which logic has any interest, and these properties are explained completely independently of psychology, then why does Mill think that the art of reasoning must be based on the science of reasoning at all? If this were Mill's view, then it would seem that the psychological science of reasoning could tell us *nothing* about the logical and epistemic properties of beliefs. Yet, Mill is unequivocal in his claim that the art of reasoning *is* based on the science of reasoning, and is somehow dependent on it. Just what the nature of that dependency is, Mill is rather

sketchy on. But, the fact that he claims there to be any dependency whatsoever indicates that Mill does not unequivocally feel that the foundations of the rules of the art of reasoning, and hence the Science of Logic, can be explained or justified independently of psychology.

It would seem, then, that no matter how strongly we interpret the dependence claim - that the art of reasoning is founded upon the science of reasoning - Mill's position runs into trouble. Importantly, this dependence claim is a consequence of Mill's views regarding the subject matter and purpose of logic. According to Mill, the subject matter of logic is reasoning and inference, and the purpose of logic is to guide our thoughts. So long as these two views are held, Mill seems committed to the claim that the precepts of logic are somehow dependent on psychology.

Mill felt compelled to ground the logical rules of art in the science of psychology because he felt that prescriptive rules of logic, in serving to guide thoughts, must somehow reflect the factual details of how those thoughts actually proceed. So, the moral at this point in the story is this: if one is to start with the commonplace that logic has a prescriptive function of supplying rules for the direction of the mind, and one wishes to avoid the perils of psychologism, one must provide some account of the relationship between logical precepts and patterns of thinking which properly insulates the former from dependency upon the latter. Such an account must begin by providing an explanation of the subject matter of logic, and a justification of logical principles, which is independent from psychological considerations.

## §3.7 - Logic as the Science of Evidence and Proof

What, then does Mill have to say about the justification of logical precepts and the principles involved in the legitimation of inferences? In order to answer this question, we must first find some examples of those rules or precepts which Mill actually offers as principles of logic.

Problematically, Mill never explicitly states any examples of the precepts of ratiocinative logic.<sup>7</sup> He does, though, claim that all valid instances of deductive inference can be represented in a syllogistic form (1843/1872, II.ii.1; 1973, 166), and further that “[e]very valid ratiocination ... may be stated in the first figure [of the syllogism]” (1843/1872, II.ii.1; 1973, 168).<sup>8</sup> As such, it would seem that the rules of ratiocinative inference, for Mill, are given by specifying the valid forms of the syllogism.

---

<sup>7</sup> Mill does offer six Canons of Induction (1843/1972, III.viii.1-7). Since I am concerned in this inquiry with the foundations of logic understood as the study of necessary consequence, the foundations of induction are not a matter of immediate interest.

That said, Mill holds that induction is involved in every real inference, including ratiocinative inference. Problematically, Mill draws no obvious or direct connection between these canons and the justification of ratiocinative inference. Instead, Mill provides a different set of principles which he claims to provide the justificatory foundation of all ratiocinative inference, and it is these which I proceed to discuss below.

<sup>8</sup> Syllogisms of the first figure have one of the following forms (or ‘moods’):

- (1) All B is C. All A is B. Therefore, all A is C.
  - (2) All B is C. Some A is B. Therefore, some A is C.
  - (3) No B is C. All A is B. Therefore, no A is C.
  - (4) No B is C. Some A is B. Therefore, some A is not C.
- (Mill 1843/1872. II.ii.1; 1973, 156)

### §3.7.1 - The Relation Between Logic and Truth

If we accept that the rules for testing the sufficiency of evidence in ratiocinative reasoning are given by certain forms of the syllogism, we must next determine how Mill distinguishes good forms of the syllogism from bad. How is the legitimacy of a form of the syllogism explained? Mill explains the legitimacy of syllogistic inference by saying that “if the premises are true, the conclusion must inevitably be so” (1843/1872, II.ii.1; 1973, 166). On this account, a good syllogism is one which has a form which necessarily preserves truth - or, in Mill’s terms, it ‘conducts’ truth from its premises to its conclusion.

According to Mill, then, good inferences have something in common with good conceptions and good judgements: they are all connected to the truth. Mill writes,

A concept, to be rightly framed, must be a concept of something real, and must agree with the real fact which it endeavours to represent, ... A judgement, to be rightly framed, must be a true judgement, that is, the objects judged of must really possess the attributes predicated of them. A reasoning, to be rightly framed, must conduct to a true conclusion. (1865/1867, Chap. xx; 1979, 365)

So Mill reaches the same point as Frege. Logic is inherently concerned with, and connected to the truth. As far as logic is concerned, Mill continues

The most important ... and at bottom the only important quality of a thought being its truth, the laws or precepts provided for the guidance of thought must

surely have for their principal purpose that the products of thinking shall be true. (*ibid.*)

Now, what properties of thought are related to the truth? What is the difference between true and false inferences?<sup>9</sup> According to Mill, “[m]aking false inferences ... [consists] of drawing conclusions which are not grounded in the reality of things” (1843/1872, Intro. §5; 1973 10-11). This is an absolutely crucial realization for Mill. The properties of thought which are of logical interest are those properties by which a thought is made true. Indeed, specifically, it is the property (or properties) by which truth is ‘conducted’ (we might now say “preserved”) between thoughts in inference.

Importantly, this is not a property that is internal to thoughts themselves. Rather, it is a relational property between a thought and the reality of things. The truth of a thought may not be determined merely by looking at it as a psychological or mental state. Instead, that aspect of the thought which represents (i.e., which corresponds or fails to correspond with) reality must be compared with reality itself. In the end, the precepts of logic must ultimately be justified in accordance with their connection to the truth.

---

<sup>9</sup> I here follow Mill’s rather idiosyncratic categorization of inferences as false (or true), as opposed to the more common categorization of inferences as (deductively) valid or invalid according to whether they are necessarily truth-preserving, where the invalid ones are usually classified as (inductively) strong or weak according to whether they are generally truth-preserving. It might be speculated that Mill intended to indicate those inferences that are capable of leading one justifiably to the truth with his otherwise incorrect categorization here.

### §3.7.2 - Objects of Judgements as the Subject Matter of Logic

Because of this, Mill distinguishes between the act and the object of a judgement. It is neither the act of the judgement, nor the mental state instantiating the judgement, nor any other psychological or phenomenological feature of the judgement that connects it representationally to the external world. Instead, it is the content of the judgement which accounts for its representational features, and which connects it to the external world. Yet, just as the truth of a judgement is not a function of its act, neither is it exclusively a function of its content. Rather, the truth of a judgement is explained in terms of its object - in terms of whether or not the state-of-affairs represented by the content of a judgement actually obtains in the world. This state of affairs represented by the content of a judgement may be called the object of that judgement. Hence, it is the objects of judgements which are of interest to logic. Thus Mill claims, "Logic ... has no concern with the nature of the act of judging or believing; the consideration of that act, as a phenomenon of the mind, belongs to another science" (1843/1872, I.v.1; 1973, 87). It is in this way that logic is distinguished from that other science - psychology. Logic has a limited, but proprietary interest in the contents and objects of judgements.

### §3.7.3 - Mill's Rejection of Conceptualism

Perhaps the most important facet of Mill's account of the nature of the object of a judgement is his denial of conceptualism. According to conceptualism, the object of a judgement is mental, and "a proposition is the expression of a relation between two ideas"

(1843/1872, I.vi.1, 1973, 109). Mill rejects this view for much the same reasons as did Frege, claiming first that it is unable to provide an adequate account of truth and second that it misrepresents the nature of communication.

Mill's first argument against conceptualism claims that it cannot supply us with an accurate account of truth, or explanation of belief. According to the mentalist view, judgements (or propositions) "consist in affirming or denying one *idea* of another (1843/1872, I.v.1; 1973, 87), and "truth consists in contemplating and handling our ideas, or conceptions of things, instead of the things themselves" (1843/1872, I.v.1; 1973, 89). This view, and the accompanying view that these relations amongst our ideas are of primary interest to the logician, Mill calls "one of the most fatal errors ever introduced into the philosophy of logic" (*ibid.*). Against this view, Mill argues that judgements do not consist in making assertions about our ideas of things, rather our judgements reach beyond our ideas to the things themselves, and involve making assertions about things in the external world. Thus, Mill writes, "propositions ... are not assertions respecting our ideas of things, but assertions respecting the things themselves" (1843/1872, I.v.1; 1973, 88). Similarly, the truth of a judgement is not established by our ideas themselves; rather the truth of a judgement is established when a corresponding fact or state-of-affairs obtains in the world.

Not only does conceptualism misrepresent the nature and foundation of truth (and so misconstrue the nature of belief). According to Mill, since conceptualist accounts provide erroneous accounts of the object of judgement, they provide a mistaken explanation of the

nature of communication. If, as maintained by conceptualism, the objects of linguistic expressions are given by ideas, then the purpose of communication must be the exchange of those ideas. But, Mill objects, this is mistaken.

For names are not intended only to make the hearer conceive of what we conceive, but also to inform him of what we believe. Now, when I use a name for the purpose of expressing a belief, it is a belief concerning the thing itself, not concerning my idea of it. (1843/1872, I.ii.1; 1973, 25-25; Cf 1843/1872, I.v.1; 1973, 88)

Communication does not merely involve the exchange of our ideas. Rather, the purpose of communication includes making an interlocutor aware of certain states-of-affairs (or facts) in the world, as well as our attitudes and intentions with regard to those states-of-affairs. As such, communication and understanding involves not merely an exchange of ideas, but an exchange of ideas *about* the world. Indeed, communication is frequently part of an activity (or set of activities) which includes direct action on the world among its other facets. So, as with truth, communication requires that the objects of our expressions be features<sup>10</sup> of the world, and not our ideas.

As with his view of truth, Mill's position regarding communication is reminiscent of Frege's. Both offer remarkably similar reasons for rejecting a mentalist account of the objects

---

<sup>10</sup> These features may be actual, or possible (or sometimes even impossible), accurate or mistaken, past, present, or future. The point is that they must reach beyond the mental world of ideas to the world itself.



of judgement. And, these similarities indicate even more general resemblances. Both Frege and Mill accept the picture that judgement and inference are mental acts or operations, and logic is prescriptive with respect to these mental processes. Yet the foundation and subject matter of logic is not to be found in these acts (although Mill is decidedly equivocal on this point); rather the subject matter of logic is inherently connected to the truth. The connection of a judgement with the truth is explained in terms of the representational nature of the content of a judgement and whether or not the object represented by that content obtains in the world. In this way, both distinguish the act from the object of a thought, and they both do so in an attempt to secure the connection between judgement and inference on the one hand and reality and truth on the other. Finally, it is this connection which is seen to secure the foundation of logic and truth. It is the object of judgement which ultimately explains its truth, and it is logic's connection with the truth which affords its prescriptive relationship to the acts in judgement and inference. As such, the foundation of logical precepts is considered as a function not of the acts of inference so much as of the objects of these psychological acts.

While Mill distinguishes between the object of a belief and the psychological belief state, he does not assert that they occur independently. Rather, like Frege, Mill admits that belief and inference are psychological states and processes. He writes: "in order to believe ... [any] fact in external nature, another fact must take place in ... [the] mind, a process must be performed upon ... ideas." (1843/1872, I.v.1; 1973, 88), and "in any ... judgement ... a process takes place in our minds" (1843/1872, I.v.1; 1973, 87). Yet, Mill claims that

“believing is an act which has for its subject [i.e., its object] the facts themselves, though a previous mental conception of the facts is an indispensable condition” (1843/1872, I.v.1; 1973, 88).

#### §3.7.4 - Mill’s Anti-Psychologism

It is Mill’s acceptance of the picture just described which brought authors such as G.P. Baker to attribute to Mill an anti-psychologistic view regarding the subject matter of logic (Baker 1988, 174). The subject matter of logic is not mental but material. In treating the objects of judgements, logic has the same subject matter as the (other) empirical sciences. Indeed for Mill, logic cannot be distinguished from the natural sciences (taken together) in terms of its subject matter. Nor, as we will see, can logic be distinguished from the natural sciences in terms of how its truths are justified. Rather, logic might be distinguished from the sciences in regards to the generality with which it treats of that subject matter. Taken by themselves, the objects of judgements are the subject matter of individual sciences. But, taken together, they are the subject matter of logic. The justification of basic logical truths relies upon their correspondence with regularities governing *all* objects of science. Further, logic is only concerned with the objects of judgement insofar as they are involved in inference - that is, insofar as they establish, or are established by, the truth of other judgements.

Importantly, Mill’s claim that the subject matter of logic is not the acts, but rather the objects of judgements flatly contradicts his earlier claims regarding the proper subject matter of logic. Mill has already claimed that logic studies mental processes - i.e., that the subject

matter of logic is acts of judgements. Indeed, as has already been noted, Mill *defines* logic as “the science of the operations of the human understanding in the pursuit of truth” (*op. cit.*). Further, insofar as the truth of a judgement - explained in terms of the relationship between the content and object of that judgement - is independent of psychological considerations, Mill’s claim that the Science of Logic must take into consideration psychological facts about thinking seems misplaced. Not only is the subject matter of logic not psychological in nature, but the essential business of logic is entirely independent of psychology. Mill’s view of the subject matter of logic, then, is decidedly fractured. On the one hand, Mill claims that the subject matter of logic is a set of psychological states and processes. On the other hand, Mill claims that the subject matter of logic is a non-psychological set of properties and relations which accounts for the truth of judgements and the logical and evidentiary relations which they bear to one another.

Having already considered the intellectual terrain on the one side of this fracture, it remains to consider the theoretical landscape on the other side. On this account, Mill rejects the view that the subject matter of logic is the operations of our understanding, and that the precepts of logic are laws which are dependent on the nature of mental processes. Rather, Mill claims

It [Logic] does not, as we now see, relate to the Laws of Thought as Thought, but to those of the Products of Thought. Instead of the Laws of Conception, Judgement, and Reasoning, we must speak of the Laws of Concepts,

Judgements and Reasonings. (1865/1867, Chap. xx; 1979, 361)

Here, Mill is unequivocal in his claim that the precepts of logic do not pertain to acts of judgement, but to the products - what we have called the contents - of these acts. As such, the nature and character of logical precepts would seem to be independent of the mental processes which they serve to govern. Rather, the things which determine the nature and character of logic are the epistemic and semantic properties of these products of judgement. These, in turn, are a function of the objects of judgement.

Let us see how this view affects Mill's account of the foundation and justification of logical precepts. Having determined that Mill formulates the precepts of ratiocinative reasoning as the valid forms of the syllogism, it remains to be seen whether there is some common principle at work in all of these valid forms. That is, is there some principle which explains the legitimacy of all valid forms of the syllogism?

### §3.8 - Mill on the Ultimate Justificatory Foundations of Valid Ratiocination

#### §3.8.1 - The *Dictum de Omni et Nullo*: Mill's Rejection of Platonism

Mill begins his search for the principle which underwrites the legitimacy of syllogistic inference by considering the views of his philosophical predecessors. In the two legitimate universal moods of the first figure of the syllogism, it may be noted that each of them begins with a universal, or major, premise which either affirms or denies something of an entire class of things. This is followed by a second, minor premise which affirms that some thing (or class of things) belongs to that initial class (Mill 1843/1872, II.ii.2, 1973, 172-174). The syllogism

concludes with a claim which (depending on whether the major premise is positive or negative) either affirms or denies the predicate involved in the major premise of the subject of the minor premise. From these observations, Mill notes:

It [i.e., the above account] has accordingly been generalised and erected into a logical maxim, on which all ratiocination is said to be founded, insomuch that to reason, and to apply the maxim, are supposed to be one and the same thing. The maxim is, That whatever can be affirmed (or denied) of a class, may be affirmed (or denied) of everything included in the class. This axiom, supposed to be the basis of syllogistic theory, is termed by logicians the *dictum de omni et nullo*. (1843/1872, II.ii.2; 1973, 174)

On this view, there is a general principle which serves to legitimate all valid forms of the syllogism: the *dictum de omni et nullo*. Furthermore, the ultimate basis of this principle is metaphysical, since classes were conceived of as special kinds of abstract objects. As Mill writes, “Universals were regarded as peculiar kinds of substances having an objective existence distinct from the individual objects classified under them” (1843/1872, II.ii.2; 1973, 174). On this picture, the principle that “everything predicable of the universal was predicable of the various individuals under it, was then no identical proposition, but a statement of what was conceived as a fundamental law of the universe” (*ibid*). Classes, or universals, are a special kind of abstract object, and the *dictum de omni et nullo* describes a certain metaphysical truth about these abstract objects and the particulars which fall under them.

Mill rejects the *dictum de omni et nullo* as the foundation of the syllogism because it “appears suited to a system of metaphysics once indeed generally received, but which for the last two centuries has been considered as finally abandoned” (1843/1872, II.ii.2; 1973, 174). The problem with the *dictum de omni et nullo* is that it supposes that universals are a special kind of abstract object of which we may have knowledge, but which we never directly experience. Clearly such a view is not consistent with Mill’s general empiricism. Thus Mill writes the following.

Now, however, when it is known that a class, an universal, a genus or species, is not an entity *per se*, but neither more nor less than the individual substances themselves which are placed in the class, and that there is nothing real in the matter except those objects, a common name given to them, and common attributes indicated by the name; what, I should be glad to know, do we learn by being told, that whatever can be affirmed of a class may be affirmed of every object contained in the class? The class *is* nothing but the objects contained in it: and the *dictum de omni* merely amounts to the identical proposition, that whatever is true of certain objects is true of each of those objects. ... The *dictum de omni* is on a par with another truth ... “Whatever is, is.” (1843/1872, II.ii.2; 1973, 175)

So in rejecting the *dictum de omni et nullo* as the ultimate justificatory principle for ratiocinative inference, Mill rejects the view that our inferences are founded upon

metaphysical truths about the universe. Just as the subject matter of logic is not our ideas, nor is it a class of abstract metaphysical entities of which we have no direct experience.

### §3.8.2 - Mill's Rejection of Conventionalism

Before completely dismissing the *dictum de omni et nullo* as the basic justificatory principle at work in all ratiocinative inference, Mill considers a second interpretation of it. On this second interpretation, the *dictum* does not have a metaphysical foundation. Rather, Mill writes, “[t]o give any real meaning to the *dictum de omni*, we must consider it not as an axiom, but as a definition; we must look upon it as intended to explain ... the meaning of the word *class*” (Mill 1843/1872, II.ii.2; 1973, 175).

Mill's consideration of such a position foreshadows later developments in the account of the nature and subject matter of logic, for it is an account that would be later taken up by the logical positivists as an attempt to provide an account of logical necessity consistent with the basic epistemological principles of empiricism. Roughly, the account at issue explains the nature of logical expressions as analytic truths, the foundations of which are definitional. That is, the truths of logic are based on, or consequences of, definitions, and as such the truths of logic are about the meanings of terms. Since the meanings of our terms are thought to be, in the end, arbitrary and fixed by convention, this position has come to be called “conventionalism”.

Mill's discussion of this position begins with his recognition of two basic categories of propositions. One class describes matters of fact, while the propositions of the second class

“do not relate to any matter of fact, in the proper sense of the term, at all, but to the meanings of names” (1843/1872, I.vi.1; 1973, 109). The first of these classes Mill calls ‘real’ propositions, while the second Mill calls ‘verbal’. One crucial difference between real and verbal propositions is that only real propositions convey information. According to Mill, a verbal proposition is uninformative and “conveys no information to anyone who previously understood the whole meaning of the terms [involved]” (1843/1872, I.vi.2; 1973, 113; see also 1843/1872, I.vi.4; 1973, 115). According to Mill, propositions which are taken to express the essences of things are merely verbal propositions. Mill rejects the view that things have real essences (1843/1872, I.vi.2; 1973, 111). Instead, the meaning of the expression “the essence of man” is given by “the whole of the attributes connoted by the word man; and any one of those attributes taken singly is an essential property of man” (*ibid.*). It is because the content of a verbal proposition is already contained in the connotation of the name(s) used in the expression that verbal propositions are incapable of conveying any new information. Because only real propositions convey information, they are the only propositions capable of adding to our knowledge (1843/1872, I.vi.4; 1973, 116). Moreover, Mill writes, “Every proposition which conveys real information asserts a matter of fact, dependent on the laws of nature, and not on classification” (1843/1872, II.ii.3; 1973, 177). That is, the justification of every real proposition must be founded on experience; its truth-value is dependent on matters of fact, and as such the proposition itself is contingent. By now, Mill’s distinction between real and verbal propositions should be recognizable as a version of the more familiar



distinction between synthetic and analytic propositions (or statements).

Accompanying the distinction between real and merely verbal propositions is a distinction between real and apparent inference. An apparent inference “occurs when the proposition ostensibly inferred from another appears on analysis to be merely a repetition of the same, or part of the same, assertion, which was contained in the first” (1843/1872, II,i,2; 1973, 158). In each of the examples given by Mill, the conclusion of the apparent inference follows directly from just one claim and is obtained by a mere repetition of all or part of the claim from which it is derived. Sometimes the apparent inference is grounded on a relation of equivalence, exclusion, or inclusion expressed by the initial claim. At other times, the ‘conclusion’ of the apparent inference is derived ‘only appealing to another mode of wording [the initial claim]’ ” (1843/1872, II.i.2; 1973, 158).

Given that this is the sort of thing Mill has in mind when identifying apparent inferences, it would seem that there is another way of producing them. The characteristic feature of apparent inferences Mill describes as follows:

In all these cases there is not really any inference [mentioned above]; there is in the conclusion no new truth, nothing but what was already asserted in the premises, and obvious to whoever apprehends them. The fact asserted in the conclusion is either the very same fact, or part of the fact, asserted in the original proposition. (1843/1872, II.i.2; 1973, 160)

Now, consider inferences of the sort where any derived claim in the inference follows

necessarily from some claim taken from an initial list of premises (which may be real propositions) and a set of merely verbal truths about the meanings of the terms used in the initial list. Given that verbal truths merely express the meanings of terms, and convey no new information, it would not be possible for any claim so derived to assert any new claim not already asserted by the premises in the initial list. As a result, the fact asserted in the conclusion of such an inference would be either the very same fact or part of the fact asserted in the initial list of premises. We might call such inferences 'complex apparent inferences', since they involve more than one premise.

The conventionalist account of logic which Mill rejects is based on the claim that the propositions of logic are merely verbal truths. Yet, this view has the consequence that all of the inferences licenced by logic are only apparent inferences or complex apparent inferences. Suppose the conventionalist view that the truths of logic are merely verbal truths. On such a picture, inferences in logic are made by combining some logical truth with some initial premise to derive a new claim. The inferences made are licenced by the nature of merely verbal truths, which, being about the meanings of the terms in the initial list, are true by definition, independently of any matter of fact. Yet, the conclusions of such inferences do not contain any information other than that already asserted by (or contained in) the initial list of premises. So, if the truths of logic were merely verbal, then only apparent inferences would be available in logic.

Yet, this result is unacceptable to Mill. Like Descartes, Mill held that the

epistemological function of logic was to provide for a system that is actually capable of advancing knowledge. Logic, for Mill, is not merely a 'Logic of Consistency', but is instead the 'Logic of Truth' (*op. cit.*), and the Logic of Truth must involve the rules governing real inferences capable of establishing informative conclusions - i.e., of advancing knowledge. Yet, Mill is contemptuous of the view that apparent inference is capable of fulfilling such a function. For example, Mill ridicules the view that arithmetic and algebraic reasoning consist of merely apparent inferences.

The doctrine that we can discover facts, detect the hidden processes of nature, by an artful manipulation of language, is so contrary to common sense, that a person must have made some advances in philosophy to believe it. (Mill 1843, II,vi.2; 1973, 254)

Instead, Mill holds that we do discover facts by arithmetical and algebraic reasoning, and as such it cannot consist in apparent inferences. Similarly, logic for Mill has a completely epistemological function, and apparent inferences - whether drawn from real or merely verbal truths - cannot even approach this job.

These same reasons inform Mill's rejection of the *dictum de omni et nullo* as a definition which serves as the justification of all ratiocinative inference. Since Mill holds that logic properly involves real, and not merely apparent, inference, Mill rejects the view that the principles grounding the legitimacy of inference can be founded in merely verbal propositions. Rather, Mill writes that "[e]very proposition which conveys real information asserts a matter

of fact, dependent on the laws of nature, and not on classification” (1843/1872, II.ii.3; 1873, 177). As such, if the dictum is interpreted not as a metaphysical truth, but as a definition of the word “class”, it cannot support or justify the real inferences which occur even in ratiocination. “Since such is the purport of all propositions which convey any real knowledge, and since ratiocination is a mode of acquiring real knowledge, any theory of ratiocination which does not recognize this import of propositions, cannot ... be the true one” (Mill 1843/1872, II.ii.3; 1973, 177).

### §3.8.3 - Transitivity of Co-existence: The Empirical Foundations of Logic

Having rejected conventionalism and Platonism as the ultimate legitimating grounds for ratiocinative inference, Mill proceeds to formulate his own principle which provides the ultimate justificatory foundations of all syllogistic reasoning. In arriving at this principle, Mill considers several instances of syllogistic reasoning. Having done so, he claims the following.

If we generalize this process [of analysing examples of the syllogism], and look out for the principle or law involved in every such inference, and presupposed in every syllogism, the propositions of which are anything more than merely verbal; we find, not the unmeaning *dictum de omni et nullo*, but a fundamental principle, or rather two principles, strikingly resembling the axioms of mathematics. The first, which is the principle of affirmative syllogism, is, that things which co-exist with the same thing, co-exist with one another: or (still more precisely) a thing which co-exists with another thing,

which other co-exists with a third thing, also co-exists with that third thing.

The second is the principle of negative syllogisms, and is to this effect: that a thing which co-exists with another thing, with which other a third thing does not co-exist, is not co-existent with that third thing. These axioms manifestly relate to facts, and not to conventions; and one or other of them is the ground of the legitimacy of every [deductively valid] argument in which facts and not conventions are the matter treated of. (1843/1872, II.ii.3; 1973, 178)

Roughly, then, Mill finds that there are two fundamental principles which provide the grounds for the legitimacy of every ratiocinative inference. These principles appear to be an affirmative and a negative formulation of the principle of the transitivity of co-existence.<sup>11</sup>

---

<sup>11</sup> Indeed, Mill claims that real general propositions like these axioms may be interpreted in two ways (1843/1872, I.vi.5; 1973, 116-117). He writes that all real general propositions may be looked at either “as portions of speculative truth, or as memoranda for practical use” (*ibid.*).

When viewed as “a portion of our theoretical knowledge” the proposition makes a statement about whether certain attributes are accompanied by other attributes in things which are signified by a given term (1843/1872, I.vi.5; 1973, 117). This interpretation “points the attention more directly to what a proposition means” (*ibid.*). By contrast, “[t]he practical use of a proposition is, to appraise us or remind us what we have to expect, in any individual case which comes within the assertion contained in the proposition. In reference to this purpose, the proposition, All men are mortal, means that the attributes of man are *evidence of*, or are a *mark of*, mortality; an indication by which the presence of that attribute is made manifest” (*ibid.*). For Mill “[t]hese two forms of expression are at bottom equivalent” (*ibid.*).

In this respect, Mill claims that “every syllogism comes within the following general formula: Attribute A is a mark of attribute B; The given object has the mark A, therefore The given object has the attribute B.” (1843/1872, II.ii.4; 1973, 180).

Accordingly, Mill claims that the two axioms previously mentioned may be rephrased as follows:

These principles Mill calls “the fundamental axioms on which its [the syllogism’s] probative force or conclusiveness depends” (1843/1972, II.iii.1; 1973, 183). Importantly, then, these principles actually serve to justify or legitimate ratiocinative inference, and not merely to describe a pattern in accordance with which we reason whenever we reason correctly. Further, Mill’s claim that “[t]hese axioms manifestly relate to facts, and not to conventions” (*op. cit.*) reiterates his rejection of the idea that the principles of logic are grounded in linguistic convention.

#### §3.8.4 - Mill on the Empirical Foundations of Syllogistic Inference

Having identified the ultimate justificatory principle involved in ratiocinative inference, the foundation of this principle itself remains to be determined. Surprisingly, though, Mill never explicitly addresses the question of the ultimate justificatory foundations of the transitivity of co-existence. At first gloss, this might seem a remarkable oversight in view of Mill’s claims that this principle provides the grounds for the legitimacy of every ratiocinative inference, and that it is the axiom on which the probative force of the syllogism depends.

Mill does, though, ask this question of the axioms of geometry, and his answer, I believe, applies just as much for the ‘axioms’ of ratiocinative reasoning as it does for those

- 
- (i) “Whatever has any mark, has that which it is a mark of” (1843/1872, II.ii.4; 1973, 181)
  - (ii) “Whatever is a mark of any mark, is a mark of that which this last is a mark of” (*ibid.*).

Here syllogisms are not divided according to whether the major premise is affirmative or negative, but rather according to whether the minor premise is universal or not.

of geometric reasoning. In regards to geometry, Mill writes: "It remains to inquire, what is the ground for belief in axioms - what is the evidence on which they rest? I answer, they are experimental truths; generalisations from observation" (1843, II.v.4; 1973, 231). For Mill geometric axioms have the status of real general propositions, and Mill's explanation of the justification of all real general propositions - indeed all real propositions whatsoever - is the same: experience.

So the reason that Mill did not feel obliged to provide a specific account of the foundations of the principle of transitivity of co-existence was because it does not have any special status. Rather, its character is that of a real general proposition, and, as such, it is justified in just the same way as every other real general proposition. In this respect, the principle which provides the ultimate justificatory grounds for all ratiocinative inference has exactly the same status - and is justified in precisely the same way - as any of the major premises used in those inferences.

When discussing the justification of the major premise in a syllogism, Mill writes the following:

[W]hence do we derive our knowledge of that general truth? Of course, from observation. Now, all which man can observe are individual cases. From these all general truths must be drawn, and into these they may again be resolved; for a general truth is but an aggregate of particular truths; a comprehensive expression, by which an indefinite number of individual facts

are affirmed or denied at once. (1843/1872, II.iii.3; 1973, 186)

Not only does Mill give us no reason to think that there is some unique but unstated justification for the principle of transitivity of co-existence, but Mill's empiricist epistemology leaves him no other possibilities for its substantiation.

Mill's empiricism commits him to the principle that "[a]ll experience begins with individual cases, and proceeds from them to generals" (1843/1872, II.i.3; 1973, 163). Because of this, so long as general principles are to be real (or substantive) and not merely verbal, there is no possible way in which they may be justified except by experience. As such, the status of all real general propositions is the same. In a real general proposition, "[t]he results of many observations and inferences, and instructions for making innumerable inferences in unforeseen cases, are compressed into one short sentence" (1843/1872, II.iii.3; 1973, 187). But, the justification of that sentence can only be traced back to the particular cases, known by experience, on the basis of which the general proposition was initially inferred.

In summary, the general picture Mill gives regarding the ultimate justificatory foundations of logic is this:

And so, in all cases, the general propositions, whether called definitions, axioms or laws of nature, which we lay down at the beginning of our reasonings, are merely abridged statements, in a kind of shorthand, of the particular facts, which, as occasion arises, we either think we may proceed on



as proved, or intend to assume. (1843/1872, II.iii.3; 1973, 192)

### §3.8.5 - Non-Contradiction and Excluded Middle: Mill's Return to Psychologism

Nor is the principle of the transitivity of co-existence the only logical principle which Mill claims is justified by observation. Mill claims that the basic logical principle of non-contradiction also has the status of an universal generalisation justified by experience. Indeed, in holding that the principle of non-contradiction is an empirical generalisation over all our experiences, Mill reverts to a psychologistic position by including psychological experiences within the scope of the universal generalisation. Thus, Mill describes the foundation of the principle of non-contradiction as follows.

I consider it to be, like other axioms, one of the first and most familiar generalizations from experience. The original foundation of it I take to be, that Belief and Disbelief are two different mental states, excluding one another. (1843/1872, II.vii.5; 1973, 277)

That is the mental states of belief and disbelief are included in the universal generalisation expressed by the principle of non-contradiction. According to Mill, the universal generalization expressed by the principle of non-contradiction is justified not only by the inward observation of an exclusionary relationship obtaining between the mental states of belief and disbelief, but also by the outward observations of the exclusionary relationship which characterizes any "positive phenomenon" when contrasted with its negative (*ibid.*). Importantly, not only are mental states included in this generalisation, they are its "original

foundation.” As such, while the subject matter of logic is not entirely psychological in nature, it is partly (and essentially so), and logic is dependent on psychology. In fact, the very foundations of logical truths cannot be explained independently of psychology.

Mill offers a similar account of the foundations of the principle of the excluded middle.<sup>12</sup> Here, Mill approvingly quotes a passage from Herbert Spencer’s paper “Mill versus Hamilton: the Test of Truth” which appeared in the *Fortnightly Review* on 15 July, 1865.<sup>13</sup>

The law of the Excluded Middle, then, is simply a generalization of the universal experience that some mental states are destructive of other states. It formulates a certain absolutely constant law, that the appearance of any positive mode of consciousness cannot occur without excluding a correlative negative mode; and that the negative mode cannot occur without excluding the correlative positive mode. ... Hence it follows that if consciousness is not in one of the two modes [then] it must be in the other. (1843/1872, II.vii.5; 1973, 278-279)

Here again, it seems that the justification of the principle of the excluded middle essentially

---

<sup>12</sup> Importantly, Mill claims that an unqualified statement of the excluded middle is false, writing that “[b]etween the true and the false there is a third possibility, the Unmeaning” (1843/1872, II.vii.5; 1973, 278).

<sup>13</sup> It is likely that Mill added this passage either to the 7<sup>th</sup> edition of *A System of Logic* (which appeared in 1868) or to the 8<sup>th</sup> and final edition (which appeared in 1872).

involves the consideration of certain psychological facts, and this alone is sufficient to make logic dependent on psychology.

### §3.9 - Consequences of Mill's Position

#### §3.9.1 - Empirical Foundations and the Status of Logic

Mill is aware that his account cannot establish the necessity of logical axioms, nor does it entitle us to be certain of them. (As Hume claims, there is no contradiction involved in supposing *any* matter of fact to be otherwise.) Yet, even concerning such a basic logical principle as the principle of non-contradiction, Mill writes that he “cannot look upon [it] ... as a merely verbal proposition” (II.vi.5; 1973, 277). Rather, Mill claims that it is “one of our first and most familiar generalisations from experience” (*ibid.*). Further, Mill maintains that his empirical account is sufficient to explain the varying degrees of certitude with which we treat different empirical generalizations. Surely, for example, we should be more certain of the principle of non-contradiction than of the generalisation that all fish swim. According to Mill, the truths of logic generalise over all of our experiences; so each of our experiences provides additional evidence of their truth. As such truths of logic are confirmed to a higher degree than other truths which generalise over a more limited domain or subject matter, and this is what justifies the increased certainty we find in them (Mill 1843, II.v.4; 1973, 231-232).

#### §3.9.2 - Mill on the Nature of Inference

The second important consequence of Mill's view that the truths of logic are empirical generalisations concerns the nature of inference. We have seen already that Logic is involved

in the advancement of knowledge for Mill, and that the subject matter of Logic is the particular objects of sensory experience. As an empiricist, Mill held that the epistemological origins, and ultimate justification of all of our knowledge is experiential. And, "all experience begins with individual cases, and proceeds from them to generals" (1843, II.i.3; 1973, 163). This epistemological position informs Mill's account of the nature of inference.

According to Mill, since all experience begins with individual cases, "All inference is from particulars to particulars" (1843, II.iii.4; 1973, 193). It may *appear* that some inferences - the deductive ones - reason from the general to the particular. But for Mill, what is really at issue in such cases is the support or justification of the general proposition - the major premise - at work in such inferences. On Mill's account,

General propositions are merely registers of such inferences already made, ...  
the real logical antecedent or premise being the particular facts from which the  
general proposition was collected by induction. (*ibid.*)

As such all ratiocinative inference is ultimately inductive in character. Moreover, because of this Mill holds that syllogistic forms do not accurately represent the actual evidentiary structure of reasoning. On this point, Mill writes:

In the above observations it has, I think, been shown, that, though there is always a process of reasoning or inference where a syllogism is used, the syllogism is not a correct analysis of that process of reasoning or inference; which is, on the contrary (when not a mere inference from testimony) an

inference from particulars to particulars; authorised by a previous inference from particulars to generals, and substantially the same with it; of the nature, therefore, of Induction. (1843/1872, II.iii.5; 1973, 196)

Despite the sacrifice of necessity and *a prioricity* that his account demands, Mill is quite content with his picture. Not only is it consistent with his empiricist principles, but it provides that the character of all deductive inference is real as opposed to apparent, and as such promises a genuine advancement of knowledge.

### §3.10 - Conclusion

So far, we have considered three accounts of the subject matter of logic. Metaphysical Psychologism claims that the subject matter of logic is psychological in nature, and as such that logic is dependent on psychology. Typically, such accounts hold that the subject matter of logic is inference, and inference is in turn interpreted as a psychological act. Problematically, such accounts typically result in the relativisation of logic (and hence parts of epistemology) to a particular group of cognitive agents. Logic loses its necessity, and its objectivity, and is reduced to a subset of psychological laws.

In response to these problems, Frege distinguished between the act and the content of a judgement, claiming that it was the contents of judgements which are the proper subject matter of logic. The content of a judgement, according to Frege, is a Thought. Thoughts are abstract, insensible but objective entities residing in Frege's Platonic heaven: the 'third realm'. The nature of Thoughts is established by their two semantic functions: (i) Thoughts are the

senses of declarative sentences, and (ii) they are the bearers of truth. While overcoming the central problems of psychologism, Frege's Platonism raised new problems of its own. Most importantly among these is Frege's failure to explain how it is that we come to understand these Thoughts. Frege's account of meaning deprives us of any viable theory of understanding. A second problem is that, in holding that the connection between a Thought and its linguistic expression is psychological, Frege's account cannot maintain that the explanation of the meaning of a linguistic expression can be given independently of psychology. That is, while avoiding Referential Psychologism, and Psychologism of Sense, Frege's position fails to avoid Semantic Psychologism altogether.

The problems associated with Platonism prompted us to turn from the abstract to the everyday. Here, we took note of that portion of Mill's position whereby the subject matter of logic is to be found among the objects of sensory experience. We have seen that Mill's position concerning the subject matter of logic is decidedly fractured. On the one hand, Mill held that the subject matter of logic is psychological processes - the operations of the understanding. Further, logic is ultimately prescriptive with respect to these processes; the purpose of logic is the guidance of one's thoughts. Because of this Mill felt that the nature and character of logic is somehow determined by contingent facts about thought processes. Indeed, on some interpretations, Mill seems committed to the view that the precepts of logic amount to no more than a subset of the laws of association, and such an account is overtly psychologistic.

Yet, on the other hand, when Mill considered in what way logic is meant to be prescriptive over thought, he was moved to recognize that logic is inherently connected with truth. Moreover, the truth of a judgement is a function of its object, not the act itself. As such, the subject matter of logic is the objects of the inferential acts - not the acts themselves. The problem now was, how to explain the nature of these objects of inference. Forsaking conceptualist, conventionalist and Platonist accounts, and prompted by his empiricist upbringing, Mill provided a physicalist account of the subject matter of logic. The effects of Mill's empiricism on the nature and foundation of logic are considerable. Logic can no longer be thought of as an *a priori* science, whose truths are universal and necessary. Rather, the basic principles of logic have the status of empirical generalisations which, while highly confirmed by experience, are nevertheless contingent. Further, the deductive character of ratiocinative inference is illusory. Instead, all inference is inductive in character, and begins with our knowledge of the particulars experienced in sensation.

While acknowledging the limitations of such an account, Mill was quite content to live within the limited means afforded by empiricism. For Mill, the principles of logic ultimately have the same foundations and status as the propositions of science such as laws of nature and empirical generalizations over natural kinds.

Further, Mill maintains that his empirical account is sufficient to explain the varying degrees of certitude with which we treat different empirical generalizations. Surely, for example, we should be more certain of the principle of non-contradiction than of the

generalisation that all fish swim. According to Mill, the truths of logic generalise over all of our experiences; so each of our experiences provides additional evidence of their truth. As such truths of logic are confirmed to a higher degree than other truths which generalise over a more limited domain or subject matter, and this is what justifies the increased certainty we find in them (Mill 1843, II.v.4; 1973, 231-232). We can be more certain of logical principles than of other empirical generalizations because every experience contributes to the confirmation of a logical principle while only some experiences contribute to the confirmation of empirical generalizations such as “all fish swim”.<sup>14</sup> While the truths of logic may be more general than the truths of science, our knowledge of them comes from experience as does their ultimate justification.

Mill was content with this account in spite of its obvious limitations because he did not see any other possible justificatory foundation available within the confines of empiricism. For Mill, there are only two possible options for the foundations of logic if logic is to have the role of advancing knowledge. The first is mental and the second is sensory (or experiential). While he was torn between the two options, the consequences of each are similar in terms of their effects on the foundations and necessity of logic. Indeed, the deleterious effect of Mill's empiricism on the nature and foundations of logic seems to be no less than that of psychologism. Logic becomes dependent on a set of contingent facts, our knowledge of

---

<sup>14</sup> Mill did not consider Hempel's ‘paradox of confirmation’ that flying squirrels contribute to the confirmation of the claim that all fish swim (Hempel, [1945] 1965, 14-20; Quine 1969, 114-116).



which only arises *a posteriori*. In the next chapter, we turn to a consideration of the position which Mill passed over: the view that the expressions of logic are analytic in nature.

## Chapter 4

## Quine: From Analyticity to Naturalistic Holism

## §4.1 - Introduction: Analyticity and Necessity

So far we have considered several semantic alternatives to a straightforwardly psychologistic account of logic. The psychologistic claim that philosophy (logic, for our purposes) is dependent on psychology is commonly grounded in the claim that the subject matter of logic is inference, which is construed as psychological in nature. Equivalently psychologism may be founded on the claim that the referents of the logical lexicon are psychological entities. Another way to establish the philosophical relevance of psychology is to claim that the meaning of logical principles<sup>1</sup> cannot be explained independently of psychology.

---

<sup>1</sup> In this chapter I introduce the phrases “logical principles” and “principles of logic”. By these phrases I mean the model-theoretic and proof-theoretic primitives of formal logical systems. Examples would include:

- (i) valuation rules,
- (ii) axioms or axiom schemes (a typical example of which is all tautologies),
- (iii) derivation rules,
- (iv) Gentzen’s axiom  $a \vdash a$ , and
- (v) Gentzen’s basic structural rules of weakening, permutation, contraction and transitivity, as well as
- (vi) basic laws of logic such as non-contradiction ( $\sim(\alpha \ \& \ \sim\alpha)$ , where ‘ $\alpha$ ’ is a meta-language variable replaceable by any well-formed formulas of the language).

I apply this term to thinkers such as Frege, and groups of thinkers such as the logical positivists. Of course these thinkers would not have had in mind *each* of these groups of expressions. Instead, the reader should recognize that I mean to indicate those expressions of this sort which properly pertain to the author(s) in question.

Having observed the epistemological problems which result from psychologism, Frege sought to avoid it entirely by explaining the meaning of logical principles as Thoughts. Thoughts are insensible abstract entities which reside in Frege's Platonic heaven - the 'third realm'. Yet such a Platonist account presents numerous metaphysical and epistemological problems of its own (see my §2.5). On the other hand, while a straightforwardly empirical account of the meaning of logical and arithmetical principles might have the epistemological resources to explain our acquisition of them, these resources cannot sufficiently account for the *a prioricity* or necessity which form an integral part of our use of these expressions. For instance, with regard to necessity, a straightforward empiricism such as Mill's could only invest our logical principles with the status of empirical generalizations whose truth was dependent on, and justified by, empirical observation.

In response to the problems associated with each of these positions, it was claimed that the status of the principles of logic could be explained by the idea that they are analytic truths. While the truth of synthetic statements depends on the way the world is, and must therefore be justified (at least partly) by empirical observation, the truth of analytic propositions is portrayed as a function solely of the meanings of the terms - or of the conceptual relations - expressed in the statement. Since analytic truths so conceived are independent of contingent matters of fact (including psychological matters of fact), the hope was that analyticity could provide a foundation for logic that would support its *a prioricity* and necessity while at the same time remaining consistent with the basic epistemological

attitudes of empiricism.

The explanation of logical principles as analytic truths reached its maturity in the accounts offered within the logical positivism movement. Yet the concept of analyticity is not original to the positivists, and similar pictures may be found in many historical accounts. (We have already noted, for example, that Mill considered and rejected the account of the truths of logic as merely verbal truths.) Still it was the positivists' adoption of the position that logical principles are analytic truths which prompted what is perhaps the single most relentless and renowned critique of the position - and the very distinction itself - in the history of Western thought: that offered by Willard Van Orman Quine (1908-2000).

The first part of this chapter (§§ 4.2 - 4.3.2) is devoted to a discussion of the analytic/synthetic distinction, and an examination of the positivist view of the nature of logic. In considering positivistic versions of the claim that logical principles are analytic truths, it is important to recognize that there is no one, homogenous 'positivist account' of logic. Instead of trying to represent the views of all logical positivists, I try to capture the positivistic view to which Quine reacted, and the theoretical considerations which informed and shaped this view.

This sets the scene for the second part of the chapter (§§ 4.4 - 4.7.2.1), which sets out Quine's objections to the positivistic view, and his adopted alternative of semantic holism. By considering Quine's model of theoretical revision within semantic holism, I identify the status and foundation holism provides to the principles of logic and trace the development

from semantic holism to epistemological naturalism. In showing this connection, I consider the question of whether, and in what respects, Quine's holism and naturalism are properly described as psychologistic. Then I move to consider the epistemological consequences of Quine's view.

This leads to the final part of the chapter (§§ 4.8 - 4.10) which demonstrates some of the failures inherent within Quine's holism and his naturalism. While recognizing some of the insights which correctly inform Quine's objections to the positivistic conception of analyticity, I argue that some of the central tenets of Quine's holism cannot be held consistently. Further, I argue that Quine's holism fails to adequately account for the foundation or the function of logical principles. Because of this, Quine's naturalism misconstrues the contribution logic makes to such epistemically central concepts as evidence and justification. In marking these failures of Quine's semantics and epistemology, I proceed in chapter 5 to propose an approach to the semantics of logical principles which properly accounts for their foundation and their function.

#### §4.2 - Empiricism and the Necessity of Logic

As we observed at the beginning of this chapter, the principal flaw in a straightforwardly empirical account of the subject matter and foundation of logic is that it fails to account for the independence of the truths of logic from the contingencies of the (sensible) world. As a result, straightforwardly empirical accounts of the semantics of logical principles could not account for their necessity, since the necessity of a logical principle requires that its

truth be explained independently from any particular set of facts (or states of affairs) which may or may not obtain in the world. Moreover, if the truths of logic are independent of matters of fact, then any *knowledge* we have of them ought to be *a priori*. At least, our justification of these truths ought not to rely on experiential knowledge, and our acquisition of the knowledge of these truths ought not to rely on, or require any particular experience or knowledge of the way the world is.

It was the idea that the truths of logic should be necessary which motivated the positivistic reaction to straightforwardly empirical accounts of logic. According to empirical accounts such as J.S. Mill's, the truths of logic are high-order empirical generalisations known by experience. Yet as Mill admits, having never experienced all of the relevant particular instances which would establish the truth of the generalization, we can never be certain of any of the truths of logic. Instead, it is perfectly conceivable, though perhaps rather unlikely, that the truths of logic might all change tomorrow having been falsified by some experience. Moreover, as Hahn writes, if Mill is right that the truths of logic are high-order generalisations, they cannot be necessary, for "[w]hatever I know by observation could be otherwise" (Hahn [1933] 1959, 149). Thus, even if (per impossible) we could be empirically certain of the truths of logic, it would remain possible that they were merely contingent truths about the universe - but contingent truths which just happened to admit of no exception. Hahn called such an account "fundamentally unsatisfactory" (Hahn [1933] 1959, 150), claiming that it misrepresents not only the character of logical truths, but how they are

justified and how we come to know them. Hahn writes:

According to ... [the older empiricists] we now believe that something must be this way and cannot be otherwise simply because the relevant experience is so old and the relevant observations have been repeated innumerable times. On this view, therefore, it is entirely conceivable that, just as an observation might show that a heated body does not expand, two and two might sometimes make five. This is alleged to have escaped our notice so far because it happens with such extraordinary rarity ... ." (Hahn [1933] 1959, 150)

Of course, Hahn considered such a consequence absurd.<sup>2</sup> It is not unlikely that a logical truth is false, or that the universe not behave in accordance with the laws of logic; rather it is impossible. The negation of a logical truth is a contradiction - a logical impossibility. As such, the truths of logic are not merely true, they are necessarily so. That is, they are true no matter how things are with the world. A central feature of the principles of logic, then, is that their truth is independent of the way the world is.

---

<sup>2</sup> Both Hahn and Carnap (below) simply take it as absurd that experience could refute a logical truth, and use this claim as a premise in the *reductio* of the view that the truths of logic are established, or justified, by experience. While this may seem to beg the question, below it will be demonstrated that the thesis that the principle of non-contradiction could be refuted on the basis of a recalcitrant experience is incoherent. As such, I hold that the arguments of Hahn and Carnap are sound, and do not beg the question against empirical logicians.

In this respect, the status (or foundation) of the principles of logic is categorically different from the status of any empirically justified truth. Because of this, any acceptable account of the justification of logical principles must be categorically different from our explanation of the justification of statements in the empirical sciences. It is precisely in his failure to mark this categorical difference that Mill's account of the justification of logical truths is unacceptable to positivist thinkers. Ayer, for instance, writes:

The contention of Mill's which we reject is that the propositions of logic and mathematics have the same status as empirical hypotheses; that their validity is determined in the same way. We maintain that they are independent of experience in the sense that they do not owe their validity to empirical verification. ([1946] 1952, 75)

The principles of logic are categorically different from statements of the empirical sciences precisely because observation and experience cannot contribute to our knowledge or justification of logical truths - or to their refutation.

This final point is crucial and marks a recurrent theme in positivistic accounts of the nature of logical principles. Since they are not dependent on any contingent body of fact, the truth of logical principles cannot be refuted by experience. Carnap for instance, made this point when wrote in his *Intellectual Autobiography* that

The rationalists had been right in rejecting the old empiricist view that the truth of '2+2=4' is contingent upon the observation of facts, a view which



would lead to the unacceptable consequence that an arithmetical statement might possibly be refuted tomorrow by new experiences. ... By contrast [to factual, empirical statements], the truths in logic and mathematics are not in need of confirmation by observation because they do not say anything about the world of facts, they hold for any possible combination of facts. (Carnap 1963, 64)

It is by claiming that empirical observation has a role in the justification or refutation of the truth of logical principles that empiricism misrepresents both the character of logical truths and how we come to know them. Further, the fact that the truth of logical principles is established independently from observation informs Carnap's claim that truths in logic "do not say anything about the world of facts" (*op. cit.*). This claim has crucial implications not only for the foundation of logical principles but also, as we will see later, for their subject matter.

At this point, though, the problem facing logical positivism is that of providing an account of the justificatory foundations of logic that would sufficiently provide for their necessity. The problem is especially acute because the positivists agreed in principle with Mill's empiricism, and shared many of his epistemological presuppositions. As was observed in the previous chapter, Mill was quite aware of the justificatory limitations of his straightforwardly empirical account of the foundations of logic, as well as the problems for the necessary character of logical principles that followed from them. Yet, Mill was prepared to accept these undesirable consequences precisely because he saw no viable alternative which

might serve as the foundations for logic. The problem for the positivists, then, was to supply some alternative foundation for logic while only working with theoretical resources acceptable to the basic epistemological tenets of empiricism. As has already been indicated, the one resource that the positivists found underutilised within empiricism was the concept of analyticity.

#### §4.3 - The Concept of Analyticity in Logical Positivism

Perhaps the most straightforward characterization of the positivist account of analyticity may be found in Ayer's claim that "the criterion of an analytic proposition is that its validity should follow simply from the definition of the terms contained in it" (Ayer [1946] 1952, 82). According to Ayer, analytic propositions are the 'consequences' of definitions. One of the first things affected by such an account is the subject matter of logic.

##### §4.3.1 - The Subject Matter of Analytic Propositions

According to many traditional accounts (classic and modern), logic was no different from other sciences in that its subject matter was the universe, and the things in it. Logic differed from the particular sciences not in regards to its subject matter, but rather because of the degree of generality with which it treated that subject matter. While the other sciences treated of particular truths, or general truths in limited domains (e.g., biology or geology), logic treated of the most general truths of the universe. As such, the foundation of logical truths was conceived of as metaphysical. Hahn gives the following description of this picture.

The old conception of logic is approximately as follows: logic is the account

of the most universal properties of things, the account of those properties which are common to all things; just as ... biology is the science of all living beings, so logic is the science of *all* things, the science of being as such. (Hahn [1933] 1959, 152)

This account of the subject matter of logic was radically altered on the positivist view that the principles of logic are analytic truths. The positivists accepted the general empiricist doctrine that each and every synthetic statement is contingent and may only be known *a posteriori*. Further, since only synthetic statements can be informative about the universe, logic, if it is to have a necessary character, could not have as its subject matter the physical, actual universe, or the objects in it.

Rather, Hahn argues, the subject matter of logic - in whatever sense logic may properly be said to have a subject matter at all - is conceptual or linguistic, not metaphysical or scientific. Thus, Hahn contrasts the positivist account with the 'old conception' as follows.

Our thesis, on the contrary, asserts: logic does not by any means treat of the totality of things, it does not treat of objects at all but *only of our way of speaking about objects*; logic is first generated by language. The certainty and universal validity, or better, the irrefutability of a proposition of logic derives just from the fact that it says nothing about objects of any kind. (Hahn [1933] 1959, 152)

So, analytic propositions of logic are categorically different from the synthetic propositions

of science. To use Hahn's phrase, logic does not 'treat of' things in the world, but rather the concepts and categories by which we describe and categorize the entities of science. The propositions of logic are not distinguished from the claims of science in terms of their generality, but in the fact that they do not treat of the same subject matter as the propositions of science. As such, the propositions of logic are no more like universal generalizations and laws of nature than they are like particular claims about individual entities. The truth of analytic statements is not to be explained through some representation or correspondence they have with some domain of reality. Indeed, it is perhaps more accurate to say that the principles of logic do not 'treat of' (i.e., they are not *about*) any subject matter whatsoever - at least not in any usual sense.<sup>3</sup> Instead, even if it turns out that the principles of logic do 'treat of' (or are "concerned with") some subject matter, their truth does not consist in a correspondence to some state of affairs which the analytic statement somehow represents.

The reason for this is that there is also a pragmatic difference which separates logical principles from scientific claims. Scientific claims are statements describing their subject matter to varying degrees of generality; they make assertions about it which may be true or false. Yet, the principles of logic are not properly construed as statements whatsoever.

---

<sup>3</sup> There is an obvious sense in which the analytic truth "All bachelors are unmarried" treats of the subject matter all bachelors, although the sentence would remain true even if there were no actual bachelors. And, while bachelors themselves may exist independently of their being so called, the concept of 'bachelor' (the connotation of the word "bachelor", the predicate or category of "bachelorhood") does not exist independently of any and all analytic truths 'about' bachelors.

Instead of saying something universally true of all objects, Hahn claims that the propositions of logic “stipulate ... [or] prescribe a *method of speaking about things*. And their universal validity and certainty, their irrefutability, just derives from the fact that they say nothing at all about objects” (Hahn [1933] 1959, 153). Indeed, not only is the necessity of logic grounded in its subject matter. In addition, it is the inherently stipulative or prescriptive relation which logic has to that subject matter which guarantees its necessity. Science describes a subject matter whose nature is already pre-given, independently of the scientific descriptions of it. Logic, by contrast, does not *describe* a subject matter whatsoever. Rather, the principles of logic actually *establish* the very nature of its subject matter. As such the relationship between logic and its subject matter might be described as “constitutive”. It is because of this that the principles of logic cannot be false.

In view of these differences, Hahn claims that we must recognize two different kinds of ‘statements’. “We see, then, that there are two totally different kinds of statements: those which really say something about objects, and those which do not say anything about objects but only stipulate rules for speaking about objects” (Hahn [1933] 1959, 154). The first class of ‘statements’ are properly so called, and have all the usual properties of declarative sentences. Their function is to make an assertion which describes a subject matter. This assertion may be true or false depending on the accuracy of the description, and a description is accurate when it correctly represents an actual state of affairs that obtains in the world (i.e., a fact). So, the accuracy of a description is a function of how the world is.

The second class of 'statements' are not really statements in the usual way of speaking, and neither are they about a subject matter in any usual sense. Their function is not to describe but to stipulate. Further, these stipulations are not made about the world itself, but about the concepts we use to categorize and classify the things in the world. So, the 'subject matter' of these 'statements' is conceptual and linguistic, not factual. Further, this 'subject matter' is not a class of objects or entities which pre-exist the 'statements' of logic, have a nature independent of the 'statements' of logic, and which are described by these 'statements'. Rather, the 'statements' of logic serve to constitute the very nature of our concepts. These concepts and categories are not an actual subject matter which is described by the statements of logic; rather, they are the constructions of logical statements. We use them to describe and categorize the actual entities which form the subject matter of science.

It is because of the function and the subject matter of these principles that they are incapable of being false, and in this respect also they differ from normal statements. As definitions, these 'statements' establish the meanings of our concepts and linguistic principles and are not subject to truth or falsity. They are neither axioms nor theorems, but rather, as authors such as Quine ([1935] 1976, 78) point out, they are licences for the substitution of one linguistic expression for another. We may also speak about another class of statements which are logically true. These are universal truths which record the consequences of definitions. (For example, from the definition that "The word 'bachelor' means an adult, unmarried human male" it follows that "All bachelors are unmarried".) The truth of these

statements is independent of any states of affairs which may or may not obtain in the world. As such, their truth is not a matter of their descriptive accuracy so much as it is a function of the meanings of our linguistic expressions.

#### §4.3.2 - Analyticity, Necessity and Deduction

This picture of the nature and subject matter of logical principles provides a completely different account of their necessity. Since logical principles are not a special kind of statement about (i.e., description of) the world, their necessity is not established metaphysically. Instead, analytic propositions “simply record our determination to use words in a certain fashion. We cannot deny them without infringing the conventions which are presupposed by our very denial, and so falling into self-contradictions” (Ayer [1946] 1952, 84).<sup>4</sup> For positivists like Ayer, to deny an analytic truth is not to demonstrate any lack of knowledge about the way the world is. Nor, indeed, could such a mistake be corrected by showing that the world is, in fact, one way rather than another. Rather, to deny such ‘statements’ is to indicate that one does not properly understand the concepts used in the expression, and the cure for such mistakes is to be found in linguistic, not factual, knowledge. So, the ultimate foundation of the principles of logic, and hence the source of their necessity,

---

<sup>4</sup> It would appear from statements such as these that Ayer was not a thoroughgoing conventionalist in the following respect. It seems that Ayer did not hold certain principles of logic (e.g., the law of non-contradiction) to be a matter of convention. Instead Ayer seems to be a realist about truth, and to assume the classical bi-valent truth semantics.

is linguistic not metaphysical.

By setting the foundations of logical necessity within language, the analytic account of the nature of logical principles also has consequences concerning the nature of deduction. Deduction does not proceed by adding factual knowledge to a set of premises which are either supposed or known to be true, and the rules of deduction are not causal or metaphysical laws of the universe. As such, the nature of deductive entailment is not a function of the way the world is. Rather, deductive arguments proceed by establishing those propositions whose negations contradict the conjunction of the premises. Deductive arguments are 'held together' by the principle of validity, and a deductively valid argument is one for which it is not possible for the conclusion to be false given the truth of the premises. The impossibility demonstrated in deduction is logical and conceptual, not causal or metaphysical - and especially not psychological. We know that the conclusion of a deductively sound argument *cannot* be false not because we have any special knowledge about the universe or the laws which govern it, but because we have stipulated that we will use terms in a certain way and to call the conclusion of a sound argument false would be a violation of these stipulations. So, the impossibility at work in the principle of deductive validity is conceptual. Logical necessity is a conceptual necessity, and this is the necessity which is preserved in deductive inference.

Within logical positivism, this picture of the "essence of ... logical deduction" (Hahn [1933] 1959, 156) is captured in the following description offered by Hahn.



[Logical deduction] ... is not ... in any way based on real connections between states of affairs, which we apprehend in thought. On the contrary, it has nothing at all to do with the nature of things, but derives from our manner of speaking about things. (*ibid.*)

According to the positivists, the laws of deduction are categorically different from the laws governing other kinds of scientific inference. The laws of deduction, unlike the laws of nature, are not descriptions of independently given principles rooted in the very metaphysical structure of the universe. Rather they reflect the stipulations which establish the meaning of our concepts and govern our use of them.

Hahn felt that this difference may be seen by considering that a persistent deductive error demonstrates a conceptual misunderstanding, not a factual ignorance.

A person who refused to recognize logical deduction would not thereby manifest a different belief from mine about the behavior of things, but he would refuse to speak about things according to the same rules as I do. I could not convince him, but I would have to refuse to speak with him any longer, just as I should refuse to play chess with a partner who insisted on moving the bishop orthogonally. (Hahn [1933] 1959, 156)

In this respect, the nature of a dispute over the laws of logic is categorically different from a dispute concerning the laws of nature. A dispute concerning a law of nature marks a disagreement concerning a matter of fact. By contrast, a dispute concerning the laws of logic

marks a disagreement concerning the meaning of concepts and their relations. Yet, disagreements concerning matters of fact can only occur after the concepts used to describe these facts have been fixed.

Admittedly, Hahn's stance here seems to miss the important point that there are crucial differences between the laws of logic and the rules of chess. The rules of chess constitute an activity, our engagement in which seems largely to be a matter of incidental importance. Our engagement with logic, on the other hand, is a matter of considerable importance. There are material connections between logic, rationality and truth which are not present in the chess analogy. Questions surrounding the 'choice of logic' (or changing certain rules of logic) are theoretically interesting and have epistemological, scientific and perhaps even metaphysical consequences, none of which apply to the issue of changing the rules of chess. Further, in view of these connections, there may be good reasons for adopting a one set of logical rules over another. The philosophically interesting question at this juncture is whether such reasons are only of a utilitarian nature (i.e., that they are only expressible in relation to certain more-or-less arbitrary goals) or whether there may be metaphysical reasons for adopting one logic over another. So, to simply refuse to 'play' with a person who accepts a set of logical rules different from our own - and to do so on the grounds that such a person simply does not understand 'our' logical game - is to avoid (if not beg) some crucial theoretical issues.

#### § 4.4 - Quine's Critique of the Positivist Program in Logic

One of the foremost critics of the positivist account of logic was Willard Van Orman

Quine (1908-2000). Perhaps the best way to characterize the position to which Quine responded is to turn to the 1946 Introduction to the second edition of A.J. Ayer's *Language, Truth and Logic*, where he characterizes the positivistic, conventionalist account of the *a priori* necessity of the propositions of logic. The propositions of logic are tautologies, and if a statement is analytic then it is a tautology ([1946] 1952, 16). So, the positivistic account of logic hinges significantly on the conception of analyticity, which Ayer characterizes as follows: "a proposition is analytic if it is true solely in virtue of the meaning of its constituent symbols, and therefore cannot be either confirmed or refuted by any fact of experience" ([1946] 1952, 16). This picture of the nature of logical principles was accepted by many logical positivists including Frege's student Carnap, and was the picture which Quine came finally to reject. Indeed, Quine first learned of this picture from Carnap in the early 1930s, and came to completely repudiate it by 1951. In doing so, he drastically altered the outlook of contemporary Western epistemology and the semantic environment in which is oriented.

Quine first met Carnap in Prague in 1933, at about the time when Carnap was drafting *The Logical Syntax of Language* (Creath 1990, 27-28). Therein, Carnap states his own conception of the nature of analyticity, which I shall try to summarize in non-technical terms. Roughly, for Carnap, an analytic sentence is one which is "true in every case" (1934/1937,

I. §10; 1951, 28) - true in every possible situation or under every interpretation.<sup>5</sup> Because analytic sentences are true under every interpretation, they do not convey any information about reality or the world. As Carnap writes, “In material interpretation, an analytic sentence is absolutely true whatever the empirical facts may be. Hence it does not state anything about facts. ... A synthetic sentence is sometimes true - namely when certain facts exist - and sometimes false; hence it says something as to what facts exist. *Synthetic sentences* are the *genuine statements about reality*” (1934/1937, I. §14 Thm. 14.4; 1951, 41). Further, in ‘not stating anything about facts’ analytic sentences may be categorically distinguished from synthetic statements in terms of their subject matter: analytic sentences are not about any subject matter, at least not in any normal sense. In Carnap’s words, “An analytic sentence is not actually ‘concerned with’ anything, in the way that an empirical sentence is; for the

---

<sup>5</sup> Using a truth-table to represent these possible situations or interpretations, an analytic sentence is one which is true on every possible valuation (1934/1937, I. §5; 1951, 20), where a valuation is understood as a single line on a truth table representing an individual and unique distribution of truth-values over the atomistic semantic particles composing some compound sentence.

Further Carnap writes, “If a sentence when materially interpreted is logically universally true (and therefore the consequence of any sentence whatsoever) we call it an *analytic* (or tautological) sentence” (1934/1937, I. §10; 1951, 28). The important point here is that analytic sentences are “a consequence of the null class of sentences (and thus a consequence of every sentence)” (1934/1937, I. §14. Thm 14.1; 1951, 39). Since it is not logically possible for an analytic sentence to be false, when an analytically true sentence serves as the conclusion in an argument or derivation, it is not logically possible that the conclusion be false given the truth of the premises. So, analytic statements may be validly derived from any set of premises whatsoever, including the null class.

analytic sentence is without content” (1934/1937, Intro §2; 1951, 7).<sup>6</sup> Like the other positivists, then, Carnap took analytic sentences to be categorically different from other kinds of sentence. He further held their distinguishing feature to be the logical impossibility of their falsehood.

At first, Quine was an adherent, and advocate of Carnap’s positivistic account of the nature of logical principles as analytic truths. Yet, over the next twenty years, Quine would come to fully reject not only the details of Carnap’s position, but also the basic theoretical underpinnings on which Carnap’s model was built, and the attitudes which inform and motivate Carnap’s approach. Indeed, Creath has remarked that the seeds for Quine’s dissent were present almost from the very beginning of his relationship with Carnap.

Astonishingly, Quine’s very first reaction (preserved in a brief shorthand note by Carnap) contains in embryonic form his whole view of the matter: Might not, he wondered, the difference between the (analytic) axioms of arithmetic and (synthetic) empirical claims about physical bodies be a difference of degree? Might not these degrees reflect our relative willingness to abandon the various beliefs under consideration? (Creath 1990, 28)

Here, the two central claims of Quine’s mature theory are presented. First, all components

---

<sup>6</sup> Carnap explains his use of the phrase “concerned with” as follows: “The figurative ‘concerned with’ is intended here in the same sense in which arithmetic is said to be concerned with numbers” (*ibid*).

of a theory are on a par with respect to their subject matter and function; there are no categorical differences between the different components of a theory. Specifically, the principles of logic have neither a special status nor a special function within a theory. Second, the 'entrenchment' of a claim in a theory - the degree of confirmation or justification of the claim - is not a function of the claim itself. Nor is it a function of the logical or epistemological properties of the claim, at least traditionally understood. Instead, entrenchment is explained in terms of the psychological attachment that thinkers have to a claim - their willingness (or unwillingness) to abandon one claim for another in the course of scientific investigation. These two attitudes crucially inform Quine's mature views and stand in the background of his naturalized programme in epistemology. It is because entrenchment is explained psychologically and not normatively that "[e]pistemology, or something like it, simply falls into place as a chapter of psychology, and hence of natural science" (1969, 82).

To see Creath's point, consider the following passage from Quine's 1935 paper "Truth by Convention" which was written only three years after his first meeting Carnap, and was largely sympathetic to Carnap's overall project. Yet, even then Quine may be found to say:

There are statements which we choose to surrender last, if at all, in the course of revamping our sciences in the face of new discoveries; and among these there are some which we will not surrender at all, so basic are they to our whole conceptual scheme. Among the latter are to be counted the so-called truths of logic and mathematics, ... Now since these statements are destined

to be maintained independently of our observations of the world, we may as well make use here of our technique of conventional truth assignment and thereby forestall awkward metaphysical questions as to our a priori insight into necessary truths. ([1936] 1976, 102)

As before, what may be seen here is that even in his apparent support of Carnap's position, Quine's justification of the conventionalist account of logic reveals the precursors of his mature naturalism. First, Quine portrays the necessity of logical and mathematical principles in terms of our unwillingness to surrender them in the course of revamping our sciences. Further, empirical corroboration or refutation are presented as the only grounds for accepting or altering a claim (no other grounds are considered). It is in this context that Quine's acceptance of the positivistic account is rooted. And it is perhaps because Quine saw the problems of logic and analyticity in this context that he was able to break with the conventionalist tradition so decisively.

By 1951, Quine's rejection of the positivistic account of logical principles as analytic truths is complete. In his seminal paper "Two Dogmas of Empiricism" Quine argues that the distinction between the analytic and the synthetic is "ill-founded" ([1951] 1961, 20), and, because of this, the explanation of logical principles as analytic truths must be similarly 'ill-founded.' Not only is it not possible to even stipulate the distinction in a theoretically rigorous way, but moreover, when the consequences of semantic holism are properly understood, no categorical distinction may be made regarding the empirical (or factual) and

the semantic aspects of a statement that contribute exhaustively to its overall truth or falsity. Instead, it may only be said in the most general way that both facts of the world and the meanings of our terms contribute to the truth conditions of each of our declarative linguistic expressions - though the specific contribution of either of these factors cannot be precisely identified.

In rejecting the distinction between analytic and synthetic propositions and advocating semantic holism in its place, Quine rejects the positivist account of the nature of the logical principles as analytic truths. In doing so, Quine rejects the accompanying explanations of the necessity, subject matter and foundation of logic. In place of this, Quine describes a model of semantic holism whereby the factual and linguistic factors of a statement's truth-conditions cannot categorically be distinguished from one another. All components of a theory are on a par in that they cannot be distinguished according to their subject matter or their function, and all are subject to the two dogmas of holism: revisability and preservability. Further, all components of a theory are built on the foundations of minimum mutilation and entrenchment. Yet, these instrumental principles do not anchor the statements of a theory according to their logical or epistemological properties traditionally understood. Instead, they are better seen as a measure of our willingness to surrender certain claims in the context of certain goals. In accepting that minimum mutilation and entrenchment actually provide theory with the only foundations available, Quine advocates that epistemology be naturalized, and that the relation of evidence to theory be studied psychologically.



The structure of Quine's argument in "Two Dogmas" roughly divides into two stages. In the first stage, Quine attempts to show that there is no non-circular way of specifying the concept of analyticity in a theoretically rigorous way. In the second stage, Quine attempts to show that, in view of semantic holism the traditional, foundationalist underpinnings of epistemology are unearthed, and that naturalistic approaches (particularly those provided by psychology) provide the most lucrative prospects for the study of epistemology.

#### §4.5 - Quine on the Concept of Analyticity

##### §4.5.1 - Analyticity is Explained via Meaning

In the first stage of his argument against the theoretical integrity of the concept of analyticity, Quine searches for a rigorous and non-circular way of defining it. Quine considers and rejects several criteria which have been invoked to stipulate those statements which are analytic, and to distinguish these from other, synthetic statements. First is the conception that analytic statements are "statements whose denial is self-contradictory" ([1951] 1961, 20). This account is rejected because, according to Quine, the notion of 'self-contradictory' stands in need of explanation just as much as does 'analyticity' (*ibid.*). Next, Quine considers Kant's conception that an analytic statement "attributes to its subject no more than is already conceptually contained in the subject" ([1951] 1961, 20-21). Quine rejects this Kantian version not only because it requires that statements have a subject-predicate form. (Such an account of the grammatical structure of statements makes opaque the logical structure of common statements, and the inferential structure of many valid inferences.) In addition to giving an

inadequate account of the structure of statements, Quine also accuses the Kantian conception of analyticity of a vagueness that deprives it of any theoretical value. According to Quine, the notion of containment is “metaphorical,” and hence not theoretically rigorous ([1951] 1961, 21). Having rejected these first two definitions, Quine settles on a distinction resembling Ayer’s, whereby: “A statement is analytic when it is true by virtue of meanings and independently of fact” ([1951] 1961, 21).

#### §4.5.2 - Meaning is Explained via Synonymy

Importantly then, the only notion which Quine allows as explanatory of the concept of analyticity is the notion of meaning. So, for Quine, the theoretical acceptability of analyticity as a property of statements depends on a theoretically acceptable account of the meaning of a statement. According to Quine, meanings are not properly understood as special kinds of entities. Quine rejects what he calls the ‘myth of the museum’ on which words are like the labels for the exhibits which are their meanings ([1968] 1969, 27). In rejecting reificationist accounts of meaning, Quine not only rejects mentalist accounts of meaning where the meanings of expressions are taken as ideas or other psychological entities. Quine also rejects Frege’s alternative according to which meanings are abstract entities which are objective but insensible (*ibid.*). The mistake involved in reification of meaning extends beyond positing an extra species of abstract entities which overpopulate the metaphysical and theoretical world. It is not just that the positing of such constitutionally insensible entities - entities whose effects even are insensible - cannot be empirically justified. Moreover, if

meanings are construed as a special class of things, then understanding must be explained as being a process of guessing which of these things an interlocutor 'has in mind' when communicating. According to Quine, "language is a social art" (1960, ix; [1968] 1969, 26). As such, the criteria for understanding and (hence) successful communication, must be articulated in terms of publically observable behaviour (1960, ix, 1; [1968] 1969, 26). Yet, the contents of our minds are epistemically private. So even if meanings themselves are construed as objective entities, if our intending them (i.e., our intensional relationship with these objects) is construed as epistemically private, then no empirically verifiable criteria for understanding and communication may be formulated. So, meanings cannot be explained in terms of their being special kinds of things.

#### §4.5.3 - Closing the Intensional Route to Explaining Synonymy

Rather, meaning is to be explained in terms of "sameness of meaning" ([1951] 1961, 37). We might say that the concept of meaning is to be explained *substitutionally*, in terms of synonymy. Having just examined the positivistic account of analytic truths as the consequences of definitions, it might seem that the synonymy of expressions may easily be established by resorting to definitions. By specifying the definition of an expression, it may easily be established that a definiendum has the same meaning as its definiens. Yet, Quine deprives the philosopher of recourse to a stipulative use of definitions, claiming that "the lexicographer is an empirical scientist, whose business is the recording of antecedent facts" ([1951] 1961, 24). Here, the Oxford everyday language philosopher is replaced by the

anthropologist (or the sociologist), and linguistic philosophy is replaced by the science of linguistics. So, in arguing that philosophers do not have any special entitlement (privileged access?) to the meanings of expressions in our language, Quine claims that “the ‘definition’ which is the lexicographer’s report of an observed synonymy cannot be taken as the ground of the synonymy” ([1951] 1961, 24). Instead, Quine maintains that “[i]n formal and informal work alike ... we find that definition - except in the extreme case of the explicitly conventional introduction of new notations - hinges on prior relations of synonymy” ([1951] 1961, 27).

Importantly, dictionary-style definitions are not the only target of Quine’s criticism here. Rather, any expression whose function is to give (part of) the connotation of another expression (e.g., ostention) as well as rules which specify (partial) criteria for the proper use of an expression would fall within the scope of Quine’s argument. Indeed, any expression which gives (part of) the meaning of any other expression- including those used in the teaching and learning of language - are construed by Quine as descriptions of a meaning which is somehow established and codified *prior* to these linguistic acts.<sup>7</sup> As descriptions of some- ‘thing’ antecedently given, definitions are really ‘statements about meanings’ and may be right or wrong - true or false - depending on their descriptive accuracy.

---

<sup>7</sup> Included here are the semantical rules for formal languages which Quine discusses in §4 (1961, 32-37) of “Two Dogmas.” Of these, Quine argues that “Semantical rules for determining the analytic statements of an artificial language are of interest only in so far as we already understand the notion of analyticity; they are of no help in gaining this understanding” ([1951] 1961, 36).

It should be observed, then, that Quine's claim that "the lexicographer is an empirical scientist" (*op. cit.*) whose claims rely on "prior relations of synonymy" (*op. cit.*) is a crucial premise in his overall argument. For, if Quine is correct about this then, (even) if the proper foundation of logical principles *is* established by definitions, our knowledge of logical truths could never be certain. Rather, since our knowledge of meaning would be like all other scientific knowledge - i.e., hypothetical and justified by experience - our knowledge of logical truths would have the same foundation and character as all of our other scientific knowledge. As such, we would be back in the position of Mill, and nothing would have been gained by changing the subject matter of logic from things to meanings. Further, Quine's only reason for denying the philosopher access to definitions as a foundation of synonymy (with the exception noted above (Quine [1951] 1961, 27)), and hence as an explanation of analyticity, is to be found in his claim that definitions are not stipulations of meaning but statements about meanings, and that to offer a definition is not to give a rule but to make an observation.

#### §4.5.4 - Closing the Extensional Route to Explaining Synonymy

With definitions unavailable as justification of synonymy, it would seem that all intensional routes to the explanation of meaning are closed to the philosopher. Quine's next move is to close the extensional route also. According to Quine, if we are to avoid the "confusion of meaning with extension" ([1951] 1961, 21) we cannot accept substitution *salva veritate*, or "interchangeability in all contexts without change of truth value" ([1951] 1961, 27) as an account of synonymy. As we saw with Frege, two expressions may have the same

extension (or reference) without having the same connotation (or sense). So, a proper explanation of sameness of meaning requires the “cognitive synonymy” ([1951] 1961, 31) of two expressions, not merely their co-extensionality. Indeed the co-extensionality of two synonymous expressions must be necessarily - or *analytically* - true, so any explanation of synonymy which is based on extensionality depends upon - and hence cannot explain - the notion of analyticity (Quine 1951, 27-32). Thus, it would seem that Quine denies both intensional and extensional avenues to achieve sameness of meaning.

#### §4.5.5 - Conclusions of Quine’s Argument Against the Concept of Analyticity

The conclusions Quine draws from this are simple yet extensive. The first is that there is no non-circular way of explaining the concept of analyticity in a theoretically rigorous way. Particularly, the notion of meaning cannot be relied on whatsoever in clarifying the nature of analyticity.

Analyticity at first seemed most naturally definable by appeal to a realm of meanings. On refinement, the appeal to meanings gave way to an appeal to synonymy or definition. But definition turned out to be a will-o’-the-wisp, and synonymy turned out to be best understood only by dint of a prior appeal to analyticity itself. So, we are back to the problem of analyticity. ([1951] 1961, 32)

Since no adequate explanation of analyticity can be found, Quine argues that the concept itself is without theoretical integrity. As such, it cannot serve to explain the nature of logical

principles. Indeed, given Quine's other theses about the nature of definition, any contribution that analyticity might make to an account of the nature of logic would not provide logic with the epistemically desirable property of certainty. Rather, our knowledge of logical truths would be of the same character, and have the same justificatory foundation, as our knowledge of any other truth in empirical science.

Moreover, since the concept of analyticity is without theoretical integrity, the entire picture of meaning of which it is a part also becomes theoretically suspect. Indeed for Quine, the failure of analyticity is but one moment in the collapse of a much larger theoretical framework. The framework, which Quine characterizes as 'reductionism' - or the reduction of theoretical claims to observation claims - in "Two Dogmas", is better characterized in Quine's mature philosophy as normative epistemology. The beginning of this collapse may be seen in Quine's holistic account of meaning, to which the failure of analyticity makes a direct contribution. One aspect of semantic holism may be found in Quine's claim that the linguistic and factual components of a statement's truth conditions cannot be isolated.

It is obvious that truth in general depends on both language and extralinguistic fact. ... Thus one is tempted to suppose in general that the truth of a statement is somehow analysable into a linguistic component and a factual component. Given this supposition, it next seems reasonable that in some statements the factual component should be null; and these are the analytic statements. But, for all its a priori reasonableness, a boundary between analytic and synthetic

statements simply has not been drawn. That there is such a distinction to be drawn at all is an unempirical dogma of empiricists, a metaphysical article of faith. ([1951] 1961, 36-37)

Quine's assertion here extends beyond the mere claim that there are no analytic statements. Rather, analytic statements are portrayed in the context of a picture where both linguistic and factual components make separable and identifiable contributions to the truth conditions of individual statements. Analytic statements are but a limiting case of this picture, where the factual component contributes nothing to the truth conditions of the statement. Yet, Quine does not merely claim that there are no such statements; rather he claims that the entire picture of meaning in which analytic statements are a part is mistaken.

#### §4.6 - Semantic Holism

That there are no purely analytic statements is merely one fragment of Quine's overall vision of semantic holism. The more general idea here is that for any particular statement, no specifically linguistic or specifically factual contribution to the truth conditions for the statement are categorically identifiable. According to holism, one cannot separate individual components which contribute to the truth conditions of a statement. Instead, it may only be claimed in the most general way that linguistic meaning and the way the world is contribute to the truth of any given statement.

Another aspect of Quine's holism concerns the minimal unit of empirical significance. According to Quine, individual statements considered independently of one another do not



have a large enough 'fund' of empirical consequences to be tested against experience one by one; so they have to be tested as a bunch.

#### §4.6.1 - Quine's Holistic Model of Belief Revision

To see this point, we must consider Quine's model of belief revision, and introduce some of the technical language in which Quine spells out his model. Quine describes the "characteristic occasion" of belief revision as follows:

It was the situation where a new belief, up for adoption, conflicts somehow with the present body of beliefs as a body. Now when a set of beliefs is inconsistent, at least one of the beliefs must be rejected as false; but a question may remain open as to which to reject. Evidence must be assessed, with a view to rejecting the least firmly supported of the conflicting beliefs. (Quine & Ullian 1978, 16)<sup>8</sup>

So far, this account seems relatively common-sense. In the spirit of Quine's model, we may

---

<sup>8</sup> Interestingly, given Quine's mature naturalism, the status of his claim that we *must* reject as false at least one of our beliefs when faced with an inconsistency provokes some rather pressing questions. For instance, is this claim an analytic statement? Alternately, is this an empirical claim, or a description of past epistemological practice? If so, it is obviously false. Many religious examples can be found where the contradiction is simply accepted, accompanied by an appeal to the mysteries of God. Yet, if it is not an empirical claim then what is the force of the necessity behind the claim that we *must* give up one of them? It would seem that a full statement of Quine's naturalistic theory relies on - indeed, requires - modal operators. Yet, what resources can Quine's naturalism supply in accounting for such modal operators? (Similar sorts of questions may be raised for the normative claim that we *ought* to give up one of the inconsistent beliefs.)

call our present body of beliefs a theory. (Quine sometimes speaks of sets of theories, though I will use the term “theory” in a more general sense to include everything in the web of belief.) Our theories consist of sentences (Quine 1992, 2) which are linked together in specifiable ways. The job of logic is to connect sentences to sentences (*ibid.*), but the “initial links in those connecting chains” (1992, 2-3) are provided by “sentences that are directly and firmly associated with our stimulations” (1992, 3). For now, we may consider these initial links as observation sentences.<sup>9</sup> “An observation sentence is an occasion sentence on which speakers of the language can agree outright on witnessing the occasion” (*ibid.*), and an occasion sentence is simply a statement whose truth or falsity depends on the occasion (*ibid.*).<sup>10</sup> As we will see below, observation sentences have a very special function and status in Quine’s overall picture. The important point to note for the moment is that observation statements are the points of contact between theory and the world (Quine & Ullian 1978, 28).<sup>11</sup> As such, it

---

<sup>9</sup> Quine seeks to explain the notion of observation in terms of stimulation, a move which I discuss below in connection with his epistemological naturalism (§§ 4.7.2, 4.7.2.1).

<sup>10</sup> Interestingly, Quine’s occasion sentences bear a strong resemblance to contingent statements (e.g., they appear to be co-extensional concepts). Yet, Montgomery and Routley (1966) argue that accepting the notion of contingency into our logic, brings with it a full, normal modal lexicon, since the other modal operators may be defined in terms of the primitive notion of contingency. Yet, it is precisely such modal notions as necessity that pose explanatory problems for Quine’s naturalism.

<sup>11</sup> In point of fact, observation statements are merely the points where witnesses agree. Quine must add the metaphysical assumption that what the witnesses are agreeing on is the way the world is, or that there are causal factors reflecting the nature of the world which explain the agreement of the witnesses.

is ultimately through them that our theory will be tested against experience.

In addition to logic and observation sentences, our theory consists of many other kinds of sentences. Some of these will be theoretical hypotheses, examples of which would include general statements of a speculative, explanatory or causal nature ranging from laws of nature to rough-hewn generalizations. To determine whether a hypothesis ought to be admitted into the web of belief, it must be tested. And, to test a hypothesis, its observable consequences must be determined. This yields the important point that theoretical claims are ultimately cashed out in terms of observation sentences. Bridging the gap between theory and observation typically involves observation categoricals. Observation categoricals compound observation sentences into generalities, and have the general form of expressing an observable regularity (1992, 10). In general, these observation categoricals do the job of logically linking theory to observation (*ibid.*). Indeed, the logical connection between observation and theory is established linguistically as words in observation sentences “recur in theoretical contexts” (1992, 7). Quine writes, “It is precisely this sharing of words, by observation sentences and theoretical sentences, that provides logical connections between the two kinds of sentences and makes observation relevant to scientific theory” (*ibid.*).

Holism claims that a theoretical hypothesis, when taken on its own, does not have a sufficient fund of observable consequences (consequences which may be expressed as observation sentences, or as conjunctions thereof) that it may be tested against experience. Instead, the testing of a theoretical hypothesis typically relies on a “backlog of scientific

theory” (1992, 13). “In order to deduce an observation categorical from a given hypothesis, we may have to enlist the aid of other theoretical sentences and of many common sense platitudes that go without saying, and perhaps the aid even of arithmetic and other parts of mathematics” (*ibid.*) not to mention logic. So, the second major consequence of holism is that “our statements about the external world face the tribunal of experience not individually but only as a corporate body” ([1951] 1961, 42).<sup>12</sup>

Further, since the statements of a theory are not *tested* by experience individually, they are not *refuted* by experience individually either. Quine writes:

the falsity of the observation categorical does not conclusively refute the hypothesis [from which it was deduced]. What it refutes is the conjunction of sentences that was needed to imply the observation categorical. In order to retract that conjunction we do not have to retract the hypothesis in question; we could retract some other sentence of the conjunction instead. This is the important insight called *holism*. (1992, 13-14)

In and of itself, this is not a particularly original or controversial insight. It is a logical

---

<sup>12</sup> Crucially, the move from the claim that some set of propositions is required to derive an observation sentence (even a set which is considerably larger than what we might at first think) to the grand holistic claim that all statements of the theory are required for such a derivation is a patent *non-sequitur*.

Further, I recognize and acknowledge that Quine later revises this assertion (§4.9.2). But part of my argument against Quine is that he does not revise his initial position as much as he should, and to demonstrate this one must understand why it is that Quine’s initial position needs to be revised in the first place.

commonplace that if the antecedent of a conditional is a conjunction of statements, the falsity of the consequent does not falsify any one of those conjuncts in particular. (Unless, of course, the consequent is one of the conjuncts in the antecedent.) This is sometimes called the ‘ambiguity of *modus tollens*.’ The source of the controversy in Quine’s holism lies in two of its more idiosyncratic features. First is the degree of theoretical material Quine requires for the implication of observation categoricals. Second is the role that Quine portrays this material as having not only in the derivation of the categorical, but in the theory as a whole. Ultimately, the controversy of Quine’s holism is visible in the kinds of claims that he considers subject to refutation on the basis of experience.

#### §4.6.2 - The Unique Status of Observation Statements

Before moving to consider the epistemological consequences of Quine’s holistic model of belief revision, there is one remaining feature of it that deserves our consideration. For Quine, the statements of our theory must stand together as a corporate body in order to accumulate the “critical semantic mass” (Quine 1992, 17) required to generate any empirically testable claim. Yet, there is one important exception to this rule of holism: the observation statement itself. According to Quine,

The beliefs face the tribunal of observation not singly but in a body. But note now that the observation sentence itself, the sentence that reports or predicts a present or imminent observation, is peculiar on this score. It does face the tribunal singly, in the usual case, and simply stands or falls with the

observation that it reports or predicts. (Quine & Ullian 1978, 22)

Because they are independently testable and face the tribunal of experience individually, observation sentences have a unique status when compared with any other type of expression in the theory. According to Quine, observation sentences do not require a 'backlog of theory' to be meaningful; rather they "wear their meanings on their sleeves" (1960, 42). Each observation sentence on its own has enough 'semantic mass' to stand against experience individually.

Given that observation sentences have such a special status in Quine's holism, it is important that we understand their nature and function. In the first place, observation sentences also play a crucial role in our acquisition of language. Because observation sentences "become associated with stimulations by the conditioning of responses" (1960, 42) they are "the entering wedge in the learning of language" (*ibid.*) supplying some of the first linguistic expressions children and other language learners are able to comprehend and use.

Beyond their special role in language acquisition, we have already seen that observation sentences also have a unique epistemological function. For Quine, "[t]he observation sentence is the means of verbalizing the prediction that checks a theory" (1992, 4), and as such observation sentences are the "vehicles of scientific evidence" (1992, 5). Since observation sentences are distinguished in that "they can be checked on the spot" (Quine & Ullian 1978, 25), they become the only stable points of contact between theory and experience. In this regard, observation sentences reflect the special function of observation

within the process of scientific discovery. As Quine writes, “[n]ormally, observation is the tug that tows the ship of theory” (Quine & Ullian 1978, 29), and conflict with observation is typically the catalyst for theoretical revision.

In summary then, their close connection to sensory stimulation provides observation sentences with their special linguistic and epistemic function. “Observation sentences are the bottom edge of language, where it touches with experience; where speech is conditioned to stimulation. It is ultimately through them that language in general gains its meaning, its bearing on reality” (Quine & Ullian 1978, 28). Indeed, as we will see later, observations are really the only “boundary conditions of our body of beliefs” (Quine & Ullian 1978, 32) allowed within Quine’s holism.

Having seen the special status and function of observation sentences within Quine’s holism, it remains to consider their nature. Firstly, observation sentences are not distinguished syntactically (according to their vocabulary or terminology), nor are they distinguished semantically (according to their subject matter). Rather, they are distinguished pragmatically, (Quine & Ullian 1978, 23). According to Quine, the notion of an observation sentence is best understood with an “unimaginative literalness”, according to the “straightforward criterion ... that *all reasonably competent speakers of the language be disposed, if asked, to assent to the sentence under the same stimulations of their sensory surfaces*” (Quine & Ullian 1978, 33 emphasis added; see also 1978, 23; 1960, 44; 1992, 3 ). That is, on witnessing the relevant occasion, all people who understand the language would agree in their judgements

regarding the truth of the observation statement.

This is not to say that our knowledge of observation sentences requires that we learn of them through witnessing the relevant occasion. Rather, “[w]hat makes a sentence an observation sentence is not that it *was* learned ostensively but that it is of a sort that *could* have been” (Quine & Ullian 1978, 26). Still, since many terms used in observation statements are normally learned ostensively, it would seem that our understanding of these terms, and our agreements in judgement require a common body of shared experience.

So, Quine’s straightforward criterion for the identification of observation statements requires that “the terms used in observation sentences are terms that we can all apply to their objects on sight” (Quine & Ullian 1978, 23). Yet, Quine recognizes that, given our different experiences (both worldly and linguistic), what might be an observation for you might not be for me. Quine writes:

I agree that the practical notion of observation is relative to one or another limited community, rather than to the whole speech community. An observation sentence for a community is an occasion sentence on which the members of the community can agree outright on witnessing the occasion.  
(1992, 6)

Given that observation statements are relative to specific sub-groups of language users, there is no definitive criterion for a statement’s being an observation statement. Any lack of conformity in the judgement of individual witnesses may be variously explained by their



linguistic knowledge, or even an abnormal perceptual state. For the time being, the point here is that the class of observation sentences cannot be precisely defined, and involves certain assumptions about normal observers and normal conditions of observation which themselves have not been precisely formulated.

#### §4.6.3 - Epistemological Consequences of Quine's Holism

Having considered the process of belief revision on Quine's holistic model, I now move to consider the epistemological consequences of such a picture. Semantic holism claims that since individual statements within a theory do not have a sufficient fund of empirically testable consequences on their own, they must face the 'tribunal of experience' as part of a 'corporate body'. Yet, this corporate body is not limited to some part of theory or several threads in the web of belief. Rather, Quine claims that "[t]he unit of empirical significance is the whole of science" ([1951] 1961, 42). That is, it is only when placed alongside the *entire* theory that a hypothesis may generate an observation categorical capable of being empirically tested.<sup>13</sup> As such, the entire corporate body of statements stands as the antecedent of any empirically falsifiable consequent. Because of this, the arrow of *modus tollens* can fall almost anywhere within the current body of theory.

This is the reasoning behind two of Quine's most controversial epistemological claims. First is the claim that, since the whole of science (i.e., every statement in the theory) is

---

<sup>13</sup> See fn. 12.

required in generating empirically testable consequences, we may pick and choose which statements we want to revise should those consequences turn out not to be the case. Indeed, there is nothing stopping us from holding any one of them true on any given occasion, since it can never be said that the arrow of *modus tollens* definitely points at any one statement. This I call Quine's Preservability Doctrine [PD], which he expresses as follows:

1. "Any statement can be held true come what may, if we make drastic enough adjustments elsewhere in the system." ([1951] 1961, 43).

On the other hand, neither can it be said that the arrow of *modus tollens* does *not* point at any given statement in the theory. This marks Quine's second claim which I call the Revisability Doctrine [RD]. RD states that

2. "[N]o statement is immune to revision [on the basis of a recalcitrant experience]" ([1951] 1961, 43).

According to PD no particular statement in the theory need be sacrificed; according to RD no particular statement in the theory is sacrosanct. Instead, as is indicated by these two doctrines (which Quine takes to be consequences of his holism), all constituents of the theory are on a par with respect to their connection to the observed facts of the world.

#### §4.6.4 - Holism and the Analytic

The doctrine of semantic holism is Quine's second route to the deconstruction and

subsequent abolition of the analytic/synthetic distinction from semantics and epistemology.<sup>14</sup> Since, for any given statement within the corporate body (observation statements excluded) no empirically testable consequences may be uniquely attributed to it, one cannot separate the linguistic factors (e.g., meanings) and the extra-linguistic factors (e.g., the obtaining of facts) from one another when determining the truth of the statement in question. Instead, Quine claims:

[I]t is nonsense, and the root of much nonsense, to speak of a linguistic and a factual component in the truth of any individual statement. Taken collectively, science has a double dependence upon language and experience, but this duality is not significantly traceable into the statements of science taken one by one. ([1951] 1961, 42)

As a result of this holism, no statement can be said to be true purely in virtue of the meanings of the terms used within it - that is, no statement can properly be described as analytic. Because of this, the analytic/synthetic distinction should be done away with once and for all. Furthermore, analyticity cannot be used as an explanation of the nature of the principles of logic. Since the contribution of an expression's meaning to its truth cannot be specifically isolated, the foundation of the truths of logic cannot be cast exclusively in meaning.

Before moving to consider the foundations on which Quine attempts to place the

---

<sup>14</sup> The first, considered in §4.5, was Quine's argument that no theoretically rigorous explanation of analyticity is possible.

principles of logic and arithmetic, two additional observations should be made regarding his holistic argument against the analytic / synthetic distinction.

The first observation concerns the net effect of Quine's 'abolition' of the analytic/synthetic distinction. Crucially, Quine's holistic position does not require that we surrender *both* categories of statement, on the grounds that neither are semantically accurate. Rather, in giving up the categorical distinction between analytic and synthetic statements, Quine's holism prescribes that *all* statements take on the character of synthetic statements. According to the Revisability Doctrine, any statement can be repudiated on the basis of a recalcitrant experience, and as such the truth of every statement depends on something more than the meanings of the terms used in it.<sup>15</sup> Quine's holistic argument, then, does not do away with a distinction, but only does away with half of it. Because the-way-the-world-is plays a role in determining the truth of all statements, all statements are like synthetic statements. All statements in the theory are contingent; no statement may be viewed as necessarily true, or knowable *a priori*. So, the net effect of the Quine's abolition of the analytic / synthetic

---

<sup>15</sup> The Preservability Doctrine has no counter-balancing effects in this regard, since it does not deny that any statement may be repudiated on the basis of a recalcitrant experience. Rather, it claims only that we may choose to insulate the truth value of some statements from revision on the basis of particular experiences on a case-by-case basis. The truth value of any such statement remains, in principle, subject to revision on the basis of a recalcitrant experience. To be consistent with holism more generally, PD must allow that the-way-the-world-is contributes to the truth conditions of *every* statement, including the ones we *choose* to insulate on any given occasion. As such, even insulated statements remain, in principle, synthetic.

distinction is to abolish the analytic, the *a priori* and the necessary, replacing them with the synthetic, the *a posteriori* and the contingent.

The second observation to be made at this juncture builds upon a point I first made when considering Quine's rejection of intensional foundations of synonymy (§4.5.3). According to Quine, definitions do not have a special or unique function within the theory. Rather, definitions are to be seen as a class of statements which report "prior relations of synonymy" ([1951] 1961, 27). As such, definitions are descriptive statements which may be true or false depending on their descriptive accuracy. Indeed, definitions are subject to the Revisability Doctrine [RD]. Like any other kind of statement in the theory, definitions are empirically justified and may be revised when they are not consistent with observed usage.

Similarly, according to RD, the propositions of logic and mathematics may be revised just like any other component of the theory. As with definitions, one of the reasons for this is that Quine's holism provides no special function for logical and mathematical laws. According to Quine's holism, "logical laws ... [are] simply certain further *statements* of the system, certain further elements of the field" ([1951] 1961, 42; emphasis added). The rules of logic are statements, and as such are on a par with all other components of a theory. As statements, the laws of logic must be seen as functioning like descriptions (or as something like descriptions). They do not have a special normative, stipulative, constitutive or regulative

relationship with their subject matter.<sup>16</sup> It is partly because of this that the laws of logic are contingent upon how things are with the world, and subject to the Revisability Doctrine.

So, just as Quine's holism deprives logic of a special status on the grounds that it treats a unique subject matter (meanings instead of facts), so does it deprive logic of a special status on the grounds that it has a unique function or relationship to that subject matter (stipulative rather than descriptive). Instead, each element of a theory is on a par not only with respect to its subject matter (which always has partly to do with the observed world), but also with respect to its pragmatic function in the system. It is a combination of these two features that permits Quine to hold that even the laws of logic are subject to the Revisability Doctrine. Indeed, Quine's doctrine of semantic holism really amounts to the claim that there is no difference in kind between the components of a theory.

#### §4.6.5 - Quine's Holistic Foundations of Logic: Minimum Mutilation and Entrenchment

Having seen Quine's repudiation of the positivistic account of the nature and foundation of logic (according to which logical principles are analytic truths), it remains to consider Quine's own holistic account of the foundations of logic. We have seen that Quine's holism does not allow that the principles of logic differ from any other component of the theory. Logic cannot be distinguished from other elements of the theory either in respect of its subject matter or in terms of the relationship it has to that subject matter. As such, the

---

<sup>16</sup> It should be noted that such a view is deeply at odds with the positivistic view as discussed in §§4.3.1 and 4.3.2.

foundations of logic under holism are no different from the foundations of any other component of a theory.

How, then, does holism explain the foundations of the components of a theory? The answer to this question is to be found in considering those principles employed in determining whether, and when, the truth-value of a statement ought to be revised on the basis of a recalcitrant experience. Here, there are two principles: (i) the maxim of minimum mutilation, and (ii) the idea of entrenchment.<sup>17</sup>

The basic idea behind minimum mutilation is that we want to accommodate the new observation (i.e., the truth of the new observation statement) into the existing theory with as little disturbance to the remainder of the theory as possible (1992, 14-16). Colloquially, the idea is “not to rock the boat more than need be” (1992, 15), and according to Quine this maxim reflects “our natural tendency to disturb the system as little as possible” ([1951] 1961, 44).

Importantly, the maxim of minimum mutilation alone will not suffice to govern or even assist in our selection of statements to be revised in light of a recalcitrant experience. After all, if the degree of mutilation to a theory is measured quantitatively, then there is an obvious choice for revision in the face of any particular recalcitrant experience. Any recalcitrant

---

<sup>17</sup> Frequently, Quine uses the phrase “minimum mutilation” to indicate both of these principles. I separate them in an attempt to mark the quantitative and the qualitative criteria required in the choice of revision.

experience may be accommodated in any theory merely by revising one statement: the law of non-contradiction. Indeed, by giving up the law of non-contradiction, we would solve *all* problems concerning theoretical revision at once! Yet, Quine does not suggest that we simply surrender the law of non-contradiction. So, there must be some qualitative criteria which also inform our choice of statements to revise.<sup>18</sup>

Since the maxim of minimum mutilation, quantitatively understood, would act as a constant cognitive pressure to surrender the law of non-contradiction, the criteria involved in the qualitative selection of statements for revision must be equally steadfast in anchoring it in place. Minimum mutilation is counterbalanced by the principle of entrenchment which recognizes that “[some] statements may be thought of as relatively centrally located within the total network, meaning merely that little preferential connection with any particular sense data obtrudes itself” ([1951] 1961, 44). Since mathematics, for example, “infiltrates all branches of our system of the world, ... its disruption would reverberate intolerably [throughout the entire theoretical system]” (1992, 15). So, the revision of other statements - statements closer

---

<sup>18</sup> When viewed over the course of several occasions for belief revision, the impact of revising the law of non-contradiction (or some proposition deeply entrenched in the theory) might be explained quantitatively. Clearly, revising the law of non-contradiction would permit many more changes in the theory than revising, e.g., the claim that “All swans are white.” In this sense, it might be feasible to explain entrenchment quantitatively, in terms of possible future changes. But, on the occasion of any single theoretical revision, the degree of theoretical change which will result from the revision of one statement rather than another must somehow be explained in terms of connections between statements holding on that occasion. It is for this reason that I think that entrenchment must be considered qualitatively.



to the peripheries of the theory - are to be preferred over the revision of mathematical statements.

So, the general principle that experience should rock the theoretical boat as little as possible has both a qualitative and a quantitative aspect to it. But there is more to the principles guiding theoretical revision than just this. Even more important, perhaps, is this: the degree to which the theoretical boat is rocked is not an absolute measure, but can only be made relative to the overall purpose of the theory. For instance, if the purpose of our theory was merely to accommodate any and all observations, then even entrenchment would not securely anchor the law of non-contradiction.

What, then, is Quine's view on the purpose of theory? In describing the principles guiding theoretical revision, Quine claims that "the ultimate objective is ... to choose the revision [so] as to maximize future success in prediction" (1992, 15; Cf. [1951] 1961, 44). In so doing, he posits that the purpose of a theory is to accurately predict future observations (presumably while remaining consistent with all past observations). Yet, this is not the only purpose which a theory may have; Quine has simply chosen a theoretical goal that suits his larger project. Recall that, following Quine, we are using the term "theory" here as a general term for someone's web of belief. Any given 'theory' can have a multitude of sorts of purposes (from scientific to religious to psychological). Further, not only might the 'goals' of the 'theory' be mutually inconsistent, but the holder of the 'theory' might not even be consciously aware of these goals.

The point of this objection is not to take issue with Quine's posited objective: his statement of the goals of science.<sup>19</sup> Rather it is to observe that, according to Quine's holism, there are no logical reasons to insulate some statements from revision over others; there are only instrumental reasons. That is, the entrenchment of a statement in a theory is not a logical property of it. Rather, as Creath writes, entrenchment is better understood as "reflect[ing] our relative willingness to abandon the various beliefs under consideration" (Creath 1990, 28). Admittedly, our willingness in this regard may be relative to our overall goals, but it may also be relative to a number of other things as well. And, there can be no unequivocal statement of *the* goal of theory. (Nor does Quine's holism seem to provide us with an objective perspective from which we may evaluate competing theoretical goals.) Indeed, the Preservability Doctrine allows that one may choose to insulate *any* statement in the theory over any others. An immediate consequence of this is that the law of non-contradiction is not necessarily the most entrenched claim in a theory. (In some theories, certain religious or psychological claims may be even more entrenched.) So, in the final analysis, the entrenchment of a statement is explained in terms of the psychological attachment thinkers have to it, as manifested by their willingness (or unwillingness) to abandon that claim for others through the experiences of life.

In summary, according to Quine the ultimate forces of stability within a theory are a

---

<sup>19</sup> This is not to say that Quine's statement of the goals of science is unobjectionable, only that I will accept it for the purposes of argument.

combination of minimum mutilation and entrenchment. But, since the rocking of the theoretical boat can only be understood instrumentally, there are no absolute principles which hold it stable in the waters of experience. Rather, choices regarding revision and preservation are the result of instrumental reasoning, made in the context of one's overall goals and attachments. For Quine, the truths of logic and mathematics are founded on policy decisions made in the practical context of maximizing future predictive success.

The final point to be made, then, concerning Quine's account of theoretical revision returns us to his views on the foundations of mathematics and logic. Since the principles of logic and mathematics are merely further statements in the theory, indistinguishable in both function and subject matter, they stand on exactly the same foundation as all other statements in the theory. For Quine, the stability of any statement in the theory is ultimately determined by the interplay of minimum mutilation and entrenchment.

So, it is ultimately the notion of entrenchment which explains any necessity logic and mathematics have in Quine's holism. One might be tempted to say that the laws of mathematics and logic are deeply entrenched in a theory because they are necessary - that their necessity explains their entrenchment. But this is not so on Quine's view; indeed things are quite the other way around. According to Quine, "mathematical necessity is explained by freedom of selection and the maxim of minimum mutilation" (1992, 56).<sup>20</sup> In elaboration of

---

<sup>20</sup> Quine is using the expression "freedom of selection" here as another label for the Revisability Doctrine discussed above.

this point, Quine writes the following:

If asked why he spares mathematics, the scientist will perhaps say that its laws are necessarily true; but I think we have here an explanation, rather, of mathematical necessity itself. It resides in our unstated policy of shielding mathematics by exercising our freedom to reject other beliefs instead. (1992, 15)

So, according to Quine, the necessity of logic and mathematics is the result of an “unstated policy” that we should hold logical and mathematical expressions as more firmly entrenched in our theory than other kinds of statement. While they are, in principle, refutable on the basis of experience, we simply choose to revise other statements instead because it is more efficient to do so in light of the overall scientific goals of our theory.

#### §4.7 - From Holism to Psychologism

Having thus articulated Quine’s views concerning the holistic foundations of logic and mathematics, and the necessity they acquire thereupon, it remains to consider whether Quine’s account of logic is genuinely psychologistic. While recognizing that there may well be psychological factors which contribute to the entrenchment of a claim, the ‘unstated policies’ at the centre of Quine’s holistic account of belief revision and preservation are not necessarily psychologistic. Further, in view of Quine’s chosen goal of predictive success, it would seem that minimum mutilation and entrenchment may be explained independently of psychological

considerations.<sup>21</sup> Nor does it appear that Quine's account of logic is remarkably psychologicist either. Indeed, Dallas Willard argues that, "When one examines any of Quine's expositions of proofs of logical laws, one finds that they are presented as *theoretically complete without a single reference to, or invocation of support from, any psychological matter of fact*" (1989, 292).<sup>22</sup> At first glance, then, it would not appear that Quine's holism is overtly psychologicist.

Yet, in his essay "Epistemology Naturalised" (1969) Quine echoes Mill's quintessentially psychologicist dictum that "it [Logic] is a part, or a branch, of Psychology" (1865/1867 ch. xx ; 1979, 359) claiming that "Epistemology in its new setting ... is contained in natural science as a chapter of psychology" (1969, 83). What, in Quine's view, is it about this new, holistic setting in which epistemology finds itself that so readily leads to the road of psychologism?

#### §4.7.1 - From the Failure of Reductionism to Naturalism

For the answer to this question, we start by returning to the central claim of semantic

---

<sup>21</sup> Again, though, it is not obvious that we could give a justification of this goal over others which is independent of psychological considerations.

<sup>22</sup> Ironically, Willard uses this argument to refute Quine's espoused psychologism (which is discussed below), instead of taking it as an indication that either (i) Quine's position is not actually psychologicist in the first place (despite what Quine himself says about it) or (ii) that he (Willard) had mis-identified the location and nature of Quine's psychologism or even (iii) that Quine's position concerning the nature and foundations of logic is not consistent - that he does not fully abandon traditional anti-psychologicist accounts of logic despite his own endorsement of a holistic account of belief revision and an explanation of the notion of evidence in the psychological terms of sensation.

holism: the claim that all statements in a theory which are not observation statements cannot be tested against experience individually. Because of this, Quine argues that such statements cannot be conclusively associated with a unique set of verification conditions. As a result, Quine argues that the positivistic ideal whereby scientific theories may be deduced from observation sentences combined via bridging laws with analytic truths is unattainable. On these grounds, Quine concludes that the notions of justification and evidence that pervade traditional epistemology cannot be supported in the framework of holism. Further, in the absence of these 'traditional' notions of justification and evidence, we would do just as well by turning to psychology when explaining how our observations connect with our theories as we would turning anywhere else.

Quine presents this line of argument in "Epistemology Naturalized" where he writes the following.

The crucial consideration for my argument for the indeterminacy of translation<sup>[23]</sup> was that a statement about the world does not always or usually have a separable fund of empirical consequences that it can call its own. That consideration served also to account for the impossibility of an epistemological reduction of the sort where every sentence is equated to a sentence [expressed] in observational and logico-mathematical terms. And the

---

<sup>23</sup> In this chapter, we have been discussing this argument as the argument for semantic holism, and have been considering it in the context of belief revision.

impossibility of that sort of epistemological reduction dissipated the last advantage that rational reconstruction seemed to have over psychology.

(1969, 82)<sup>24</sup>

In view of the failure of the positivistic vision of ‘reductionism’ (what Quine here calls “rational reconstruction”), Quine claims that we might as well turn to psychology when explaining the relationship between scientific theory and observation. Admittedly, we cannot deduce scientific theory from our observations about the world. But, Quine goes so far as to claim that ‘traditional’ views invert the actual relationship between epistemology and natural science.

The old epistemology aspired to contain, in a sense, a natural science; it would construct it somehow from sense data. Epistemology in its new setting, conversely, is contained in natural science, as a chapter of psychology. (1969, 83)

Epistemology, as a discipline, does not stand outside of, and independently of, natural science; rather epistemology is a part, or a branch, of natural science.

Importantly, as authors such as Jaegwon Kim (1988) have pointed out, just as Quine

---

<sup>24</sup> I will not dwell on the numerous *non sequiturs* I find within this argument, not the least of which is Quine’s move from the failure of ‘reductionism’ to the bankruptcy of all normative notions of evidential relations. Rather I hope that the failings of this argument will become evident when the failings of Quine’s account of holism are discussed below.

is not merely asking us to abandon the analytic / synthetic distinction, he is not merely asking us to abandon the deductive reconstruction of theory from sense-data either. Instead, “it is normativity that Quine is asking us to repudiate” (Kim [1988] 1994, 40). That is, Quine “is asking us to set aside the entire framework of justification-centred epistemology. ... [and] is asking us to put in its place a purely descriptive, causal-nomological science of human cognition.” (Kim [1988] 1994, 40). Kim argues that such a move demands that we give up our notions of evidence (Kim [1988] 1994, 42) and knowledge (Kim [1988] 1994, 41) as we traditionally understand them. Yet, the epistemological naturalist claims that it is precisely in natural science that we will find the proper explanations of these epistemological concepts.

Moreover, it is Quine’s naturalism that leads him to psychologism. So, the first reason why Quine’s picture is psychologistic is because he adopts some version of epistemological naturalism, whereby epistemological properties - in whatever sense we may properly speak of them - are explained by natural, causal processes (see my §1.6.2). In addition to this naturalism, Quine tacitly accepts the Relevance of Psychology thesis which claims that the natural processes relevant to the naturalized epistemologist are psychological processes (see my §§1.6.2.1 and 1.6.2.2).

Indeed, this is the line of reasoning Quine uses to advocate what Kornblith ([1985] 1994, 3-4) has called the “replacement thesis” whereby “epistemological questions may be replaced by psychological questions” (Kornblith [1985] 1994, 4). On Quine’s vision, then

[E]pistemology still goes on, though in a new setting, and a clarified status.



Epistemology, or something like it, simply falls into place as a chapter of psychology and hence of natural science. (1969, 82)

So, the first source of Quine's psychologism comes from his view that natural science will provide the best explanation of the relationship between theory and observation, and that, of the natural sciences, psychology is the candidate best suited for this task.

#### §4.7.2 - From Observation Sentences to Sensory Stimulation

There is, though, a second source of Quine's psychologism which is to be found in his account of the justification we have for observation statements themselves. Recall that Quine gives a privileged place to observation in the scientific process, and a corresponding place to observation statements in scientific theories.

For Quine, the concept of observation is not rigorous enough to form a basis for the foundations of scientific knowledge. He complains that it is "awkward to analyze" (1992, 2) and that "a gulf yawns between ... [objects of observation] and our immediate input from the external world" (*ibid.*). So, in order to explain this vague notion of observation, Quine resorts to the notion of sensory stimulation. Presumably, Quine finds sensory stimulation a more scientifically rigorous concept because it may be quantified and measured. Further, Quine takes it as unobjectionable that sensory stimulations are those things that are immediately given to us in experience, and as such that they must serve as the beginning points in our chains of knowledge.

Because Quine treats sensory stimulation as a scientific and quantifiable concept, he

offers a fairly technical definition of stimulation, which goes as follows. “By the stimulation undergone by a subject on a given occasion I just mean the temporally ordered set of all those of his extroceptors that are triggered on that occasion” (Quine 1992, 2). Yet, it is not just that sensation is a quantifiable concept where observation is not. More importantly, the very notion of sensation is completely naturalized, whereas observation may be interpreted normatively. Further, since stimulation is a physiological process which occupies a place (though perhaps an end place) in the chain of cognition, it may be seen as a psychological process.

So, it is with the naturalized and psychological notion of sensory stimulation that Quine hopes to explain the concept of observation. Indeed, Quine claims that with the help of stimulation “[o]bservation then drops out as a technical notion. So does evidence, if that was [defined exclusively in terms of] observation. We can deal with the question of evidence for science without the help of ‘evidence’ as a technical term” (1992, 2). Already it may be seen that the explanation of observation by stimulation is a route to the naturalization of the concept of evidence for observational sentences. Thus, just as Quine sought to naturalize the concepts of evidence and justification as they apply between sentences in a theory, so does he hope to naturalize the concept of evidence we apply to those observation sentences which stand at the very boundary of theory and our experience of the world.

In this vein Quine argues that “[a]ny realistic theory of evidence must be inseparable from the psychology of stimulus and response, applied to sentences” (1960, 17). Indeed,

Quine does not merely claim that psychology is necessary for epistemology. He seems to claim that psychology is sufficient for epistemology when he writes that “[w]hatever evidence there is for science is sensory evidence. ... The stimulation of his sensory receptors is all the evidence anybody has to go on, ultimately, in arriving at his picture of the world” (1969, 75). Since the only evidence we can have for a theory is sensory, and since sensation is a natural, psychological process, Quine claims that the best way of accounting for the relationship between theory and evidence qua sensation is to simply describe the causal, psychological processes by means of which we proceed from sensation to theory. Thus, Quine immediately continues the passage just quoted with the rhetorical questions: “Why not just see how this construction [of theory from sensation] really proceeds? Why not settle for psychology?” (1969, 75). Here again we see the replacement thesis whereby Quine suggests that epistemological questions may simply be replaced by psychological questions.

#### §4.7.2.1 - A Chomskian Objection to Stimulus Meaning

On Quine’s account, then, stimulation is to replace observation, and the scientific description of stimulus and response is to replace a normative account of evidence and justification. At the risk of a brief digression, it is worthwhile to consider a preliminary objection to Quine’s proposal that the epistemic dimensions of the concept of observation may be explained with the naturalized notion of stimulation.

A preliminary objection to this strategy is one of the same sort that Chomsky made of B.F. Skinner’s behaviourism in his seminal 1959 review of *Verbal Behaviour*. Skinner’s

project in this landmark work was to extricate any mentalistic (or cognitive) terminology from psychology, replacing it with an exclusively behaviouristic lexicon. That is, all of our behaviour - including the most complex forms of linguistic behaviour - could be explained completely in terms of stimulus and response, and the laws of psychology are properly seen as laws connecting stimulus to response. Chomsky's point - which started the cognitive revolution in psychology, and was a precursor to many of the functionalist positions presently available in the cognitive marketplace - is based on the idea that, for any given response, the stimulus is overdetermined.

Consider a similar point in an epistemological - as opposed to an explanatory - context. Suppose I am looking for the justification a subject, S, has for believing (affirming) that, B, there is a bird on the windowsill. Suppose further that the belief that B is true, and that the subject knows this by seeing the bird, and that we want to explain S's justification *exclusively* in terms of the stimulation undergone by him (as Quine has defined it above). The problem for such an account is that all kinds of sensory stimulation may be going on at the periphery of S's body and the external world. Since S's stimulation is defined as "all those of his extroceptors that are triggered on that occasion" (*op. cit.*), S does not only have the sensation of seeing the bird. Instead, at that instant, S is exposed to (and even aware of) a multitude of sensory information, most of which is completely irrelevant to the particular claim whose justification is at issue. Perhaps S also feels the pangs of hunger, and the soreness in his back. Perhaps S hears the sound of the wind rustling the leaves of the trees

which he also sees through his window. None of these, nor any of the other multitude of sensations is relevant to the claim at issue - except one: the seeing of the bird on the sill. So, this notion of a stimulation may well be overdetermined, and may have to, in the end, be governed by the ill-defined notion of the observation that we had initially hoped to clarify.

Faced with such a situation, as Chomsky pointed out, all too often the scientist - in this case the naturalized epistemologist - selects the stimulus only *after* the response has been observed, and the selection of the stimulus (i.e., cause) (out of the many possible candidates) is determined *teleologically* by the observation of the response (i.e., effect). Yet, this move is decidedly anti-scientific. Hence Chomsky objects to Skinner's behaviourism saying, "But the word 'stimulus' has lost all objectivity in this usage. ... We identify the stimulus [only] when we hear the response. ... We cannot predict verbal behavior in terms of the stimuli in the speaker's environment, since we cannot know what the current stimuli are until he responds" (1959, 32). The fact is that the normal level of sensory stimulation completely overdetermines any genuinely naturalistic identification of the response, let alone any explanation of the psychological or epistemological connection that obtains between them. For this reason, Chomsky criticized Skinner's model as smuggling in a cognitive framework which Skinner had claimed to forsake in favour of behaviourism.

In the case of Quine, the consequence of this objection is that the essentially normative epistemological concepts such as evidence, reason or grounds are being smuggled back into the ostensibly naturalised model when the selection of one sensory stimulus is

preferred to another *on the basis of an observed output* (i.e., belief, claim or conclusion). Indeed, it is curious that Quine would advance such a disenfranchised position more than a generation after it had been virtually abandoned (at least in such naive terms) within the psychological community.

#### §4.8 - Arguments Against Quine on the Concept of Analyticity

To this point we have considered Quine's rejection of the concept of analyticity, and his accompanying rejection of the positivistic account of the nature of logical principles as analytic truths. Since, according to holism, the contribution of fact cannot be separated from the contribution of meaning when specifying the truth-conditions of any statement, no statements are purely analytic. Rather, every statement in the theory is subject both to the Preservability and the Revisability Doctrine. The foundations of all statements in a theory - the propositions of logic and arithmetic included - are cast within the mould of minimum mutilation and entrenchment. These two principles guide our revision and preservation of individual statements in light of the 'evidence' provided by our senses. These are not absolute or logical principles, but are at best instrumental and perhaps even psychological principles. Indeed Quine even goes so far as to claim that the epistemological relationship between sensation and theory, as well as the epistemological relationships between different components of theory, are best explained naturalistically using the principles of psychology. In the final sections of this chapter I move to articulate a concerted series of objections against Quine's picture of semantic holism and epistemological naturalism.

## §4.8.1 - In Honour of the Defence of a Dogma

Quine's arguments against the positivistic account of logical principles as analytic truths admit of several levels of criticism. Some of these arguments may be directed against Quine's criticism of the concept of analyticity itself. Of these arguments, Grice and Strawson's (1956) "Defense of a Dogma" deserve our consideration.

Grice and Strawson begin their critical analysis of Quine's argument in "Two Dogmas" by linking the point of his critique to the manner in which he carries it out. Quine might be read as trying to convince us to dry-dock an otherwise seaworthy conceptual distinction. Yet, Grice and Strawson note that Quine criticizes neither the clarity nor the utility of the analytic / synthetic concept-pair (1956, 141). Instead, Quine challenges the integrity of the distinction itself, and with it the coherence of the concepts that mark its boundaries (Quine [1951] 1961, 36-37). "That there is such a distinction to be drawn at all is an unempirical dogma of empiricists, a metaphysical article of faith" ([1951] 1961, 37), Quine writes. His method for doing this involves showing that we have no satisfactory explanation of the difference supposedly marked by this distinction (*ibid.*). And, Grice and Strawson seem to put their finger on Quine's criterion for explanatory adequacy when they write that "it would seem that Quine requires of a satisfactory explanation of an expression that it should take the form of a pretty strict definition but should not make use of any member of a group of interdefinable

terms to which the expression belongs” (1956, 148).<sup>25</sup> While this may at first seem an inordinately high standard for our explanations of concepts to meet, we should perhaps not criticise Quine for his rigour so long as he is evenhanded in applying it.

#### §4.8.2 - Using Observation to Define Analyticity

But as it turns out, Quine is not so equitable in his adherence to the rigorous specification of concepts. Recall that Quine’s notion of sensation is hopelessly under-determined (see my §4.7.2.1) and that his notion of an observation statement is decidedly vague around the edges (see my §4.6.2). Moreover, it does not appear that Quine’s dismissal of analyticity is accidental in this regard. Rather, Quine’s intolerance seems a bit more deliberate.

To see this, recall Quine’s characterization of observation sentences. In the first place, observation sentences are not syntactically distinguished from other statements in the theory (or web of belief), nor are they distinguished semantically by their subject matter (Quine & Ullian 1978, 23). Rather, observation sentences are distinguished from other expressions in the theory according to the following ‘straight forward criterion’: on the experience of some particular event, all reasonably competent witnesses to that event who understand the language would be bound to unanimously agree on the truth (or falsity) of the observation

---

<sup>25</sup> Creath describes this requirement as follows: “a sufficient criterion of the term’s use be given in observational terms (and for Quine this means physical or behavioral terms) as would allow a field linguist not only to describe some natural language under study but also to confirm hypotheses containing the term” (1991, 351).



sentence (*ibid.*).

Yet, accepting this characterization of an observation sentence, a parallel description of analytic statements is but a short step away. In a similar way, analytic statements may be specified as being all and only those statements on which, for all agents understanding the language, there would be unanimous agreement concerning the truth-value of the statement, *no matter which event* was witnessed (or indeed whether any event whatsoever was witnessed).<sup>26</sup> (This might be called a Quinean ‘straight-forward criterion of analyticity’.) The general point of this attempt at a ‘Quine-friendly’ characterization of analyticity is to recognize that there are some statements whose truth we ascertain *completely independently* of any and all observations. Just as observation sentences are “directly and firmly associated with our stimulations” (Quine, *op. cit.*), these sentences do not seem to be associated with our sensory stimulations whatsoever. As such, our attitude towards such statements, and our method of ascertaining their truth requires some sort of explanation.

Quine might attempt such an explanation by saying that those statements picked out by the Quine-friendly ‘straightforward criterion of analyticity’ are merely those statements which we choose to shelter behind the Preservability Doctrine. Such a response might allow Quine to retain the Revisability Doctrine and his account on which analytic statements do not

---

<sup>26</sup> NB: I am not proposing this as a definition of analytic statements. Rather, I claim that Quine, in advancing his notion of observation sentences, is committed to accepting this as a characterization of analyticity.

have a unique foundation or epistemic status. Surely, though, at this point the fact of our universal agreement becomes a phenomenon deserving of considerable explanation. Further, at this point our justification for our acceptance of such statements would seem to become relevant also. Yet, Quine does not consider our testimony regarding our acceptance of such statements - specifically our testimony that our reasons for accepting some statements have nothing whatsoever to do with experience - to be reliable.<sup>27</sup>

Admittedly, neither Quine's account of observation statements nor the above account of analyticity is without its problems. The point is that the problems of each will be remarkably similar. As one might expect, there will be clear cases and borderline cases, and perhaps even completely contestable cases. There may be occasional disagreement among the relevant group of language users. Also, their attitudes towards these statements might well change over time. The point is that Quine is willing to tolerate all of these ambiguities for observation sentences, but none of them for analytic statements. Yet, if Quine is willing to permit such a definition of observation sentences, it is only prejudice that prevents him from admitting an analogous account of analytic statements. But instead, Quine does not even consider a pragmatic approach to characterizing analytic statements, let alone a pragmatic

---

<sup>27</sup> Since composing this section, I have learned that some advocates of a post-Quinean position (specifically Donald Davidson) have used considerations of this sort to argue that Quine should give up his notion of an observation sentence as well as the notion of analyticity.

account that is practically in front of his eyes for all to see.<sup>28</sup>

#### §4.8.3 - A Dogma Worth Defending

It should be evident then that, as Grice and Strawson claim, “[t]he fact, if it is a fact, that the expressions cannot be explained in precisely the way which Quine seems to require, does not mean that they cannot be explained at all” (1956, 149). Indeed, that Quine is not satisfied with our explanation of a concept should not constitute sufficient grounds for our giving it up.

Rather, Grice and Strawson observe not only that there is an established “and not wholly disreputable” (1956, 142) philosophical tradition standing behind the distinction, but further that current practice evidences an “established philosophical *use*” (1956, 143) for the concepts. That is to say, there is considerable agreement in the application of the concept pair. On this basis, Grice and Strawson argue that there must be “a presumption in favor of the distinction’s existence” (1956, 142), and that the burden of proof must be placed upon Quine and those wishing to denounce the distinction.

Further, Grice and Strawson proceed to identify a series of related distinctions, tied

---

<sup>28</sup> In one respect, Quine does consider a pragmatic approach to characterizing those statements which are (mistakenly) called “analytic” by philosophers. What Quine rejects is the traditional explanation of the nature and foundation of such statements as being true in virtue of meaning, or true by definition. On Quine’s account, so-called ‘analytic’ statements are merely those which we stubbornly choose to cling to in the face of all experience, even though we could revise them if we wanted. In this respect, what Quine rejects about analyticity is not the class of sentences, but their epistemic status and foundation.

to the analytic / synthetic distinction, which must also be surrendered as a consequence of accepting Quine's argument. For instance, to accept Quine's conclusion is to surrender the notion of *logical impossibility* (1956, 150) and admit that we cannot distinguish between statements which are merely profoundly unlikely, and those which are *a priori* impossible (1956, 150-151). (In the former case, we can imagine some circumstance - however improbable - which, if it in fact obtained, would establish the truth of the statement. By contrast, in the latter case, the only conceivable way that the statement could be made true would involve imagining a contradiction or changing the usual meanings of the terms involved.) This yields the related point that the acceptance of Quine's argument relieves us of the "distinction between that kind of giving up which consists in merely admitting falsity, and that kind of giving up which involves changing or dropping a concept or set of concepts" (1956, 157). Ultimately then, Quine's demand that we surrender the concept of analyticity is a demand that we abandon the idea that there is any difference between conceptual and factual change.<sup>29</sup>

It is by turning to these related distinctions that Grice and Strawson suggest that we may mark the distinction between the analytic and the synthetic in a way that breaks out of the 'family circle' of related concepts. While admitting that their approach to this distinction

---

<sup>29</sup> At this point, I do not put this forward directly as a *reductio* for Quine's position. Rather I mention it so as to clarify and to make explicit the full consequences of Quine's holistic semantics. Needless to say, I find it to be an objectionable consequence.

may be illustrative rather than exhaustive or rigorous, Grice and Strawson suggest the following means to distinguish the analytic from synthetic.

The distinction in which we ultimately come to rest is that between not believing something and not understanding something; or between incredulity leading to conviction, and incomprehension yielding to comprehension. It would be rash to maintain that *this* distinction does not need clarification; but it would be absurd to maintain that it does not exist. (1956, 151)

Not only is this criteria reminiscent of Hume's own criteria, but it attempts to meet Quine's naturalistic requirement that all criteria involved in the distinction be completely overt, public and behavioural.

So, to give up the distinction between the analytic and the synthetic is to say that we cannot make sense of the distinction between factual and conceptual change. Yet, Grice and Strawson argue that this latter distinction is *prima facie* sensible. "If we can make sense of the idea that the same form of words, taken one way (or bearing one sense), may express something true, and taken another way (or bearing another sense), may express something false, then we can make sense of the idea of conceptual revision" (1956, 157). This alone, Grice and Strawson argue, would count as sufficient reason to preserve the distinction between the analytic and the synthetic, "while conceding to Quine the revisability-in-principle of everything we say" (1956, 157).

In this section I have demonstrated not only that much good sense can be made of the

distinction between the analytic and the synthetic, but moreover that Quine himself is under a considerable obligation to admit this distinction if he wishes to maintain his own category of observation statements. Further, following Grice and Strawson, I have indicated some of the many epistemologically valuable distinctions to which the analytic synthetic distinction is conceptually related. I now proceed to present a series of arguments against Quine's holistic account of the foundations of logic.

#### §4.9 - Arguments Against Quine on Holism and the Foundations of Logic

##### §4.9.1 - The Shallow Inconsistency of Quine's Revisability Doctrine

We have seen that one of the most radical and controversial features of Quine's epistemological position is what I have called his Revisability Doctrine [RD] - the claim that "no statement is immune to revision [on the basis of a recalcitrant experience]" ([1951] 1961, 43). RD, which Quine asserts as a consequence of holism, is the claim which most directly threatens the character of logical laws as expressing necessary truths. As was previously observed, the net effect of Quine's criticisms of analyticity, and his semantic holism, is to characterize *all* statements as contingent (true in some cases but not in others), and to remove necessity from all statements. To accept the Revisability Doctrine is to accept that all statements (that is, all components of theory) are synthetic.

The preliminary objection to the Revisability Doctrine, which marks the shallow inconsistency inherent in Quine's overall position, is that even Quine does not maintain such a position consistently. That is, Quine (and all other adherents to RD) do not - and cannot-

consistently believe that all statements are revisable on the basis of a recalcitrant experience. There has to be at least one exception - even for Quine. While for most of the rest of us this exception would be the law of non-contradiction, for Quine it would appear that the statement is the Revisability Doctrine itself. To see this consider the question: what experience would serve as a suitable refutation of the dictum that every statement is revisable on the basis of a recalcitrant experience? More generally, what evidence would Quine accept as establishing (or even contributing towards establishing) that the Revisability Doctrine is false? It is no simple oversight that Quine does not provide *any* criteria for the refutation of RD *anywhere* in his writings. Why? Because Quine does not see RD as refutable, let alone refutable on the basis of a recalcitrant experience.

A possible response to my objection that Quine does not take RD to be revisable is to claim that RD is *in principle* revisable, it is just that we never actually revise it. Indeed, the fact that Quine never actually revises RD is not sufficient evidence for the claim that he does not hold it to be revisable. But consider the rather precarious position Quine's theory is in. Either RD is revisable or it is not. If it is not revisable, then it is false, and Quine must abandon it along with significant aspects of his holistic theory. So, suppose that RD is revisable; now, either RD gets revised (in fact), or it does not. Yet, if RD actually is revised, Quine must again surrender RD as well as significant tenets in his semantic holism. So, the only way that Quine may consistently hold his Revisability Doctrine is to hold that the doctrine itself is revisable, but it just so happens that it never gets revised. One way Quine might try

to explain why it is that we never seem to revise RD is to claim that it is true. This raises the important questions: what is it about RD that makes it true? What are its truth conditions? Answering these questions is crucial because the claim that RD is true is not entirely sufficient to support the precarious position it occupies in Quine's theory. For RD to be acceptable, it must not only be true *but it must also be possible that it be false*. Paradoxically, if RD does not meet this condition - that is, if it is held to be necessarily true, or true *a priori* - then it is self-refuting and cannot be held consistently.

So, we now return to the question of, under what conditions would RD be false, according to Quine? Under what circumstances is RD to be revised? More to the point what recalcitrant experience would count as evidence - sufficient evidence - towards establishing the falsity of RD? Yet, Quine never provides us with any such truth / revisability conditions for RD.

So, that we do not ever, in fact, revise RD is no challenge to Quine's theory, so long as it always remains possible that we do so. Yet, my claim that Quine does not take RD to be revisable *in principle* is not based merely on the claim that we do not, in fact, revise it. Rather, it is based on the claim that Quine never provides RD with any revisability conditions. And, given the importance of RD to Quine's overall theory, I think that Quine is under considerable obligation to provide us with these revisability conditions.

Seeing that Quine does not meet this obligation, I will speculate upon what such a condition might look like. The only obvious revisability condition for RD seems to be this:



Our attitude to RD should be revised when we are presented with a statement which is not revisable on the basis of a recalcitrant experience - that is a statement whose truth-conditions are completely independent of any matter of fact. (To me, RD seems like a promising candidate, and might be considered as first in the queue!) Yet, under Quine's holism, there are no such statements. Moreover, that there are no such statements is no mere contingent truth for Quine. Rather, it is *a priori* impossible to provide one, since, according to Quine, there is *always* a factual component to the truth conditions of *every* statement. So, no counter-example we could ever produce would convince Quine to revise RD. This situation should produce a serious question as to whether Quine does indeed hold that RD is in principle revisable, and true only as a matter of fact. Instead, it appears that, in Quine's system, it is simply not possible that RD is false. Yet, as I stated above, the impossibility of RD's falsehood is alone sufficient to refute RD, and shows that RD cannot be consistently held.

Lastly, it is no defense of Quine's semantic holism, and of naturalistic epistemology, to claim that the only reason we never revise RD is because it is just one of those propositions which we shield with the Preservability Doctrine and stubbornly hold on to in the face of any and all experience. At this point, the normative epistemologist may rightly argue with Quine: While you *do* hold on to RD, you *ought to* give it up.

This is more than an interesting reversal, or an anomalous self-referential paradox. It points to a much deeper problem in Quine's thinking. Recall that RD is a consequence of

holism, and, according to Quine, observation is the ultimate checking point for a theory. As such, the only way of testing Quine's theory is to falsify its consequences (Quine 1969, 75). But, RD is not falsifiable; it is not a *testable* consequence. This is an indication that Quine's overall semantic theory is itself not empirically testable. The *aprioricity* of Quine's RD does not merely establish that Quine's semantic theory supports certain inconsistencies. More importantly, it would seem that Quine has not set up the theoretical tenets of his own semantic theory as scientifically falsifiable.

While this should not prompt us immediately to abandon Quine's theory, it should provoke our asking some rather pressing questions of Quine. For instance, what evidence would Quine accept as counting towards the falsity of his semantic theory? For at this point, it would seem that Quine's Revisability Doctrine, as well as his overall theory of semantic holism, "is an unempirical dogma ... a metaphysical article of faith" (*op. cit.*) This marks the shallow inconsistency of Quine's Revisability Doctrine.

#### §4.9.2 - The Deep Inconsistency of Quine's Revisability Doctrine

There is though, another, deeper inconsistency inherent in Quine's Revisability Doctrine. According to RD, no statement is immune to revision on the basis of a recalcitrant experience, and the law of non-contradiction is itself included within the scope of the doctrine. Yet, I contend that it is absurd to say that the law of non-contradiction can be revised *on the basis of* a recalcitrant experience.

The absurdity involved in revising the law of non-contradiction on the basis of a

recalcitrant experience, arises from the very nature of a *recalcitrant* experience. What is the nature of a recalcitrant experience? A recalcitrant experience is an experience which on its own provides sufficient evidence to establish a proposition (an observation statement, in Quine's terms) which *contradicts* (at least) one of the statements in a theory. In other words, an experience can only be a *recalcitrant* experience on the assumption that the law of non-contradiction holds.<sup>30</sup> The proposition justified by the 'recalcitrant' experience can only contradict some other proposition in the theory if the law of non-contradiction applies. Hence the absurdity involved in revising the law of non-contradiction on the basis of a recalcitrant experience: one must accept the law in order to revise it.

This is not to say that one cannot abandon the law of non-contradiction, or even that one could not give up the law of non-contradiction in the face of some experience or other. But, one cannot do so *on the basis* of some recalcitrant experience. *To give up the law of non-contradiction is to abandon the notion of recalcitrance with it.* The moral of the story here is that the notion of contradiction is bundled together with the very notion of recalcitrance.

---

<sup>30</sup> This is not to say that the tautology ' $\sim (O \ \& \ \sim O)$ ' must act as a premise in any argument where some observation statement,  $O$ , contradicts some hypothesis of the theory,  $\sim O$ , and so prompts revision of the theory. Rather, it is to say that the meta-linguistic principle ' $\sim (\alpha \ \& \ \sim \alpha)$ ' (where ' $\alpha$ ' is a meta-language variable ranging over all sentence letters) must be accepted, and recognized as informing the very semantics of our truth-functional calculus as for instance in the valuation rules for negation (' $\sim$ '). Indeed, it might be said that the law of non-contradiction is *partly constitutive of our very notion of truth*. After all, it is only in accepting the usual semantics for negation that ' $\sim (O \ \& \ \sim O)$ ' is a tautology in the first place. More specifically, non-contradiction certainly seems partly constitutive of our notion of *recalcitrance*.

We cannot use one as the grounds for abandoning the other.

As with the shallow inconsistency of RD, I do not take this paradox to mark a superficial exception to Quine's Revisability Doctrine. Rather, I take it to mark the source of a pervasive series of errors in Quine's holistic account of belief revision.

According to Quine's model, some observation sentence [O] is justified exclusively by experience, and it stands on its own against the body of theory which it contradicts. Moreover, the entire theory itself stands together as a 'corporate body' - as an undifferentiated mass of statements, with none of its constituents having any special standing in relation to any of the others. Only the two policies of entrenchment and minimum mutilation determine which of the statements in the theory ought to be revised or preserved, and these two policies are not founded on any epistemological or logical principles.

Yet, we have just seen that the observation statement [O] does not stand on its own against the body of theory which it contradicts. Rather, it stands together with the law of non-contradiction (as a meta-linguistic principle), and without it there would be no contradiction to speak of. Putting this point in more Quinean terms, it might be said that non-contradiction is not just entrenched in the mass of theory; rather it is entrenched in the observation sentence as well. And, nor is this the only component of the theory with which the observation statement must stand in order to occasion a theoretical revision. Rather, other statements are also required in order that O contradict some other statement [ $\sim$ O] in the theory.

Specifically, there are a whole series of semantic principles which establish and fix the meaning of the observation statement, and its constituent terms. For instance, the metalinguistic claim that the signs used in O have the same meanings as the corresponding signs used in the theory is also required in order that O be seen as contradicting  $\sim O$ .<sup>31</sup> For, by Quine's own admission, the link between theory and observation is established by the recurrence of the same terms in theoretical and observations sentences (*op. cit.*). Yet, if these 'terms' are simply seen as signs (graphemes) with different meanings in different instances, no contradiction occurs. Moreover, any expressions which give the meanings of these signs stand together with O in enabling it to contradict  $\sim O$ . As with the principle of non-contradiction, it does not make sense to say that any of these principles will be revised *on the basis of* a recalcitrant experience, for they are themselves partly responsible for the recalcitrant nature of the experience in the first place. Without these principles, there would be no recalcitrance to speak of. So it is simply false to suggest that these expressions may be 'revised' (especially in respect of their truth-value!) on the basis of a recalcitrant experience. Quine's explanation that such semantic expressions and logical principles are deeply entrenched in the theory, and as such are not suitable candidates for revision misses the larger point that such expressions are not candidates for revision whatsoever. Nor is this Quine's

---

<sup>31</sup> Again, this meta-linguistic claim is not required as a premise in that argument of the object language. Nevertheless, it must be accepted in order that the object language argument work properly.

only error on this point.

Not only does Quine's picture misrepresent the relation such expressions have to the theory and the epistemological role they have in theoretical revision, but in so doing it also misconstrues the nature of theoretical revision. Laudan argues that the idea that we may accommodate a recalcitrant experience by changing the meanings of our terms, is "surely a Pickwickian sense of 'holding on to a theory come what may,' since what we are holding onto here is not what the theory asserted, but the (redefined) string of words constituting the theory" (Laudan 1998, 326). This would seem to indicate that Quine misconstrues the Preservability Doctrine also.

So, certain truths of logic as well as certain semantic principles stand behind any observation sentence, not only when the results of observation are reported back to theory, but also when observation meets with experience in the first place. Indeed, the list I have proposed here may be seen as decidedly short. Depending on the content of the observation statement, many other components of the theory must also be in place in order that the observation statement contradict some other statement in the theory. For instance, insofar as the observation statement involves numbers or quantities, the truths of mathematics will be required to stand along with the observation statement. Further, certain statements about the reliability of our powers of observation also stand behind our acceptance of the observation sentence. *In general, any statement or set of statements which, if supposed to be false would discount our acceptance of the observation sentence (as opposed to revising some feature*

*of our theory) stands along with the observation sentence when it engages with experience and reports back to the corporate body.*

So, the first pervasive error in Quine's holistic model of belief revision marked by the deep inconsistency of the Revisability Doctrine is that observation statements stand on their own against a theory on the occasion of theoretical revision. No observation statement stands on its own. Rather it stands with an entire set of logical, semantic and even theoretical principles which are required in order that the observation statement meet with experience, relate to a theory, potentially contradict that theory and so occasion a revision of it.

The second pervasive error in Quine's picture is his claim that "the unit of empirical significance is the whole of science" ([1951] 1961, 42). As I noted above (fn. 12) Quine backs away from this claim with his recognition that some constituents of the theory will be unaffected by a recalcitrant experience. For instance, Quine concedes that "[a]ny purely logical truth is thus exempted, since it adds nothing [substantive] to what ... [the theory] would logically imply anyway, and sundry irrelevant sentences ... will be exempted as well" (1992, 14). As a concession, Quine amends his holistic model of theoretical revision to claim that it is not the entire 'corporate body' which stands before the tribunal of experience, but rather "some middle-sized scrap of theory [which] usually will embody all the connections that are likely to affect our adjudication of a given sentence" (1960, 13). But, this is only a minimal concession on Quine's behalf, and one which does not properly do justice to the reasons actually requiring the amendment in the first place. That purely logical truths are

exempt from revision on the basis of a recalcitrant experience does not merely mark a degree of attrition among the members of the corporate body facing the tribunal of experience.

Rather, it marks the fact that not all members of the corporate body are held in place by entrenchment and minimum mutilation. Since the principle of non-contradiction remains unaffected by *any* recalcitrant experience, whatever holds it in place cannot be explained by the interplay of entrenchment and minimum mutilation. The source of logical and mathematical necessity cannot be explained by an “unstated policy of shielding mathematics [and logic] by exercising our freedom to reject other beliefs” (1992, 15). No policy is required to shield mathematics or logic from experience; rather it is the very function of logic and mathematics in the theory which serves to insulate them from the contingencies of experience. Yet, even while making the apparent concession that there are logical features of statements in the theory which may exempt them from revision, Quine does not question - let alone revise - either his Revisability Doctrine or his account of those principles which anchor any and all statements in a theory. This marks the third pervasive error in Quine’s holistic model of belief revision which is drawn to light by recognising the deep inconsistency of the Revisability Doctrine.

Recognizing that some statements in a theory are not held in place by entrenchment and minimum mutilation makes visible the fourth pervasive error in Quine’s holistic model. On Quine’s model, our web of belief only bumps up against the external world as a whole, undifferentiated mass of theory. As a result, the external world is the only effective



'constraint' on the system. Experience does not just mark the "boundary conditions of our body of beliefs" (*op. cit.*), it marks the *only* boundary conditions on our beliefs. Since there is no internal structure to the system, there are no internal constraints on it. The web of belief never bumps up against the limits of logic; it only ever bumps up against the limits of the world. Yet, as we have just seen, some constituents of belief systems are not merely anchored in place by the policies of entrenchment and minimum mutilation. Some constituents of a theory provide it with the very structure through which it may have a boundary with experience. As such, there are internal (e.g. logical) constraints on any theory which provide a different set of boundary conditions for the changes occurring therein. The changes which we make to our system of belief are constrained not only by experience, but by logic also.

The fifth pervasive error in Quine's account of belief revision is found in his claim that a theory consists of an undifferentiated mass of statements none of which have any special standing in relation to any of the others beyond that which can be supplied by the application of minimum mutilation and entrenchment. Indeed, this is the error which is perhaps best seen as the source of the other errors in Quine's model. Quine is absolutely insistent that all components of the theory function as statements, refusing to allow that any expressions may have a constitutive, stipulative, regulative or otherwise normative function. Definitions are considered as reports of "prior relations of synonymy" ([1951] 1961, 27), while logical laws are portrayed as "further statements of the system" ([1951] 1961, 42). Yet, this position is simply untenable. As Quine discovered when trying to articulate a 'non-circular' definition of

the concept of analyticity, concepts do not function independently of one another, but they work as part of a group. For example, the law of non-contradiction is partly constitutive of the nature of recalcitrance. 'Statements' expressing the relations between concepts mark departmental boundaries within the corporate body. They have a categorically different function from statements which apply those concepts to the world of experience.

#### §4.10 - Departmental Boundaries within the Corporate Body

Over the course of this chapter, we have seen many of the problems inherent in Quine's picture of the corporate body of theory. Quine's view that observation statements stand on their own ignores the role which logical, semantic and theoretical principles play in establishing the content of observation statements, and connecting them to experience and to theory. Quine's claim that the constituents of a theory meet the tribunal of experience as a single, corporate body misrepresents the unique roles of individual constituents in that encounter. Further, Quine's claim that the only thing holding any of these constituents in place are the policy decisions resulting from the interplay of minimum mutilation and entrenchment ignores the fact that some constituents of a theory are secured in their positions completely independently of any such policy decisions. In addition to this, Quine's claim that the boundaries of change within the system are marked only along its frontier with experience obscures those constraints imposed by the very structure of the theory itself, and by the special place that some constituents hold within it. Finally, Quine's view that all members of the corporate workforce are statements which cannot be categorically distinguished from one

another according to their subject-matter or function misrepresents the actual jobs which many of the constituents of a theory actually perform. These pervasive errors should provoke a considerable institutional restructuring of Quine's picture of the corporate body of theory.

What is missing in Quine's picture of the corporate body is the idea that not all members of the corporation perform the same function. In order for the corporation to work properly, different members must perform different functions, and these different functions provide for categorically different positions within the institution of theory.

We might think of these differences in terms of different departments within the corporate body of theory. While I have not conducted a corporate audit to determine what, precisely, these departments are, or ought to be, here are some of the departments we might expect to find within the institution of theory. One department might be responsible for setting the goals or objectives of the corporation, and perhaps stating its core values. Another department could be responsible for providing the conceptual infrastructure with which the corporation will begin to produce testable claims. Still another department might be given the responsibility of creatively generating speculative hypotheses about the nature of things and how they work. The production end of the corporation might be seen as the department of testable hypotheses; members of this department are the real temporary labour of the theoretical workforce. Lastly, there will be some department - or perhaps some set of members within each department (a meta-department if you will) - which prescribes the relations and connections each department (member) has to other departments (or

departmental members). This might be thought of as the department of inter-departmental relations. Investigation will surely show that there are more (and perhaps different) departments than the few I mention here.

Notice, though, some of the vistas offered by this new perspective on the corporate body of theory. First, each department has a unique function according to which it is distinguished from other departments within the corporation, thus recognizing the different jobs performed by different constituents of a theory. Secondly, the departments are related to one another in ways that reflect their different jobs. As such, no member of the corporation stands on its own. Rather, each member stands as a representative of the theory - a node within the corporate body. Constituents work as members of a group, and their place in the group is reflective of the work that they do. Further, interdepartmental relations within the corporate body are not uniform. Members of different departments respond in categorically different ways to changes affecting the corporation. Moreover, not every constituent is even subject to the effects of certain types of change. Indeed, entire departments are insulated from changes of certain types. This is not the result of some corporate policy, but rather is explained by the very structure of the institution itself. The position of these constituents within the corporation is not established by some policy, but rather by the nature of their job. Thus, the internal structure of the institution itself places certain constraints on the ways in which the corporation of theory can respond to changes of different sorts. So, by recognizing that different constituents of a theory perform different jobs within the corporate body, we can

overcome several of the pervasive problems inherent in Quine's naturalised holistic model of theory and of belief revision.

## Chapter 5

## Conclusion:

## Logic Without a Subject Matter

## §5.1 - Psychologism: Its Nature and Controversy

Psychologism is a thesis about the relation between philosophy and psychology. Generic Psychologism is the thesis that philosophy is dependent on psychology. This generic thesis can become a source of philosophical controversy when it is specified with respect to some particular philosophical domain (such as logic or epistemology), if that domain is held (on some theory or other) to be independent of psychological considerations. For example, it might be argued that evidentiary (or justificatory) relations can be explained independently of psychological considerations. In such a situation, a claim of epistemological psychologism (e.g., the claim that the theory of justification is dependent on the outcome of psychological investigation) becomes a site of philosophical controversy.

In this inquiry, we have considered the thesis of psychologism in logic - the claim that logic is dependent on psychology. Specifically, we have considered the thesis [LP\*] that empirical psychology is necessary for logic. The truths of logic are frequently considered to hold irrespectively of any contingent facts about the world, including psychological facts. Further, even if it is supposed that there are some necessary truths of psychology, the truths of logic are often thought to hold whether or not there are human minds in the world, and irrespectively of how these minds function or are structured. As such, the thesis that logic is

dependent on psychology has several controversial consequences regarding the nature and foundation of logic.

If psychology is required for logic, then the study of logic can only take place after the results of psychological inquiry are known. If psychology is considered an empirical science (as it typically is today), then this means that the discipline of logic is also *a posteriori*. Yet the truths of logic are typically seen as *a priori*, and not as being justified by any contingent facts known by experience. So, psychologism challenges the *a prioricity* of logic.

Further, the truths of logic are typically thought to be objective and not relative to particular times, places, individuals or groups. Yet, if psychology is required for logic, then it would seem that the truths of logic are not objective, but are relative to facts about human psychology. For example, if psychology is required for logic, then any explanation of basic logical principles, logical laws and logical truths depends on psychology. That is to say, the laws of logic could only be specified (or identified) following psychological inquiry, and any explanation of the status or foundation of these laws would require recourse to psychological facts. So, according to psychologism, logic is not objective, but is relative to psychology on which it depends. On such a picture, the foundations of logic ultimately rest (at least partly) on the ground of psychology. Yet, the ground of psychology does not appear to be sufficiently stable to support the infrastructure of logic.

Not only is psychology typically seen as an empirical science, but the truths of human psychology are typically seen as contingent, and as changing over the course of history in both

individuals and in the species. (At the very least, it would seem that such changes are possible, and that it is an empirical question as to whether such changes do, in fact, occur.) Yet if psychology provides (part of) the ultimate foundations for logic, then psychological change could well bring about logical change. Take, for example, take the logical truth  $(p \ \& \ (p \rightarrow q)) \rightarrow q$ . If the truth of this expression is dependent on psychological facts, then, if certain psychological facts about human minds change from one time to the next, it is entirely conceivable that the truths and laws of logic could change with them. It is completely conceivable that certain psychological changes (whether they are innate or developmental, whether they are due to nature or nurture, evolution or adaptation) could bring it about that  $(p \ \& \ (p \rightarrow q)) \rightarrow q$  is false, and instead that  $(\sim p \ \& \ (p \rightarrow q)) \rightarrow \sim q$  is true. Since the truths of logic are relative to human psychology, nothing inherently precludes this scenario. Yet, this scenario challenges the timelessness with which logic is typically seen. Further, if we want to admit of logical change,<sup>1</sup> the question remains as to whether the correct way to explain such change is by recourse to psychological change, or whether such logical changes should be accounted for while retaining the objectivity of logic itself.

In addition to the possibility of temporal changes in human psychology, there may be regional differences in the facts of human psychology. (Again, at the very least, it would

---

<sup>1</sup> By "logical change" I mean either a change from one logical system to another, or a change within a logical system (e.g., a redefinition of a connective, valuation or inference rule, or the addition or removal of an axiom).



seem that such differences are possible, and that it is an empirical question as to whether such differences actually occur.) Yet, if psychology provides (even part of) the support for logic, then psychological differences could indicate logical differences. For example, if the truth of ' $\sim(p \ \& \ \sim p)$ ' depends on psychological facts and these psychological facts vary culturally, genetically or even geographically (environmentally), then it is entirely possible that the truths and laws of logic vary from one cultural or geographic region to the next. Thus, it is entirely conceivable that ' $\sim(p \ \& \ \sim p)$ ' is a logical truth in one culture, while ' $(p \ \& \ \sim p)$ ' is a logical truth in another culture. Yet, this scenario challenges the universality with which logic is typically seen. Further, if we want to admit of logical differences,<sup>2</sup> the question remains as to whether these differences are properly due to psychological differences, or whether we need a different way of accounting for these differences that preserves an account of logic as objective and independent of human psychology.

Importantly, even if there are features of human psychology which are unchanging and invariant, the universality and timelessness of logic would remain relative to these psychological facts, and thus the objectivity of logic would remain compromised. On this scenario, even if the truths of logic did not change with time or vary with place, the truths of logic would only hold for human minds, and only for so long as there were human minds in the world. Should there be other kinds of minds, whose basic psychological constitutions

---

<sup>2</sup> By "logical difference" I mean differences among two or more logical systems (e.g., whether some well-formed-formula is a theorem).

were categorically different from our own, the possibility would remain that these differences on their own would give rise to categorically different logics. According to psychologism, what is logically true is merely true *for us*. It would seem, then, that any dependency on psychology compromises the objectivity of logic.

Finally, psychologism also compromises the necessity of logic. On psychologistic accounts, any necessity logical truths or laws might have is relative to, and dependent upon, some set of psychological facts. On this picture, what is logically necessary may tell us more about the nature or operation of the human mind than what is actually possible or impossible. For instance, the concept of necessity might merely reflect the bounds of our own thinking resulting from the structure of our minds, or from some deep-seated habits of thinking. Similarly, the idea of possibility might mark only what we are capable of imagining, as opposed to what might actually be true. What is necessary, according to psychologism, is merely necessary *for us*. And so it would seem that any dependency on psychology compromises the necessity of logic.

Indeed, this points to what is perhaps the most general philosophical controversy presented by psychologism. As Frege observed, logic is inherently connected with the truth: the laws of logic are truth preserving.<sup>3</sup> Yet, if these laws are dependent on human psychology

---

<sup>3</sup> A valid argument is one for which it is not logically possible that the conclusion be false given the truth of the premises. Thus, it is often been said that the laws of valid argument (i.e., the laws of logic) are truth-preserving.

then so is truth in this respect, and logic does not provide us with the laws of truth, but with the laws of our taking-to-be-true (Frege [1918] 1977, 1). Yet, according to Frege, the truth of something and our taking it to be true are not the same, and they should never be confused. The truth of something is independent of whether and how we take it to be true. Since logic is concerned with the laws of truth rather than the laws of taking-to-be-true, logic should be independent of psychology.

Having inventoried some of the controversies arising from psychologism, it is worth reviewing some of the reasons one might have for claiming that psychology is required for logic. The first step in this project was to determine the sources of psychologism. What reasons might one have for claiming that psychology is required for logic?

#### §5.2- Sources of Psychologism

The generic thesis that logic is dependent on psychology may be informed by a variety of different views about the nature or origin of the asserted dependency. Both metaphysical and semantic positions have been advanced in explanation of the philosophical dependence on psychology. Not only are the standardized formulations of these positions logically equivalent, but the semantic thesis of Referential Psychologism effectively encompasses psychologism viewed as a reductive or a methodological thesis.

The thesis of Metaphysical Psychologism with respect to logic claims that some essential part of the subject matter of logic is psychological in nature. This view quickly produces the consequence that logic is dependent on psychology. If the subject matter of

logic is psychological in nature, then psychological entities become the proper bearers of logical properties and the elements of logical relations. As such, these properties and relations are explained in terms of the relevant features of these psychological entities, and the nature and foundation of logical relations thus becomes dependent on human psychology.

Equivalently, the thesis of Referential Psychologism claims that some entity which is necessarily referred to within the logical lexicon is also referred to within the psychological lexicon. In this case, the logical dependence on psychology arises from the fact that the semantics for logical terms cannot be given independently of psychology. Since the propositions of logic are about psychological entities, logical truths are dependent on the truths of psychology. Since these truths are, in turn, descriptions of psychological facts, logic becomes dependent on facts about human psychology. Moreover, the truths of logic will have the same ultimate status as the psychological truths on which they depend.

Historically, the question of psychologism has been frequently conceived of as a question concerning the proper subject matter of logic. Yet the equivalence of Metaphysical Psychologism and Referential Psychologism justifies a semantic treatment of psychologism. The question of psychologism may be treated as the question of how the semantics of logical terms ought to be given. In this inquiry, we have considered several possible options for explaining the semantics of logical terms - several views on the subject matter of logic. Traditionally, the subject matter of logic is commonly viewed as inference, which, in turn, is characterized as a mental, psychological process. Closely related to this view is the thesis to

which Frege reacted - the claim that Thoughts are like ideas.

Against such psychological accounts of the subject matter of logic, or of the senses of our linguistic expressions, Frege's critical arguments still stand as sound refutations. His anti-psychologism on this point endures as a landmark - a boundary stone - by which we may continue to take our philosophical bearings. Yet the primary business of this inquiry has not been to defend Frege's critical position against its objectors (historical or contemporary). Rather, my aim in this regard has been considerably more modest. I sought only to understand and expound Frege's anti-psychologistic arguments, and the underlying philosophical values which motivated him.

Instead of defending anti-psychologism from its critics, I sought in this inquiry to approach those questions which are to be found at the site of Frege's landmark. Regrettably, Frege can no longer be seen as offering any clear direction for providing a theoretically viable, non-psychologistic account of the nature and foundation of logic. Instead of offering us a clear path, Frege's landmark faces us with the question of where we should go from here. What should a non-psychologistic account of logic look like? How ought we to account for the semantics of logical terms? What is the proper subject matter of logic? The work of this inquiry has been to address these questions, in an attempt to identify some of those characteristics required by any account of the nature and foundation of logic hoping to overcome the problems of psychologism.

I have sought to find direction in this matter by looking to the footprints of my

forebears. I now turn to a review of the semantic alternatives considered over the course of the inquiry, marking the successes and the failings of each strategy. From the remains of each of these theories I draw a set of criteria which a successful response to psychologism must meet.

The first, and most basic, of these criteria stems from the idea that any acceptable response to psychologism must not itself succumb to the epistemological problems posed by psychologism. Indeed, not only should a response to psychologism not display these psychologistic symptoms, but it should be manifestly free of them. So, the first criterion that any non-psychologistic theory must meet is:

- (i) Any acceptable response to psychologism must successfully explain the nature and foundation of logic in such a way as to preserve those desirable modal and epistemological properties which are the source of the psychologism controversy in the first place.

If no account of the nature and foundation of logic can provide it with the qualities of objectivity and necessity, then there seems little reason to prefer a non-psychologistic account to a psychologistic one. With this initial criterion in mind, let us turn to those strategies for denying psychologism previously considered.

### §5.3 - Strategies for Denying Psychologism

One strategy for denying psychologism is to give an account of the subject matter of logic on which it has a non-psychological nature. The idea here is that if the subject matter

of logic is not psychological, then logic itself would be independent of psychology, and the truths of logic could be known, justified and explained without being dependent on psychological facts.

This was the strategy employed by both Frege (with his Platonism) and Mill (with his empiricism). These two options mark the obvious alternatives for a non-psychological account of the subject matter of logic. Yet, each of these options presents a unique set of problems which are almost as epistemologically terminal as psychologism itself.

#### §5.3.1 - Lessons from Frege

In the case of Frege's Platonism, logic does not treat of a special class of mental things (e.g., ideas) or processes (e.g., thinking). Because these psychological entities are subjective, individual and epistemically private they are unsuitable to serve as the senses of our expressions and as the bearers of truth. Indeed, in taking such psychological entities to be the subject matter of logic, Frege argued that psychologistic logicians relativize logic to psychology, making the laws of Thought into laws of thinking and the laws of truth into laws of taking-to-be-true. As a solution to this problem, Frege postulated a kind of abstract object which he called Thoughts. Thoughts are the senses of our declarative linguistic expressions; they are a class of objective, abstract entities inhabiting the 'third realm' which are 'grasped' by the human mind in the act of understanding language. While this solution certainly overcomes the logical and epistemological relativism which Frege saw as resulting from psychologism, the problems it poses are daunting. Most importantly, the idea that

understanding is a psychological process of grasping Thoughts virtually prevents us from providing any theoretically satisfactory explanation of this process. That is, accepting that the senses of our meaningful linguistic expressions are Thoughts precludes any viable theory of understanding. Yet we should not simply trade epistemological relativism for a grand hermeneutic mystery merely because we desire objectivity in truth and logic. Rather, the foundations of objectivity must be plain, and plainly visible - a landmark which may be grasped by all, if you will.

So the second criterion that any acceptable, non-psychologistic account of the nature and foundation of logic will have to meet is this:

- (ii) If logic treats of some subject matter, then, whatever that subject matter is determined to be, we must be able to have adequate knowledge of it.

That is, if logic is to retain the desirable epistemic properties sought by anti-psychologism and if the justification of logical truths is grounded in the knowledge of some particular subject matter, then a non-psychologistic theory must be able to explain our knowledge of that subject matter. Should we be unable to explain our knowledge of logic's subject matter, we would be unable to justify our ascribing those properties to logic. As such, logic (even if it were on a sound metaphysical platform) would be left without an epistemically stable foundation.

In Frege's case, this requirement takes a more specific form. Since Frege took the subject matter of logic to be Thoughts, Frege must explain how we come to have knowledge of the senses of sentences. That is, not only must Frege provide a non-psychological account



of the nature of sense, but this must be accompanied by an account of the grasping of senses. That is, Frege must provide a viable theory of understanding. To anticipate this strategy, two additional criteria for any acceptable non-psychologicistic account of logic may be added to our list.

- (iii) If the principles of logic are explained in terms of the meanings of our linguistic expressions, then the nature of meaning must be explained independently of psychology.
- (iv) If the principles of logic are explained in terms of the meanings of our linguistic expressions, then it must be accompanied by a viable theory of understanding.

Indeed, any answer to psychologism which claims that the subject matter of logic is to be found in the meanings of our linguistic expressions, must provide for our knowledge of meaning. At minimum, such a theory will have to provide a set of criteria which will determine, for any given linguistic expression, whether, in most normal situations, a person understands it. These criteria will have to be publicly verifiable, in such a way that normal speakers of the language may employ them as they go about their day-to-day linguistic activities. This is not to say that a philosophically acceptable theory of understanding must explain whatever processes (psychological, neurological, etc.) may actually be involved in the proper application of these criteria. In this respect Frege was right: that is a task for the psychologist. What is required, though, is that these criteria be public and that we be manifestly able to employ such criteria in determining whether linguistic agents understand

one another.

### §5.3.2 - Lessons from Mill

Mill's empiricism promises to meet this second criterion (in its general form) by claiming that the subject matter of logic is not some set of abstract entities with which our epistemic relationship is theoretically opaque; rather the proper subject matter of logic is the concrete particular objects of our every-day experience. The subject matter of logic is the same as the subject matter of experience. In making this claim, Mill dissolves any unique epistemological problems raised by logic. Our knowledge of logical truths is of exactly the same sort as our knowledge of all other sorts of truths; the only thing we must explain is our knowledge of objects in the every-day world, and this will serve as the foundations for our knowledge of logic also.

Yet, while Mill's view that the objects of experience comprise the proper subject matter of logic explains our knowledge of logic, it does not seem to provide logic with a satisfactory foundation. Specifically, it cannot support the modal and epistemic properties we typically attribute to logic. For Mill, the expressions of logic, at least insofar as they are *real* propositions, are of exactly the same character as laws of nature and empirical generalizations.<sup>4</sup> Being grounded in experience, our knowledge of, and justification for,

---

<sup>4</sup> I do not discuss here the account of logic whereby the principles of logic are merely 'verbal' propositions, or on which logic is confined to 'apparent' inferences. The subject matter of verbal propositions is the meanings (or connotations) of words, while the subject matter of real propositions is the objects of experience. Yet Mill holds that all

these general and universal propositions is incomplete. Since we have not had experience of each and every instance contained in the generalization, we cannot be certain of it. At best, our knowledge of these types of propositions is hypothetical. Moreover, such propositions are by no means necessary. It is always conceivable that things could be other than we have experienced them (to this point), and for this reason we must continually check our knowledge against our experience. Even such basic logical principles as the law of non-contradiction Mill takes to be justified by each of our experiences, including our mental experiences. (In this respect, Mill's position is similar to Quine's. Even the law of non-contradiction, in being grounded (at least partly) in the facts of experience, is subject to refutation on that same basis.) So, while Mill dissolves the unique problem of our knowledge of logic, he does so at the cost of many of the desirable modal and epistemic properties typically ascribed to the propositions of logic. Thus, while Mill's response meets the second criterion, it fails to meet the first.

Indeed, any view which holds that the subject matter of logic is really the concrete particular objects of everyday experience faces a problem similar to Mill's. Any view which holds that "logic is the account of the most universal properties of things" (Hahn [1933] 1959, 152) is committed to explaining the logical properties of these objects, and the logical laws

---

inference involves 'real' inference and not merely 'apparent' inference, so the ultimate grounds of logic must finally be explained in terms of the foundations of real propositions. The view that the meanings of our expressions are the proper subject matter of logic is discussed below.

which apply to them, in terms of the nature of these objects themselves.

Accounts such as these might be called metaphysical accounts of logic. The laws of logic reflect the basic metaphysical nature of the universe (indeed, perhaps of any universe), and logic is founded upon the universal, metaphysical nature of all objects. Such metaphysical accounts are capable of providing logic with the desirable properties of necessity and objectivity, but have difficulty explaining our certain knowledge of these logical laws. After all, on such accounts, our knowledge of logic is ultimately grounded in, and justified by, our metaphysical knowledge of all things. But, given our limited experience of the universe, it is not at all clear how we could have knowledge of these basic metaphysical properties.

In general, then, the problem for any theory of the subject matter of logic is to give an account of that subject matter in such a way as to preserve the desirable epistemic and modal properties of logic, while being able to explain how we come to have knowledge of that subject matter in the first place. Yet theories which construe the subject matter of logic as (i) a set of abstract objects, (ii) the concrete particular objects of experience, or (iii) the universal, metaphysical features of all objects each fail to provide a satisfactory solution to at least one aspect of this problem.

### §5.3.3 - Lessons from Positivism

In an attempt to overcome these problems, the logical positivists sought to provide yet another account of the subject matter of logic by which logic could retain its objective, *a priori* and necessary character, while avoiding epistemological problems of the sort described

above. The truths of logic are analytical statements: statements whose truth-value is solely a function of the meanings of the terms used in them. On this account, if logic may properly be said to treat of some subject matter, this subject matter is categorically different from that of any scientific discipline. While the sciences treat of things in the world, logic treats of the concepts and categories which we use to describe and categorize the entities of science. While science treats of the world of facts, logic treats of the world of meaning.

Further, the relationship which logic has to its subject matter is of a categorically different sort than the relation science has to its subject matter. The statements of science describe a pre-existing subject matter whose nature is independent of any statements made about it. By contrast, the principles of logic do not describe the world of meaning - they constitute it. As such, the truth of logical expressions does not arise from any sort of agreement, correspondence or representative accuracy. Rather, the truth or necessity of logic is the result of the linguistic function which the principles of logic perform within the language, theory or system.

The positivistic account offers some promise for meeting the first two criteria for any acceptable, non-psychologistic account of logic. In the first place, such an account promises to insulate logic from the contingencies of psychology (as well as the world and our experience of it). The principles of logic are explained in terms of our concepts (the meanings of our expressions) which provide logic with its ultimate foundation. Further, our concepts are fixed prior to our applying them to the world. So, as long as meaning can be explained

independently of psychology (i.e., as long as criterion (iii) can be met), the truths of logic will be unaffected by psychological or worldly contingencies. In the second place, a positivistic account does not pose any unique epistemological problems for our knowledge of logic. Our grasp of logic is explained by our grasp of linguistic meaning. As such, our knowledge of logic only requires that we have a viable account of understanding of language (i.e., criterion (iv) must be met). Yet, this would be required of any comprehensive epistemological theory anyway.

#### §5.3.4 - Lessons from Quine

This positivistic account is the picture Quine sought to reject. Among the features of the picture rejected by Quine was the view that analytical statements were statements 'about' meanings - as if meanings were 'things' which antecede linguistic expressions, which are in turn interpreted as being descriptive of them. (While Quine's point is an important one, it is not obvious that the positivists held the view with which Quine here takes issue.) According to Quine, meanings are not properly explained as a special class of things of which we have a special knowledge. Rather, the nature of meaning is explained through concepts such as synonymy (sameness of meaning) and through activities like definition (or ascription of meaning). That is, according to Quine, we require a non-metaphysical account of meaning.

In giving his non-metaphysical account of meaning, Quine came to accept semantic holism, which led him to adopt a naturalized epistemology. Quine's holism has some important consequences for the nature and foundations of logical principles.

In the first place, the principles of logic are not analytic truths; the principles of logic cannot be justified by, or explained in terms of, the meanings of our linguistic expressions alone. On a holistic semantics, no expression in a language refers to a distinct or uniquely identifiable subject matter. As such, there are no statements which are true purely in virtue of the meanings of the terms they contain. Rather, both the way-the-world-is and the meanings of terms contribute to the truth conditions of every statement. So, the principles of logic are just like every other component of a theory in terms of their subject matter.

Further, the principles of logic cannot be distinguished according to their function in a theory either. For Quine, the principles of logic and mathematics act as statements, and have no special job within a theory which might provide them a unique foundation or entitle them to any special epistemological status.

This position leads Quine to the view that there is only one genuinely epistemic force acting upon theory: experience. Yet, since individual statements do not have a sufficient semantic mass to generate empirically testable consequences, they must be tested against experience as large groups within the corporate body of theory. This means that recalcitrant experiences do not single out any particular statement for revision. Instead, the Revisability Doctrine claims that every statement is subject to revision, while the Preservability Doctrine claims that any statement may be shielded from revision. Further, there are no logical or semantic forces holding statements in place. Instead, the selection of a statement (or set of statements) of the theory for revision occurs as a result of the interplay of the policies of

minimum mutilation and entrenchment.

This line of thinking results in a second major consequence for Quine's account of the principles of logic. Since all constituents of a theory - including the principles of logic - are subject to the Revisability Doctrine, and are only supported by the policies of entrenchment and minimum mutilation, the principles of logic do not have a special epistemological or modal status with respect to other statements in the theory. Hence, no statement is necessarily true, or true independently of the-way-the-world-is.

Quine's naturalistic holism presents several obvious problems for a non-psychologicistic account of the nature of logic. The first, and most obvious problem is that Quine's account fails to preserve the necessity and objectivity of logic and so fails to meet the first criterion. But what is important to recognize about Quine's naturalistic holism is not *that* it fails to meet this first criterion, but *why* it fails to do so.

The reason that Quine's holism fails to meet the first criterion is that it fails to recognize the unique function of logical principles in a theory. For example, the principle of non-contradiction is partly constitutive of the very nature of recalcitrance, and as such it is not subject to revision on the basis of a recalcitrant experience. Indeed, whatever anchors it within the theory cannot be explained by the interplay of entrenchment and minimum mutilation. This realization allows a fifth criterion to be added to the list of standards which any acceptable non-psychologicistic account of logic should meet.

(v) Any acceptable account of logic must recognize the unique function of logical



principles within a theory or language.

This requirement does not directly mandate that the principles of logic be treated as necessary truths. Rather, it allows for a stratified holism which characterizes the concepts and expressions which comprise language. Although the concepts of our language do not come individually as semantic atoms, neither do they come all together as an undifferentiated semantic mass. Rather, concepts are related to one another in categorically different ways. Whether or not these are uniquely specifiable ways, we must seek to recognize these differences by incorporating them into our theories of language. These conceptual relations provide a language with an internal, logical structure. The example of non-contradiction and recalcitrance demonstrates that some concepts may be partly constitutive of others. In addition, conceptual relations can establish local areas of consequence. (E.g., that a patch is blue may have immediate consequences for a set of sentences attributing some other colour to that patch, but no consequences for statements pertaining to the size or shape of the patch.) Conceptual relations such as these, and the functional differences among linguistic expressions can help not only to identify the principles of logic, but also to explain their nature, foundation, and status within a language or theory.

Indeed, the idea that the principles of logic may be distinguished by their linguistic function, and that this function contributes to an account of their nature and foundation, offers a new strategy for responding to psychologism. To see this, notice that each of the strategies considered to this point shares a crucial assumption with the psychologicistic views it seeks to

replace.

#### §5.4 - From Semantics to Pragmatics: Denying the Subject Matter Thesis

Each semantic alternative considered so far accepts the premise that logic treats of some subject matter. Psychologistic thinkers claim either that the propositions of logic are about psychological states and processes, or that facts about psychology somehow determine the character and foundation of logical expressions. So, by each of these responses, psychologistic logicians were right to explain the nature and foundation of logic in terms of its subject matter; their only problem was that they misconstrued the nature of that subject matter. The subject matter of logic is not psychological in nature. For Frege, logic is about a set of abstract entities. For Mill, logic is about the objects of our everyday experience. For others logic may be about the most general features of the universe, or the most general properties of all things. Even Quine's holistic account shares this premise. By claiming that logical principles cannot be distinguished from other statements according to their subject matter, Quine retains the view that logic treats of *some* subject matter: it treats of the same subject matter as every other statement in the theory, and it does so in exactly the same way. Accounts such as these seek to explain the nature and foundation of logic in terms of the nature and characteristics of its subject matter.

From this assumption follows a basic methodological approach for explaining the nature of logic. The problem of explaining the status and foundation of logic is one of explaining the nature of its subject matter. On these accounts, the status of logical principles

is a function of the degree to which they are supported by their subject matter. That is, logical principles function to describe a subject matter, and to the degree that these descriptions are accurate (or supported) the logical principles embodying them are justified.

So, on the assumption that logic describes some subject matter, the only salient question which remains to be answered concerns the nature of that subject matter. The direction of the psychologism debate to this point may largely be explained by its acceptance of this underlying assumption, and the methodological approach which follows from it. Yet every account considered herein which has taken this approach has failed to meet one or more of the criteria required to provide an adequate, non-psychologistic account of logic. In view of these failures, it might be prudent to question the assumption that logic treats of some subject matter, and that the justification of logical principles is to be given in terms of its correspondence with that subject matter.

The claim that logic has no subject matter presents a completely different strategy for rejecting psychologism and avoiding the accompanying epistemological problems. Suppose that logic does not describe any subject matter. Since logic does not treat of any subject matter, it cannot be the case that the subject matter of logic is psychological in nature. In this way, Metaphysical Psychologism is denied. Admittedly, denying that logic describes a subject matter does not contradict the claim that logic is dependent on psychology (i.e., Generic Psychologism). But, it certainly does not give any *prima facie* reason to think that logic is dependent on psychology. (As mentioned above, the answer to this question will turn on the

issue of whether the meaning of logical principles can be explained without involving psychology.) Further, if Generic Psychologism was justified on the grounds that logic described a psychological subject matter, but it turns out that logic does not describe any subject matter, then Generic Psychologism will require some other justification.

It is worth taking a moment to clarify what exactly is involved in the denying the claim that logic has a subject matter. After all, throughout the course of this inquiry, I have construed logic as the study of necessary consequence. So, is necessary consequence not the subject matter of logic? To claim that logic has no subject matter is to claim that there is no class of entities which pre-exist the expressions of logic, and whose nature is independent of the 'statements' made about them.

To deny that logic has a subject matter should not prevent one from describing logic as the study of necessary consequence. Rather, the denial that logic has a subject matter serves to characterize the relationship logic has to necessary consequence. The relationship between logic and necessary consequence is not analogous to the relationship between mineralogy and minerals; and logic is not the mineralogy of logical relations. Instead, the relationship between logic and necessary consequence is more akin to the relationship between criminal law and criminal guilt or innocence. Without criminal law there is no such thing as criminal guilt or innocence, the nature of which is wholly determined by the body of criminal law. Similarly, the nature of logical consequence is not independent of the expressions of logic, and the expressions of logic do not function to describe this subject with more or less

accuracy. Rather, the nature of logical consequence is constituted by the expressions of logic, without which there would be no such thing as logical consequence of which to speak. Further, the semantics of logical expressions are explained in a completely different way from the statements of a science.

So, to deny that logic has a subject matter is to relieve oneself of a certain set of ontological commitments held by those seeking to give a metaphysical account of the nature and foundations of logic. But this should not prevent one from describing logic as the study of something, or from claiming that logic has some subject matter in this deflated sense. Rather, it commits one to providing a certain account of the nature of that subject matter, and of the semantics of logical expressions.

The claim that logic does not describe a subject matter represents not merely a denial of Metaphysical Psychologism but an entirely new approach to specifying the semantics of logical questions, and to questions of meaning more generally. The principles of logic are not distinguished from other expressions according to their subject matter. Rather, what distinguishes principles of logic from other expressions is their linguistic function. This represents a shift from semantic to pragmatic approaches in explaining the meaning, content and foundation of logical expressions.

The accounts considered so far have adopted a semantic approach to theories of meaning. As Brandom observes, semantic accounts privilege reference as the primary linguistic feature, and explain the practical aspects of language - the employment of language

in activities such as understanding, reasoning and inference - in terms of the subject matter of those linguistic expressions (Brandom 2000, 1). That is, semantic approaches “explain the use of concepts in terms of a prior understanding of conceptual *content*.” (2000, 4). In place of this, Brandom advocates “[t]he pragmatist direction of explanation, [which] by contrast, seeks to explain how the use of linguistic expressions, or the functional role of intentional states, confers conceptual content on them” (*ibid.*). Pragmatism, then, may be characterized by the idea that meaning is explained in terms of use.

#### §5.5 - Directions for Further Research

While an investigation into the theoretical viability of a pragmatic account of the nature and foundations of logic is well beyond the scope of the present study, several preliminary comments can be made. Firstly, if the results of this inquiry are any indication, explanations of the nature and foundations of logic in terms of its subject matter do not seem viable. Any subject matter of which we may have knowledge seems to provide inadequate support to the foundations of logic. Similarly, those abstract or universal entities which might account for the objectivity and necessity of logic appear to be epistemically opaque. As such, an alternative strategy which escapes this dilemma presents a more promising approach.

Pragmatic approaches to the semantics of logical principles promise to avoid this dilemma by claiming that it is the function of logical principles, not their subject matter, which distinguishes them from other linguistic expressions. Thus, a pragmatic approach begins by directly addressing criterion (v), and avoids the hurdle presented by criterion (i). What

remains to be seen is whether a pragmatic account of the meaning of logical principles is capable of providing an adequate foundation for logic (criterion (i)). It further remains to be seen whether pragmatic accounts of linguistic meaning can be provided independently of psychological considerations (criterion (ii)) and in such a way as to permit a viable theory of understanding (criterion (iv)). These questions must be left for future study.

In addition to these questions, there remain those questions which were bracketed at the beginning of this inquiry. These questions served to limit the scope of this study, and so mark the boundaries of its conclusions. As such, these questions deserve serious consideration. First among these is the question of whether a non-empirical psychology (of the sort which is perhaps offered by Kant) would present similarly undesirable consequences for the nature and foundation of logic.

Finally, the issue of psychologism in other areas, including epistemology and the other traditionally a priori sciences such as mathematics, deserves consideration. In general, I feel that one of the most pressing questions for philosophy today is the question of whether the notion of evidence, not merely the notion of consequence, can be explained independently of psychology.

Appendix I:  
Definitions of “psychologism”

Baker, G.P.:

“According to psychologism, a necessary truth is a proposition about mental entities. For example, the Law of Non-contradiction reports the incompatibility of the mental state of believing that p with the mental state of believing that not-p; and the inference-pattern *modus ponens* represents a law of thought, i.e., a natural law about human thinking” (Baker 1988, 171-72).

Baker G.P. & P.M.S. Hacker:

Psychologism blurs the distinction between logic and psychology by defining the rules of logic as “patterns of human thinking, often as psychological laws displaying the nature of the human mind” (Baker & Hacker 1989, 85).

Ben-Menahem, Yemima:

“[P]sychologism is a much more specific error than linking philosophy with psychology: it represents a theory of meaning based on private ideas” (Ben-Menahem 1988, 124).

Bezuidenhout, Anne:

“The view that the epistemological properties of beliefs or judgements depend on the psychological processes which are responsible for those beliefs or judgements” (Bezuidenhout 1996, 743).

*A [Blackwell] Companion to Epistemology* (entry by David Bell):

“With respect to a given subject matter psychologism is the theory that the subject-matter in question can be reduced to, or explained in terms of, psychological phenomena (mental acts, events, states, dispositions and the like)” (Bell 1992, 401-402).

Block, Ned:

“Let psychologism be the doctrine that whether behavior is intelligent behavior depends on the character of the internal information processing that produces it” (Block, 1981, 5).

Brockhaus, Richard:

Psychologism is “roughly the thesis that the meanings of words are mental entities” (Brockhaus 1991, 494).



Brockhaus, Richard (cont.):

“[L]ogical psychologism [is] the thesis that the principles of logic are very general empirical hypotheses about the operations of the human mind” (Brockhaus 1991, 494).

“Weak psychologism claims that logical principles are inherent in the laws of mind, and uncoverable by psychological methods, the stronger version is that logic is literally a branch of psychology” (Brockhaus 1991, 495).

Carnap, Rudolf:

Psychologism is “the wrong interpretation of logical problems in psychological terms” [glossary entry] (Carnap 1950, 581; as cited in Notturmo 1985, 23).

Creath, Richard:

Psychologism is “the view that logic or other branches of philosophy *describe* how people think” (Creath 1990, 25).

Currie, Gregory:

Psychologism is “the view according to which we are to give a subjective, mental explanation to the nature of ... concepts [like truth, validity and even knowledge]” (Currie 1982, 13).

Cussins, Adrian:

“Psychologism is the doctrine that psychology provides at least part of the explanatory basis for the constitutive understanding of the mental” (Cussins 1987, 126).

“Since I deny that ‘psychologism’ need bear a pejorative sense, I am not happy with the definition of ‘psychologism’ as a doctrine which confuses philosophy and psychology. Instead, I shall adopt an asymmetric definition which holds that a psychologistic doctrine is a doctrine which requires psychology in order to answer a philosophical question. The rejection of psychologism is the rejection of the philosophical relevance of psychology” (Cussins 1987, 126).

Dummett, Michael:

Psychologism is “[i] the explanation of logical laws as governing the process of thinking, and [ii] [the explanation] of the meanings of words and sentences as mental contents” (Dummett 1981, 64).

Dummett, Michael (cont.):

Psychologism is “the importation of psychological considerations into logic” (Dummett 1973, xxiv).

NB: Both of these definitions are used in the context of articulating the thesis of psychologism against which Frege argued.

Engel, Pascal:

Psychologism [glossary entry]: “The view that the laws and truths of logic are reducible to laws or truths of human psychology” (Engel [1989] 1991, 376).

“Psychologism in general is the thesis according to which logic describes the actual psychological processes of reasoning” (Engel [1989] 1991, 292).

George, Rolf:

“*eliminative psychologism* ... [aims] to replace logic with the empirical investigation of inferential habits” (George 1997, 237).

“a common element in all but the eliminative variety is their reductionism, namely of logical relations to psychological ones” (George 1997, 237).

Grzegorzczuk, Andrzej:

Psychologism<sub>1</sub>: “The relation of meaning is established by human beings” (Grzegorzczuk 1998, 109).

Anti-psychologism<sub>1</sub>: “The relation of meaning is independent of human beings” (Grzegorzczuk 1998, 109).

Psychologism<sub>2</sub>: “When we describe the meaning of words we need to refer to human behavior” (Grzegorzczuk 1998, 109).

Anti-Psychologism<sub>2</sub>: “When we describe the meaning of words we do not need to refer to human behavior” (Grzegorzczuk 1998, 109).

Jacquette, Dale:

“psychologism includes any attempt to ground philosophical explanation in psychological phenomena” (Jacquette 1997b, 312).

“Psychologism is a philosophical ideology that seeks to explain the principles of logic, metaphysics, and epistemology as psychological phenomena” (Jacquette 2001, 261).

Kornblith, Hilary:

“Psychologism is the view that the processes by which we ought to arrive at our beliefs are the processes by which we do arrive at our beliefs;” (Kornblith [1985] 1994, 8).

Macnamara, Terance:

Def'n Psychologism: “logic [is] a subbranch of psychology, deriving its fundamental principles from psychology” (Macnamara 1986, 1).

“*Psychologism* is the name given to the doctrine that philosophy is a study of the mind, though I confine it to the doctrine that logic is a study of the mind. ... Psychologism is opposed by the view that logic is not in any sense a psychological study, that it has to do with the truth conditions of sentences and with inferences to sentences, all conceived of as independent of any psychological state or act” (Macnamara 1986, 10).

Margolis, Joseph:

“Broadly speaking, psychologism is a theory about the conceptual and cognitive resources on which truth claims of any sort depend: ... Psychologism, then, is the denial that there is any principled disjunction, epistemically and subjectively, between the cognizing *source* or *scope* or epistemic *certainty* imputed to distinctive ‘elements’ or aspects of human cognition or, short of that, any determinate difference in scope or power between would-be elements that, though not explicitly disjoint, may be shown to contribute in different modular ways to what should count as knowledge” (Margolis 1997, 292).

Mohanty, J.N.:

“It [psychologism] is an epistemological thesis, which traces back all epistemological questions to some aspects of psychology” (Mohanty 1989, 2).

“Logical psychologism is the theory that logic is based upon psychology” (Mohanty 1997, 274).

Notturmo, Mark A.:

“Psychologism, in its generic form, is the doctrine that psychology provides the epistemological and metaphysical foundations for each of the other special sciences” (Notturmo (ed.) 1989, Preface).

Notturmo, Mark A. (cont.):

“ ‘psychologism’ is intended to connote, and to denigrate, the use of psychological methods in philosophical and scientific investigations” (Notturmo 1985, 9).

Pandit, G.L.:

Reductive Psychologism: “By ...[this phrase] I intend to refer to the traditional concept of psychologism as a reductionist doctrine according to which logic and philosophy must be founded upon, and in effect reducible to, the laws of psychology. Reductive psychologism is traceable piecemeal even in certain contemporary philosophical theses which involve confusion of logical or philosophical issues with psychological ones” (Pandit 1971, 86).

Methodological Psychologism: “[B]y ... [this phrase] I intend to refer to the procedure of formulating a philosophical explication with the help of a psychological concept – i.e., the procedure of either formulating an explicandum with the help of a psychological concept or a psychological concept being assigned a classificatory role within the formulation of a philosophical explication” (Pandit 1971, 86-87).

Pap, Arthur:

“Psychologism [is] the tendency to confuse *logical* issues with *psychological* issues; e.g. if one tried to answer a question of logical validity by investigating actual beliefs (however the meaning of this deprecatory word is unclear to the extent that the meaning of ‘logical’ is unclear)” (Pap 1958, 435; viz. Jacquette 1997b, 314).

Skorupski, John:

“ ‘Psychologism’ may be the view that the laws of logic are, or hold in virtue of, the laws which govern our mental processes, or again it may be the view that ‘meanings’ are mental entities” (Skorupski 1984, 240).

Specht, Ernst Konrad:

“ [T]he ‘psychologistic theory of meaning’ somehow interprets ... [the meaning of a word] as a mental object, as a picture in the soul, as a representation of the object signified by the word, as a thought, etc.” (Specht 1963, 118).

Stumpf, Carl:

“ ‘psychologism’ ... [is] the reduction of all philosophical research in general, and all epistemological enquiry in particular, to psychology” (Stumpf 1892, 468; as cited in Kusch 1995, 103 ).

Toulmin, Stephen:

“Primitive psychologism ... [is] the view that statements in logic are about actual mental processes” (Toulmin 1958, 86).

Willard, Dallas:

Logical psychologism is “the view that the non-normative statements made by logicians in their business are about, and draw their evidence from the examination of, the particular conceivings, assertings, and inferrings of particular persons – a range of facts commonly thought to belong ultimately to the science of psychology alone” (Willard 1977, 43; viz. Notturmo 1985, 15).

## BIBLIOGRAPHY

- Abbagano, Nicola. 1967. "Psychologism." Nino Langiulli, trans. In *The Encyclopedia of Philosophy*, vol. 6. Paul Edwards, ed. New York: Macmillan Publishing & The Free Press.
- Ayer, A.J. [1946.] 1952. *Language, Truth and Logic*, 2<sup>nd</sup> ed. New York: Dover.
- Ayer, A.J. (ed.). 1959. *Logical Positivism*. New York: The Free Press.
- Baker, G.P. 1988. *Wittgenstein, Frege and the Vienna Circle*. Oxford: Basil Blackwell.
- Baker, G.P. and P.M.S. Hacker. 1989. "Frege's Anti-Psychologism." In *Perspectives on Psychologism*. Mark A. Notturmo, ed. New York: E.J. Brill, pp. 75-127.
- Beaney, Michael (ed.). 1997. *The Frege Reader*. Oxford: Basil Blackwell.
- Bell, David. 1992. "Psychologism." In *A [Blackwell] Companion to Epistemology*. Jonathan Dancy and Ernest Sosa, eds. Oxford: Blackwell, pp. 401-402.
- Beneke, F.E. 1833. *Die Philosophie in ihrem Verhältnis zur Erfahrung, zur Spekulation und zum Leben dargestellt*. Berlin: Mittler.
- Ben-Menahem, Yemima. 1998. "Psychologism in Meaning." In *The Story of Analytic Philosophy: Plots and Heroes*. Anat Biletzki and Anat Matar, eds. New York: Routledge, pp. 123-38.
- Bezuidenhout, Anne. 1996. "Resisting the Step toward Naturalism." *Philosophy and Phenomenological Research*, 56(4), 743-70.
- Block, Ned. 1981. "Psychologism and Behaviourism." *Philosophical Review* 90(1), 5-43.
- Brentano, Franz. [1874.] 1995. *Psychology from an Empirical Standpoint*. Linda L. McAlister, ed. Antos C. Rancurello, D.B. Terrell and Linda L. McAlister, trans. New York: Routledge.
- Brockhaus, Richard. 1991. "Realism and Psychologism in 19<sup>th</sup> Century Logic," *Philosophy and Phenomenological Research*, 51, 493-523.
- Carnap, Rudolf [1934/1937.] 1951. *The Logical Syntax of Language*. Amethe Smeaton,

trans. London: Routledge & Kegan Paul.

Carnap, Rudolf. 1950. *Logical Foundations of Probability*. Chicago: University of Chicago Press.

Carnap, Rudolf. 1962. *Logical Foundations of Probability*, 2<sup>nd</sup> ed. Chicago: University of Chicago Press.

Carnap, Rudolf. 1963. "Intellectual Autobiography." In *The Philosophy of Rudolf Carnap*. Paul Arthur Schilpp, ed. La Salle, IL.: Open Court, pp. 3-84.

Chomsky, Noam. 1959. "Review of B.F. Skinner *Verbal Behavior*," *Language: Journal of the Linguistic Society of America*, 35(1), 26-57.

Coffa, J. Alberto. 1991. *The Semantic Tradition From Kant to Carnap - To the Vienna Station*. Linda Wessels, ed. Cambridge: Cambridge University Press.

Cohen, Jonathan. 1998. "Frege and Psychologism." *Philosophical Papers*, 27(1), 45-67.

Creath, Richard. 1990. "Introduction." In *Dear Carnap, Dear Van: The Quine-Carnap Correspondence and Related Work*. Richard Creath, ed. Berkeley: University of California Press, pp. 1-43.

Creath, Richard. 1991. "Every Dogma Has its Day," *Erkenntnis*, 35(1-3), 347-389.

Currie, Gregory. 1982. *Frege: An Introduction to His Philosophy*. New Jersey: Barnes & Noble Books.

Currie, Gregory. 1989. "Frege & Popper: Two Critiques of Psychologism." In *Imre Lakatos and Theories of Scientific Change*, Kostas Gavroglu, Yorgos Goudaroulis and Pantelis Nicolacopoulos, eds. Boston: Kluwer, pp. 414-430.

Cussins, Adrian. 1987. "Varieties of Psychologism." *Synthese*, 70(1), 123-54.

Descartes, Rene. [1641.] 1993. *Meditations on First Philosophy* 3<sup>rd</sup> ed. Donald A. Cress, trans. Indianapolis: Hackett.

Dummett, Michael. 1973. *Frege: Philosophy of Language*. London: Duckworth.

Dummett, Michael. 1981. *The Interpretation of Frege's Philosophy*. Cambridge, Mass.: Harvard University Press.

Dummett, Michael. 1991. *Frege: Philosophy of Mathematics*. London: Duckworth.

Engel, Pascal [1989.] 1991. *The Norm of Truth: An Introduction to the Philosophy of Logic*. Pascal Engel and Miriam Kochan, trans. Toronto: University of Toronto Press.

Feigl, Herbert. 1963. "Physicalism, Unity of Science and the Foundation of Psychology." In *The Philosophy of Rudolph Carnap*. Paul A. Schilpp, ed. La Salle: Open Court, pp. 227-267.

Frege, Gottlob. [1879.] 1967. "Begriffsschrift." In *From Frege to Gödel: A Source Book in Mathematical Logic, 1879-1931*. Jean van Heijenoort, ed. Cambridge, Mass.: Harvard University Press, pp. 1-82.

Frege, Gottlob. [1879-1891.] 1979. "Logic." In *Posthumous Writings*. Hans Hermes, Friedrich Kambartel and Friedrich Kaulbach, eds. Peter Long and Roger White, trans. Chicago: University of Chicago Press, pp. 1-9.

Frege, Gottlob. [1884.] 1980. *The Foundations of Arithmetic: A Logico-Mathematical Enquiry Into the Concept of Number*, 2<sup>nd</sup> ed. J.L. Austin, trans. Evanston: Northwestern University Press.

Frege, Gottlob. [1892.] 1952. "On Sense and Reference." In *Translations from the Philosophical Writings of Gottlob Frege*. Peter Geach and Max Black, eds. Oxford: Basil Blackwell, pp. 56-78.

Frege, Gottlob. [1893.] 1962. *Grundgesetze der Arithmetik*. Hildesheim: Georg Olms. [Repr. of Jena: H. Pohle, Band I 1893, Band II 1903.]

Frege, Gottlob. [1893.] 1964. *The Basic Laws of Arithmetic: Exposition of the System*. Montgomery Furth, ed. and trans. Berkeley: University of California Press.

Frege, Gottlob. [1894.] 1972. "Review of Dr. E. Husserl's *Philosophy of Arithmetic* [1894]." E.W. Kluge, trans. *Mind*, n.s.81(323), 321-337.

Frege, Gottlob. [1897.] 1979. "Logic." In *Posthumous Writings*. Hans Hermes, Friedrich Kambartel and Friedrich Kaulbach, eds. Peter Long and Roger White, trans. Chicago:



University of Chicago Press, pp. 126-151.

Frege, Gottlob. [1918.] 1977. "Thoughts." In *Logical Investigations*. P.T. Geach, ed. P.T. Geach and R.H. Stoothoff, trans., Oxford: Basil Blackwell, pp. 1-30.

Frege, Gottlob. 1980. *Philosophical and Mathematical Correspondence*. Gottfried Gabriel, Hans Hermes, Friedrich Kambartel, Christian Thiel and Albert Veraart, eds. Abridged by B. McGuinness. Hans Kaal, trans. Oxford: Basil Blackwell.

George, Rolf. 1997. "Psychologism in Logic: Bacon to Bolanzo." *Philosophy and Rhetoric*, 30,(3), 213-242.

Glock, Hans Johann. 1994. "Wittgenstein versus Quine on Logical Necessity." In *Wittgenstein and Contemporary Philosophy*. Souren Tegrarian, ed. Bristol: Thoemmes.

Grice, H.P. and P.F. Strawson. 1956. "In Defense of a Dogma." *Philosophical Review*, 65, 141-158.

Grzegorzczak, Andrzej. 1998. "Is Antipsychologism Still Tenable?" *Vienna Circle Institute Yearbook*, 6, 109-114.

Haack, Susan. 1978. *Philosophy of Logics*. Cambridge: Cambridge University Press.

Hahn, Hans. [1933.] 1959. "Logic, Mathematics and Knowledge of Nature." In *Logical Positivism*. A.J. Ayer, ed. Arthur Pap, trans. New York: The Free Press, pp. 147-161.

Hartman, James B. 1967. "General Introduction." In *Philosophy of Recent Times*, Vol. I: *Readings in Nineteenth-Century Philosophy*. James B. Hartman, ed. New York: McGraw Hill, pp. 1-16.

Hatfield, G. 1990. *The Natural and the Normative*. Cambridge, Mass.: MIT Press.

Hönigswald, Richard. 1931. *Grundfragen der Erkenntnistheorie: Kritisches und Systematisches*. Tübingen: Mohr.

Hume, David. [1739.] 1978. *A Treatise of Human Nature*, 2<sup>nd</sup> ed. L.A. Selby-Bigge and P.H. Nidditch, eds. Oxford: Clarendon Press.

Jacquette, Dale. 1997a. "The Dialectics of Psychologism." *Philosophy and Rhetoric*,

30(3), v-vii.

Jacquette, Dale. 1997b. "Psychologism the Philosophical Shibboleth." *Philosophy and Rhetoric*, 30(3), 312-31.

Jacquette, Dale. 2001. "Psychologism Revisited in Logic, Metaphysics, and Epistemology." *Metaphilosophy*, 32(3), 261-278.

Kant, Immanuel. [1783.] 1977. *Prolegomena to any Future Metaphysics that will be able to come forward as a science*. Paul Carus and James W. Ellington, trans. Indianapolis: Hackett.

Katz, Jerrold. 1998. *Realistic Rationalism*. Cambridge, Mass.: MIT Press.

Kim, Jaegwon. [1988.] 1994. "What is 'naturalized epistemology'?" In *Naturalizing Epistemology*, 2<sup>nd</sup> ed. Hilary Kornblith, ed. Cambridge, Mass.: MIT Press, pp. 33-55.

Kitcher, Philip. 1992. "The Naturalists Return." *Philosophical Review*, 101(1), 53-114.

Kitcher, Philip. 1979. "Frege's Epistemology." *Philosophical Review*, 86, 235-62.

Kneale, William and Martha Kneale. 1962. *The Development of Logic*. Oxford: Clarendon Press.

Kornblith, Hilary. [1985] 1994. "Introduction: What is Naturalistic Epistemology?" In *Naturalizing Epistemology*, 2<sup>nd</sup> ed. Hilary Kornblith, ed. Cambridge, Mass: MIT Press, pp. 1-13.

Kornblith, Hilary. 1982. "The Psychological Turn." *Australasian Journal of Philosophy*, 60, 238-53.

Kornblith, Hilary. [1980.] 1994. "Beyond Foundationalism and the Coherence Theory," In *Naturalizing Epistemology*, 2<sup>nd</sup> ed. Hilary Kornblith, ed. Cambridge, Mass: MIT Press, pp. 131-146.

Kusch, Martin. 1995. *Psychologism: A Case Study in the Sociology of Philosophical Knowledge*. New York: Routledge.

Laudan, Larry. [1990.] 1998. "Demystifying Underdetermination." In *Philosophy of*

*Science: The Central Issues*. Martin Curd and J.A. Cover, eds. New York: W.W. Norton, pp. 320-353.

Locke, John. [1689.] 1975. *An Essay Concerning Human Understanding*. Peter H. Nidditch, ed. Oxford: Clarendon Press.

Macnamara, John. 1986. *A Border Dispute: The Place of Logic in Psychology*. Cambridge, Mass.: MIT Press.

Margolis, Joseph. 1997. "Late Forms of Psychologism and Antipsychologism." *Philosophy and Rhetoric*, 30(3), 291-311.

Mill, J.S. [1843/1872.] 1973. *A System of Logic Ratiocinative and Inductive: Being a connected view of the Principles of Evidence and the Methods of Scientific Investigation*, Books I-III: *The collected works of John Stuart Mill*, vol. 7. J.M. Robinson, ed. University of Toronto Press, Routledge and Kegan Paul.

Mill, J.S. [1843/1872.] 1974. *A System of Logic Ratiocinative and Inductive: Being a connected view of the Principles of Evidence and the Methods of Scientific Investigation*, Books IV-VI: *The collected works of John Stuart Mill*, vol. 8. J.M. Robinson, ed. University of Toronto Press, Routledge and Kegan Paul.

Mill, J.S. [1865/1867.] 1979. *An Examination of Sir William Hamilton's Philosophy: The collected works of John Stuart Mill*, vol. 9. J.M. Robinson, ed. London and Toronto; Routledge and University of Toronto Press.

Mohanty, J. N. 1997. "The Concept of 'Psychologism' in Frege and Husserl." *Philosophy and Rhetoric*, 30(3), 271-290.

Mohanty, J.N. 1989. "Psychologism." In *Perspectives on Psychologism*. Mark A. Notturmo, ed. New York: E.J. Brill, pp. 1-10.

Monk, Ray. 1996. "What is Analytical Philosophy?" In *Russell and the Origins of Analytical Philosophy*. Ray Monk and Anthony Palmer, eds., Bristol: Thoemmes Books, pp 1-22.

Montgomery, H. and R. Routley. 1966. "Contingency and Non-contingency Bases for Normal Modal Logics." *Logic et Analyse*, 9, 318-328.

- Notturmo, Mark A. [ed.]. 1989. *Perspectives on Psychologism*. New York: E.J. Brill.
- Notturmo, Mark A. 1985. *Objectivity, Rationality and the Third Realm: Justification and the Grounds of Psychologism (A Study of Frege and Popper)*. Boston: Martinus Nijhoff.
- Pandit, G.L. 1971. "Two Concepts of Psychologism." *Philosophical Studies*, 22, 85-91.
- Pap, Arthur. 1958. *Semantics and Necessary Truth: An Inquiry into the Foundations of Analytic Philosophy*. New Haven: Yale University Press.
- Passmore, John. *One Hundred Years of Philosophy*, 2<sup>nd</sup> ed. London: Duckworth, 1957.
- Picardi, Eva. 1996. "Frege's Anti-Psychologism." In *Frege: Importance and Legacy*. Matthias Schirn, ed. New York: de-Gruyter.
- Philipse, Herman. 1989. "Psychologism and the Prescriptive Function of Logic." In *Perspectives on Psychologism*. Mark A. Notturmo, ed. New York: E.J. Brill, pp. 58-74.
- Quine, W.V. [1936.] 1976. "Truth by Convention." In *The Ways of Paradox and Other Essays*. Cambridge, Mass.: Harvard University Press, pp. 77-106.
- Quine, W.V. [1951.] 1961. "Two Dogmas of Empiricism." In *From a Logical Point of View*, 2<sup>nd</sup> ed. Cambridge, Mass.: Harvard University Press, pp. 20-46.
- Quine, W.V. 1960. *Word and Object*. Cambridge, Mass.: MIT Press & New York: John Wiley and Sons.
- Quine, W.V. [1968.] 1969. "Ontological Relativity." In *Ontological Relativity and Other Essays*. New York: Columbia University Press, pp. 26-68.
- Quine, W.V. 1969. "Epistemology Naturalized." In *Ontological Relativity and Other Essays*. New York: Columbia University Press, pp. 69-90.
- Quine, W.V. 1992. *Pursuit of Truth*, rev. ed. Cambridge, Mass.: Harvard University Press.
- Quine, W.V. and J.S. Ullian. 1978. *The Web of Belief*, 2<sup>nd</sup> ed. New York: Random House.
- Quine, W.V. and Rudolf Carnap. 1990. *Dear Carnap, Dear Van: The Quine - Carnap*

*Correspondence and Related Work*. Richard Creath, ed. Berkeley: University of California Press.

Russell, Bertrand. [1912.] 1967. *The Problems of Philosophy*. Oxford: Oxford University Press.

Scarre, G. 1989. *Logic and Reality in the Philosophy of John Stuart Mill*. Dordrecht: Kluwer.

Schilpp, Paul Arthur (ed.). 1963. *The Philosophy of Rudolf Carnap*. La Salle, IL.: Open Court.

Shanker, S.G. 1998. *Wittgenstein's Remarks on the Foundations of AI*. New York: Routledge.

Sher, Gila. 1991. *The Bounds of Logic: a Generalized Viewpoint*. Cambridge, Mass.: Bradford.

Skorupski, John. 1989. *John Stuart Mill*. London: Routledge.

Skorupski, John. 1984. "Dummett's Frege." In *Frege: Tradition and Influence*. Crispin Wright, ed. Oxford: Basil Blackwell, pp. 227-243.

Sluga, Hans D. 1977. "Frege's Alleged Realism." *Inquiry*, 20, 227-42.

Sober, Elliot. 1978. "Psychologism." *Journal for the Theory of Social Behaviour*, 8(2), 165-92.

Stumpf, Carl. 1892. "Psychologie und Erkenntnistheorie." *Abhandlungen der philosophischen Klasse der königlich bayerischen Akademie der Wissenschaften*, vol. 19. Munich: G. Franz, pp. 466-516.

Tarski, Alfred. [1966.] 1986. "What are logical notions?" John Corcoran, ed. *History and Philosophy of Logic*, 7, 143-54.

Toulmin, Stephen E. 1958. *The Uses of Argument*. New York: Cambridge University Press.

Willard, Dallas. 1977. "The Paradox of Logical Psychologism: Husserl's Way Out." In

*Readings on Edmund Husserl's Logical Investigations*. J.N. Mohanty, ed. The Hague: Martinus Nijhoff, pp. 43-54.

Willard, Dallas. 1989. "The Case Against Quine's Case for Psychologism." In *Perspectives on Psychologism*. Mark A. Notturmo, ed. New York: E.J. Brill, pp. 286-95.