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THE TASK OF THEORETICAL UNIFICATION IN PSYCHOLOGY

by

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Abstract

The aim of this thesis is to outline a possible program for theoretical unification in psychology. It will be clearly distinguished from the Eclectic and Theoretical Pluralist positions. Part I, examines three scientific 'metatheories' (underlying philosophies of science): Positivism, Metaphysical Pluralism, and Naturalistic Emergentism; and their historical influences upon the building of various systems and schools of psychology. The central issues of scientific endeavor in general and their implications for psychological science in particular are highlighted. Part II, describes and assesses three recent views of theoretical unification in psychology; linking them to their respective metatheoretical foundations. The over-all attempt is to accomplish a non-dogmatic analysis and unification of progressive trends in psychology, particularly those present in the functionalism of William James and John Dewey, the ecological psychology of James Gibson, and the Activity theory approach that has been developed in the Soviet Union and West Germany.

Chapter One outlines the positivist view of science and its influence on the methodology used in structuralism and behaviorism. Chapter Two describes

metaphysical pluralism which grew out of Kantian influences and which has influenced two recent influential theoretical psychologists (S. Koch and K. Gergen). Chapter Three describes naturalistic emergentism (Darwin, Morgan, James, Dewey), and its influence on the early functionalist school and ecological psychology. Chapter Four critically reviews two recent attempts to provide a platform for theoretical unification in psychology Metatheoretical Constructivism (J.R. Royce) and Uninomic Psychology (A.W. Staats). Finally Chapter Five reviews the concept of Pluralistic Monism (C.W. Tolman) and its supporting influences of activity theory and dialectical materialism. A clear distinction is made among unity of science, unity of subject matter, and unification of theories. It is argued that the concept of activity provides the most satisfactory solution to the problem of relevance of psychological theories by providing a genetic theoretical assessment methodology leading to a unified and concrete understanding of the subject matter for scientific psychology.

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Introduction

OVERVIEW OF ECLECTICISM, THEORETICAL PLURALISM, AND UNIFICATIONISM

(I) The Problem of Theoretical Unification in Psychology

When studying the historical development of our science, one must ask: Is it not possible to resolve the theoretical differences between the various classical schools and systems? Given the fact of our historical disunity, can the herculean task of theoretical unification in psychology be accomplished in principle? And if so, what sort of theoretical methodology is required to bring it about?

It is well established that during the early years of our science (1890-1935), a period of territoriality arose in which each new school claimed ownership of the true subject matter of psychology (see Table 1). Even in the absence of any workable standards by which to choose between them, it became apparent that the initial hopes regarding the power of particular schools or systems were inflated (Woodworth, 1931; Heidbreder, 1933). Each new school, while pointing out novel areas of study, left behind some important facts which were already well established both scientifically and philosophically by other schools (Hilgard, 1987).1

The more current landscape of psychology (1970-

1990) has been characterized by a period of eclecticism (M.H. Marx, 1973; Hillner, 1984). Flexibility in the application of appropriate therapeutic and research techniques has continued to uncover new areas of interest and novel connections between already established areas of research and theory. The apparent absence of a clear, non-dogmatic, and systematic outline by which to sort out and sift through the truthfulness of psychological theories has indeed slowed the progression which might have ideally occurred if such a system had existed in an explicit form. Surely, no one, however, would go so far as to suggest that psychology has been stopped dead in its tracks.

For all practical purposes, most psychologists now understand that, although no single one of the classical schools or systems of psychology constitutes a valid unifying system in itself, each of these contains within it the seeds of a system (Robinson, 1979, p.xi). As Daniel N. Robinson notes, the period of territoriality between psychological schools is over; psychology is "now in a period of transition" (Robinson, 1979, p.271). But it has remained an open question as to exactly how far and in what direction this transition will lead.

The complicating factor here is that different assumptions about whether or not there presently exists

an adequate philosophy of science to support the investigations of natural and/or psychological science is related to what the term unification is taken to mean. Thus, while a few theoretical psychologists have embarked upon a new drive to find some means by which to achieve theoretical unification by way of producing a more complete system of psychology (e.g., J.R. Royce, A.W. Staats, and C.W. Tolman), there have been others who continue to consider such an endeavor as merely chimerical (e.g., K.J. Gergen, S. Koch).

(II) Three Positions Regarding Unification

Roughly three attitudes toward the problem of theoretical unification in psychology can be identified. For the present purposes these can be labeled: eclecticism, theoretical pluralism and unificationism.

Eclectic theorists believe that the various historical schools and systems of psychology (see Table 1) capture different aspects of the psychological subject matter to different degrees of sufficiency. They seek to apply a number of bits and pieces from various systems of psychology according to their particular area of interest.

There is an implied yet important argument in the eclectic's position. It goes something like this:

Although at this time no over-arching system of psychology is apparent, there is a chance of such a system being developed. Hilgard and Bower (1966) working specifically within the substantive area of learning theory, made the following observations:

> Science ought to be systematic, not eclectic, but a premature systematic position is likely to be dogmatic and bigoted just as an enduring eclecticism is likely to be superficial and opportunistic. It is possible to have systematization of knowledge as the goal without permitting the desire for system to blind the seeker after it to the truths unearthed by those with views unlike his own. (Hilgard & Bower, 1966, p.13; emphasis added)

In contrast the theoretical pluralist, believes that each school captures all the relevant subject-matter, but simply interprets it differently. Such a pluralist would claim that each system is internally consistent and that each can provide an equally coherent but alternate account of psychological reality. But this position also states that there are no means by which to make the equally successful systems of psychology come together. They are conceived of as incommensurable alternatives.

Such a theorist would argue that it is dangerous to produce an eclectic approach because the underlying assumptions of various parts of such a mosaic may be contradictory. K.J. Gergen and S. Koch are two self-professed theoretical pluralists in psychology.

It should be noted that there is an (optimistic-pessimistic) dichotomy implied here. The eclecticist is successful in actual concrete practice and is often optimistic about the usefulness of both theory building and theory testing. In contrast, the skeptical nature of the theoretical pluralist position reveals it as an abstract, intellectual reaction to an historically prolonged period of eclecticism in psychology.

Once this pessimism is noted, a series of questions are in order: Does the theoretical pluralist adequately account for the historical development of successive schools and systems of psychology?; Is it actually the case that each of the schools and systems are internally consistent?; What is the external relevance (or practical use) of each of these systems or schools?; and finally, Does not the history of eclecticism provide guidelines for the further development of a metatheory which will, in turn, guide the building of a more satisfactory psychological system?

A third position openly and optimistically seeks <u>some</u> sort of unification. Like the eclecticist, the

theoretical unificationist believes that an underlying philosophy is common to the historic, scientific progress accomplished thus far. On the other hand, like the theoretical pluralist, the unificationist also believes that it is undesirable to have contradictory assumptions within a system. Different versions of unificationism have been put forward by Royce, Staats and Tolman.

(III) The Goal Of This Thesis

This thesis compares three classical foundations for science (metatheories) and the three contemporary suggestions for unifying psychology which grew out of them. This thesis contends that the very fact that progress continues (no matter how slow or garbled with non-progressive trends) indicates that underlying those progressive trends is hidden some form of workable philosophy of science.2 In Part I the metatheoretical assumptions underlying this contention are made explicit and in Part II three varieties of unificationism are compared.

Part I will evaluate three metatheoretical influences: Positivism, Metaphysical Pluralism and Naturalistic Emergentism. These 'metatheories' are broad, descriptive categories of observed regularities in the epistemological and ontological assumptions present in the explicit positions of given historical

theorists, schools, and systems of science.

Part II will outline and evaluate three distinct views of unification put forward by Royce, Staats, and Tolman. It will be argued that psychology has reached a state of historical development at which an internally consistency and externally relevant system of psychology can now be developed. The key to such a development is a correct understanding of what is meant by theoretical unification.

Part I

THREE CLASSICAL METATHEORETICAL PROJECTS

(I) The So-Called Fractionation of Psychological Specialties

It is probably the case that M.H. Marx's comment that modern psychological researchers "are likely to be casual about the definition of psychology" (Marx, 1973, p.76) would apply as well today with respect to the question of theoretical unification. The majority of researchers, when faced with the proliferation of divergent ideas present in contemporary psychology, tend to choose a specific area in which there is some success of investigation and then continue on toward profitable research in that area. On an individual basis, of course, it is a "human necessity" for each of us to single out a manageable area of work that seems most interesting or significant (Buxton, 1985, p.5).

> Some of these special-interest fields are known by their methods (psychometrics, experimental this or that, clinical psychology). Others are identified by the subjects of investigation (animals, the abnormal, children, minorities, the military, or the aged). Still others are designated by psychological processes of central interest (learning, sensory processes,

> adjustment, development, motivation, attitude change, schizophrenia, and myriad others). (Buxton, 1985, p.5)

The current training of the North American psychologist includes at least a working knowledge of numerous statistical techniques and familiarization with vast arrays of data collection devices. Whereas researchers concern themselves with questions of data, there is often an unspoken attitude that the related questions: Where do theories come from?; How can we produce good theory? and What is the nature of psychological truth?; should be left for the theoreticians who have waxed philosophical in middle age.

Such "fractionation" of psychological specialties has been described as reflective of "the attempts by scholars to get a grasp on a seemingly amorphous subject matter" (Buxton, 1985, p.5). It is implied that no explicit guidelines by which to define the domain and rules of psychological investigation have yet been produced. Hilgard & Bower (1966) have stated clearly what they think is needed to resolve this situation.

> Accumulation of knowledge means neither mere fact-gathering nor isolated hypothesis-testing, but thoughtful systematic approaches to

> meaningful questions leading to conclusive thinking...We need, along with contemporary model-building, some general psychologizing, that is, repeated reflection upon the larger questions of psychology, to determine whether or not our approaches are indeed leading to their answer. (Hilgard & Bower, 1966, p.583; emphasis added)

If these "larger questions of psychology" are indeed as important as indicated above, it is ironic that many psychologists never grapple with them in any depth. Part I of this thesis is designed to acquaint the reader with those larger questions. Some of the central philosophical terms used in this thesis are defined in Appendix 1. The major philosophical choices described in this thesis are presented in Appendix 2 and Figure 5.

(II) The Three Classical Metatheoretical Projects

In Part I the challenging problem of theoretical unification and the often implicit classical metatheoretical underpinnings which have served to shape that problem, are brought into the foreground. The apparent schism between advocates of systematic vs. advocates of anti-systematic psychology, as well as the split between those theorizing and those carrying out research, is in part due to the necessities of dealing with an ever increasingly complex society and subject

matter. But these trends also sprang directly from two major underlying metatheoretical perspectives which have been hegemonic during the development of psychology: Positivism and Metaphysical Pluralism.

A third metatheoretical influence which until recently has been largely under-applied in psychology is Naturalistic-Emergentism. It both contrasts with and also answers, some of the more widely held and better known concerns of the other two metatheoretical influences.

The reason why we must elaborate each of these metatheories in some detail is that they have been both misunderstood and misrepresented in the past. Each of the metatheoretical rationales has connected with it a distinctive underlying metaphysic, which has served to shape the respective classical and contemporary conceptions of unification. Each metatheory has also been reflected in one or more of the major classical schools or systems of psychology and has therefore produced demonstrable results which we are now in the position to evaluate.

Chapter One

THE POSITIVIST ATTEMPT AT UNITY OF SCIENCE

The first of the three metatheories is positivism with its attempt at a strict separation between scientific and metaphysical modes of inquiry. Positivism assigned itself the optimistic project of providing the basis for a thoroughly scientific understanding of the world.

Kolakowski (1972) defines positivism in the most general terms as a collection of "normative attitudes" which "distinguish between philosophical and scientific disputes that may profitably be pursued and those that have no chance of being settled..." (p.11). Boeselager (1975) defines positivism more precisely in terms of three internally connected assertions common to the various forms of positivism: (1) A scientific ontology is, for epistemological reasons, impossible (sensualism) or is without object (empiricism); (2) A rational, scientific explanation of the world is possible (anti-irrationalism); and (3) This explanation of the world is nevertheless supplied by science alone (scientism) (Boeselager, 1975, p.6).

The positivist movement spanned the stretch of time from the 1830's with the work of Comte, to the mid-1940's (later in psychology) and went through several versions of its central doctrine. Those

versions mainly differ from each other in the emphasis they put on one or other of the above assertions. An understanding of these differences is of crucial importance to the question at hand. In its history, positivism has taken four major forms: social positivism (Comte, Mill); evolutionary positivism (Spencer); empiriocriticism (Mach, Avenarius); and logical positivism (Schlick, Neurath, Carnap).

(I) Social Positivism

Social positivism was part of the grand wave of optimism to which the first successes of the industrial revolution gave rise (Abbagnano, 1967, p.414). The social positivists sought to promote a more just social organization through the use of the methods and results of science (Abbagnano, 1967, p.415). The philosophies of the time were in a conceptual stalemate. They seemed unable to provide an adequate logical foundation for scientific endeavors. Hundreds of years of philosophical debate had not resolved the important philosophical issues.3 The fundamental philosophical schism between the materialist and idealist metaphysical views (i.e., primacy of matter vs. primacy of idea) seemed unresolvable on other than dogmatic grounds. On the other hand, science was resolving problems and answering questions of everyday

importance. Positivism therefore actively eschewed metaphysics. In order to destroy dogmatic metaphysical doctrines, a new positivist philosophy would be needed as the basis of politics, ethics, public education, and religion. In the name of progress, a project of self conscious metaphysical agnosticism was undertaken.

(A) Comte's Early Positivism

The term positive was coined by Henri de Saint Simon but was adopted by Auguste Comte to mean all of the following: (1) empirically given, real, actual (as in Bacon's works), (2) effective, constructive, what serves men, and (3) free of useless, abstract, chimerical (metaphysical) speculation (Boeselager, 1975, p.9). Comte contrasted this positive view with the negativists who both refused to believe in science as the ultimate source of knowledge and "continued to uphold old pre-scientific dogmas" (Andreski, 1974, p.9).

Comte's immediate preoccupation was to ensure a stable social order in post-revolutionary France. He was interested in applying what he saw as the positive method of the natural sciences to the subject matter of social science (Boeselager, 1975, p.9).

The two most familiar and lasting products of Comte's six volume work Cours de Philosophie Positive

(1830-42) are the law of three stages and the hierarchy of sciences. Later in life, Comte also introduced a positive religion but it has not had a lasting influence.

(1) The Law of Three Stages

Comte's law of three stages boils down to an account of human progress from superstition to science, (Andreski, 1974, p.12). According to Comte, both the general history of humanity and every branch of human knowledge, passes through three stages: theological, metaphysical, and positive (Abbagnano, 1967, p.415).

During the theological stage the path which nature takes appears as a series of miracles deliberately performed by higher supernatural powers. But this stage is not to be deplored since it motivated the earliest store of observations and organizations of data (e.g., astrological observations) (Kolakowski, 1972, p.69).

The metaphysical stage compresses the multiplicity of occult powers into the single overall concept of nature. Supernatural agents are replaced by abstract forces believed to be capable of generating the observed phenomena (Abbagnano, 1967, p.415; Andreski, 1974, p.20).

The positive stage is characterized by a turning

away from seeking the ultimate causes of phenomena and a turning toward discovery of the laws of phenomena by observation and reasoning (Abbagnano, 1967, p.415). According to Comte, the positivist investigator no longer asks the question <u>why</u> since he ceases to speculate on the hidden nature of things. He does however ask <u>how</u> phenomena arise and what course they take. The aim is to discover the invariable universal laws governing phenomena and this stage makes use of observation, experiment and calculation (Kolakowski, 1972, p.71).

> Hence there are three mutually exclusive kinds of philosophy, or conception systems regarding the totality of phenomena: the first is the necessary starting-point of human intelligence; the third its fixed and final state; the second is only a means of transition. (Comte, In Andreski, 1974 p.20)

For Comte, knowledge and science are made up of facts perceived by the senses but science is not merely the collection of facts but of laws (constant relations between phenomena) discovered by virtue of induction from individual and social experiences (Boeselager, 1975, p.9). Comte's understanding of laws, although not reductive, is nonetheless absolutist. All

observable phenomena are, for him, the particular cases of "one single fact" (e.g., the fact of gravitation) (Andreski, 1974, pp.20-21).

> We see that it is the nature of positive philosophy to regard all phenomena as subject to invariable natural laws, the discovery of which, and their reduction to the least possible number, is the aim and end of all our efforts, while causes, either first or final, are considered to be absolutely inaccessible, and the search for them meaningless. (Comte, In Andreski, 1974, p.24)

Comte himself attempted to dissuade critics from accusing him of supporting "universal explanations" and of "reducing the totality of acquired knowledge to....the diverse effects of one single principle" (Comte, In Andreski, 1974, p.39). But his disclaimers take the form of a state of the art argument. Comte claims for instance, that "it seems quite obvious that we are too far from it in the present state of our knowledge to attempt those universal explanations until considerable time has elapsed" (Comte, In Andreski, 1974, p.39).

Comte's grandiose project for universal reform, his understanding of history as ending at the

positivist phase and his position that the permanence of species was a necessary condition for the existence of biological science can be used to argue the point that he was de facto an absolutist of sorts (Kolakowski, 1972, p.77). But a better argument can be made by calling attention to his belief that the scientist obtains experience and laws of nature as "phenomenally universal facts" (Boeselager, 1975, p.9). The implication of this for Comte was that the subjugation of the obtained laws to the test of facts would be "a too detailed investigation" (Abbagnano, 1967, p.416).

(2) Comte's Hierarchy of Science

The application of Comte's positive philosophy resulted in his classifying the sciences into a hierarchy according to the complexity, generality, and range of their subject matters; and according to the order in which they entered into the positivist stage. His analysis yielded the following hierarchy: astronomy, physics, chemistry, biology and sociology (Andreski, 1974, p.56). Mathematics remains outside this hierarchy as the "basis of all science...since we can regard all the phenomena of the universe as roughly either geometrical or mechanical" (Comte, In Andreski, 1974, p.63).

As Kolakowski points out, Comte's hierarchy is nonreductive. Each science presupposes the ones preceding it in rank, but the reduction of all disciplines to lower ones is ruled out. For example, there can be no reductive social physics (reduction of organic life to mechanical motions). On the contrary, knowledge of specifically social phenomena is indispensable since sciences are practiced for the purpose of social application.

The hierarchy also contains a pedagogical aspect (Kolakowski, 1972, p.74). As Comte puts it: "chemists who, before concerning themselves with their own science, have not previously studied astronomy and then physics...have not prepared themselves for their specialized work..." (Comte, In Andreski, 1974, p.60). Sciences should thus be taught in order of their development, so that they may form a coherent system in the student's mind (Kolakowski, 1972, p.74).

We should also note that psychology is excluded from Comte's hierarchy. Instead, Comte supported phrenology and believed the individual to be a fiction and society to be primary and real. Psychology was impossible because the observed and the observing organ would have to be identical (Abbagnano, 1967, p.415).

(B) John Stuart Mill's Positivism

There was a tendency toward what can be described as the Standard View of Science in all of early social positivism. Yet this tendency is much stronger in Mill than it was in Comte. Whereas Comte had stressed the rational aspect of science and considered its experimental basis as merely preparatory to the formation of laws, Mill went on to appeal to a more vigilant empiricism where the formulated laws are liable to the test of facts (Abbagnano, 1967, p.416).

Mill stated that the ultimate causes of phenomena where to be found in laws which were derived from observation. Theories explain the facts and are subject to empirical testing. Under such a model, everything, even our laws, are subject to the test of facts.

For Mill, the principles of logic are generalizations of empirical data, and induction is the only method that science has at its disposal (Abbagnano, 1967, p.416). The deductive sciences (mathematics, geometry) are also entirely based on experience (Kolakowski, 1972, p.99). If b always follows a and c always follows b, we may infer (deduce) that a will always be followed by c. The rule permitting this inference derives from observation. There are no a priori truths (the necessity attributed

to mathematical propositions is an illusion, and the elementary truths of geometry are merely the result of observation) (Kolakowski, 1972, p.99).

In his attempt to show how experience could explain our access to knowledge Mill was strongly influenced by associationist psychology. In contrast to Comte, Mill held that the human mind has the same structure as natural phenomena, is knowable in the same ways and that therefore the "laws of formation of character" could be sought alongside Comte's sociology (Abbagnano, 1967, p.416).

(II) Evolutionary Positivism

Whereas social positivism arose from consideration of society and history, evolutionary positivism arose from consideration of physics and biology (Abbagnano, 1967, p.415). The discovery of the links between the human species and the rest of organic nature produced the possibility of applying biological regularities to all types of human conduct (Kolakowski, 1972, pp.109-110).

Spencer first used the term evolution in 1857. For him evolution was a matter of the totality of the world (Boeselager, 1975, p.11). Spencer's universal law of development considered progress as a "continuous and unilinear evolution from a primitive nebula to the

more refined products of human civilization" (Abbagnano, 1967, pp.416-417). Darwin (1859) in contrast remained agnostic about the universe in its totality since for him evolution was mainly a question regarding the organization of organic nature (Abbagnano, p.416; Boeselager, p.11).

According to Spencer, knowledge was to be reduced to a single formula (a supreme law) thus accounting for the totality of phenomena in a unified science. Philosophy is to perform this reduction with the help of some basic truths (e.g., the indestructibility of matter, the continuity of motion and constancy of force) (Kolakowski, 1972, p.110). His transcendental physiology made a strong analogy between the structural and functional features of society and living organisms. In this mechanical reduction, the transcendence is of the individual scientific disciplines (Kolakowski, 1972, pp.116-117).

Spencer, likewise, polemicized against Mill's utilitarianism and proposed his own ethics based on the necessity of recognizing the biological elimination of the unfit in any scientific view of the world. Pity or benevolence are thus excluded (Kolakowski, 1972, pp.118-120).

Spencer's positivism attempted to embrace trends which both interpreted the concept of evolution materialistically and those which interpreted it

spiritualistically (Abbagnano, 1967, p.417). The materialists were said to understand that our consciousness can be described as mechanical motion; the spiritualists were said to understand that the actions of matter are accessible only as facts of consciousness (Kolakowski, 1972, p.113). Thus, for him, both materialism and spiritualism are equally valid.

Although Spencer did not read Comte until later in life, he expressed agreement on points that reflected the spirit of the age (e.g., the desire to create a scientific sociology) (Kolakowski, 1972, p.119). In contrast to the poor reception given to Comte's positive religion, Spencer's ethical and metaphysical agnosticism found many adherents among philosophers and scientists (Abbagnano, 1967, p.417).

(A) Influence of Social and Evolutionary Positivism

Under the influence of Mill and Spencer there developed two leading 19th century positivist themes. The first was the aim of limiting science to the record of experience (empiricism) and the second was the view that science is entirely neutral on metaphysical questions and aims at unification of all knowledge. These two were firmly set in place by the last quarter of the 19th century (Kolakowski, 1972, pp.121-122).

Subsequent positivists leaned toward the one or the other of these themes. Lombroso's theories about crime and organic constitutional variables, and Gobineau's theory of races were the results of the latter theme. The former theme was so dominant in that age that Kantians sought to interpret Kant in such a way as to retain only what was compatible with the broadly conceived positivism (Kolakowski, 1972, p.122).

The rebirth of German speculative philosophy in neo-Kantianism had its effect on the further development of positivism. The empiriocriticists were in open opposition to Kant (Boeselager, 1975, p.12).

(III) Empiriocriticism (from Dogmatic Objectivism to Subjectivism)

In empiriocriticism the implicit realism of social positivism became weaker and progressively more explicit idealist positions were taken. This movement displayed stronger psychologistic and subjectivist tendencies than had been seen previously (Kolakowski, 1972, p.125).

Empriocriticism, deriving much from Hume and owing little to Comte, was particularly concerned with inquiry into the origins and function of knowledge (Kolakowski, 1972, p.125). In it Kant's question as to the conditions under which knowledge is valid was also

revived. "Theories concerning concepts, scientific laws, and causality very different from those of classical positivism are the chief results of empiriocriticism" (Abbagnano, 1967, p.418).

Whereas Comte and Spencer had taken for granted the results and value of the natural sciences, Avenarius and Mach questioned the meaning of all scientific statements and set out instead on a search for an understanding of experience purged of illegitimate additions (i.e., the natural view of the world) (Kolakowski, 1972, p.126). This purged experience was not conceived of as a mirror in which reality is reflected (Locke), but rather, the human knower was seen as an organizer of all sense data (Hume). "For this reason attempts were made to invalidate the claims of science to objective knowledge, and these led to destruction of the concept of fact" (Kolakowski, 1972, p.127). Facts for both Mach and Avenarius were considered as "relatively stable sets or groups of sensations..." (Abbagnano, 1967, p.418).

In empiriocriticism, there was a return to questions concerning scientific method and genetic epistemology while the desire for a general theory of progress was distinctly on the wane (Kolakowski, 1972, p.125). Consequently positivism's longtime struggle to sustain an objectivist position within an

epistemologically subjectivist framework became manifest.

Empiriocriticism attempted to overcome the dualism between the physical and mental worlds by replacing it with analysis of experience. Its exponents rejected the view that psychology is about an "inner world" while physics is about an "outer world" (Passmore, 1967, p.55). Being deeply concerned with the unity of science, they put forward the doctrine that both physics and psychology describe experience (Passmore, 1967, p.55). This was done to establish a unification rather than an opposition between the so called inner and outer worlds (Kolakowski, 1972, p.133).

Although at this time empiriocriticism is mainly of historical interest, it forms an important bridge from the 19th century into the most recent and final form of positivism Logical Positivism (Boeselager, 1975, p.12). Under its sensualist reign, the concept of law, which social positivism had conceived of as a constant relationship between facts, underwent a radical transformation from explanation to description, to mathematical function possessing only logical (not physical) necessity (Abbagnano, 1967, pp.418-419). In this respect, (although it lacked the emphasis on logic and language) the empiriocritical branch of positivism was the immediate antecedent of logical positivism.

(IV) Logical Positivism

This 20th century positivist program developed in the period between the two world wars. Although Wittgenstein was not himself a logical positivist, the publishing of the Tractatus in 1921 is viewed as the beginning of logical positivism. Schlick was the founder and leader of the Vienna Circle; "a group of scientifically trained philosophers, philosophically interested mathematicians and scientists" (Feigl, 1969, p.3). Those who attended Schlick's seminar as members included: Carnap, Neurath, Waismann and Feigl (Boeselager, 1975, p.14). Philosophers who were temporarily connected with the group included Reichenbach and Ayer.

Logical positivism was modernist in the sense that it accepted the relational view of space and time, siding with Leibniz and Einstein against the absolutism of Newton (Feigl, 1969, p.7). Likewise, the rejection of metaphysics also possessed a special character. "[W]hereas the earlier critics of metaphysics had generally been content to describe it as empty or useless or unscientific, the logical positivists took over from Wittgenstein...the rejection of metaphysics as meaningless" (Passmore, 1967, p.53).

This intransigent attitude toward metaphysics can be explained in part by the peculiar (irrational)

character of the previous German idealism (its hostility to science and its claim to supranaturalistic access to truth) (Passmore, 1967, p.53; see also Chapter 2 of this thesis). An understanding of the links with particular modernist trends in science and philosophy, however, is equally important in order to understand the logical positivist program.

(A) Immediate Intellectual Antecedents of Logical Positivism

With regard to that which provided the inspiration for the new positivism Toulmin (1969) cites the influence of both the founding Cambridge philosophical analysts (Russell and Whitehead). For Russell the proper business of philosophy was the clarification of concepts or the analysis of meanings by use of the analytical methods of "refined lexicography and purified mathematics" (Toulmin, 1969, p.28).

To that view, Wittgenstein posed the following question: 'If we did try to reform philosophy by the use of such propositional calculus (reconstructing language on an explicitly defined mathematical model), what guarantee would there be that the resulting formalism had any application to the real world?' (Toulmin, 1969, p.29). Something more was required to demonstrate that the relations between language and the

world made such a formalization possible (e.g., for Wittgenstein a degree of mysticism).

Toulmin points out that a recognition of this issue is fundamental for any proper understanding of the Tractatus, and so of the origins of logical positivism (Toulmin, 1969, p.30). Wittgenstein's reservations must not be overlooked because they distinguish his own position from those of the Vienna circle philosophers. Unlike Wittgenstein's qualified belief in the philosophical relevance of Russell's Principia Mathematica, the confidence of Schlick and his associates was unquestioning (Toulmin, 1969, p.31).

Some aspects of logical positivism are derived from Hume and Comte but, in contrast especially to Mill's positivism, a new conception of logic (having its origins in Leibniz, Frege, and Russell) was united with the empiricism of Hume, Mach, and the early Einstein (Feigl, 1969, p.3). When the logical positivists set about identifying an epistemological starting point for their theories, they turned in vain to the Tractatus. Although that work provided a basic logical structure, the new positivism was not completed until the Tractatus was run together with Mach's sensualism (Toulmin, 1969, pp.34-35).

Thus was born the hybrid system of logical positivism which professed to put an end to all metaphysics but succeeded, rather, in rewriting the

metaphysics of Hume and Mach in the symbolism of Russell and Whitehead (Toulmin, 1969, p.40). The hope was "to give an account of science which would do justice...to the central importance of mathematics, logic, and theoretical physics, without abandoning Mach's general doctrine that science is, fundamentally, the description of experience" (Passmore, 1967, p.52).

What was new about the approach was that it saw the problems of philosophy as being primarily about language rather than about knowledge or ontology. "The primary questions were to be: 'What is meaning?' and 'What kinds of statements have meaning?', rather than 'What can we know?' and 'What is there in the world?'" (Hanfling, 1981, p.4).

As Boeselager (1975) pointed out, there are according to the logical positivists only two sorts of meaningful propositions: the empirical and the logical. The propositions of traditional philosophy (e.g., "reality is spiritual" and "beauty is significant form" (Ashby, 1967, p.240)) belong to neither of these and, therefore, are meaningless. The philosophy of neopositivism itself is the logic of science and belongs to the second sort of proposition (Boeselager, 1975, p.16).

(B) The Conceptual Development of Logical Positivism

Boeselager (1975) has pointed out the conceptual course of development that this movement traversed. There are three discernible stages in the logical positivist movement: sensualism, formalism and dissolution.

(1) Sensualism

The logical positivists thought of themselves as continuing a nineteenth-century Viennese empirical tradition. Carnap and Neurath for example, agreed that meaningful concepts are reducible to relations between elementary sense impressions. But the issue of how to escape the subjectivist implications of sensualism was a source of major differences of opinion among the members of the Circle (Hanfling, 1981, p.16). For Carnap it was "impossible in principle to pass beyond our language in order to discuss what our language talks about" (Passmore, 1967, p.54). In other words, there began to develop a proposed language barrier, just as (in philosophy) there had for some time been a supposed barrier of the senses. It was in this way that the positivist movement became preoccupied with the use of scientific language and its relation to truth.

Carnap regarded language as a self-contained system; the truth and meaning of a statement depending on its relations with other statements. Schlick, on the other hand, held that truth and meaning must depend on something outside language. Schlick had liberalized the sensualism of Hume by asserting the existence of a world of knowable things and attempting to retain a realist view in all specific assertions of existence (i.e., atoms and electrons in physics, and genes in biology) (Feigl, 1969, p.14).

He argued that if the Carnap-Neurath (coherence) view of truth were accepted, there would be no ground for preferring the statements of empirical science to those of "any fabricated tale" (Schlick, 1932, p.184). But as Hanfling points out, Schlick's eventual alternative account is "fraught with difficulties" since it maintains the "'absolute certairty' of observational statements" (Hanfling, 1981, p.17; Schlick, 1932, p.192).

Later, Carnap abandoned his initial conventionalist view. Indeed none of the logical positivists had ever intended subjectivism. "Schlick, Reichenbach, and Carnap, though highly impressed with Poincare's genius, repudiated his conventionalism" (Feigl, 1969, p.18).

(2) Formalism

During the course of its development logical positivism split into three groups, one asserting physicalism (early Schlick, Neurath), the second rejecting it (early Carnap), and the third expressing a preference for the physicalist language (later Carnap-Neurath) (Passmore, 1967, p.56).

In an attempt to overcome the seemingly subjective nature of a science of experience, Schlick drew a distinction between content and structure of experience. We can never be sure that the content of our experience is identical with the content of any other person's experience (e.g., the experience of the color red). But science is only interested in the structure of our experience (e.g., agreeing to the position of 'red' on a color chart) (Passmore, 1967, p.55).

To Schlick's above distinction, Carnap now countered with a more formalist position that ontological assertions are meaningful propositions about language, not about a world beyond language. In particular, Carnap claimed that philosophers should confine themselves to speaking about words and statements as distinct from objects or experiences (Schlick's content). This was his distinction between the formal and material modes of speech (Hanfling,

1981, p.18). Carnap wished to move from sentences which looked as if they are about objects to sentences which were obviously about words (Passmore, 1967, p.54). His suggestion was that by reforming language in this way, the pseudo-questions (content) that had troubled Schlick might be eliminated. In scientific discourse there should only be mention of the words in question and not of their relation to something outside language.

Pushing things one step further, Neurath explicitly rejected the view that it is experiences which verify propositions. Only a proposition can verify a proposition. Carnap then accepted this conclusion and developed the conception of protocol statements (Passmore, 1967, p.55). These statements were directly describable records a private experience (see Carnap, 1932, pp.150-160). At this point Carnap's emphasis was upon the syntax of language.

But again Carnap later revised his own position. This time the problem was the unduly restrictive limitation of analysis to syntactical aspects. Now he planned to relax the position in order to include reference to semantical aspects as a matter of practical convenience (see Carnap, 1938, pp.112-129). But then Carnap ran into trouble with Neurath who argued that to try to pass beyond language to what language signifies, is at once to reintroduce the

transcendental entities of metaphysics.

Evidently, replacing a barrier of the senses with a formalist barrier of language did not help things and logical positivism began to dissolve as a school. Before moving on to that, however, mention must be made of the logical positivist views on the unity of the sciences.

(i) Logical Positivism's Unity of the Sciences. The positivist manifesto (1929) written by Neurath, Hahn, and Carnap had stressed the aim of unification of science by means of unifying language, unity of method, and interdisciplinary dialogue (Cohen, 1967, p.478). Within the logical positivist movement, the unity of the sciences was to be a unity of language achieved through method of reduction. According to the various proponents, this language was to take one of two forms: phenomenalist or physicalist. The central controversy for the logical positivists was with respect to the preferred form of the reduction statement.

Initially Carnap preferred immediately given phenomena, putting forward a doctrine of atomic bits of knowledge conveyed by individual experiential reports (protocol statements). His position was put forward not as a description of the actual process of theory production but as a logical reconstruction. His position was to be neither idealistic nor materialist, but metaphysically neutral.

The basic observation statements could be assumed to be experienced directly and hence not in need of definition (Feigl, 1969, pp.19-20). By the proper reduction of scientific language, the same inter-subjective and sensual confirmation basis for all scientific statements might be obtained. But Carnap encountered strong opposition from Neurath on this point.

Neurath, on the contrary, suggested that the use of physicalist predicates might produce an empirical language suited to all the sciences. For due to the probabilistic nature of experience, we appear to have no rational grounds for predictions that are certain (pseudo-rational certainty is also put into doubt). Neurath's antiphenomenalist role within the Vienna Circle therefore took the form of an attempt to express the objective foundation of knowledge by means of intersubjective agreement on the reduction of knowledge claims to physicalist (rather than experiential) language (Cohen, 1967, p.478).

This position endorsed a program for the future development of science toward a unitary or monist set of explanatory premises. It encouraged explanatory reductions of chemistry to physics, of biology to physics and chemistry; and of psychology to neurophysiology. "A future theoretical physics was fancied from which all observable phenomena of the

entire universe (including organic life and mind) would be derivable" (Feigl, 1969, p.21).

Under this view, there arose a convention of describing the relationship between the various sciences as a hierarchy arranged in order of complexity (see Figure 1). While the logical positivist model attempted to account for the unity between the various sciences by means of reduction, some more recent watered-down versions have been willing to settle for "an explanatory reduction of the data to the next lower level..." (Pronko, 1967, p.45).

Although the doctrine of physicalist language was mainly developed by Neurath, at one point or another Schlick, Carnap, and Reichenbach all espoused this view. Under the influence of Neurath, Carnap adopted physical thing language. Carnap's abandonment of the preferred epistemological status of phenomenal reports re-opened the question as to the nature of those basic statements. These questions were raised around the issues of reducibility and verification (Martin, 1967, pp.28-30).

(3) Dissolution of Logical Positivism (The Lack of a Criterion for Meaning)

The conflict between sensualism and formalism is implicit in the heart of logical positivism and when

the difficulties of these two alternatives became evident, no further system of logical positivism came into being. "It began to dissolve as a movement" (Boeselager, 1975, p.18).

This conflict is most evident around the verifiability principle. The status of this central principle in logical positivism was by no means clear. It stated that the meaning of a proposition is the method of its verification and was aimed directly at metaphysical propositions to show that they were meaningless because they could not be verified. These problems arose when it became apparent that the verifiability principle could not itself be verified in terms of appeal to empirical data (Passmore, 1967, p.54).

In response to this, the positivists made a number of successive attempts to save both the principle and the project which they felt relied upon it. One proposed solution was to call the principle a recommendation. But this wiped the force out of this central principle since the metaphysician could escape their criticism simply by refusing to accept their recommendations (Passmore, 1967, p.54). The fall of the verifiability principle had re-initiated a gradual slide toward subjectivism, as it was successively replaced by such principles as confirmability, testability, and the principle of tolerance. The

latter stated that because we can never have a perfect language we must tolerate those statements that lack cognitive meaning.

> Finally, logical positivism found the formulation of precise criteria of meaning to be a tantalizing business: set the criteria too high and you exclude perfectly respectable areas of natural science; set them too low and you include pseudo-science and superstition. The ironic course of positivism was, in fact, one of progressive liberalization to the point where virtually nothing could be denied cognitive meaning by reference to its criteria of observational control; its acid negativism had turned to water. (Scheffler, 1967, p.6)

When the logical positivists started to see that their now tangled metatheory was undermining science, they rejected it themselves. Various other 'realist' approaches were subsequently developed in an attempt to fill the gap left by positivism's demise. Developments by Popper for example, argued that science is not concerned with verification so much as it is with falsification.

(V) Influence of Positivism on Psychology (Behaviorism and Structuralism)

The attempt to provide a systematic approach for the natural sciences via the implementation of a monistic reductionist methodology, was reflected further in the different versions of behaviorism which, in an attempt to remain objective, limited the scope of investigation to observables. The behaviorists (like the positivists) disallowed by definition some very important realms of investigation. The result was a negation of significant aspects of mentalistic psychology (e.g., cognition, imagination) from the realm of science. There was a methodology of exclusion of subject matter at work in behaviorist psychology.

Although the influence of metatheoretical positivism on psychology is seen most dramatically in the development of the behaviorist systems, it was also present in the structuralist system against which the behaviorists were rebelling. Structuralism, like positivism, had its antecedents in British philosophy of the 18th and 19th centuries. John Locke had established the empirical tradition that 'all knowledge came from experience', J.S. Mill, Alexander Bain, and Herbert Spencer had developed laws of association, but "never put them to the experimental test" (Lundin, 1984, p.374).

Structuralism, springing from the work of Wundt and Titchener, set itself the task of developing a discipline of scientific psychology separate from its philosophical forbears. "The key-note of the whole enterprise was the attempt to treat psychological material as science regularly treats its data" (Heidbreder, 1933, p.121).

Titchener himself was strongly influenced by Mach (see Danziger, 1979). Both the structuralists' goal (of bringing psychological content under scientific investigation) and also their method of explanation (reduction to mental structures), are congruent with the reductive character of positivism.

Watson's early Methodological Behaviorism pointed to structuralism's association techniques as unreliable, subjective and qualitative. Watson's research was primarily with animals whose consciousness he saw as being very difficult if not impossible to study. Watson used such arguments as a means by which to gain at least implicit widespread support for a behaviorist methodology. This popular view, however, was taken further to develop the more questionable Metaphysical Behaviorism which "denied not merely the scientific utility but even the existence of consciousness" (M.H. Marx, 1973, p.394; Hillner, 1984, pp.104-106). "To admit the mental into science is to open the door to the enemies of science--to

subjectivism, supernaturalism, and tendermindedness generally" (Heidbreder, 1933, pp.235-236). With this view of the mental, Watson went on to reduce cognitive processes to bodily movements (i.e., thinking as laryngeal movements, personality as sum total of an individual's reactions and tendencies to react) (Heidbreder, 1933, p.253).

In contrast to structuralism which attempted to keep psychology free of all utilitarian influences, Behaviorism was not content with simply understanding the human machine, but aimed at improving it. Thus its methods came to be applied in the areas of education, advertising and the industrial work place. Declaring what Heidbreder calls, "right on the one side and wrong on the other", behaviorism achieved a system with sharp, clean outlines (Heidbreder, 1933, p.260).

Behaviorism's tightness as a system and its leanings toward absolutist arguments made it a formidable opponent for functionalism which was more diffuse. But as in the case of structuralism, the rigidity also came to prove disadvantageous. Again as Heidbreder notes, "a psychology which is too pure might be sterile; ...existing formulations must not be taken so seriously as to exclude relevant problems they were not framed to meet" (Heidbreder, 1933, pp.150-151). Watsonian behaviorism had attempted to "physicalize the age-old mechanistic tradition in terms of an

'objective', descriptive S-R psychology" (Hillner, 1984, p.305). In Skinner's Operant Behaviorism which reinterpreted many of the basic elements of Watson's approach, the rigidity of the structure remained.

Why couldn't the metaphysical behaviorist theorists agree that consciousness was important? It was for the same reason that structuralists thought it was all important: they both adhered to an implicit form of either/or logic. Once this view of logic is adopted, arguments begin to be framed in exclusionary categories. In behaviorism: Either humans are made of the same stuff as animals and reduce to the level of single cells, or they are totally discontinuous. In structuralism: Either one cognitive structure is completely independent from the next and therefore isolated like the links of a chain, or they are a mush or stream which run into one another.

(A) Psychological Atomism

For the positivist, facts referred to what was given and theories implied a dirtying of those facts. It is important to note here, that this belief grew out of the acceptance of particular British empiricist assumptions. This common historical link shows up in both the structuralist and the behaviorist systems of psychology.

The structuralists' instructions to their research subjects is an example. "Titchener warned against stimulus error, which constituted a reading into the experience of association from one's past that would contaminate the raw data" (Lundin, 1984, p.375). This was a absolutization of the importance of studying uninterrupted, non-interfered-with consciousness.

Again, in behaviorism the participation of the organism was seen as something to be excluded form their investigations in the interest of more objective and repeatable data. Consciousness was seen as a threat to such pure data and therefore to the prediction and control which the behaviorists asserted as the true aim of a science of human beings.

Essentially, there was a shared concern of the structuralist and behaviorist psychological projects that can be stated as follows: Without everything being explainable and predictable in either reduction to mental structures, physiological events, or S-R relations, then the unity of the universe would be unattainable to scientific investigation. Both systems of psychology, therefore, subscribed to an absolute monist understanding of the universe, which has been described as the block universe. That is, the universe was thought of as "a single closed system of interlocking parts in which no genuine plurality and no room for alternative possibilities" (R. Hall, 1984,

p.363). Structuralism got this straight from the British empiricists, and behaviorism received it more indirectly via the positivists, but it was present in both all the same.

This set the stage for Gestalt psychology which reacted initially against structuralism in Europe and then later against behaviorism in North America. It rejected the atomistic orientation of each of these conceptual approaches with respect to consciousness in structuralism and overt behavior in behaviorism (Hillner, 1984, p.305).

(VI) An Incomplete Critique of Positivism

The metatheoretical goal of positivism was to provide a platform upon which all science could be founded in a non-dogmatic manner. The most lasting bequest to science which has grown out of the positivist influences, is the working out of what Scheffler (1967) has called the Standard View of Science (see Figure 4). Facts in the world are converted into data which form observational laws, which are then in turn explained by the theoretical laws of a given science. There has been, at least until recent times (see Chapter 2 of this thesis), an almost across-the-board acceptance that this is the way science ideally works. But there is a major weakness

in the argument for the standard view as put forward by the positivists. This weakness stems from their understanding of the term facts.

(A) The Dubious Nature of Positivism's facts

Under the Social Positivist program, scientific investigation was confined to facts and relations between facts (laws). The full implication of this decision, was a gradual and traceable subjectivizing trend in the positivist metatheory which culminated in the empiriocriticists and logical positivist versions. The positivist position vacillated between the implicit support of absolutist notions of facts (Comte, Spencer, Schlick) and a more pessimistic position on the availability of such facts to the human observer (Mach, Avenarius, Carnap).

The most insidious consequence of this weakness, has been the acceptance of the myth of value freedom. This was the view that scholars could separate themselves from the surrounding social relations and achieve a neutral position clear of both methodological bias and ethical implications (Kolakowski, 1972, pp.90-96). The outcome was that questions of ethics were pushed aside as metaphysical and therefore meaningless (Anderson et al., 1986, p.47).

It took much time and intellectual agony for the

positivists to realize finally that if the objectivity which they sought for science was certainty about objects (Hume), and if such certainty was to be based upon observations, which in turn were based on facts (which were only sense data and not the observation of the objects in question), then no such objectivity could be attained. Secondarily, if such objectivity was not attainable, how could the claim to value freedom be supported?

(B) Positivism and Humean Epistemology

Despite the overt stand against all philosophy, the positivists shared much with their philosophical forebears. Essentially, what had opened the positivists up to the charge of dogmatism was their implicit (thus unquestioned) acceptance of Humean epistemology. The skeptical argument associated with Hume can take two forms, one epistemological and the other logical. The former asks what guarantees our certainty about scientific knowledge. The latter concerns the adequacy of inductivism as a logical or rational reconstruction of what science does in fact do (Anderson, et al., 1986, p.233).

According to the Humean epistemology, it was impossible to prove that sense impressions were caused by objects in the external world. Hume's view had been

that the evidence of the world was an unverifiable hypothesis, so he attempted to remain agnostic on questions of ontology (Bitsakis, 1987, p.394). Hume opted for an agnosticism because the attempt to produce a deductive argument for the possibility of knowledge, logically ends in total solipsism (subjective idealism), and is thus repugnant to the possibility of progress for human knowledge. In response to this Humean conclusion, the respective versions of positivism attempted a purification of science from metaphysical questions regarding ontology or regarding any theory of knowledge. This was motivated by an attempt to allow progressive continuation of scientific investigation, but as Bitsakis points out: "such purification is tantamount to mutilation" (Bitsakis, 1987, p.398).

As it related to the positivists the epistemological problem boiled down to this: If, as the positivist program dictated, the only <u>scientific</u> propositions are those which are empirically testable, then how can the positivist assert in a non-dogmatic way that the objects of scientific study exist? According to such a rigid criterion, even a simple statement (e.g., 'This kettle <u>is</u> black.'), is not a scientific proposition but a <u>philosophical</u> one. If even the existence of the object under investigation is in question, how can we ever have objective knowledge

of anything else about that object? The positivists had no effective answer to this problem. As was the case with Hume, the "logical conclusion [end point] of positivism is solipsism: the reduction of the world to subjective consciousness" (Bitsakis, 1987, p.399).

(C) Popper's Attempted Methodological Side-Step

A more recent extension of the Humean skeptical argument, is called the successor theory problem. It asks about the truth status of any single general law in the light of the vicissitudinous history of science (Anderson, et al., 1986, p.233). Karl Popper's "Science: Conjectures and Refutations" (1963), was designed to answer both Hume's logical problem and the so called successor theory problem. Like the positivists before him, however, Popper attempted to ignore (or at least to side-step), the implications of Humean epistemology. He therefore charted out a tight-rope-walking empirical-methodological approach which is sometimes included under the label of neopositivism.

Like the positivists, Popper was concerned with distinguishing pseudo-science and metaphysics from proper science. Both types of activity profit from the use of corroboration, so this could not be used as a demarcation criterion between them. Popper settled upon a falsification principle for such a demarcation.

Scientific theories were to state the conditions under which they will be counted as having failed. Scientific hypotheses should be stated in falsifiable terms with the best theories being stated in precise fashion so as to be more vulnerable to the outcome of a crucial experiment designed as a test.

Popper attempts to side-step the above mentioned epistemological issue by redefining the whole question in terms of methodology. Although (in conjunction with Hume) a theory cannot be proved to be true, it can survive a number of serious and relevant attempts at falsification. Popper's goal was to show that it is scientific methodology and not necessarily scientific theory which is rational. "The method which science uses, according to Popper, is the critical appraisal of the plurality of theories and hypotheses, which are at any moment, in competition with one another. It is by trial and error that science learns which to use and which to disregard" (Anderson, et al., 1986, p.239). Such trial, error, and mutation of theories in response to attempts at falsification, were said to demonstrate the evolutionary nature of scientific knowledge. Science accumulates knowledge, providing, therefore, a continuity between the succeeding theories. In this respect, Popper's falsificationism can be regarded as an attempt at a mediate ground somewhere between the absolute objectivism that was demanded by Hume and the

later, more openly relativist interpretations of science and knowledge. Although a vulnerable system (see Chapter 2), Popper's falsificationism did allow a seemingly reasonable approach to empirical research during a time of epistemological crises in the scientific community.

(VII) Conclusion

Positivism was a transitional phase in the collective human history of knowledge. What was implied in both the Humean and the positivist positions was a response to the skeptic's premise that we "ought not claim knowledge about anything unless we are absolutely sure about it" (Hamlyn, 1967, p.9; also see Kolakowski, 1972, pp.53-54). At the same time, the general positivist program sought to replace pretensions to absolute knowledge with rational investigation based upon empiricist premises (Kolakowski, 1972, p.58).

Although all the positivists remained explicitly agnostic on the proposed dichotomy between coherence and certainty about objects as possible criteria for truth, some positivists implicitly leaned toward the former (Mach, Avenarius, later Carnap) and some toward the latter as a goal (Comte, Spencer, early Carnap, later Schlick). The positivists had chosen to ignore

given types of problems for the sake of progress, but this choice caught up with them eventually. Instead of admitting that they did not have the answers, they suggested that such questions where not resolvable on other than methodological grounds. This effect of positivist metatheory is being perpetuated even to this day. But there is hope for the future!

> It is now becoming clear to an increasing number of psychologists, as well as philosophers, that not all metatheoretical concerns can be reduced to questions of logic, that questions of ontology and epistemology, even of ethics, are essential concerns of scientific practice that do not disappear when ignored. (Tolman, 1987b, p.211)

Chapter Two

METAPHYSICAL PLURALISM

One form that the opposition to the neopositivist metatheory in psychology took is that which will here be called metaphysical pluralism. Rather than being an established movement (as was the case with positivism), metaphysical pluralism is an aspect of given theories, sometimes explicit, but often implicit and unexamined.

This metatheory is heterogeneous, its proponents varying widely in both the degree of consistency and content of their arguments. Their common concern is to question the applicability of the natural science model to the distinctive area of social science. An overt contempt is frequently displayed for what they consider to be the over-drawn claims of positivist science to universal knowledge about the world. Accompanying this is a call for a more complete understanding of the subjectivity involved in the human knowing process (see Figure 2).4 This chapter will outline the explicit positions of various metaphysical pluralists and will attempt to expose the shaky foundations upon which those positions are based.

(I) Background Information (Kantian Influences)

The metaphysical pluralist position is heavily

influenced by the philosophy of Immanual Kant. Historically, Kant was situated between Hume and the 19th century positivists. He was impressed by the success of the natural sciences and concerned with the "futile" debates of the metaphysicians (Bitsakis, 1987, p.395).

Kant was seeking a middle ground between the rationalist (nativist) philosophy, which had as a goal the gaining of knowledge by way of logical deduction and mathematics, and the skeptical view of Hume and Berkeley, which failed to show by empirical deduction alone that there existed an external world of mind-independent objects. As Anderson, Hughes and Sharrock (1986) put it:

> The question was how to provide for the possibility of objective knowledge of an independent reality from within our experience of that reality....If we could have a sound argument which did that, then we would have a metaphysics which was indubitable, and hence the possibility of objective knowledge. (Anderson et al., 1986, p.19)

Kant's Transcendental Idealism (a form of objective idealism) was aimed at logically supporting the possibility of the independent world.5 A

distinction was drawn between empirical and transcendental arguments. Empirical arguments rest upon a body of facts. Transcendental arguments also rest upon empirical evidence but, in addition, they try to go beyond the limits of experience and show how such evidence is possible.

Against the nativists, Kant asserted that knowledge is not simply reducible to innate principles (since it includes synthetic propositions). Against the Empiricists, he asserted that knowledge is not merely reflexes of experience (because it is also a priori). The world said Kant is independent of, but known through, our concepts. These categories of understanding were said to correspond to the features which reality must necessarily have if we are to experience it in the first place.

Aside from the issue of whether or not Kant successfully defended his position from the grips of solipsism, the major themes in Kant's arguments have inspired various lines of thought ever since. First is the theme that there are clear and definite limits of knowledge. We cannot know things in themselves nor outside space and time. The dichotomies (antinomies) between subject/object, and reality/ appearance have been considered subsequently in one manner or another.

Second, the Kantian distinction between the noumenal and phenomenal world, has had considerable

influence upon subsequent philosophy of science. Phenomenology, while not rejecting the achievements of science, resisted the scientistic claim that natural science had somehow "wrenched itself free from subjectivity" (Anderson, et al., 1986, p.83). If all knowledge begins in consciousness, then even the objective rules and procedures of science are just as rooted in consciousness. Phenomenological influences all involved the movement of intentional consciousness to the central stage.

Finally, the critical character of Kant's philosophy was extended to all knowledge by various philosophical positions. Husserl, Heidegger, Sartre, and Wittgenstein all demonstrated the same critical commitment in their attacks on "idolatry" in modern scientific knowledge (Anderson et al., 1986, p.24). Philosophy of science through the application and extension of Kantian arguments was transformed into a rejection of positivism and any similar naive application of the natural science model to the social sciences.

Of crucial importance to this chapter is how these Kantian influences affected the understanding of theoretical unification in the philosophy of science. Along this line, the explicit views of N.R. Hanson and T.S. Kuhn will be examined. Secondly, the manner in which those views have been applied by theoretical

psychologists such as S. Koch and K. Gergen, to the question of unifying psychological theories, systems and schools will be investigated.

(II) Metaphysical Pluralism in Philosophy of Science (Hanson and Kuhn)

Hanson and Kuhn are clear and prominent examples of how metaphysical pluralism necessarily commits theorists to a hidden relativist epistemology and to negative conclusions about the possibility of progress in science.

(A) Hanson's Position

During the 1950's the down-fall of positivism as a movement was under way. One of the influential writers well into the sixties was Norwood Russell Hanson. He argued that different theorists cannot appeal to the same observational evidence. For example, Hanson (1958) considers Kepler and Tycho both sitting on a hill viewing the dawn of the day. Both will have the same sense data; both will see the distance between a bright disk and the horizon increasing. But Kepler would experience the earth moving while Tycho would experience the sun as rising and the earth as still.

Hanson is quick to add that two people with

opposing theories do not see the same event and then interpret it differently; they actually observe different events. When considering the reversible perspective figures in Gestalt Psychology textbooks as an analogy, Hanson argues using introspection that:

> To interpret is to think, to do something; seeing is an experiential state. The different ways in which these figures are seen are not due to different thoughts lying behind the visual reactions. What could "spontaneous" mean if these reactions are not spontaneous? When the staircase "goes into reverse" it does so spontaneously. One does not think of anything special; one does not think at all. Nor does one interpret. One just sees, now a staircase as from above, now a staircase as from below. (Hanson, 1958, p.157)

Similarly, for Hanson, when a physicist and a lay person view an X-ray tube they observe different things. Although the physicist is educated about X-ray tubes and the lay person is not, the physicist does "nothing over and above what the layman does when he sees an X-ray tube" (Hanson, 1958, p.158). The physicist just sees. But all the theories of physics concerning X-ray tubes are needed to make the same observations as the physicist. For this reason Hanson

calls scientific observation a "theory-laden" activity. Hanson concludes from this that two opposing theories will have incommensurable data.

(B) Kuhn's Position

The task of formulating Hanson's ideas into a philosophy of science was taken up by Thomas Kuhn. Kuhn argued that the Popperian characterization of science as the epitome of evolutionary methodology, is not borne out by the historical facts. In contrast science is characterized by Kuhn as conformity and conservatism, with long periods of uniform attachment to general frameworks (paradigms) broken by short periods of revolution and general upheaval. Kuhn stated that change in science happens not gradually and not cumulatively, but in a succession of scientific revolutions.

A change in paradigms amounts to a gestalt switch which is always easiest for the young and uncommitted to make. The point about using the term gestalt switch is to deny the possibility of holding or working within both paradigms at once. According to Kuhn the two paradigms are incommensurable, with the definition of what counts for evidence differing in each so as to disallow objective comparison (Anderson, et al., 1986, p.251).

Kuhn (1970) cites many examples. For instance in the change from Newtonian to Einsteinian world views (an example often used to show commensurability), Kuhn points out that there were no introductions of new words for newly discovered objects or concepts (i.e., space, time, velocity, energy, etc.). What must have changed, then, were the meanings of those terms. This fact, Kuhn argues, illustrates "...the scientific revolution as a displacement of the conceptual network through which scientists view the world" (Kuhn, 1970, p.271). Thus, although "...an out-of-date theory can always be viewed as a special case of its up-to-date successor, it must be transformed in the process" (Kuhn, 1970, p.271).

In Kuhn's description of that transformation, priority is given to extra-scientific, psychological factors. Scientists choose between theories primarily on subjective rather than objective grounds. Kuhn's main emphasis has been on: (a) subjective factors, such as the functions of personality, or whether or not one's reputation is in danger by competing with an established theory; and (b) external factors, such as political persuasion through special appointments or the Planck principle in which supporters of the old paradigm simply die off.

In more radical moments Kuhn talks of scientific shifts in terms more associated with religious

conversions than of scientific conviction or argumentation. Kuhn writes that theory choice "cannot be resolved by proof" and "[in] the absence of criteria able to dictate the choice of each individual, we do well to trust the collective judgement of scientists trained in this way" (Kuhn, 1977, p.198). Such statements have led many critics to accuse Kuhn of irrationalism, where might makes right.

In defense, Kuhn has suggested that there can indeed be rational arguments made during the process of theory choice. On the topic of objective factors involved in theory choice Kuhn lists accuracy, consistency, scope, simplicity, and fruitfulness as criteria that transcend paradigms to which scientists can appeal for rational argument. However, these criteria are not considered by Kuhn to be fixed in any way (having only been used since about the seventeenth century). He also points out that these criteria "...function not as <u>rules</u>, which determine choice but as <u>values</u> which influence it" (Kuhn, 1977, p.203, emphasis added).

It can be seen that whereas the Popperians defended science as the paragon of rationality guided by an evolutionary progressive destiny, under Kuhn and Hanson's programs all we can say is that science is a history of change with no necessary progression towards truth (Kourany, 1987, p.231).

(III) Metaphysical Pluralism in Two Theoretical Psychologists (Koch and Gergen)

Anti-objectivist arguments are also a common aspect of the psychological literature. Koch and Gergen hold to a purely theoretical pluralist position by rejecting the possibility of unifying the major theories of psychology into a single unified system.

(A) Koch's Position

Sigmund Koch's critiques of behaviorism have been most influential. His early position rejected the limiting effect which positivism has had on psychological investigation. Koch (1964) put it as follows:

> In psychology, problems concerning any range of human endeavor or experience can be the object of study. No definition of our science- however restrictive its heuristic effect may have been on problem selection- has ever [successfully] called into question this awesome peculiarity of our subject matter. In recent years we have sought security by addressing only small and rather unadventurous segments of our subject matter. But problems--psychological problems--of art and

> morality, of scientific creativity, of human sensibility in all manifestations, of language, problem solution, and of course, society, personality etc., do stand before us almost untouched. (Koch, 1964, p.28)

In later years, however, Koch attacked not only behaviorism but scientific psychology in general. Over psychology's one hundred year history as a science, it has been showing signs of what Koch facetiously calls "epistomopathic symptoms" (Koch, 1981, p.258). The use of jargon, restrictive definitions, simplifying assumptions, and a lack of willingness to view one's own epistemological commitments, comprise some of these epistomopathic symptoms.

Koch states that there has been a methodology fetish in the so called scientific psychology, this being due to preconceived notions about psychology's subject matter. Unwittingly following the positivist equation of methodology with science, Koch concludes that a scientific psychology will <u>necessarily</u> be dogmatic because it will pigeon-hole psychological phenomena into a preconceived methodological structure. He suggests that a non-dogmatic science of psychology is impossible.

The grievances with the past scientific psychology are typified in what Koch (1981) calls ameaningful

thought.

> Ameaningful thought or inquiry regards knowledge as the result of "processing" rather than discovery. It presumes that knowledge is an almost automatic result of a gimmickry, an assembly line, a methodology... So strongly does it see knowledge under such aspects that it sometimes seems to suppose the object of inquiry to be an ungainly and annoying irrelevance... Objects of knowledge became caricatures, if not faceless, and thus they lose reality. (Koch, 1981, pp.259-260)

In short, Koch suggests that scientific psychology has made false boundaries which limit what we study to a sterile, ameaningful domain, and distort what we do study to mere caricatures. Meaningful psychology, according to Koch, would recognize what he calls the antinomies of everyday life. These, like Kant's aforementioned antinomies of pure reason, are questions that we must confront in everyday life but that are at the same time rationally unresolvable. They are meaningful but undecidable.

At the heart of these antinomies is uncertainty. Koch points out that if we humans had to be certain about everything we did we would remain "trembling in

our beds" (Koch, 1981, p.263). Everyday life is contaminated with these uncertainties and is therefore not open to scientific investigation. This is the second reason why Koch feels that psychology should not be counted as a science.

Koch's (1981) argument boils down to the following: By only looking at the certainties, science would by definition ignore important aspects of everyday life. At the same time, any attempt to resolve any two opposing psychological theories would be dogmatic and ameaningful because meaningful psychological questions are undecidable. Thus, psychology is inherently pluralistic and has inherent epistemological undecidables.

Koch (1984) ends up suggesting that we replace the word psychology with the phrase "psychological studies" (p.175). These studies have their own language communities in which the very languages used are to a large extent incommensurable. Psychology, Koch concludes, would better serve humanity if it embraced the "pluralistic objectives of the psychological studies" and not try to imitate science (Koch, 1984, p.175).

(B) Gergen's Position

Kenneth Gergen also reacts to the positivist-

empiricist psychology. He makes his views clear as to why it has failed and will continue to fail to provide theoretical unification in psychology. Gergen takes his cues from: (a) Hanson that competing theoretical accounts may be incommensurable; (b) Kuhn that changes in science do not represent steady increases in knowledge; (c) the Quine-Duhem thesis that, because of auxiliary hypothesis, no theory can be verified or falsified; and (c) Feyerabend that in theory and methodology only anarchy can reign (Gergen, 1984, p.30).

Gergen is quick to point out that psychology has many schools of thought all co-existing together (Gergen, 1984, p.28, p.38). According to empiricism we should be able to resolve the disputes between rival theories once and for all by doing some crucial experiments. But instead, we see one school after another not replacing, but joining the already existing schools. Thus, Gergen's view is that at least in psychology the scientific method has failed. The nature of human beings is problematic for the strict and rigid view of scientific truth in empirical psychology. If laws are supposed to be absolute and non-changing, and humans are not absolute but instead are free and ever-changing, then there can be no psychological laws (Gergen, 1984, pp.31-32).

Borrowing from Wittgenstein, Gergen questions how

one might get out of one's language in order to get at the object of study. According to the Empiricists, in order to see if a proposition is true we have to see if it corresponds to what it is referring to by way of observation. But first it must be made clear as to what the proposition itself refers. Gergen informs us that it is at this point that problems arise.

To demonstrate the problems, Gergen uses the example of what he calls a social fact. We may observe certain movements of a person's arm, (e.g., its velocity, direction etc.). But "what transforms this observation into a social fact is its meaning to the individual, to others, or to the theorist" (Gergen, 1981, p.335). It could potentially mean an infinite number of things (e.g., a salute, sign of aggression, waving, etc.). Thus when psychologists use social facts to support and structure their theory, they are not appealing to observation but to their interpretation of the meaning of the observations (Gergen, 1981, p.335).

For Gergen, not only can we assign any number of meanings to an observation, but we can also attribute any number of observations to a single meaning of a term. An experimenter, for instance, can use the raising of one's arm or the pressing of a button (which will give someone an electrical shock) as signs of aggression. What makes these both mean aggression, is

the intention of the person doing the act. But intentions can only be inferred not observed. Gergen (1981) writes:

> The meaning of human action is dependent on the observer's system of interpretation...There is no means of verifying or falsifying a 'mode of interpretation'. One may choose to agree or disagree because one employs a different system of interpretation, but one may not empirically falsify a theoretical competitor. (Gergen, 1981, p.335)

Gergen concludes that scientific propositions can be neither verified nor falsified. But even more extreme, Gergen claims that "data and observation may be inimical to the development of theory..." (Gergen, 1981, p.335; emphasis added). Theories should not be understood as descriptive, we are told, because "...the fundamental basis for what we take to be knowledge does not grow logically from the soil of nature itself (i.e., empirical observation) but from some other source" (Gergen, 1984, p.29). In Gergen's position, Kant's "categories of the mind" and "intuition" have been replaced by the categories or historical structure of language in the role of the "other source" (Gergen, 1987a, p.6).

The type of psychology Gergen hopes for, is not one that is empirically based, but rather one where "attention would...shift to the structure of psychological language" and where propositions about the external world will be reduced to statements about mental conditions (Gergen, 1987b, pp.124-128). By studying the existing language conventions, we are told, we can learn about psychological theory; its organization and its constraints (Gergen, 1987b, p.120). But we can never unify psychological theories or schools because they have different language systems.

(IV) An Incomplete Critique of Metaphysical Pluralism

Hanson, Kuhn, Koch, and Gergen were all rebelling against the scientism contained in the positivist metatheory. In doing so, they have come up with various arguments some of which we are inclined to agree with at least initially (Scheffler, 1967, p.22). These theorists, however, are guilty of making the reciprocal error of asserting too strongly the relative nature of knowledge. Although extreme statements of anti-objectivism have undoubtedly increased the publicity afforded to such positions, they, stand as obstacles barring our understanding of the issue of theoretical unification.

Kuhn succeeded in calling to general attention the fact that science is not run strictly on logical grounds. Although this is surely correct, it is clearly an overstatement to go on to assert that becoming a member of the scientific community means learning to use enshrined criteria and standards unquestionably and without hesitation (Anderson et al., 1986, pp.250-251).

Kuhn's emphasis on the irrational and discontinuous side of scientific endeavor is overgeneralized. "If as Kuhn argues the movement from one world view to another is a wholesale incommensurable change, then all we could say is that the history of science...is a history of changes. We could not claim progression" (Anderson et al., 1986, p.252). As Foster (1987) pointed out, this non-progressionist view goes against the common sense position of those who consider the issue in any depth.

> ...most laypersons and scientists alike would regard scientific knowledge as essentially cumulative in character...[viewing] achievements such as reaching the moon, heart transplants and personal computers as a direct result of an increasingly larger store of scientific knowledge. (Foster, 1987, p.97)

Both Hanson and Kuhn share an implicit relativism in their explicit anti-objectivist views. As Cunningham (1973) points out, such anti-objectivists employ "an undefended dichotomy between inquiry being carried on completely unconditioned by social, economic, etc., factors on the one hand and objective inquiry being impossible on the other" (p.15). This hidden relativist position, does not argue that all theoretical claims are necessarily invalid, "only that their validity (or invalidity) is impossible to determine" (Foster, 1987, p.94). "The general conclusion to which we appear to be driven is that the adoption of a new scientific theory is an intuitive or mystical affair" (Scheffler, 1967, p.18).

(A) Responses to Relativism

There are two basic replies to the anti-objectivist position: (1) Treat the adherent as a nut and ignore the position, or (2) Resist (counter) the implicit relativism (i.e., show it to be incoherent, provide an alternative).

Such radical views cannot be ignored for long, since they contain at least some degree of truth. As Scheffler has pointed out: "Uncoordinated as they are, they have...subtly altered the balance of philosophical forces..." (Scheffler, 1967, p.12). The motivation for

countering relativism, then, is very strong, because by doing so in a non-dogmatic manner the truths contained in the position might be preserved within a metaphysic which is more conducive to scientific inquiry. Developing such an alternative approach will be no easy task (see Chapters 3 and 5) because a premature systematic objectivist position is likely to be dogmatic, just as the relativist approach is superficial and opportunistic!

(1) Reductio of Anti-objectivism

The first step in countering the relativist position is to expose its inherent reductio ad absurdum. If we examine what it would mean to take anti-objectivism to its logical conclusion, we would discover that it entails the claim that there are no such thing as "right" or "wrong" statements. That this inherent paradox is logically insurmountable from within a relativist metaphysic has been put forward in various ways by different objectivist theorists.

In his Science and Subjectivity (1967), Scheffler never wavered from the conviction that criteria for objective control over assertions could be found by virtue of studying those criteria "embodied clearly enough in scientific practice" (p.10).

...the reasoned rejection of objectivity seems to involve a reductio ad absurdum, in fact, a form of self-refutation. For objectivity is relevant to all statements which purport to make a claim, to rest on argument, to appeal to evidence. Science, as I have urged, is not uniquely subject to the demands of objectivity; rather, it institutionalizes such demands in the most systematic and explicit manner. But to put forth any claim with seriousness is to presuppose commitment to the view that evaluation is possible, and that it favors acceptance; it is to indicate one's readiness to support the claim in fair argument, as being correct or true or proper....And indeed there is a striking self-contradictoriness in the effort to persuade others by argument that communication, and hence argument, is impossible; in appeal to the facts about observation in order to deny that commonly observable facts exist; in arguing from the hard realities of history of science to the conclusion that reality is not discovered but made by the scientist. To accept these claims is to deny all force to the arguments brought forward for them. ....(Scheffler, 1967, pp.21-22)

Scheffler tempered this devastating paragraph with

two further insightful comments. First, the relativist argument contains details "to which we ourselves are inclined to assent at least initially" and second, these "troubles in our own house" will not be removed by a "mindless objectivism loudly proclaimed" (Scheffler, 1967, p.22). Scheffler thus attempted to pinpoint the places at which the relativist reasoning goes astray. The realization that scientific endeavor is continuous with other areas of life, allowed Scheffler to build a basis for his view of objectivity as responsible assertion.

In a similar manner Cunningham's Objectivity and the Social Sciences (1973) was written with the aim of dissuading would-be adherents to a growing tide of anti-objectivism in the social sciences. After investigating three possible defenses of anti-objectivism (arguments from: historicism, values, and selection), Cunningham moved gradually into a comparably destructive reductio of the anti-objectivist position.

> ...the anti-objectivist position is faced with an irreconcilable conflict from the very start, no matter what arguments are turned to for support ....If, as I think can be argued, sincerely to believe a theory is to believe that it is objectively true, then the second consequence of

> the anti-objectivist position would be that he would have to admit either that he does not believe his theory or that it is objectively true; neither alternative would be attractive to him. If he does not believe the view, why does he advocate it? If <u>it</u> is objectively true, why cannot <u>other</u> theories also be objectively true? The burden would lie on the anti-objectivist to show what there is about his endeavour....that allows it and it alone to escape his own anti-objectivist claim (and he would have to show this without himself employing or supposing the conclusions of any theory the objectivity of which he has tried to show impossible). (Cunningham, 1973, pp.22-23; emphasis in original)

Unfortunately, both Cunningham and Scheffler were missing some vital components to their arguments which are, as it turns out, necessary for a sufficient outline of the objectivist position. This sufficient outline of the objectivist position itself, is the second stage in the countering of the metatheoretical extremes of metaphysical pluralism and positivism (see Chapters 3 and 5 of this thesis).

(B) The Inconsistency of all Anti-objectivist Views

Foster (1987) provides an irreverent and almost polemical attack against relativism, and in particular against the inconsistent and irresponsible day to day professional conduct of its adherents:

> Of course, these consequences have yet to abate the tendency for relativists to criticize objectivist literature. Thus the 'supreme contradiction' in the relativist writings where one can almost hear the critical author saying, "No, no. The objectivist does not have a true understanding of the way things really are in (science, psychology, etc.), but I do and I will explain the true picture in my critique" (Foster, 1987, p.108).

In psychology, the same convenient ignorance of the relativist implications of anti-objectivist arguments is disturbingly common.

(1) Koch's Inconsistency

As mentioned previously, Sigmund Koch (1964) aspired to the amiable goal of opening up psychology to areas disallowed by the behaviorist project. We can

agree with much of Koch's argument against behaviorism. As a metaphysical thesis he says, "nothing can be done for a truly obstinate disbeliever in mind or experience, even by way of therapy" (Koch, 1964, p.6). As a methodological thesis, behaviorism had "extremely restrictive consequences for empirical problem selection" (Koch, 1964, p.6). Koch classed behaviorism as an:

> ...essentially irrational position (like solipsism) which start with a denial of something much like a foundation-tenet of common sense, which can, in the abstract, be rationally defended for however long one wishes to persist in ones superordinate irrationality but which cannot be implemented without brooking self-contradiction. (Koch, 1964, p.6; emphasis in original)

What was repugnant to Koch about behaviorism was its proposed methodological monism, and its dogmatic banishment of metaphysics and mind from psychology. It is this extreme position which Koch sees correctly as unattainable.

Koch also recognized that there is a necessary difference in the terminologies and complexity of the subject matter for different sciences such as

psychology, biology and the physical sciences (Koch, 1964, p.28). Despite the potential complexities involved in working out a "significant psychology" he maintained a hopeful tone throughout the 1964 paper:

> But this state of affairs could lead to a happy consequence: should psychology break out of the circle just described, it could at one and the same time assume leadership in pressing toward resolution of the central intellectual problem of our time and liberate itself for the engagement of bypassed, but important and intensely interesting, ranges of its own subject matter. (Koch, 1964, pp.5-6)

But Koch then diverges from these more sound proclamations by suggesting that the reins of psychology be let loose; this being accomplished by the adoption of a theoretical pluralist perspective. According to his assessment psychology is necessarily a mass of competing systems with no basis for resolution.

> My position suggests that the non-cohesiveness of psychology finally be acknowledged by replacing "psychology" with some such locution as "the psychological studies....Moreover, the conceptual ordering devices, technical languages

> ("paradigms", if you prefer) open to the various psychological studies are--like all human modes of cognitive organization--perspectival, sensibility-dependent relative to the inquirer, and often-noncommensurable. (Koch, 1984, p.175)

This later position equivocates from the earlier more radical one by using terms such as "largely" and "often" incommensurable. This could be taken as a recognition that describing psychological theories as <u>always</u> incommensurable would force his position into insurmountable difficulties since it would be reduced to solipsism. Adding weight to this interpretation is the fact that Koch (1964) had argued that Existentialism was not the way to go about transforming psychology because the necessary "massive and responsible" attack on problems was being curbed by such forms of "philosophical obscurantism" (p.35).

In attempting to reassert a plurality of procedural alternatives back into psychology, Koch had moved toward a <u>hesitantly</u> held metaphysical pluralism. But clearly this is itself a move away from Koch's own criterion of "common sense" and away from the aforementioned objectivity (e.g., Scheffler) which is necessary in order to motivate us to produce alternative theories in the first place. Why would Koch have made this move? One answer is that his

position postulates as necessary a choice dichotomy between a restrictive monistic methodological view on the one hand and a pluralist incommensurability of various "language communities" on the other.

When Koch's method of analysis is turned back on itself, it self-destructs. First, the attempt at a theoretical pluralist understanding of psychology does not work as a methodological thesis since it cannot be implemented without brooking self-contradiction. In particular, Koch's suggestion to open up psychology can not be implemented by the theoretical devices that he advocates. The inherent anti-objectivist presuppositions are totally inadequate to provide any such guiding principles for either scientific or non-scientific psychological methodology because the very argument is repugnant to any such narrowing of the possibilities.

Second, it does not work as a metaphysical thesis since it shifts necessarily into subjectivity and relativism if held to consistently. Under the implicit relativist basis no amount of argument would be sufficient to support a program for unfettering psychology. What would be the motivation for different theorists to come up with different positions if each is just another voice crying in the wilderness?

In neglecting to come to terms with the unworkable methodological and metaphysical nature of his position

Koch displays his own set of epistemopathic symptoms. The outcome for Koch as a theoretical pluralist is decisively negative as is plain in this passage from his later work.

> I have sought the conditions of a significant psychology over a forty-year career as an analyst of psychological theory and philosopher of science (and indeed, for the first ten of those years as an experimentalist in the field of rat behavior). I have not discovered what those conditions are, but have learned much about what they are not. (Koch, 1985, p.175)

The best that such theoretical pluralist views can do is to provide a <u>negative</u> <u>argument</u> against an opposite and equally dogmatic restrictive psychology. Psychology is reduced to "humility", and a plurality of incommensurable language communities, doomed to "continued fractionation" where "optimism concerning the prospects of cognitive science generating an adequate unifying paradigm for psychology must be sharply qualified" (Koch, 1985, p.175). This is surely a depressing end-point to such a hopeful and insightful beginning.

(2) Gergen's Inconsistency

The work of Kenneth Gergen is an equally poignant example in psychology of how implicit relativist assumptions can lead an otherwise progressive and forward looking attempt astray. In Gergen's 1987 article the question of the present and future state of psychological theory is investigated. From within his metaphysical pluralist position Gergen writes the following on "metapsychology":

> A mature discipline of metapsychology should not only enhance our consciousness of the development and limitations of theoretical constructions. Ideally it should also invite new theoretical ventures. If theories are not derived from nor dependent upon observations, then significant theoretical development should no longer await the establishment of a so called "observational base". Rather, the theorist is fundamentally free to engage in new theoretical departures.... the outcome of a mature metapsychology should be a flourishing of new theoretical implements of greater intellectual and social consequence than hitherto. (Gergen, 1987, p.16; emphasis added)

In the above Gergen has (intentionally or

otherwise) set himself in opposition to the historic positivist confusion between fact and theory. The positivists had asserted a dichotomy between fact and theory and sided with the realm of facts. Theories, being generalizations from observations, were to be avoided due to their dubious nature. Heidbreder (1933), provides the most readily available example of what such a confusion can mean with regard to the issue of unification in psychology.

> Psychology...has risked everything on being science; science on principle refrains from speculation that is not permeated and stabilized by fact. Yet there is <u>not enough facts</u> in the whole science of psychology to make a single solid system. (Heidbreder, 1933, p.3; emphasis added)

Heidbreder, being influenced by positivism, had equated theory with metaphysics and therefore exhibited some trepidation regarding the sufficiency of talking about developments in psychological theory per se. This explains her insistence that if enough <u>facts</u> are gained, then all the various schools and systems of psychology would be unified into one single solid system.

> When this evidence is sufficient in bulk and solidity, it will itself determine the form of psychology and constitute its substance. At that time systems will no longer be needed they will have fulfilled their purpose...(Heidbreder, 1933, p.429)

Gergen's position is correct in one essential way. It is not for lack of facts that psychology has been held back in its theory development. Rather, it has been the production of sufficient ways of conceptualizing the facts (drawing out compelling theoretical laws), which has been lacking in psychology.

Gergen's primary aim had been to call attention to the tendency of empirical (positivist) psychology to state too strongly the importance of the factual level in their account of theory choice. But Gergen has also gone too far! Essentially, by denying that theories are to some extent "derived from" and "dependent upon observation", he ends up cutting scientific theorizing off from its observational base.

It is ironic that in attempting to state clearly the differences between his view and empiricist psychology, Gergen has inadvertently brought out, in clear form, the basic similarity between those two extreme metatheoretical positions. Gergen has simply

postulated the reciprocally opposite implications of a fact-theory dichotomy, while assuming the very same underlying adversarial relationship. He is suffering from another strain of fact-theory confusion!

Those two opposing positions suggest similarly extreme views on the methods and outcomes of psychology's search for unification. Gergen's method reduces facts to theory and Heidbreder's reduces theory to facts. Heidbreder suggests a possible outcome of a methodologically monolithic understanding of facts, and Gergen suggests a plurality of theories unconstrained by the observational level.

In a similar fashion to Koch, Gergen wished to reaffirm that theorists are "fundamentally free" to engage in novel theoretical departures. But what can such freedom mean if we are cut off from our observational base? Randomness? But randomness is not freedom; it is the worst sort of possible restraint upon scientific theory. A position in which the theorist is cut-off from the observational base, surely does <u>less</u> to promote progressive theory formation, than a position in which we are totally constrained by observable facts. This is the manifest inconsistency in Gergen's explicit position.

In order to drive home the present argument that Gergen's radical theoretical pluralist view is not the answer, it should be sufficient to return to Koch's

point about the implementation of such presuppositions. Put bluntly, it is dogmatic for Gergen to assert anything about the nature of metapsychology (the object of his discussion). His anti-objectivist position allows nothing to be asserted. This is the irresponsible nature of Gergen's implicit position.

Being cut-off from observation, no objective criterion for theory choice is possible and Gergen inevitably finds himself on the slippery slope to solipsism (whether he chooses to recognize it or not). He has moved from a position which correctly recognized meaning as somehow influencing social facts to conclusions that are unwarrantably negative about the possibility for any sort of theoretical unification in psychology.

(C) Explaining the Disparities in Theory

How is it that Hanson, Kuhn, Koch, and Gergen, have come to support positions which are so pessimistic about the possibility of scientific knowledge and progression?

(1) The Link with Irrationalism

It is important to realize that these views are extensions of what Hodges (1970) called a discernible

trend of irrationalism in philosophy from about 1800 onwards. As part of this historical movement, these more recent manifestations have fallen into the same sort of oxymoronic rhetoric.

But since mere denouncement is not enough, the contrast between what E.A. Burtt (1932) called "Medieval thinking" (rationalism), and the "Modern Scientific thinking" (positivism) may assist in explaining how and why these irrationalist positions came into being. For as Burtt points out "modern metaphysics, at least beginning with the work of Berkeley and Leibniz, has [been]....in large part a series of unsuccessful protests against this new [positivist] view of the relation of man to nature" (Burtt, 1932, p.25).

> ...just as it was thoroughly natural for medieval thinkers to view nature as subservient to man's knowledge, purpose, and destiny; so now it has become natural to view her as existing and operating in her own self-contained independence, and...to consider his knowledge and purpose somehow produced by her, and his destiny wholly dependent on her. (Burtt, 1932, p.24)

Although Burtt's basic stand was that "it has been no doubt worth the metaphysical barbarism of a few

centuries to possess modern science", he set his own goal as locating these key problematic assumptions, in order to deal with them in a more sufficient fashion (Burtt, 1932, pp.305-306).

(2) Two Factors in the Rise of Irrationalism

By now, the historical factors which led to the failure of these modern philosophical systems to construct a "convincing and encouraging philosophy" (Burtt, 1932, p.35) and which in turn ushered in the rise of irrationalism (Hodges, 1970) seem clear. It has been the combined historical lack of non-dogmatic replacements for: (1) Formal (either/or) Logic, and (2) the Indirect (Representational) Theory of Perception. These combined influences predisposed philosophers and scientists alike to such extremes as positivism and metaphysical pluralism.

Hodges (1970), points out that the philosophy of the eighteenth and earlier nineteenth centuries had tended to overemphasize the powers and achievements of reason, and that the nineteenth and twentieth centuries have seen a reaction to this "lack of balance" (p.96). Sole reliance upon formal (either/or) logic during the 17th and early 18th centuries, had produced a static world view. For Galileo, and Newton, motion was understood as external force acting upon discrete

bodies at relative rest, and development was considered as a rearrangement or recombination of elements (Morris, 1932, p.47).

There were two competing movements in the reaction against this static world view. The first movement was Irrationalism, and a second was Hegel's notion of transition from abstract intellect (Verstand), to dialectical thinking (Vernunft). The irrationalist positions were characterized by: (a) the appeal to intuitive knowledge because of the alleged incompetence of reason, and (b) an appeal to an epistemological elite (Hodges, 1970, pp.87-89).

(i) Irrationalist rejection of all logic. Hodges describes the crisis which occurred in biology when it became clear that mechanistic concepts were not able to explain or even accurately describe the behavior of living matter. For some, it seemed to follow that science could never deal with living matter (Hodges, 1970, p.88).

When these limitations of formal mechanistic logic started to become clear the lack of a replacement logic produced irrationalist positions which rejected all logic in preference for feelings and emotional evaluations (e.g., Neitzsche). It became axiomatic for such proponents that value judgments have nothing rational in them and that science itself depended on such value judgments. The only way to go beyond

abstract mechanistic scientific thinking, they argued, is by recourse to some kind of intuitive insight (e.g., Bergson).

Thus, although the type of reason the irrationalists were reacting against was initially formal either/or reasoning, they also eventually rejected any possibility of a Hegelian sort of dialectical reasoning. While Hegel's position was considered by the irrationalists as a negative argument which succeeded in drawing out the inadequacies of mechanistic scientific concepts, it was argued that to go beyond such concepts was not a rational progression, but rather as a flash of intuitive insight (e.g., Schelling).

(ia) The distinction between discourse and being. Much of the difficulty with theoretical argumentation arises from an over-extension of either/or categories from the realm of discourse into the realm of being (from abstract argumentation to concrete existence).

The either/or logic tends to force arguments into neat easily cognized, packaged, forms which conform to either one theoretical extreme or to the other. With the example of the aforementioned Popper-Kuhn (evolutionary vs. revolutionary) theory choice debate, it can be seen that both proponents were adhering to opposite yet equally abstract and dismissing positions. Both were overgeneralized and unsatisfying arguments.

The subsequent challenge has been to find a more concrete middle ground between them which matches the actual nature of scientific theory choice.

It is crucial to note that both the neopositivist and the metaphysical pluralist positions fail to do justice to the discourse and being distinction in a clear and consistent manner. The tendency to frame questions in terms of clearly separate and distinct sections, may perhaps be an aid to initial classification and categorization on a given subject but such orthogonal groupings of elements often do not conform to the way things are in the world.6

(ii) Representationalism. The second characteristic which shaped the arguments of the modern philosophers, as they broke out of the medieval rationalist unity of nature, was the felt need to stress the duality between appearance and essence. Eventually this trend was formalized by Locke, Berkeley, and Hume into the Representationalist theory of perception. As Katz and Wilcox (1984) outline:

> According to it, the perceiver comes to know the world 'indirectly', or 'mediately' by using a collection of atomic elements to reconstruct the world through some form of quasi-rational inference or schematism. Virtually every modern theory of perception or cognition can be thus

described. (Katz & Wilcox, 1984, p.152)

The major point of interest here is that this paradoxical understanding of perception is common to those who fall under both the metaphysical pluralist and positivist metatheories. The historical relations between the epistemological trends which underlie such vastly different metatheoretical positions were adeptly illustrated by Randall (1940).

> Suffice it to say that they came gradually to feel that the Cartesian object of science, a knowledge of the real world as it actually is, was impossible and misdirected....This program is sometimes known as phenomenalism, which emphasizes the belief that objects and events are "appearances" or pictures, not real things; sometimes as empiricism, which stresses the origins of knowledge in such an experience; sometimes as positivism, which claims that the object of science must only be what we can positively know, the relations between observed phenomena; sometimes as agnosticism, which declares that all further knowledge of an independent reality must remain unknown to man. (Randall, 1940, pp.270-271; emphasis in original)

These relations are of paramount importance if we are to become aware of the full impact of perception theory upon the outcome of philosophical debates, and movements in scientific method. The widespread Idealist ontology was to a large extent an outcome of adopting a representationalist epistemology. But just as important, is the indication (found in Randall's early 20th century work), that at other times, other theorists have thought about the world in a different light (i.e., using a predominantly materialist metaphysic). This materialist alternative, will be considered in Chapter 3. For now, we will endeavor to understand the paradoxical nature of Indirect perception.

(iia) Indirect perception as paradoxical. Katz and Wilcox (1984), pointed out the paradoxical implications of abandoning some sort of direct perceptual access to the object. Whether used in the experimental situation or in theoretical debate the end result is the same. The proponent ends up juggling with two epistemologies: an indirect realism for the perceiver (or subject in the experiment) who cannot know the world directly, and a direct realism for himself who can (Katz & Wilcox, 1984, p.153).

This indirect understanding of the perceptual situation is paradoxical because the two actors can at any time (at least in principle), change places. Given

this occurrence, the former subject (now the experimenter), suddenly (according to the theory) enjoys a windfall of omniscience, for he can now make judgements about whether others perceive what is actually the case in the world (Katz & Wilcox, 1984, p.154).

If, in fact, the psychologist as a perceiver, were to consistently remain under the constraints of indirect realism, he could say nothing at all for he could not escape from his sensations to the external world. The psychologist becomes a victim of the egocentric predicament (Katz & Wilcox, 1984, p.154).

Indirect perception cannot be correct because it assumes its antithesis in order to interpret the facts which are purported to support it (Katz & Wilcox, 1984, p.153). It is parasitic upon direct realism. If the indirect realist was to hold consistently to such an epistemology, the result would be solipsism.

Similar conclusions were reached by Foster (1987) about anti-objectivism in general. First, that a implicit relativism supported by an indirect realism doesn't work logically. "Once some access to the object is allowed, then a denial of relativism follows as a matter of necessity..." (Foster, p.108). The second conclusion that Foster makes is that this fact is conveniently ignored by such theorists. In other words, relativism is de facto parasitic upon

objectivism.

(V) Conclusion

Over the course of philosophical history the combination of non-dialectical either/or logic with representationalism has continually polarized theoretical positions into dichotomies such as: free-will vs. determinism, mind-body monism vs. dualism, subjectivism vs. objectivism, universal monism vs. pluralism, and science as built on facts vs. science as built on theory.

In the face of these historical and conceptual connections between metaphysical pluralism and positivism it is even more imperative that we heed the words stated in earnest by Scheffler (1967). "The problem is thus not simply to show the doctrine self-refuting or otherwise defective. It is to show how we can ourselves reasonably avoid being driven to it" (Scheffler, 1967, p.53). It is in this respect that the critique of both metaphysical pluralism and also positivism is <u>incomplete</u> until a non-dogmatic, and practicable objectivist position is outlined. This challenging task <u>is</u> taken up in later chapters. In preparation for this we must now investigate the third classical metatheoretical influence on science and psychology, Naturalistic Emergentism.

Chapter Three

NATURALISTIC EMERGENTISM

What has been too often overlooked in the historical and theoretical texts of psychology is that positivism and metaphysical pluralism do not exhaust the classical options for dealing with the task of theoretical unification. Overlapping with the period of positivism and the rise of metaphysical pluralism (1880-1950), was a productive era in theory building associated with the work of C.L. Morgan, Charles Peirce, William James and John Dewey.

It is possible to outline this third metatheory by calling attention to the complementarity between Emergent evolutionary theory (C.L Morgan), Pragmatism (Peirce, James, Dewey), Dialectical Materialism (Marx, Engels, Lenin), and Direct perception (Gibson, Lombardo). It will be shown that: (1) Emergent evolution allows the understanding of levels of nature and an acceptance of both continuity and discontinuity between the subject matter of the various sciences; (2) Within the pragmatic account of the relationship between philosophy and science, the views of Peirce and James contrast with positivism and the views of Dewey can be set off against metaphysical pluralism; (3) Functional and Dialectical materialism are the supporting ontologies for these successive

developments; and (4) The Direct theory of perception allows the connection between the perceiver and the environment to be explained in a naturalistic, evolutionary, and emergent manner.

(I) Emergent Evolution and Naturalism

In order to explicate the third metatheory, we must historically backtrack to when the concept of evolution was fresh in science. Although Darwin's theory regarding the transmutation of species (1859) was unacceptable to the creationists (e.g., bishop Wilberforce), it was eventually triumphant. Darwin, in contrast to Lamarck, was successful because he had established both the fact of evolution and its means (natural selection). A physiological continuity between man and other species had been established which was destined to transform the sciences in a way comparable with Newton's Principia two centuries earlier (Lowry, 1971, p.110).

(A) Psychological Continuity (Darwin)

In psychology, the influence of Darwin's theory was that human psychological functions could no longer be viewed as isolated or unconnected with their animal counterparts (Fancher, 1990, p.207). Darwin himself

had argued that animals show the rudiments of reason, "the only faculty of the soul that Descartes had reserved exclusively for human beings" (Fancher, 1990, p.200). The "difference in mind between man and the higher animals great as it is, certainly is one of degree and not of kind" (Darwin, 1874, p.128).

In his Animal Intelligence (1882) Romanes developed a "comparative" psychology by suggesting that if we may speak of the evolution of physiological processes, then surely we may speak of the evolution of mental processes as well (Lowry, 1971, p.118). This attempt to trace psychological processes back to their origins in non-mental antecedents led to two kinds of excesses. Loeb described higher processes in the light of lower ones, and others attributed human abilities to the higher animals.

(B) The Importance of Morgan's Canon

C. Lloyd Morgan (1894) helped establish comparative psychology but doubted that higher psychological processes could be followed uninterruptedly throughout the animal series (Lowry, 1971, p.120). Although comparative psychology had been brought into being by the doctrine of phylogenetic continuity; Morgan (1894) held that the discipline should also be prepared to recognize phylogenetic

discontinuity (Lowry, 1971, p.121). He exposed the inherent paradox of holding the strict continuity view.

> Those evolutionists who accept this assumption as valid are logically bound to believe either (1) that all forms of animal life from the amoeba upwards have all the faculties of man, only reduced in degree and range...or (2) that in the higher forms of life the introduction of the higher faculties has been effected by some means other than that of natural evolution. (Morgan, 1894; p.58; In Lowry, 1971, p.121)

In order to remedy the problem of anthropomorphism, Morgan suggested that: "In no case may we interpret an action as the outcome of the exercise of a higher psychical faculty, if it can be interpreted as the outcome of the exercise of one which stands lower in the psychological scale" (Morgan, 1894, p.53). His canon assumed that higher and lower faculties exist and that these terms are not interchangeable.

It should be noted that although Morgan's canon was directed principally against anthropomorphic excesses, its emergentist implications apply equally against the reductionist excesses of Loeb (Lowry, 1971, p.122). As it happened, the anti-reductionist

influence of the canon was not very clearly seen at that time. Thorndike for example, even after hearing Morgan speak at Harvard (1896), neglected this aspect in his animal learning research. Similarly, Watson was later to claim support from the cannon for his doctrine of S-R behaviorism.

(1) Morgan's Metaphysics

Morgan attempted an ontological monist position by way of a double-aspect theory with regard to the relation of mind and body. These "two aspects" were the result not of an existentially double world, but of "analysis" (Morgan, 1894, p.7). As Robinson (1977) points out, such "analytical monism" necessitated the rejection of radical forms of both materialism (which denied the mental) and psychism (which denied the physical). For Morgan: "They are not separate existences temporarily associated during life, but different ways of regarding the same [indivisible] natural occurrences" (Morgan, 1894, p.30). The important point is that by including the psychic in the natural world (rather than in someone's head), Morgan had guaranteed a place for psychology in science (Robinson, 1977, p.xxiii).

(C) The Doctrine of Emergent Evolution

Despite the equivocal historical treatment of his famous canon, Morgan later became a principle advocate of an explicitly stated emergent evolutionist doctrine which left no room for such misinterpretation (see Morgan, 1923). The classical Darwinists had assumed that changes in nature take place in a gradual continuum of organic modifications which retained a continuity between forms. But this "made it difficult to understand how any single modification or group of coadapted modifications could first arise" (Goudge, 1967, p.474). Since the continuity which the Darwinian understanding of evolution had provided was quickly adopted by reductionist theorists it was this question that the doctrine of emergent evolution first addressed. Goudge (1967) states that:

> EMERGENT EVOLUTIONISM is a doctrine first brought into prominence by C. Lloyd Morgan as an interpretation of the history of nature. It was designed in part to cope with the influence of Darwinism on philosophy by providing a way of interpreting evolution without having recourse to mechanistic, vitalistic, reductionist, and preformationist ideas. In its most restricted form the doctrine deals only with the history of living things on the earth. A more inclusive

> version deals with the history of the spatiotemporal universe. (Goudge, 1967, p.474)

Emergent evolutionary theory first called attention to the discontinuity between species and then indirectly to the more general emergent properties of matter itself. Although Morgan considered the doctrine incomplete without the "supplementary" postulation of a deity, Novikoff (1945) exemplifies a more mature form of the doctrine. Emergent evolution in this form maintains that transmutations of matter must be in some sense discontinuous with what existed before (i.e., such transmutations are more than simple reshuffling of fundamental units). The development of matter is seen as "continuous because it is never-ending, and as discontinuous because it passes through a series of different levels of organization-- physical, chemical, biological and sociological" (Novikoff, 1945, p.209).

As matter evolved, new properties arose with each new qualitative leap. The higher levels, although dependent upon the prior, are not entirely explainable by the prior since they contain properties not before seen in the lower levels. The fact that novel qualities arise at each new level necessitates the production or presence of new laws, which, in conjunction with the old laws, govern those novel qualities.

(D) Naturalism

This section compares three prevalent definitions of naturalism (Danto, Bugger & Baker, Baldwin) and makes a suggestion regarding the ontological basis for a progressive naturalism.

(1) Naturalism Progressively Defined

Danto (1967) called naturalism a species of philosophical monism according to which whatever exists is natural and susceptible to explanation through methods exemplified in the natural sciences. It is a repudiation of the view that there exists or could exist any entities or events beyond the scope of scientific explanation. With all due respect to the fourteen presumptions of the "typical naturalist" outlined by Danto, I suggest that his definition is far too diffuse for our purposes.

But Danto did make a crucial point. There is a "philosophical heterogeneity" of "otherwise rival ontologies" present in naturalism making the position a "methodological rather than an ontological monism" (Danto, 1967, p.448). This results in the claim that naturalism is ontologically "neutral" including "dualists, idealists, materialists, atheists, or nonatheists, as the case may be" (Danto, 1967, p.448).

Any useful definition of the naturalist position would need to correct this ontological heterogeneity.

Even more unacceptable is the fairly hostile and narrow-minded treatment of naturalism present in Bugger & Baker (1972). Naturalism is described as a philosophical view which gives a decisive or exclusive role to nature directing itself "one-sidedly" to its biological dimension (Biologism), and which considers specifically human abilities as a mere extension of the biological order to the principles of physical science (Bugger & Baker, 1972, p.268).

Fortunately, a more open-minded view was implied by Baldwin (1957). Baldwin made a distinction between what can here be called a traditional and a progressive form of naturalism. The traditional form which Baldwin associated with the "positivist" and "materialist" camps is defined as follows:

> The theory that the whole of the universe or of experience may be accounted for by a method like that of the physical sciences, and with recourse only to the current conceptions of physical and natural science; more specifically, that mental and moral processes may be reduced... (Baldwin, 1957, p.138)

According to Baldwin, the more progressive form of

naturalism "simply limits itself to what is natural or normal in its explanations, as against appeal to what transcends nature as a whole, or is...supernatural or mystical" (Baldwin, 1957, p.138). In this more progressive meaning, the distinction between the adjectives "natural" and "physical" is stressed in particular with reference to the mental and moral questions in science as opposed to those in the physical sciences (Baldwin, 1957, p.138). Baldwin urged that it is "extremely desirable that this distinction of usages should be recognized" because it allows "the meaning of natural to include man" (Baldwin, 1957, p.138).

(2) The Ontological Basis of Naturalism

Since Baldwin's distinction allowed us to avoid narrow caricatures (e.g., Bugger & Baker) and hopeless bemuddlements (e.g., Danto) of the naturalistic position, it should also allow us to push the argument one step farther by commenting on the ontological basis of a progressive naturalism. Indeed in his critique of naturalism, Danto had suggested that some cleaning of its own decks was necessary; "the chief divisions being not so much between naturalists and antinaturalists... in combat with whom the naturalist has always been most comfortable--but between competing views of what

philosophy is" (Danto, 1967, p.450).

If it is a "philosophical justification which naturalists have failed to furnish" (Danto, 1967, p.450), let me make one simple clarifying suggestion. The traditional forms of naturalism are associated with positivism and mechanistic materialism whereas the more progressive form is associated with both functional and dialectical materialism.

It is certainly to this more progressive form of naturalism that the functional materialist philosopher O.J. Flanagan refers when he writes:

> Naturalism you might say, is what you get when you take classical (say, Cartesian or Newtonian) materialism and reconstitute it with evolutionary concepts, in particular with the concept of different levels of biological organization and the concept of organisms as functional systems which continually change by interacting with other functional systems. (Flanagan, 1984, p.24)

Such naturalists view the world as comprised of physical objects, their properties, and relations but depart from the traditional materialism by "denying that mental phenomena, naturalistically interpreted, require a simple mechanical analysis" (Flanagan, 1984, p.24). The naturalist then:

> parts company with the reflex mechanist by reading evolutionary theory as pointing not merely to increasing complexity of biological organization but also as pointing to the need for increasing complexity at the level of explanation as we ascend the phylogenetic scale: reflexes require reflex analyses, full-blown mental phenomena require mental analyses. (Flanagan, 1984, p.24)

It seems then that naturalism has matured to a stage in which it is not and can not be ontologically neutral. The choice has been narrowed to one or other types of progressive materialism. I shall use the term naturalistic in what follows in this progressive and ontologically partisan form.

(E) Naturalistic Emergentism and Scientific Laws

These naturalist and emergentist trends combine to provide a cosmological view which is optimistic for the possibility of both human knowledge and scientific endeavor. For example the two prior metatheoretical understandings (positivism and metaphysical pluralism) had postulated a false dichotomy between a static unity and an undifferentiated plurality account of the universe. The actual situation, however, is more

accurately described as dynamic, integrated, and emergent relations between the levels of nature (see Figure 3). Adequate examination of the world entails the search for numerous principles that exist on a hierarchy of increasing complexity, being layered (nested) one within the other, by virtue of the evolutionary developmental nature of matter.

The significance of this cosmological view is that it can be applied profitably to outline the nature of scientific laws and in doing so, the relation between the various sciences which try to discover those natural laws.

As Bitsakis (1987) points out:

> The laws of nature are local: they correspond to the structures and relations existing in a certain phase of the evolution of the part of the universe under consideration. (The laws of biology do not exist in the sun and they were non-existent on earth some billions of years ago.) More than that: It is possible that the "eternal" laws of nature and the "universal constants of physics" are functions of space and time, as Mach, Dirac and others contend (see Bitsakis, 1963). (Bitsakis, 1987, p.403)

The understanding of scientific laws as local

indicates that new laws, being primarily descriptive, emerge with the changing nature of matter. In this aspect, naturalistic emergentism is in distinct contrast with both the positivist and the metaphysical pluralist metatheories. Their shared assumption was that scientific laws were necessarily universal and unchanging. The positivists suggested a variety of formalized methodologies aimed at capturing objective (eternal) laws and the metaphysical pluralist doubted the possibility of ever obtaining any such objective scientific laws.

In fact, it was this basic misunderstanding as to the nature of scientific laws that was the source of the problem. The naturalistic emergentist influences on our thought, however, have allowed us to recognize the dynamic relationship between the laws of science and the levels of nature which they attempt to describe.

(II) Naturalistic Emergentism in Philosophy of Science

One way to understand more clearly the above view, is to inspect its development in the pragmatic philosophical movement and in functionalist psychology.

(A) Pragmatism

The fact that the evolutionary rule (i.e., each aspect of a species' endowment must have an adaptive purpose) presumably held as true for a species' psychological endowment as for its anatomy and physiology was used as the evolutionary rationale for the late nineteenth century psychological school known as functionalism (Lowry, 1971, p.127). This approach to mind in terms of the category of function is a distinctive feature of the pragmatic (or instrumental) movement in philosophy which developed around the work of Peirce, and which was successively elaborated upon by James, Dewey, and Mead.

The point to be elaborated here is that there are two persistent misunderstandings of pragmatism. First that pragmatism is a form of positivism, and second that it is subjective idealist (anti-realist) in epistemology. By "persistent" I mean merely that these misunderstandings have been present from the time of James (1907a,1909b) when he emphatically denied both, to the relative present (e.g., Kolakowski, 1972). In distinguishing pragmatism from positivism and anti-realism it is hoped that its underlying metatheory (naturalistic emergentism) will become more evident.

(1) Pragmatism Is Not Positivism

Positivism (particularly Logical Positivism) chose to throw out all metaphysics as meaninqless. As will be seen, the pragmatic movement was in marked contrast with respect to the treatment of metaphysics.

(a) Peirce on metaphysics. Charles Peirce's article "How to Make Our Ideas Clear" (1878), had a pervasive influence on later pragmatic views with regard to the relation between science and metaphysics. In it Peirce argued against authority (the Schoolmen) and a priori philosophy (Descartes) in favor of a philosophy "better adapted to modern uses" (Peirce, 1878, p.102). His complaint against the past metaphysics was that "philosophers have been less intent on finding out what the facts are than on inquiring what belief is most in harmony with their system" (Peirce, 1878, p.115). He suggested that any belief or hypothesis whether in common sense, science, or metaphysics which does not have conceivable consequences in practice cannot be significant (e.g., transubstantiation of wine into blood).

This line of argument led Peirce, James, and Dewey to the conclusion that a particular metaphysical dispute can be significant only if it has empirical or practical consequences. Peirce had laid the foundation for a pragmatic criticism of the nonfunctional

character of transcendental metaphysics (e.g., Plato, Kant). "There is no royal road to logic [neither in the abstract or in the a priori categories], and really valuable ideas can only be had at the price of close attention" (Peirce, 1878, p.118). This theme of banishing only non-instrumental metaphysics received elaboration by both James and Dewey.

(b) James on metaphysics. James in his famous Principles (1890) and in his Briefer Course (1892) is far too friendly toward the potential benefits of metaphysics to be labeled a positivist. The Principles attempted to provide a "natural science" approach to psychology without yielding to the assumptions of positivism. His attitude toward metaphysics is not that of a positivist. Rather, he considers metaphysics as extremely important.

> Men must keep thinking; and the data assumed by psychology just like those assumed by physics and the other natural sciences, must some time be overhauled. The effort to overhaul them clearly and thoroughly is metaphysics; but metaphysics can only perform her task well when...conscious of its great extent. (James, 1890, p.vi)

James' deliberate decision was to throw out non-practicable metaphysical beliefs and proceed cautiously

on to a provisional natural science approach to psychology. The appeal for the development of a better metaphysic than the "irresponsible" sort implied by the idealist "associationist" and "spiritualist" theories became a progressively more explicit part of James' writings (James, 1890, p.vi).

In the Briefer Course James challenges us to seek "deeper thought" than is attainable by his own preliminary position.

> If critics find that this natural-science point of view cuts things too arbitrarily short, they must not blame the book which confines itself to that point of view; rather must they go on themselves to complete it by deeper thought. Incomplete statements are often practically necessary. (James, 1892, p.xxvi)

By 1907, James was even more explicit on this issue of metaphysics and science. Pragmatism, he informs us, is first and foremost a method of settling metaphysical disputes (e.g., Is the world one or many?; Is life fated or free?). If this be taken as the goal, science and metaphysics come much nearer together (James, 1907a, p.32). In particular, James suggests that pragmatism provides the outline for an alternative to the traditional tough minded materialism and soft

minded idealism. The whole function of philosophy ought to be to find out "what definite difference it will make to you or me, at definite instants of our life, if this or that world-formula be the true one" (James, 1907a, p.31).

James had for many years suggested that we take into account the person's "sentiment of rationality" (i.e., our practical nature) as the criterion for judgements about the nature of appropriate solutions to our intellectual needs (see James, 1879, p.12). When considering different philosophies there are no abstract criteria by which to judge good ones from bad. Rather they are the criteria of a concrete individual living in a concrete world. In its helpfulness in life's practical struggles, James suggests, pragmatism has a great advantage both over "positivist empiricism" with its anti-philosophical bias and over "religious rationalism" with its exclusive (mystical) interest in abstract absolutes (James, 1907a, p.43).

(c) Dewey on metaphysics. The preface to Dewey's pre-pragmatist work Psychology (1886) points out that the issue of what the "attitude towards philosophical principles" shall be "may be suppressed, but cannot be avoided" (p.i). Hence even at this early stage, Dewey's attempt was to "unite" the approach of the "older works" (which considered psychology as an extension of "logic, ethics, and metaphysics") with the

other sort of texts which "attempt to leave behind all purely philosophic considerations and confine themselves to the facts of scientific psychology" (pp.i-ii). Psychology seems "deserving of a treatment on its own account" but "the philosophic implications embedded in the very heart of psychology are not got rid of when they are kept out of sight" (pp.i-ii).

Likewise, Dewey's later formulation of a naturalistic metaphysics (under the banner of pragmatism) carried out the program sketched by James (1907). Unlike the positivists, Dewey argued that the adoption of scientific methodology would not entail the end of philosophy but rather a "reconstruction" of philosophy. Such a reconstruction consisted of a movement away from a metaphysical quest for certainty (since there was no ultimate and static categorization of things) and toward a reorientation to the more fruitful task of explaining how categories or theories changed (Sidorsky, 1977, p.xxiii).

For Dewey pragmatism provided a philosophical rationale for the consistent adoption of scientific inquiry, and a methodology for potentially resolving all problematic situations whether they be scientific, ethical or political (Sidorsky, 1977, p.xvi). Dewey's was a comprehensive systematic attempt to complete his conception of naturalism for all realms of human experience. In comparison, the works of Peirce and

James were more programatic in this respect.

To sum up, pragmatism is different from positivism in its more open view of metaphysics. It is also, however, different from both positivism and from metaphysical pluralism in its rejection of representationalist perception and that is the issue to which we now turn.

(2) Pragmatism Is Not Subjectivist

C.W. Morris (1932) described the pragmatic position as opposed to any view which isolates mind from nature (ontological dualism) (Morris, 1932, p.274). Further, Morris stated that an epistemology of "objective relativism" is adopted in which the given is regarded as a genuine part of nature even though dependent in part upon the activity of the organism (Morris, 1932, p.274).

The attempt of the pragmatists to include the active person in the account has led to charges of relativism (anti-realism). Kolakowski (1972) for instance, states that "radical relativism is the natural consequence of this position [pragmatism]" (p.190). The present section however, will argue against that interpretation.

As mentioned earlier (see Chapters 1, 2) the metaphysical pluralist and positivist metatheories

shared an adherence to the representational theory of perception and the inevitably subjective definition of truth implied therein. Pragmatism was a break from that tradition.

(a) Peirce on realism. Peirce recognized that any sort of absolute (eternal) truth is unattainable and that every belief is fallible and open to replacement. He also asserted, however, that currently accepted scientific theory is superior to earlier theories (e.g., the biology of Aristotle or the physics of Newton). "Who would have said, a few years ago, that we could ever know of what substances stars are made" (Peirce, 1878, p.117).

Evidence for Peirce's realism can be found in his "How to Make Our Ideas Clear" (1878):

> [Men of science] may at first obtain different results, but, as each perfects his method... the results will move steadily together toward a destined center. So with all scientific research. Different minds may set out with the most antagonistic views, but the progress of investigation carries them by a force outside of themselves to one and the same conclusion. (Peirce, 1878, pp.115-116; emphasis added)

This is surely a view in clear contrast to

subjectivism and to relativism. Rather, objective understanding can be gained as a result of investigations which are "carried sufficiently far" (Peirce, 1878, p.116). Peirce's belief in cumulative, progressive, but non-absolute knowledge and science was developed further by James and Dewey.

(b) James on epistemology. James assured us that his pragmatism is a realism in two related articles (1907b) and (1909a). In 1907 James left it up to the reader to decide whether the accusations of anti-realism and solipsism "be not impudent slander" (James, 1907b, p.60). But it appears that James was over-optimistic about the evaluative abilities of his readership because by 1909, he was embittered with his critics' lack of ability to seek the "spirit" of the position. Thus in 1909 he emphatically distinguishes pragmatism from other common positions.

Skepticism, positivism and agnosticism declare that real truth is inaccessible to us, and that we must put up with relative or phenomenal truth as its next best substitute. To skepticism this state of affairs is unsatisfactory, while positivism and agnosticism are cheerful about it, and consider phenomenal truth quite sufficient. In contrast to these, pragmatism asks "what does the notion of truth signify ideally?" (James, 1909a, p.62).

James points out that whereas the ordinary

traditional epistemology "contents itself with the vague statement that the ideas must 'correspond' or 'agree'; pragmatism insists on being more concrete [by asking] what such agreement may mean in detail" (James, 1909a, p.66). If such agreement exists, the result is satisfaction in the sense that practical tasks and human needs are able to be met.

James is quick this time, however, to caution explicitly against the subjective interpretation of the pragmatist position where "the conclusion is drawn that truth falls wholly inside of the subject, who may then manufacture it at his pleasure" (James, 1909a, p.66). In contrast to that, James states, "there can be no truth if there is nothing to be true about....That is why...throughout my whole discussion, I remain an epistemological realist" (James, 1909a, p.68).

James' Radical Empiricism differed from the British Empiricist predecessors in that connections between things were <u>given</u> in experience rather than sensations being given; and therefore concrete things are associated and not abstract ideas (James, 1890, p.554). James supported this pragmatic, naturalist realism by putting forward the understanding of mentality as a product of natural selection (Flanagan, 1984, p.23). Beliefs are true of reality (James, 1909a, p.68). They are part of our relation to the world not something existing abstractly. The person

holds up the subjective end of a truth and reality holds up the objective end by being itself present simultaneously (James, 1909a, p.70).

(c) Dewey on epistemology. Dewey's instrumentalist epistemology systematically articulates and develops the earlier pragmatic insights of Peirce. In The Quest for Certainty (1929) Dewey argued that the illusion of certainty has been harmful in past philosophical interpretations of knowledge. As Sidorsky puts it: "Whether certainty is alleged to reside in logical first principles or in incorrigibly given sense data, whether it is asserted as self-evident truth or is the product of arduous effort at illumination, it inevitably distorts the continuing nature of inquiry" (Sidorsky, 1977, p.xliii). The traditional quest for certainty has fostered absolutism in theories of knowledge, morals and politics, whereas a more accurate appreciation of the process of inquiry would allow both fallibility and an openness to the possibility of change.

By 1929, Dewey had cleared up any remaining potential for ambiguity on the point of realism:

> It is not claimed, ...that there is no philosophical problem of the relation of physical science to the things of ordinary experience. It is asserted that the problem in the form in which

> it has chiefly occupied modern philosophy is an artificial one... (Dewey, 1929, p.252; emphasis in original).

Or as pointed out by Morris:

> We never have the task of getting from the realm of 'psychic states' into the world of physical existences, but simply the task of getting from the world as it is partially perceived to the world as it is more largely inferred to be. (Morris, 1932, p.259)

The metaphysical background of Dewey's writing is clearly naturalistic emergent metaphysics, a position only hinted at in James' brand of direct realism. For Dewey the mental emerges from the domain of organic life and is conceived of as one level of interaction between natural events. Experienced events are natural processes which are emergent upon the presence of organisms.

It is clear that the pragmatists have answered the trepidations of the metaphysical pluralist metatheory without falling into the subjectivist trap. As seen in the above the pragmatists accepted the two most significant arguments of metaphysical pluralism: (1) values are important, and (2) absolute knowledge is

impossible. The metaphysical pluralist conclusion was that science (what ever it was) should be kept out of social subject matter (in general) and that psychology itself could never become a science (in particular). The pragmatists (particularly Dewey) recognized both these arguments but without being driven to the concomitant problematic conclusion.

(III) Naturalistic Emergentism in Psychology

Functionalist psychology itself can be understood in light of its contrast with structural and behavioral psychology. The emphasis upon dynamic and adaptive psychological processes is the main distinguishing feature of functionalism's subject matter but its historical lack of formulation as a system is also important.

(A) Functionalism vs. Structuralism

Although structural psychology belonged to the latter half of the nineteenth century, it was an essentially pre-Darwinian enterprise (Lowry, 1971, p.111). The generalized, human, and normal mind was to be revealed in the psychological laboratory for purely academic purposes (Lowry, p.111).

As outlined by Heidbreder (1933), the

functionalist approach diverged from the more formalized structualist psychology of the day in three ways: First, it studied mental processes not as elements entering into a composition, but as activities leading to practical consequences (Heidbreder, 1933, p.203). Second, functionalism was a common sense system. The basic question being: 'What do mental processes accomplish in the world?' Consequently, functionalism joined hands with applied science through Dewey's contributions to educational practice. Third, there was a fundamental difference in both subject-matter and method. As a result, "introspection [of any sort] could no longer be considered the distinctive method of psychology, nor consciousness its special subject-matter..." (Heidbreder, 1933, pp.202-204). The resulting studies in the areas of comparative psychology, motivation, learning, emotion and mental development could not have fit into the structuralist mold.

(1) Nonreductionist Aspects of Early Functionalism

Under functionalism, psychology was necessarily closely related to biology, anatomy and physiology as means of assisting understanding of mental processes (Wilshire, 1971, p.40). Many of the facts of reductionist science could be relied upon but at the

same time the paradoxical situation of reductionism was recognized. James (1892) for instance pointed out that his position was "in one sense... materialism: it puts the Higher at the mercy of the Lower." (p.xxix). But immediately he clarified this by stating that "we do not in the least explain the nature of thought by affirming this dependence, and in that latter sense our proposition is not materialism" (James, 1892, pp.xxix-xxx). These indicate the non-reductive naturalism at the base of James' psychology.

(B) Functionalism vs. Behaviorism

Such an anti-reductionist position was bound to have its detractors. J.B. Watson went on to reduce cognitive processes to bodily movements. That is, thinking as laryngeal movements, personality as sum total of an individual's reactions and tendencies to react etc. (Heidbreder, 1933, p.253). Behaviorism was aimed at improving the human machine and its methods came to be applied in the areas of education, advertising and the industrial work place.

In behaviorism the participation of the organism was seen as something to be excluded form their investigations in the interest of more objective and repeatable data. Consciousness was considered a threat to such pure data and therefore to the

prediction and control which the behaviorists asserted as the true aim of a science of human beings.

(1) Dewey's Critique of the Reflex Arc

Dewey (1896) maintained that the reflex arc concept was not the "unifying principle" for psychology (Dewey, 1896, p.357). He denounced the reflex arc as a survival of Platonic dualism and set out to produce an "explanatory" analysis by suggesting that the stimulus and response are conceptual abstractions rather than concrete distinctions of existence (Dewey, 1896, p.365).

While avoiding both spiritualism and mechanism Dewey had come to the same conclusion as Descartes. A more accurate explanation of human capacity for consciousness required some sort of teleological account. The conscious so called stimulus and response have a "special genesis or motivation and a special end or function" rather than a detached preexistence (Dewey, 1896, p.370).

The importance of Dewey's criticism is that it provided a basis for a critique of behaviorism years before the behaviorist school of psychology had even been established (Piekkola, 1982, p.36). The major paradox in the various forms of subsequent behaviorism is their successive failure to recognize that stimuli

and response are themselves concepts that are developed by way of mental abstraction. The resulting irony is that despite its attempted exclusion of mind from psychology and despite all its supposed materialism, the behaviorist position is founded on conceptualized abstractions from the experientially given (Piekkola, 1982, pp.36-45).

(C) The Unformalized Nature of Functionalism

James' psychology was neither a finished system nor a provider of final conclusions, but a collection of vivid and informed personal reflections on all of the major areas of the emerging new science (Fancher, 1990, p.255). As he put it: "The reader will in vain seek for any closed system in the book....That will perhaps be centuries hence..." (James, 1890, p.vii).

While James (1892) was very realistic about the current state of psychology (e.g., the oft quoted: "This is ...only the hope of a science") he was also very optimistic as to the eventual outcome of that hope. "The Galileo and the Lavoisier of psychology will be famous men indeed when they come, as come they some day surely will... (James, 1892, p.335). His aim was to help facilitate this occurrence by doing his part to provide a mass of descriptive details which he points out as both "incomplete" and also subsumed under

the "revisable" assumptions of natural science (James, 1892, p.335).

In sum, the early functionalism of James and Dewey contributed a great deal to psychology. It broadened the scope to include behavior as well as experience, and extended psychology to a wide range of areas including adjustment, intelligence testing, learning, abnormal, and animal behavior. Likewise, it absorbed the structuralist interest in consciousness but changed the focus from one of content to one of function.

One of the disadvantages of functionalism as a school of psychology, however, was that in its attempt to "reconcile conflicting viewpoints...it ended up non-descript" (Hart, 1984, p.410). Functionalism was a most eclectic school. It attempted to encompass successively many of the progressive aspects of structuralist, behaviorist, and psychoanalytic approaches.

Although functionalism was based on the soundest metatheoretical position that had yet been developed, its links with that basis were implicit and informal. As a result, when functionalism ran up against the reductionism of behaviorist principles, it was unable to provide a formal reply and hence eclecticism was relied upon (e.g., Angell, 1907) as a convenient alternative to total devastation. Functionalism faded as a school not because the principles were rejected as

incorrect, but because it became absorbed within the general fabric of North American psychology (Hart, 1984, p.41).

(IV) Critique of Naturalistic Emergentism

If naturalistic emergentism provided such a strong basis for scientific advance, why hasn't it been embraced by the majority of theorists and held up explicitly as a set of guiding principles for psychological science to follow? In short, why does there still exist resistance to accepting naturalistic emergentist principles?

After the simple facts of historical priority, and the ease of running with the pack (to borrow Heidbreder's term) are discounted, there remain two essential difficulties barring the acceptance of naturalistic emergentist developments. These are: (1) difficulty in understanding dialectical logic, and (2) the past lack of alternatives to the representationalist theory of perception.

(A) Dialectics

This section will outline the dialectical materialist methodology (dialectics) with regard to its relation to the dominant formal logic methodology

present in both positivism and metaphysical pluralism. After some preliminary terminology, the materialist dialectic is distinguished from mechanical materialism and Hegelian idealism.

(1) What is Dialectical Materialism?

Dialectical materialists distance themselves from what they call metaphysics but not from philosophy itself. The term metaphysics has been identified with doctrines of an eternally changeless reality and mystical, idealistic, nonscientific, and non-historical philosophical positions (Somerville, 1967, p.34). In contrast to positivism then, the dialectical materialists believe that philosophy itself will never be rendered obsolete. The more the task of discriminating distinct aspects of the world into different sciences is carried out, the greater becomes the other task of synthesizing and generalizing the obtained results (Somerville, 1967, p.37). 7

Materialist dialectics as a methodology is specifically concerned with the formulation of the general laws of motion and development of nature, human society and thought (Konstantinov, 1974, p.126). In the course of this task it comes into sharp distinction to both mechanistic materialism and the idealist dialectics of Hegel.

(2) Dialectical Methodology and Mechanistic Materialism

The mechanistic materialism of the 17th and 18th century (e.g., Laplace) viewed matter as inert and not moving unless something pushed or pulled it (Conforth, 1953, p.41). Accordingly the materialists, who rejected any supernatural force as a factor influencing natural processes, were compelled to fall back on the mysterious "first impulse" that was supposed to have set matter in motion (Konstantinov, 1974, p.144).

Profiting from scientific achievements in the 18th and 19th centuries which showed that human knowledge and society are in constant change, dialectical materialism (Marx, Engels, Lenin) argued that the static view of matter which separates matter and motion must be rejected in favor of one that accounts for the actual inseparability of matter and motion. This reconceptualization of matter would similarly leave no room for a transcendent force external to nature but would also be in no need of a mystical first impulse since matter itself is considered the source of development.

In order to support this self-motion and self-development view the mechanistic belief in the independence of all things and particles was dropped. Dialectical materialism views the world not as a mixture of ready-made things, but as a complex set of

processes in which all things are continually developing (Conforth, 1953, p.47). Things come into being, change and pass out of being, not as separate individual units but in essential relation and interconnection (Conforth, 1953, p.48).

The explicit static world view of the 17th century has given way to the concept of evolution and the concomitant understanding of a universe in continual progressive development. But a complicating factor is that the concept of development is common to both the idealist and materialist camps.

(3) Materialist and Idealist Dialectics

Just as pragmatism was confused with relativism, the dialectics of Marx and Engels has been confused with the dialectics of Hegel. Of relevance here is the fact that Morgan's Emergent Evolution (1923) did not even mention Marx or Engels and consequently neglected to put the concept of emergent evolution into its historical context.

The founders of materialist dialectics, while acknowledging their debt to Hegel (and Heraclitus), took considerable pains to distinguish the "rational kernel from the mystical shell" of previous dialectics (Selsam & Martel, 1963, p.94).

Hegel made an attempt to offer a dialectical view

of contradictions in thought but his position was permeated with idealism. For him, the process of development was due to an Absolute Idea above and beyond normal corporeal existence. Similarly, the British philosophers while coining the progressive phrase "emergent evolution" claimed that emergence itself was either inexplicable (S. Alexander) or that it was due to activity originating in an immaterial and supplementary God (Morgan) (Conforth, 1953, p.51). Morgan's view more closely "accords with the spirit of Hegelian treatment" (Morgan, 1923, p.297).

Only materialist dialectics has been able to give us a scientific theory of contradictions (Konstantinov, 1974, p.141), by finding a way to explain development in a materialist fashion while simultaneously avoiding mechanism (Conforth, 1953, p.51). Yet the idealist views are still prevalent theoretically. For example, even the so-called "dialectical psychologist" Klaus Riegel used the mechanical view of development as equilibrium instead of the dialectical view (see Tolman, 1981). The equilibrium theories of development regard things as being, at some point, in a state of rest (or balance) and hence free from internal contradictions (Konstantinov, 1974, p.150).

The dialectical view of development, however, is that even in the smallest instance (or interval of time) there are internal objective contradictions; and

to conceptually nullify these is to abstract from the actual state of affairs (Somerville, 1967, pp.58-59).

(4) Formal Logic and Dialectical Logic

The source of this implicit mechanistic theory of development is said to reside in the laws of nature and correct thinking as stated by Aristotle. Somerville (1967) contrasts the Aristotelian view of correct thinking (formal logic) with the dialectical view of correct thinking (dialectical logic). His point is that what is called "Aristotelian logic" is not to be identified with "logic itself" (the logic of things) (Somerville, 1967, pp.42-43).

The Aristotelian laws are as follows: (1) Law of Identity: Each existence is identical with itself; (2) Law of Noncontradiction: Each existence is not different from itself; and (3) Law of Excluded Middle; No existence can be both itself and different form itself.

> What Aristotle sees as the most basic characteristic of existence is static self-identity. His three laws really make the same point from three different angles; positively, by saying that a thing can be only what it is; negatively, by saying that a thing cannot be what

> it is not; and dichotomously, by saying that there are only two alternatives--to be A or not to be A--and they are mutually exclusive. (Somerville, 1967, p.45).

In contrast to the above view, materialist dialectics holds that the basic rules of correct thinking should reflect a universe not in which the static and changeless is at the core but in which change is at the core. The dialectical laws of correct thinking, which subsume the Aristotelian principles, are as follows: (1) Law of Unity and Struggle of Opposites: Every object or process develops into something else, not only because it is affected by some external force but also because the very components out of which it is made force changes (change is built-in to its existence); (2) Law of Transition from Quantitative to Qualitative Change: Development cannot take place without discontinuity; and (3) Law of Negation of Negation: Every new stage, while synthesizing in itself the progressive trends of previous stages, contains within itself the preconditions for further development. In brief, the first law says that everything has a history; the second, that the history is qualitative as well as quantitative; the third, that this kind of history does

not stop (Somerville, 1967, p.67).

These laws are presented as conclusions arrived at on the basis of the factual evidence rather than as a priori principles (Somerville, 1967, p.67). Even though these principles are regarded as universal (found in everything), it is not claimed that the specific laws of each level can be deduced from them. While dialectical logic provides broad methodological guidelines it "does not obviate the necessity of finding, in each new case, the specific cause, the concrete pattern of change" (Somerville, 1967, p.74). Materialist dialectics therefore provides a strategy of approach to phenomena rather than a mere catalogue of contradictions (e.g., cuase and effect, necessity and chance, possibility and reality, essence and appearace). What the specific contradictions of particular objects are and how they are to be resolved are questions for scientists in the various field of knowledge (Konstantinov, 1974, p.146).

(5) Implications of Dialectical Logic

The application of dialectical logic provides support for the emergent evolutionist position and also aids in the solving of the successor theory problem.

(a) Support of emergentism and progressive naturalism. The dialectical materialists have fine-

tuned the argument for emergent evolution to an extent not present in Morgan or any of the functionalist theorists. The problem with functional materialism has been that although in its explicit position it is distinctly opposed to both physicalist materialism and to ontological dualism, it is "not in principle incompatible with idealism" (Dubrovskii, 1987, p.65).

Indeed we saw this compatibility with idealism in Morgan's emergent arguments for deity. While Morgan was correct that some higher emergent level exists beyond the individual human being, he failed to recognize that it was social and not immaterial. The unswerving ontological materialism of materialist dialectics has in contrast allowed them to suggest that the law of quantitative to qualitative transformation is the key to understanding the self-movement of nature, knowledge, and society (Konstantinov, 1974, p.131, p.140).

It should be stressed here then, that the dialectical materialist philosophy seems to provide a more consistent methodological and ontological grounding for progressive naturalism and the emergent view of evolution than was present in functional materialism. This accounts in part for the term 'integrative levels' being used by the dialectical materialists to distance themselves from the idealist 'varieties of emergentism'. Dubrovskii himself went so

far as to point out that "one cannot at the same time acknowledge emergence and emphatically reject dialectics" without being guilty of a logical contradiction (Dubrovskii, 1987, p.68).

(b) Solving the successor theory problem. When dialectical logic is applied to the successor theory problem (see Chapter 1), many of the apparent contradictions treated in the past as logical contradictions are shown to be objective contradictions which belong to the actual process of scientific advance.

Under formal either/or logic, the truth status of any given theory or law was apparently called into question due to the vicissitudinous history of scientific theory (e.g., Kuhn, Koch). A given theory or law does not tend totally to supplant its rivals because there are always issues left open by it and because it is itself eventually superseded by another theory or law. Both positivism and metaphysical pluralism used this lack of total succession or completeness in knowledge as a basis for their arguments that the truth status of a law, or theory would need to be redefined.

We are now, however, in a position to recognize that it was the idealist philosophy of Humean Empiricism (which associated 'real' knowledge with certainty) coupled with an Aristotelian understanding

of Laws (as universal and everlasting) which made the objective contradictions of successive theories appear to be logical contradictions in the first place. The usefulness of applying dialectical logic to this question is that it allows us to see that theoretical progression does not and need not mean formal either/or negation of past attempts as an end point; but rather it does mean dialectical transcending (sublation by negation of negation) which entails a continuing process of improvement without an end-point. Bitsakis (1987) outlines this as follows:

> The two theories in question are epistemically distinct. At the same time, the new one accepts the old as limit or as a special case (this is the case of Galilean and relativistic [Einsteinian] mechanics or of the Newtonian and relativistic theories of gravitation). Scientific becoming is not identical with a series of "paradigms," nor is it a series of "trials and errors." It is the acquisition of objective truths through the mutual determination of theory and practice. (Bitsakis, 1987, p.409)

Given that dialectical logic can help us conceptualize our world more fully by escaping the tendency of reductionism and either/or logic, one

question still remains. Upon what epistemological foundation is it based? It is at this point where we diverge from Bitsakis who while avoiding the use of absolutism by means of a dialectical logic placed within in a realist epistemology, was not clear regarding perception theory.

(B) Perception

Naturalistic emergentism has recently been applied in the area of perception theory. The result has been a resolution to what the analytical philosophers have named the problem of knowledge, "the inability to give a rational account of the all-important connection between consciousness and external reality" (Tolman, 1980, p.11).8

In the pre-evolutionary philosophy, there was no adequate conception of development or the passing of time. Understandably then, the thinkers of the time subscribed to a solo-snapshot view of perception. Perception was that which was given in experience at a particular moment. Since one can not know everything about an object at any one time, our perceptual connection with it was considered to be indirect and limited. That is, if it were not for recourse to the 'Good' in Plato's metaphysic, or to the 'grace of God' as in Descartes' and Kant's metaphysics, then human

knowledge would be doomed to subjectivism (Tolman, 1980, p.8).

With secularization of science from the church, however, came new attempts to understand human perceptual processes. Although many attempts have been made since then to put forward workable criteria of relevance for scientific theory building (e.g., utility, parsimony, simplicity, heuristic value, and impact on the scientific community) the problem of knowledge connected with indirect perception remained a persistent and influential factor in the shaping of philosophical debates and outlines of scientific methodology.

(1) Direct Realism (James, Lenin) and Naive Realism (Scheffler, Cunningham)

What has always been either missing or ignored within the Idealist mode of thought, is the recognition that indicators of veridicality between the thing as perceived and the object of study, are in fact meaningless without the additional postulate of direct access to those indicators. This type of access is disallowed by the indirect realist position. Such access was in fact adopted only in a programatic fashion by the direct realism of James, Dewey, and Lenin. Being able only to support their direct realism with common sense, pragmatic, and general evolutionary arguments,

they were unable to provide a sufficient outline of that direct contact.

The later efforts of Scheffler (1967) and Cunningham (1973) to provide an objective foundation for science also fell somewhat short of the mark. Being aware of the historical implications of both positivism and the anti-objectivist movements allowed them to at least strive for some means of gaining a middle ground. In the end, however, neither Scheffler nor Cunningham could circumvent the label of naive realism.

Scheffler held that although objectivity was possible no direct access to the object of study was necessary (Scheffler, 1967, pp.122-123). Thus he opted for a two-tiered Standard View of Science where proponents of two different theories have recourse to the common "rubric" of observational language. But this attempted solution only pushed back the problem and the presence of naive realism potentially reduces the argument to dogmatism.

As if to recognize something wrong in Scheffler's end-point, Cunningham went one step farther by at least accepting as a "basic assumption" the "correspondence" theory of truth (Cunningham, 1973, p.4). "Where a reliable science of society...will be one that reaches conclusions which are true to the extent that properties attributed to a society are....properties which that society does have" (Cunningham, 1973, p.4). Implied in

Cunningham's position was an adherence to the Leninist view of practice as the criterion for truth (see Goldstick, 1980).

What is missing in all these arguments is a supportive theory of direct perception. Consequently they lacked the force by which to drive the reality of objectivity home in other than practical terms. Up until recently, the best one could hope for was an argument that was epistemologically inadequate but not unwarranted. This all changed with Gibson's introduction of the Ecological Theory of direct perception.

(2) Argument from Direct Perception

Direct perception is the final missing epistemological link which the above objectivist theorists were missing. Rather than the usually held self-refuting indirect realism or the progressive but vulnerable direct realism, direct access to the indicators of veridicality is allowed more consistently by the adoption of a explicitly outlined direct perception.

Gibson's direct perception was a movement away from previous sensation based theory, toward an information based understanding of perception. Direct perception is opposed to both traditional empiricist and nativist

theories of perception, because both previous views assumed that perception involved an enrichment process (Lombardo, 1987, p.87). Instead of postulating that the brain constructs information from the input of the sensory nerve, Gibson proposed that the centers of the nervous system, including the brain, are transparent to structured ambient light from the environment. "The brain is relieved of the necessity of constructing such information by any process--innate rational powers (theoretical nativism), the storehouse of memory (empiricism), or form-fields (Gestalt theory)" (Gibson, 1966, p.267).

(a) The meaning of direct. The direct in direct perception, means simply that the traditional conception of sensation (as a segment of a sequence which goes between the object and the accomplishment of a perception) is thrown out. Instead, sensations (conscious awareness of stimulation of sensory organs) are considered as "incidental", and "not essential" to the process of information-pick up (Gibson, 1966, p.56; 1979, pp.54-55, p.246). The sensations are to be reinterpreted as auxiliary to the process of perception itself. Thus the main bastion for arguing that the causal process of perception occludes the perceiver from direct contact with the world is demolished. In its place, Gibson provided a novel description of the causal process, previously unknown in perception theory.

(c) Perceptual systems. Gibson (1966) distinguished between the level of analysis applicable to stimulus energy and stimulus information respectively. The active perceptual systems are contrasted with passive receptors upon which they rely (in a causally contingent manner) but to which they are not reducible. Perceptual systems yield an awareness of objects, an awareness that does not necessarily include any awareness of the receptors stimulated (see Reed & Jones, 1982, p.375). The receptors are threshold exhibiting units functioning at the physical, chemical, and biological levels of existence. The perceptual systems, which show greater plasticity, function at the psychological-ecological level. As Gibson points out:

> One sees the environment not with the eyes but with the eyes-in-the-head-on-the-body-resting-on-the-ground....The perceptual capacities of the organism do not lie in discrete anatomical parts of the body, but lie in systems with nested functions. (Gibson, 1979, p.205)

Gibson's 1966 work exhibited clearly the nested ontological hierarchy in such systems (Gibson, 1966, p.42). Perception is not reducible to, nor explainable simply by, a combination of lower firings because it exhibits distinct emergent properties. The receptors

carry the external structure of the stimulus flux, but it is stimulus information that is picked-up by the perceptual systems. The simple stimulation of receptors is necessary but not sufficient for perception to take place (Gibson, 1966; 1979). Later in Bransford & Shaw, the receptor irritability and neural activity was conceived of as a "medium" that is "transparent" to structured invariances from external objects and events (Shaw & Bransford, 1977, p.30).

(3) Significance of Direct Perception

Gibson's solution to the problem of knowledge, solves many of the long-standing questions posed by the largely hegemonic Indirect (Representationalist) theory of perception, which had been the starting place of the analytical philosophers. "An important innovation of this theory was to re-define perception as the pick-up of information over time. The inclusion of time and motion is significant. It goes a long way toward freeing us of the photography metaphor that has so generously supported representationalism" (Tolman, 1986b, p.13). As Tolman puts it, representationalism has from the beginning made a great deal out of mistaken perceptions. The commonness of mistakes has customarily been taken as evidence that perception is an active, subjective process of construction. But Gibson demonstrates that

it was not the perception that was mistaken, it was the judgement about the content of that perception. It is not the object which is constructed as the Idealists claim, it is our judgement about the object.

Direct perception provides a direct (but non-absolute) link with the level of objects in the world. These objects when investigated perceptually by the active inquiring human being, will (in Gibson's terms), afford relevant "variances and invariances" which are picked up directly in the form of stimulus information (see Gibson, 1979).

(a) Improvement on the Standard View of Science. These facts regarding the directness of the perceptual process, provide a cogent basal link to the Standard View of Science (observation of the object) which can now be understood as being a three-tiered structure (see Figure 4). Thus an improvement on the traditional Standard View (see Chapter 1) is accomplished.

With enough information of the correct type, one can in principle come to objective opinions about one's subject matter. That is, one could choose between two separate theories by virtue of their correspondence with the object as exemplified through experimentation and demonstration.

This is not an absolute objectivity, we never know everything about the object of study, but rather we are always getting to know more via interaction with the

object of study. Our knowledge about psychology, although often objective, is always relative to that which we do not yet know. This dialectical nature of knowledge is exemplified in the fact that whenever we answer a given question, this leads to other questions. Equally, some of the apparent logical contradictions between theories may in fact signal objective contradictions in the subject matter itself.

It is the combination of both materialist dialectics and direct perception which produces a non-dogmatic solution to the question of the possibility of objectivity in science. On this account, when there is a difference in theoretical opinion, this does not consist of the two theorists constructing an object of study differently, rather, the differences in opinion come from differences of interpretation or judgement about the nature of the object under investigation. In these differential interpretations there is an amount of adumbration (construction), but this is conceptualization of information <u>from</u> the object and not construction <u>of</u> the object itself. This is the foundation which best provides us with the possibility of a non-dogmatic, systematic understanding of the movement from facts to theory, and from theory to theory. The argument for its potential to unify psychological science will be taken up in Part II of this thesis (see Chapter 5).

Part II

SOLVING THE CRISIS OF RELEVANCE IN PSYCHOLOGY

In Part I it was concluded that the classical metatheoretical alternatives of positivism and metaphysical pluralism are untenable and that the common, problematic assumptions/conclusions of both these extremes are overcome by naturalistic emergentism. The question posed in Part II is how these classical metatheories have been translated into providing the more current theoretical platforms for unification in psychology (see Table 6).

Psychologists have assumed that the empirical method, which deals with data and the testing of hypotheses, is adequate to provide selection between competing theories. It now appears that empirical methodology is not adequate all by itself. There are theoretical questions that need to be dealt with but for which we lack the methodology. A theoretical methodology is needed to guide and complement empirical methodology. We need a methodology for theory building and selection that is just as rigorous and objective as our empirical methodology.

The positions of Royce, Staats, and Tolman are compared in order to decide which provides the best outline of the sort of empirical and theoretical methodology necessary for obtaining a unified science

of psychology (see Table 6). Each of the three positions considered in Part II addresses the problem of the relevance of psychological theories to varying degrees. In particular these positions contrast with respect to their use of the terms unification and pluralism. By comparing these attempts a clear distinction can be made among unity of science, unity of subject matter, and unification of theories and an outline for theoretical progress in psychology is established.

Chapter Four

AN EVALUATION OF THE METATHEORETICAL CONSTRUCTIVIST AND UNIFIED POSITIVIST PROGRAMS FOR UNIFYING PSYCHOLOGY

This chapter considers the attempts of Joseph Royce and Arthur Staats to produce a system conducive to the unification of psychology. While these approaches have not succeeded in their task, they are worth understanding because they have set the stage for more recent and more promising developments.

Royce's early, middle, and late positions suffer from a metaphysical pluralist base. Consequently his position remained pessimistic regarding the progress already made in the area of basic philosophical issues and in the outline of a progressive theoretical assessment methodology. Similarly, although Staats seeks a methodological middle ground between the past positivist and metaphysical pluralist metatheories, he tends to avoid basic philosophical issues and therefore remains susceptible to the influence of the two past metatheoretical extremes.

(I) Joseph Royce on Unification

This section outlines Royce's views on Unification as laid out in three articles (Royce, 1970, 1978, 1988).

(A) Royce's Call to Unify Psychology (The Early View)

Joseph R. Royce acting as the editor of Toward Unification in Psychology (1970) briefly reviewed the state of theoretical psychology and suggested that contemporary psychology was suffering from a "super-empiricism".9 He stated that psychology should become more open to rational and metaphorical modes of knowing (Royce, 1970, p.17) and that "man needs to invoke all the available ways of knowing for the best possible grasp of his world..." (Royce, 1970, p.13).

To Royce, rationalism (primarily dependent upon logical consistency), empiricism (the extent to which we perceive correctly) and metaphorism (dependent upon symbolic and intuitive cognitions) are all equally legitimate but different criteria for knowing. Since the nature of the behavioral beast is "more like the weather than the motion of billiard balls", we need to "adapt our thinking and methodology" (Royce, 1970, p.22).

Thus, Royce (1970) made some preliminary prescriptions for action:

> (a) That we inductively generate, from within the storehouse of existing psychological data, an inventory of basic concepts, functional relationships, and principles of varying degrees

> of generality. (b) That we make greater use of multivariate methods...on the grounds that they are, in general, more appropriate than... bivariate analysis. (c) That we continue to try out a variety of conceptual schemes...in terms of their relevance to their particular area of psychological study (e.g., appropriateness of certain physical and mathematical models). (d) That we focus more on area rather than general theories of behaviour, with subsequent extensions of well-established area theories and linkages between areas as a basis for moving toward the eventual unification of psychology (Royce, 1970, pp. 34-35; emphasis added).

(1) Suggestions for Area Theories

Royce's basic position in 1970 was that the "hope of moving directly to a general behavioural theory without prior establishment of strong area theories seems to be unrealistic" (Royce, 1970, pp.26-27). He proposed that we analyze the various "area" theories (e.g., motivation, psychopathology, perception, learning) with regard to the characteristic mode of observation, degree of formalization, and adequacy of conceptual-observational fit. His preliminary findings using these criteria were that the "optimal results

occur where there is either high empiricism (i.e., sticking close to facts), as in the case of Skinner, or relevant high formalism (i.e., ...appropriate mathematics), as in the case of test...and learning theory,...and when the theorist confines himself to a relatively limited domain..." (Royce, 1970, p.22).

In this early position, Royce seemed to be pushing for a bottom up approach to theory unification. One would first move from a "conclusive theory of colour vision" to a theory of perception, and then would "inter-relate" that "with the theory that holds in learning, evolving a theory of perceptual learning" (Royce, 1970, p.49).

But one caution regarding this early position should be sounded immediately. In his use of the terms "rationalism, empiricism, and metaphorism" Royce has equated the domain of epistemology with that of methodology. Although methodology proper (rationalism, empiricism, metaphorism) has connections to epistemology proper (realism, anti-realism), the two terms should not be confounded (see Appendix 1). The fact that Royce equated the two is a symptom of a superficial (surface trait) treatment of the problem of disunity. Royce (1970) appeared to be looking for common characteristics of successful theories, without dealing with the underlying reasons for such success.

(2) Comments and Critics

The peer comments to Royce's early paper also reflect concern that Royce was unclear in his use of central terms. MacLeod noted that Royce's attempt "may or may not be a noble aspiration, depending on what we mean by unification" (see Royce, 1970, p.38). If unity means we seek something that is common to all psychologists, then it is a "silly quest" (p.38). The point here is that a convincing and practical approach to the problem must provide an adequately sound definition of its central terminology.

The closest Royce (1970) came to defining the term unification, as he used it, was when he said, "I want to first look at what...we are studying, I want to look at the total panorama of what is there, then I want to try to unify" (p.50). In response to this comment, an unidentified graduate student auditor replied: "I don't think the meaning of unification is at all clear, and until we understand what we mean, we cannot clearly lay out the different strategies of unification to see what we are trying to achieve" (see Royce, 1970, p.50).

It was left for the conference commentary to fill in the gaps that remained unaddressed by Royce's review article. Bertalanffy stated that not even physics has a thoroughly unified grand theory, but that there are "unifying concepts and principles" (i.e., atomic theory, molecular biology, evolution), that function to

"help bring different phenomena and special theories into a general framework..." (see Royce, 1970, p.41).

Royce's paper also failed to convince the critics of unification who were present at the conference. Krech's comment is an example. "My guess is that he who would seek to unify psychology is doomed to the use of the empty concept. There does not now exist a set of 'filled concepts' which can do an 'i.e.' job of integrating the full range (or any significant portion thereof) of what passes for psychological data" (Royce, 1970, p.43). Krech defiantly asks the challenging question: "Why seek to unify the potpourri of things now called 'psychology'?" (Royce, 1970, p.43).

Unfortunately, that question remains largely unanswered by Royce in any of his subsequent articles. The progressive reply to Krech's question is that the task is to discover what the objective relations are, not only in terms of how psychology relates to sociology (unity of sciences) but also in terms of how various areas of psychology relate to each other (unity of a science) and also how given theories might be unified (unification of theories). Royce has not made these distinctions clear even in his later articles. One must conclude that although Royce did have a noble ambition, he also lacked the adequate conceptual tools to fulfill it.10

(3) Royce's Response to Gibson

Evidence of Royce's lack of adequate conceptual tools can be seen in his comments to an article by J.J. Gibson (1972). Gibson's article had outlined his direct theory of perception. One can only count the exchange as an opportunity lost, for Royce clearly misunderstood and consequently rejected Gibson's approach.

> Professor Gibson claims his theory provides support for direct (or naive) realism because the pickup of ecological invariants allows the subject to "know" the "real object." The interpretation I am putting forth is probably more consistent with a critical or constructive realism wherein the subject can be said to be dealing with reality because of the invariance of what is perceived. The point here is that reality comes from invariance, not from veridicality in the traditional sense (Royce, In Gibson, 1972, p.237, emphasis in original).

To that, Gibson replied:

> I don't know what "critical" or "constructive" realism would be. But I am convinced that

> invariance comes from reality, not the other way round. Invariance in the ambient optic array over time is not constructed or deduced; it is there to be discovered (Gibson, 1972, p.239, emphasis added).

Here, Gibson has drawn out the idealist foundation of Royce's implicit epistemological position. Royce's failure to address and deal sufficiently with these underlying epistemological issues is the key to his next set of views on unification.

(B) Theoretical Constructivism (Royce's Middle View)

By 1978, Royce had embraced theoretical constructivism as the metatheory by which to deal with the problem of theory advancement in psychology. There he attempted to outline the optimal strategy for the construction of "programatic", "descriptive", and "explanatory" types of psychological theory.

> The argument is that theory-laden constructivism is the most adequate metatheory available for science, and that this state of affairs has implications for psychology... (Royce, 1978, p.261)

Royce informs us that this metatheory arose from the writings of Polanyi, Feyerabend, Habermas, Hanson, Kuhn, and others (Royce, 1978, p.261). The "claims" of that philosophy as Royce saw them were: (1) All observations are theory-laden and thus might have different meanings if embedded in different theoretical contexts; (2) Basic concepts are constructed by the investigator; (3) We choose between theories primarily on theoretical grounds (exhaustiveness, reliability, fruitfulness, etc.), and only secondarily on empirical grounds; and (4) Observation is not the arbiter between competing theories since no theory has ever been dropped because of a crucial experiment or inadequate data (Royce, 1978, p.261).

Paradoxically, after aligning his own position with those claims (which have in the present thesis been identified with metaphysical pluralism rather than any sort of unificationism), Royce goes on to ask: "How can psychology best move in the direction of... formalization and unification?" (Royce, 1978, p.261). Here is the basic contradiction in Royce's position. Although he took theoretical unification for his goal, he was de facto a metaphysical pluralist.

(1) Royce on Theoretical Power

For Royce (1978), the "critical" aspect of theory

is its capacity to account for observables, its "theoretical power" (p.262). Royce postulates a continuum of theories ranging from weak to strong and in general, his message is that more precise concepts will allow a better account of observables. The specific meaning of his message, however, is again ambiguous because (as he indicates in a footnote) the term "power" is used synonymously with "strength, maturity, valid, and viable" (Royce, 1978, p.263). To this qualification, Royce attaches the immediate disclaimer that "it is possible that a more penetrating analysis will eventually reveal that these terms encompass more than one concept" (Royce, 1978, p.263).

This paradoxical set of assumptions forced Royce to ignore issues pertaining to the consistency of his position on unification. The following is the main example.

> The elaboration of a theory...raises a complex of metatheoretic questions which include logical, epistemological, linguistic, and ontological issues. However, let us bypass most of these issues by confining ourselves to the cognitive status of theories (Royce, 1978, p.263; emphasis added).

Such a side-step itself (considering only

cognitive status) is convenient for Royce, but the question we should ask here is: Should we let Royce side-step these important issues? Ironically, Royce makes the claim (four pages later) that such issues do have "implications for the construction of theory" (Royce, 1978, p.267). As shown in Chapter 2 of the present thesis, such logical contradictions are inherent to any position which has metaphysical pluralism as its basis.

(2) Royce's View on Theory Assessment

Royce (1978) postulated that the "linguistic and maturity characteristics [of theories] constitute limiting constraints on what can be accomplished via conceptual analysis" (Royce, 1978, p.268). He concludes that different amounts of conceptual analysis are needed depending upon the maturity of the theory.

Royce suggests that only "minimal" conceptual analysis should be allotted to ordinary language theory (this being the interest of philosophers). Comparably little analysis is also warranted by programatic theories (e.g., the complex areas of motivation and psychopathology) which are hampered by a "lack of adequate taxonomy" (Royce, 1978, p.269). The task of programatic theory is simply one of establishing the "viability of a few basic concepts" and of elaborating

how several approaches "complement each other..." (Royce, 1978, p.269).

According to Royce, only relatively "mature" theory areas (sensation, perception, learning, individual differences and biopsychology) deserve an "extended conceptual analysis" (Royce, 1978, p.270). This would "eventually improve the chances of developing explanatory theory..." (Royce, 1978, p.270). But Royce qualifies this statement by suggesting that: (1) There are "no such analyses in the areas of sensation, perception, and biopsychology"; and (2) It is "unlikely that psychology is ready for this kind of theory" (Royce, 1978, pp.270-271).

Royce (1978) made two other notable points. First, the importance of the development of programatic theory should not be underestimated since "the establishment of any degree of order in the chaos of raw empiricism constitutes a significant theoretical advance" and may itself provide direction for further study (Royce, 1978, p.272). Second, "[a] major point...is that the various areas of psychology are in different stages of development. For example, areas such as sensation, perception, learning, and biopsychology can be characterized as experimental and semi-explanatory, whereas areas such as personality and social are characterized as correlational-descriptive (Royce, 1970)" (Royce, 1978, p.260).

(3) Royce's Initial Projections for Theory Analysis

In his consideration of the indeterminacy problem Royce adopted a combination of Popperian and Kantian ideas, eventually suggesting what he called a "constructive dialectic" to provide unity in psychology (Royce, 1978, p.273). "In this view the term dialectic has to do with maintaining the tension between viable alternatives, and the term constructive refers to 'invented' or 'created' (i.e., not 'discovered') theories" (Royce, 1978, p.273).

The task, as he defined it, was to "sort out the complementary roles of the several 'limited' theories" (Royce, 1978, pp.273-274). Paradoxically, Royce postulated a better outcome in this task for programatic than for more mature theory areas. In the case of programatic theory, the confrontation between viable alternatives would result in: (a) the selective elimination of most of the candidates, (b) the selective retention of a relatively small number of viable alternatives, and (c) the retained alternatives constituting a highly complementary mosaic with a relatively small residue of unresolved conflict. For the more mature descriptive (semi-explanatory) types of theory, he suggested that: (a) the retained alternatives would not constitute a highly complementary mosaic, and (b) there would be a

relatively large residue of unresolved conflicts because more powerful theories typically "press in the direction of making ontological claims" (Royce, 1978, p.274).

The discouraging conclusion to his (1978) paper was that even if psychology evolves its share of "theoretically mature" theories, it is highly probable that conceptual anomalies would persist. According to Royce, just as the incompatibility of particle and quantum theory remains in physics, and the question of how life emerged from inorganic matter remains in biology, antinomies such as the mind-body relation and the determinism vs. nondeterminism of human behavior will remain for psychology (Royce, 1978, p.274).

The quick reply to Royce's above closing argument is that the first issue (in physics) will be solved in time, the second issue (in biology) is on its way to being solved, and the third and fourth issues (in psychology) have also already been solved. Royce vastly underestimated the progress already made in the underlying philosophical questions of science and as a consequence, ends up projecting a continuing state of theoretical pluralism in psychological science.

His acceptance of a Kant-like strong theory-laden view, and his Popper-like attempted side-step of the successor theory problem, are his ruination. Although Royce had set out to investigate the best way

toward unification, his (1978) work is de facto metaphysical pluralist.

(C) Royce's Final Call For a Method of Theory Appraisal

In his most recent article on the subject, Royce (1988) suggests that the task of unification in psychology is "heavily dependent upon a valid method of theory appraisal" (p.59). Royce claims that the major problem is the existence of a "large number of theories in each of [the] major domains" (p.59). This situation could "only be resolved if a method [of theory appraisal] can be developed which is equally adequate for the full range of theories, thereby rendering them commensurate and amenable to critical analysis and comparison" (Royce, 1988. p.60).

A very important point to note is that Royce (1988) distinguishes between the "context of justification" involving the scientific evaluation of explanatory theories, and the "context of discovery" involving the preliminary evaluation of alternative theories as to their potential as a source of further efforts (pp.62-63). The past philosophies of science have, according to Royce, failed to distinguish between the types of theory and consequently theory appraisal has been elaborated within the "philosophy of justification" focussing attention on supporting the

validation of strong theory (Royce, 1988, p.60). But, as Royce points out, strong theory evolved from weak theory in a continuum including programatic, descriptive, and explanatory forms. In the remaining two and a half pages of his article, Royce attempts to develop a method of theory appraisal "so that the relative strength of a theory can be ascertained" (Royce, 1988, p.61).

(1) Royce's Theory Appraisal Criteria

The main point of the article was that different criteria of appraisal are appropriate for each kind of theory. The "overall criteria" for each class can be stated as "explanatory power for developed theory and heuristic power for undeveloped theory" (Royce, 1988, p.61). The criteria of strength for advanced (mature) theory are: empirical testability, degree of formal fit, scope, parsimony, cohesiveness, and explicitness of conceptualization. The assessment dimensions for programatic (immature) theory, are "the number of empirical laws contained in the theory, and the further research the theory provokes..." (Royce, 1988, p.61).

In order to put these differential criteria into relation with each other, Royce suggests we recognize that science is made up of a three stage process: a discovery phase, a pursuit phase, and a justification

phase. From there Royce ends on a positive note but once again it is qualified.

> This means that we can anticipate that the philosophers will eventually provide us with the same kind of deep and penetrating analyses of the discovery aspect as we have already received for the justification aspect....however, it will be two or three decades before they come up with insights that might be of help in furthering the advancement of theory construction in psychology" (Royce, 1988, p.63; emphasis added).

In summary, the final call from Royce was for a methodology of theoretical research. It will be the task of the next chapter to show that Royce had again underestimated the progress that has already been made in such an endeavor. A major reanalysis of the relationship between the empirical and theoretical levels of science has already taken place in the work of Ilyenkov (a philosopher of science) and Davydov (a psychologist). Before moving on to that, however, we must outline the work of Arthur Staats which is related in a complementary way to that of Royce.

(II) Arthur Staats and Uninomic Psychology

Staats' Psychology's Crisis of Disunity (1983) aimed at describing the crisis and the changes that must be made in our science to resolve it (Staats, p.12).11 His interests and goals thus have much in common with both Royce and the present thesis. It will be argued here, however, that his "unified positivism" lacks sufficient answers to the basic questions discussed in Part I of this thesis and is therefore vulnerable to the two classical metatheoretical extremes of positivism and metaphysical pluralism. In short, although the goal of Staats' system is admirable, it fails to defend itself against the charge of dogmatism.

The reader should be aware that Staats has attempted to circumvent this lack of philosophical grounding by stating that the analysis of "implicit assumptions" is an important part, but not the "singular task" of a uninomic psychology (Staats, 1987a, p.40). The other two tasks, as he sees them, are the building of unity in pieces, and the construction of general or grand theories (Staats, 1983). These three major concerns of his approach will be addressed in the remainder of this chapter.

(A) The Basic Assumptions of Uninomic Psychology

Staats' position has been consistent across his various works on unification issues. His main argument is that "what psychologists should do to advance their science is not well indicated by the traditional forms of philosophy of science" (Staats, 1983, p.4).

According to Staats, psychology has inherited the skills of the general scientific method yet is still a "primitive science" with respect to its ability to interrelate meaningfully what it produces (Staats, 1987, p.298). The subject matter has expanded enormously since the late 20's and "each expansion has made its disunity worse" (Staats, 1987, p.299). Although psychology has been prolific in its output, it has also suffered from an "aimless lack of direction" (Staats, 1988, p.14).

(1) Staats' Search for a Middle Ground

Staats is searching for a middle-ground between the two metatheoretical extremes (positivism and metaphysical pluralism). He proposes that "psychology needs an indigenous philosophy of science with a methodology of theory construction..." (Staats, 1988b, p.13). "Simple criticism of logical positivism does not provide a positive philosophical position upon which to base the activities of science. Moreover,

retreat to subjectivist doctrines,...cannot provide a productive foundation for our science and profession of psychology" (Staats, 1987, p.301).

Staats himself recognizes two opposing sets of assumptions in philosophy of science, logical positivism and social constructivism, and suggests that "perhaps the uninomic perspective can provide" a foundation "which looks for truth in both positions but which will be richer than either by itself..." (Staats, 1987a, p.40).

By aiming at a middle-ground the uninomic approach contains many of the commonsense arguments with which we would like to agree. It overtly rejects the unity of science through reductionism that was part of the positivist movement while at the same time cautioning that "the rejection of the logical positivist view of unity of science" should not extend to a rejection of the "description of sciences as progressing towards unity" (Staats, 1983, p.77, p.89, p.312).

Uninomic psychology is also said to reject the "glorifying of observations" which was the central pillar of logical positivism (Staats, 1987, p.301). Rather, it claims to recognize an "interaction of theory and fact" (Staats, 1987, p.301). Likewise, Staats points out that it "is not experimentation itself that is bad, as some subjectivist philosophies suggest...it is experimentation for its own sake

without regard to producing knowledge that links with other knowledge" (Staats, 1987, p.310). Given that the present thesis has already agreed with much of this, there are two questions that we must bear in mind: (1) How well does Staats support his position?; and (2) What is the effect of that support on his view of unification?

(2) Staats' Broad Suggestions

Unified positivism attempts to provide a philosophy which shows how the various methods, phenomena, theories, and sciences are, or can be, unified. For example, Staats points out that the enforcement of citation procedures and standardization of research and theoretical reviews would function to broaden our collective criteria of "originality" (Staats, 1983, p.260). That is, to move from only considering "novel" ideas as original toward including clarification, organization, integration, and deletion of information within the realm of originality (Staats, 1983, p.260). The point he makes is that we need to know the intellectual-historical foundations of our current ideas as well as the position of the opposing view, if we are to make an accurate assessment of a given field and to recognize the underlying relationships through the "disguise" of superficial

differences (Staats, 1983, p.260).

(B) Unity in Pieces

Staats also proposes a bridging of phenomena by means of searching out broad underlying principles that cut across subject areas. In accordance with this, Staats provides a pseudo-ontologically based argument (see Appendix 1) for the origin of the various fields of psychology.

> The different fields of psychology have been founded, basically, because groups of psychologists have ascertained that there are phenomena to be studied in the field that they considered important, phenomena that were not being adequately studied in already established fields of the science (Staats, 1983, p.319; emphasis added).

For Staats, however, unity of theories aims at putting the knowledge into "one language system" and gaining a body of agreement for general "consentual knowledge" (Staats, 1987, p.307). It should be noted here that this is the same criterion of truth for which positivism was criticized as insufficient (see Chapter 1).

(1) Staats' Systematic Eclecticism

Staats' recommendations toward the resolution of schisms in psychology (e.g., nature vs. nurture, consciousness vs. behavior as a subject matter, elementalism vs. wholism) is to come up with a theoretical analysis that can account for knowledge on both sides (see Staats, 1987, p.309; 1988, p.20). According to Staats, this "does not mean a vaguely stated eclecticism, but a closely reasoned, heuristic theory construction from which the methods and research of each side can be derived and new research can be stimulated" (Staats, 1988, p.21). Staats therefore attempts to distance himself from the "eclecticists" who present a "potpourri of knowledge" in their general psychology texts (Staats, 1983, p.293). The chapters in such books "simply represent summaries of...the different fields as the fields exist", without any attempt at relating them.

While Staats correctly asserts that unified positivism is not a vague eclecticism, the approach lacks the founding theoretical tools to avoid the charge of systematic eclecticism. Two examples should be sufficient to substantiate this charge. The first is Staats' own indication that unified positivism has not solved the subject-object schism (Staats, 1983, p.284). As has been shown in Part I of the present

thesis, if this schism is not solved one can not talk in a cogent manner about objectivism in science. A non-dogmatic epistemology is clearly missing in Staats' approach which instead maintains a naive realist avoidance of such issues.

A second example of Staats' systematic eclecticism is his set of recommendations for unifying personality theory with behaviorist theories. He suggests that we introduce the concept of personality into behaviorism by defining personality "according to methodology acceptable to behaviorism, but which also [recognizes] the causative role of personality" (Staats, 1983, p.291). Staats claims that "the concept of behavioral repertoires provides a basis for ...joining the knowledge of behavioral psychology with that of...personality theory" (Staats, 1983, p.324).

While one might call this attempt by Staats a programatic step in the right direction, it is not itself a unified solution. Using the theoretical tools implied by uninomic psychology Staats has been unable to resolve the conflicting assumptions (logical contradictions) between personality theory and behaviorist theory in any other than a common sense manner. The suggestion of behavioral repertoires lacks a sufficient appreciation of the transformational qualities that such unifying theories would need to possess. It is one thing to put forward the admonition

that personality theory and behaviorism must come closer together (that some combination of theory and methods is necessary); it is quite another thing to support the unification of the progressive aspects of each with an unimpeachable foundation.

Despite these shortcomings, it is very important to note that there is a positive side to Staats' adherence to a systematic eclecticism. Because of it, Staats is more precise and optimistic than was Royce on the ultimate relation between the various methods and the eventual outcome of efforts toward unity in psychology. To this end Staats claims that: "A unified methodological development will involve showing the contributions of the various methods to the unified knowledge pool" (Staats, 1983, p.343). "It is not enough that we can produce experimental findings systematically. We have to be concerned with how the product fits into a structure..." (Staats, 1983, p.340).

Thus for Staats (in contrast to Royce) the strategy of building unity of psychological science from below "does not exhaust the possibilities" (Staats, 1983, p.299). He also struggles to put forward a "methodology for constructing larger, unified theories in psychology" (Staats, 1983, p.299).

(C) Grand Unified Theory (The Top Down Approach)

In his acceptance of the possibility of grand theory in psychology, Staats is in clear contrast to Royce's (1970) position that such theory constitutes a desirable yet unattainable goal. We should look carefully therefore at what Staats means by grand theory and at what criterion for success he attaches to their analysis.

Fortunately, Staats (1983) summarized his approach quite succinctly:

> ...it combines...(1) the concept of classical hierarchical theory in which certain parts of the theory are basic to other parts, (2) the concept of interlevel theory in which the levels are the major fields of psychology, and (3) the understanding of the preparadigmatic nature of psychological knowledge... (Staats, 1983, pp.317-318).

(1) Hierarchical Theory

With regard to the hierarchical aspects of theory, Staats argued that no theory is perfect and that parts of it may be better or more fundamental than others. "The theorist must separate the junk [in the theory or

field of psychology] from that ....which has significance for a general unified theory" (Staats, 1983, p.327).

It should be noted here that this first assertion is merely an a priori assumption of unificationism. The real question should be: By what method should these "significant" portions of theory be selected? That is the intended consideration of Staats' second point that we "might be justified to look for a hierarchical relationship between the separate fields of psychology" (Staats, 1983, p.320).

(2) Multilevelled Theory (Grand Unified Theory)

When Staats puts forward the argument that some sort of "multilevelled theory" is the only way to capture the complexity of psychology's subject-matter, his goal is to avoid the "exclusion" of subject-matter that was present in the historic structuralist and behaviorist systems of psychology (Staats, 1983, p.319). To this end, he argues that a unifying general theory "will have to be hierarchical and systematic", but "will not be stated in formal logic and mathematics" since the "material to be handled is too complex" (Staats, 1983, p.328).

(a) Grand theory as skeleton theory. This amiable position does, however, have its idiosyncrasies.

Staats' view is that in constructing the unified theory, the "overly complex fund of knowledge [has] to be boiled down to a skeleton theory" (Staats, 1983, p.328). He claims that: (1) These "skeleton theories", are a "better vehicle" for studying an area (e.g., animal learning) than any of the "speciality theories"; and (2) That "greater detail is actually a handicap in the unified-theory task" (Staats, 1983, p.329; emphasis added).

On the other hand, a unified theory may be rejected by the population of psychologists because it is not as detailed as the standard works in the area, but, says Staats, this "detail can be added later", and a "simplified treatment ...nevertheless, can have value that the specialized treatment can not yield" (Staats, 1983, p.329).

(b) Staats' criteria for grand theory. Staats specified the particular meaning of the "value" of grand unified theories quite clearly. A unifying grand theory must: (1) Show its heuristic potentiality for producing empirical products in the various areas to which it is applied; (2) Give specialists in psychology a general meaning to their science; (3) Include the major fields of psychology; and (4) Show the contributions of various methods to the knowledge pool (Staats, 1983, pp.331-334; emphasis added).

(3) Is Psychology Preparadigmatic or Simply Preunified?

The third point in Staats' summary regarding the "preparadigmatic" nature of psychological science deserves extensive treatment since it proves to be the Achilles heel of his position. Despite Staats' intention to identify a progressive middle ground between positivism and metaphysical pluralism (Staats, 1987, p.40) the apparent ontological and epistemological assumptions of unified positivism do not provide an unambiguous and non-dogmatic foundation.

(a) Staats' Kuhnian language and its remedy. Although Staats rejects the relativist roots of the Kuhnian position as "circular", he fails to reject the language of Kuhn's argument and thus views his own task as describing the philosophy of science which fits a "preparadigmatic science" (Staats, 1983, pp.55-59).

A major and serious concomitant (or result) of failing to exclude such language is that in various places Staats seems to be quite timid in the conclusions he draws. A fairly clear instance of this is the disclaimer at end of his (1983) work: "I have written this work not to present a particular theory. My thesis is that psychology is ready for paradigmatic development" (Staats, 1983, p.352). Another instance is where Staats describes his (1986) journal as "open to philosophical works of all persuasions" and on the

same page: "Unified positivism is one such philosophy" (Staats, 1986a, p.12). Taken in isolation such statements might suggest that his approach is just one of many possible alternatives. The real trick, of course, is to show that your position is the best position, and that there is no more plausible alternative!

It is vital to note, therefore, that without loss of meaning we need only talk of 'unified' and 'preunified' science wherever Staats uses the terms "paradigmatic" and "preparadigmatic". Likewise, we need only talk of 'conflict' wherever Staats uses the term "incommensurable". For example, one could change the following important quotation from Staats' book in this manner:

> As will be described ...in the preparadigmatic [preunified] science there is incommensurability [conflict] between theories large and small, between specialized fields of study, between bodies of fact, between apparatus modes, between methods of research and theory construction strategies, and between philosophies of science (Staats, 1983, p.82).

The dropping of such residual subjectivist language (see Chapter 2) would benefit Staats, and any

other unificationists, since it would both stress the desired goal more clearly and preclude many of the possible misinterpretations.

(III) Conclusion

Royce initiated a new push for the unification of psychology. He called attention to the fact that psychology had an "embarrassment of riches", possessing both a plurality of metatheories and a plurality of theories (Royce, 1978, p.264). The goal as he stated it was to move beyond mere metaphor or analogy by identifying some of the relevant theoretical constructs in the domain and ascertaining their theoretical relationships (Royce, 1978, p.273). While we sympathize with that goal, it is clear that Royce was not successful in achieving it.

First, the ambiguousness in usage of the term unification in Royce's various papers tends to work against him. He failed to distinguish clearly between unity of sciences, unity within a science, and unification of theories. The result is a diffuseness of the goal and a lack of consistency in his argumentation. Second, a crucial irony in Royce's position is that although he suggests that we distinguish between different maturity levels in theory, he did not recognize the significant

explanatory power of Gibson's theory of direct perception.

Likewise, there is much in Staats' work that we can agree with, but the progressive aspects cannot be supported by the neo-positivist metatheory upon which they are based. Although he suggests citation and research reviews, and describes many types of unification, he did not place them within a practicable philosophical system.

At the heart of the failure of both Royce's constructivism and Staats' uninomism to reach beyond dogmatic proclamations, is their respective insufficient positions on epistemology. Royce's constructivism openly accepts the non-supportive assumption of indirect perception and Staats' uninomic positivism is supported only by an agnostic version of naive realism.

As we have seen throughout this thesis, the idealist answers to questions such as: 'Where do theories come from?', and 'How can we resolve differences between theories?', simply will not be sufficient because the correct answers to such questions must be gained from direct contact with the object of study. It is on this account that although given suggestions from each of Royce's and Staats' approaches may be progressive, the approaches themselves lack the clout to resist the charge of

dogmatism. While the shared goal was to put forward progressive unificationist positions, the actual results were inconsistent opportunism and systematic eclecticism.

How can we best draw together the progressive aspects of each of these amiable attempts? I suggest that the answer already exists in the form of the position put forward by C.W. Tolman, reflecting work previously done by Ilyenkov and Davydov. This will be the topic of the final chapter of the present thesis.

Chapter Five

A DIALECTICAL APPROACH TO THE UNIFICATION OF PSYCHOLOGY

There are at least three pertinent kinds of unification: (1) unification of the sciences, (2) unification of a science, and (3) unification of theories. All these have been implicit in the attempts of Royce and Staats to deal with psychology's disunity. But, these forms of unification were not clearly differentiated or defended owing to the problematic philosophical bases of those positions.

The main body of this chapter is made up of three sections. Section (I) proposes that Tolman's Pluralistic Monism has broad implications for our understanding of both the unification of the sciences and the unification of psychology's various phenomena. Section (II) outlines the dialectical materialist Theoretical Assessment Methodology (Davydov, Ilyenkov, Holzkamp) and suggests that it has implications for our understanding of theoretical unification. Section (III) argues that the Activity Theory Approach provides an explanatory principle for psychology and that in this transformative role the concept of activity solves two issues that have plagued both behaviorist and mentalistic psychology throughout the century (the postulate of immediacy and the lack of nondogmatic criteria of relevance).

(I) Pluralistic Monism

After outlining Tolman's basic philosophical position and making some preliminary distinctions between theoretical, ontological, and metaphysical pluralisms, this section will discuss the implications of pluralistic monism for our understanding of unification of the sciences and the unification of psychology's various phenomena.

(A) Tolman's Basic Philosophical Position

Tolman takes as his founding philosophical position the earlier mentioned dialectical materialist ontology and direct perceptionist epistemology (see Chapter 3 of this thesis).12 This foundation is in sharp contradiction to the arguments put forward by both Royce and Staats. Tolman opens his 1988 article, for instance, as follows: "The problems of theoretical indeterminacy, disunity and fragmentation will not be solved by the revival of any form of positivism (e.g., Staats, 1986)" (Tolman, 1988a, p.29). Tolman elaborates this assertion in the following way:

> [Most] critiques [of positivism], have not penetrated the sceptical-subjectivist epistemology that is the root cause of its

> problems....As a result, the tendency has been to reject the scientistic appearance and preserve the essential defect...the inability to specify an independently existing, nonarbitrary ground...as a basis for resolution of theoretical differences. (Tolman, 1988a, p.31; emphasis in original)

That argument surely applies to Staats' own critique of positivism (see Staats, 1983, pp.74-83). It also sheds light on the temporary agnosticism that Staats exhibits when confronted on basic philosophical issues (see Staats, 1987, p.40). The present thesis concurs with Tolman's further argument that "only a [dialectical] materialism--certainly not positivism in any form--can provide the necessary foundation for a truly unified psychology" (Tolman, 1988a, p.31).

As for Tolman's position on Royce's metatheoretical constructivism, his (1980) article points out that "constructivism is a species of philosophical idealism, and that, as such, it suffers from a general confusion over priorities in relations between the concrete and abstract" (Tolman, 1980, p.7). Royce relies explicitly upon the assumption of indirect perception in its objective idealist form. In doing so Royce's position is an example of how objective idealism returns unintentionally to an implicit

subjective idealism (see Figure 5; Appendix 2). Thus in Royce, the "ghost of Hume" in positivism, is only temporarily replaced with the "ghost of Kant" (see Tolman, 1980, p.7).

Under Royce's constructivist metatheory, the criteria for theoretical power are themselves mere constructs (Tolman, 1980, p.10). Tolman points out the disappointing implication of such a claim:

> Since they are constructions, they can serve as criteria for competition and/or agreement among theorists only if the respective theorists agree to adopt them. In short, criteria that are purely theoretical do not solve, but create the problem of relativism. (Tolman, 1980, p.10)

In contrast, Tolman points out that the solution to the question of unification is not merely a function of time and effort nor even enforcement of materialist assumptions, but of clarity on the larger issues of psychology and on criteria of relevance (Tolman, 1988a, p.31). Toward this goal, Tolman makes use of two very important metatheoretical tools which will be outlined in this chapter: Pluralistic Monism and the Ilyenkov-Davydov theory assessment methodology.

(B) Theoretical and Ontological Pluralism vs. Metaphysical Pluralism

Even the most ardent unificationists must admit to the existence of some sort of ontological plurality, and must account for this in their understanding of the term unification. The typical empiricist-objectivist position states that the plurality of competing theories should decrease as our objective knowledge increases. But a complicating factor is that particular theories correspond with particular ontological levels of the domain under study. This complication makes the distinction between theoretical plurality and ontological plurality crucial for understanding the possibilities of unification in psychology.

A theoretical plurality exists when there are a number of theories which attempt to explain the same phenomenon. For example, there are, and have been, various theories of memory (e.g., physiological and molecular theories, mathematical models, cognitive coding theories). On the other hand, ontological plurality refers to the hierarchy of levels and inter-level relationships contained in the object or phenomenon of study. Human memory, for example, exists on the physiological and the psychological levels but social tools (i.e., written language, tape recorders, etc.) are also used as a form of memory. As such,

ontological plurality always exists in psychological phenomena and the specific relations between these levels need to be understood if we are to explain their various manifestations (e.g., animal and human memory, short-term and long-term memory, voluntary and involuntary memory).

It must be stated outright that even the simultaneous existence of both ontological plurality and theoretical plurality, does not necessitate adherence to a metaphysical pluralism. Tolman used an analogy from geography to illustrate this point (Tolman, 1988b, p.4). We know that the earth can be described in many ways, for instance the variety of maps contained in all but the most elementary atlases. "Yet no one would claim for all of this diversity that there is more than one earth. All the various accounts and depictions of the earth are understood to be ultimately commensurable and the "basis for this commensurability is the object itself, the one and only earth" (Tolman, 1988b, p.4). For the physical object (the earth) the essential unity of the diverse set of maps is not lost.

Following this line of reasoning, although memory is not a material object of investigation, but a psychological function, the same unity in diversity should be sought. Defining memory concretely is not a matter of choosing between <u>either</u> tissue habituation <u>or</u>

human memory, nor between either recognition or recall but rather of accounting for all of these in their actual relations with each other.

(1) Pluralistic Monism and the Unity of Sciences

Tolman's 1989 paper, on "pluralistic monism" aims at developing a more workable solution to the historical (ontological) monism vs. pluralism debate (Tolman, 1989a, p.178). To do this, he appeals to the implicit dialectical arguments in parts of the works of James, and to the works of the preclassical philosopher Heraclitus, who put forward a more overt (though primitive) dialectical position (Tolman, 1989a, p.182).13

The dialectical solution to the long-standing problem of ontological pluralism vs. monism, is to recognize that it is not either pluralism or monism, but both. The logical kernel of Tolman's paper revolves around the following argument:

> Perhaps Heraclitus's distinction between contradiction in things (unity of opposites) and logical contradiction ought to be taken seriously. This appears to have been his key to grasping the ultimate unity of the one and many, thus allowing him to avoid the unnecessary

> complications that come with absolutizing the one (Zeno) or the many (Empedocles), or with adopting an eclectic position on the question (Democritus). (Tolman, 1989a, pp.184-185)

Tolman's pluralistic monism goes even farther by stating that since we are able to accept the objective contradictions in material objects we should also recognize them in psychological processes and study them accordingly.

As shown in Chapter 3 of this thesis the major objective contradiction in psychological processes as a group is that while they all necessarily have a biological, chemical, and physical basis they also possess higher (emergent) properties. Therefore the results of the various other sciences are necessary to take into account but they are <u>not</u> <u>sufficient</u> by themselves to explain all of the properties of psychological phenomena.

Tolman's position is clearly congruent with the ontological implications of Naturalistic Emergentism (see Figure 3). This is not to say that Tolman has simply given that position a new name (pluralistic monism), for he has also tied it to the philosophical foundation of direct perception and dialectical materialism.

(2) Pluralistic Monism and the Ontological Status of Psychology's Subject Matter

In psychology, the different areas of interest and specialization fit into what we collectively call psychological science. The historically different schools and systems of psychology have been oriented to different aspects of the subject matter. The problem has always been to recognize how the several areas complement each other. Just as each science specializes in outlining a particular ontological level, each area in psychology (e.g., personality, perception, learning, clinical psychology etc.) also has different and unique relations with each other.

Pluralistic monism allows us to recognize that different theories, both between and within the various areas of psychology, must be linked and ordered in a hierarchical manner. This follows from the ontological plurality of levels at work in each of the phenomena to which those theories refer (e.g., recovery of speech after brain damage, animal learning, human memory, etc.). It is in this ontological sense that our psychological theories will be both plural, referring to the different levels relevant to the phenomena of interest, and monistic, referring to the same one, integrated aspect of psychological subject matter.

It follows from this ontological plurality that

the different domains in psychology, require different methods (procedures) for their investigation. The specialized areas require a variety of descriptive categories and methods of empirical observation (e.g., experimental, psychometric, observational, self-report etc.). A perfectly responsible procedural plurality, therefore, does not signify the acceptance of a metaphysical pluralism. Equally, there is no one empirical method for all the levels of psychology's subject matter (contra positivism). If the subject matter has a diversity in its unity, then our methods should reflect (investigate) that diversity if they are to be truly objective. At the same time these methods should also reflect the unity of psychological phenomena and must therefore be complementary to one another (i.e., must not be in logical contradiction).

In general, Staats' push for some sort of multilevel theory within psychology can also be supported by pluralistic monism. The problem in Staats's approach was an underestimation of the need for a philosophical grounding of the kind present in Tolman's work. In that respect Tolman would agree with Rappard's statements that attempts to systematize psychology "require the kind of historically informed theoretical work" that is "not arrived at by way of empirical research" (Rappard, 1987, p.15). Consequently, the pluralistic monist solution is an

improvement over the past arguments for and against a monolithic type of unification (e.g., positivism and metaphysical pluralism).14

(3) Theoretical Indeterminacy and Unification of Theories

According to Tolman (1988b):

> Theoretical indeterminacy exists when, despite the availability of large amounts of empirical data produced by what ought to be more or less crucial observations and experiments, differences between theories remain unresolved and no overarching theories emerge. (Tolman, 1988b, p.1)

Tolman's thesis statement is that the present theoretical indeterminacy is symptomatic of an impending transition to an historically more advanced stage of theoretical knowledge in psychology (Tolman, 1988b, p.1). As he states elsewhere, "[theoretical] pluralism represents a developmental stage of knowledge and not a permanent condition..." (Tolman, 1988a, p.30).

With regard to how psychology can ever advance beyond low-level theories toward more encompassing approaches, Tolman considers both metaphysical

pluralism and eclecticism inadequate. Whereas metaphysical pluralism denies the possibility of such advance, eclecticism does not show us how to determine theoretical superiority (Lemery & Tolman, 1989, p.6). It "gives us little more than the hope that empirical research will somehow show us how diverse theories can be integrated into superior overarching theories" (Lemery & Tolman, 1989, p.6).

The flaw in the metaphysical pluralist and eclectic positions is their shared assumption that the issue of theoretical indeterminacy would have to be decided purely upon empirical grounds. "Rather, the issue of theoretical superiority rests upon the methods by which.... theories abstract from their phenomena to form concepts and generalizations" (Lemery & Tolman, 1989, pp.6-7). It is in this regard that, "Popper's [falsificationist] analysis does not pertain to the most essential way in which theories distinguish their prevalence over other theories" (Lemery & Tolman, 1989, p.10). Tolman, supports this view by drawing upon the work of three theorists, K.Holzkamp (a German Critical psychologist), E.V. Ilyenkov (a Soviet philosopher) and V.V. Davydov (a Soviet psychologist).

(II) Toward A Theoretical Assessment Methodology for Psychology

After listing the various sources of theoretical

indeterminacy in psychology, this section outlines the dialectical materialist Theoretical Assessment Methodology (Davydov, Ilyenkov, Holzkamp) and suggests that it has implications for our understanding of theoretical unification.

(A) The Methodological Sources of Theoretical Indeterminacy and Inessentiality

This subsection will outline more fully and provide an example of each of the sources of theoretical indeterminacy.

(1) Tolman's View on Indeterminacy

Tolman (1988a) outlined two sources of theoretical indeterminacy common in empirical procedures. The first of these is weak confirmation. Experimental design and statistical assessments, investigate both the occurrence and the reliability of the events they study. Generally, if both are the case, the theory is treated as being corroborated and if not the theory is treated as being falsified. However, there are problems with this approach.

> Our experimental and statistical methods have come to be so highly refined that under existing

> rules of procedure almost any selected relationship has very favourable chances of being confirmed....With the right sample size and 'alpha level', very little explained variance [can count as statistically significant]. (Tolman, 1988a, p.32)

This state of affairs allows statistical corroboration of hypotheses which, although statistically significant and reliable may be entirely irrelevant or even misleading. In this regard Hilgard (1987) called attention to the well known case of twin study data:

> The difference can be stated simply: those who favor heredity tend to rely chiefly on correlational data, while those who favor environment rely chiefly on changes in mean IQ. The same body of data will yield opposite interpretations if emphasis is upon the data analyzed by one or the other of these procedures. (Hilgard, 1987, p.481)

The point here is that methodologies based exclusively upon empirical abstraction (i.e., all statistically oriented ones), will fail to discover concrete essentialness which comes only from a

"dialectically-informed theoretical analysis" (Tolman, 1989b, p.20).

The second source of indeterminacy that Tolman outlines is the lack of broader perspective. The resolution of the differences between theories is "not to be sought in further empirical confirmation" but in a broader perspective which will show whether the theory is "actually relevant or essential" (Tolman, 1988a, p.32).

For Tolman, that "broader perspective" is an historical understanding of the process under study. The essentiality of a given aspect of a psychological process (e.g., memory) can be determined by studying the "evolutionary or other developmental context that has shaped it" (Tolman, 1988a, p.32). Such a criterion of relevance and essentiality would give us the ability to both choose between theories and to put them into hierarchical relation with each other. In memory, this can be done by analyzing how memory develops and how its lower forms are transformed into higher ones (Leontyev, 1977, p.57). This is the genetic approach to the phenomena of psychology first put forward by Vygotsky, Luria and Leontyev. "We cannot truly know what a thing is unless we know where it came from and how it came to be" (Tolman, 1988b, p.10).

(2) Sources of Irrelevance and Inessentiality

Tolman (1988) following Holzkamp, lists three ways in which theories can be irrelevant or inessential. First, there may be confusion about conceptual distinctions and classification boundaries. For example, learned and innate are not exclusive categories. Learning is an innate strategy. The relevant dimensions of difference between learned and innate are ones of "potential flexibility with respect to external contingencies" (Tolman, 1988a, p.35; also see Leontyev, 1981).

Second, theories or principles may be falsely extended from one level to another. Tolman cites sociobiology as erroneously extending insect genetics to human societal behavior (Tolman, 1988a; see also Gould, 1981, p.329). In this case, what is most relevant is the societal context of human development (e.g., appropriation is more important than adaptation) (Tolman, 1988a).

Third, theories may falsely generalize that which is true only in particular instances. Operant conditioning is a "misunderstanding of broader, evolutionarly determined flexible adaptive strategies" (Tolman, 1988a, p.35). "And from [the] restricted [empirical] view it will remain forever impossible to understand how the grain of truth in operant theory can

be integrated with the grains of truth in opposing theories" (Tolman, 1988a, p.35). Only the broader evolutionary understanding can allow that sort of comparison.

The reader may protest that this is all quite obvious. The point here, however, is that it has not been systematically implemented in psychology's traditional theoretical methodology. Again, the reason lies in a lack of dialectical logic.

(3) The Problem of Abstract and Concrete

Following Ilyenkov, Tolman proposes that the most important source of theoretical indeterminacy itself lies in the traditional lack of understanding of the dialectic between abstract and concrete thought. That is, "there is something about our traditional understanding of the abstract and concrete in generalization and theory...that fosters theoretical indeterminacy and creates the appearance of incommensurability" (Tolman, 1988b, p.6). This problem is "methodological in nature" and can be resolved (Tolman, 1988b, p.6).

In the traditional approach to psychology, the "thing out there is concrete, while the idea in the head is abstract, or, if in the head, sensuous knowledge is concrete, while logical, theoretical

knowledge is abstract" (Tolman, 1989b, p.17; also see Ilyenkov, 1982, p.31). The methodological result of this is that in the traditional view, the general is made synonymous with abstract. Tolman suggests, for example:

> [Our] statistical analytic methods reflect this understanding of theory and generalization. Arithmetic means, for instance, are abstractions...and the [aim] of any analysis is to generalize as broadly as possible...to arrive at laws that are as abstract as possible. (Tolman, 1988b, p.7)

The individual (from whom data has been obtained) has been almost eliminated from the first measurement, and is "further rarefied" by the elimination of 'error variance' and the combination of results with other "similarly purified sets of data" (Tolman, 1988b, p.7). In contrast to that approach are the crisis intervention systems whether in family care or hot line versions. The practitioners of this applied area of psychology are well aware of the dangers of loosing touch with the individual and, as a matter of necessity, are in the daily business of concretizing general human needs such as shelter, security, and self-esteem.

(B) Toward a Solution of Psychology's Problem of Indeterminacy

This subsection will outline the major reanalysis of theory assessment made by the dialectical materialist position. Then the concept of activity will be put forward as meeting the criteria for a unifying theory which psychology has been lacking.

(1) Abstract and Concrete Conceptions

The traditional methodology for abstraction from facts lacks an explicit guideline for deciding which aspects of the object to select as a basis for abstraction (Tolman, 1988b, p.8). A simple operational criterion of generality (e.g., Royce, 1978) will not do because the choice of abstractions will tend to define the object differently (Tolman, 1988a, p.8): "A particular theory of reinforcement tells us what reinforcement is; a particular theory of perception tells us what perception is; etc." (Tolman, 1988b, p.8).

In contrast to the traditional view, Tolman (1989) calls attention to the dialectical materialist approach to the abstract and concrete. Following Ilyenkov, Tolman informs us that there are two different kinds of concreteness, empirical and conceptual. Empirical

concreteness comes from a closeness to facts and objects. "Thus 'mammal' is more concrete than 'animal', but 'cat' is more concrete than 'mammal'..." (Tolman, 1989a, p.190). Conceptual concreteness comes from an evolutionary understanding of the object under study. Thus, at the point of high abstraction (such as animal), there are two ways of concretizing: (1) we can move downward to the empirical object (the cat), or (2) "rise to the concrete" understanding of a more empirically removed consideration (mammal) by means of developmental physiology. That is, if we study biology and learn what mammals there are, how they have evolved, etc., our conception of animals becomes more concrete rather than more abstract (Tolman, 1989a, p.190).

The methodological recommendation of this approach is that we should recognize two distinct kinds of scientific generalizations from facts: abstract and concrete. These are outlined by Davydov (1972) and are summarized by Tolman (1989b). Abstract generalization is "based upon common characters of diverse entities (e.g., all mammals have hair)", concrete generalization, on the other hand, seeks to discover the "essential unity" between the particular (and varied) manifestations of something (e.g., the essentiality of the labor process in our definition of human beings) (Tolman, 1989b, p.17).

This is important to psychology because "if our psychological scientific activity is guided by a methodology that...[understands] theoretical concepts, propositions, and laws as mainly abstract, and [equates all generalization with abstractness], then our theories are likely to remain abstract only" (Tolman, 1989b, p.18).

Nondialectical methodology, Tolman claims, has led both to the situation of theoretical indeterminacy itself, and to idealist treatment of issues. Both Staats (1983) and Royce (1978) have made comments on the relative advancement of theory in various areas of psychology (Royce, 1978, p.201-202; Staats; 1983). They have also noted the differential progress made in physics, chemistry, biology and psychology (Royce, 1988, pp.60-61; Staats, 1983). But they have been unable to explain either the cause or the cure of what they have observed.

The combined dialectical materialist approach of Davydov and Ilyenkov, on the other hand (see Table 5), allows a theoretical assessment methodology which accounts for the career of an idea as it moves through various stages of maturity. That is, it doesn't merely describe such movement (e.g., Royce) it explains <u>how</u> and <u>why</u> that movement takes place. In doing so it contrasts with Staats' (1983) assertion that details "hinder" the establishment of general unified theory.

Davydov and Ilyenkov, by contrast, claim that concrete general concepts arise out of a historical understanding of those very details (Davydov, 1972, Ilyenkov, 1982). The stages of this dialectical theory assessment methodology will now be outlined (see Table 5).

(a) Initial abstraction. The initial stage of investigation of a given area or phenomenon in psychology results in many initial abstractions on the empirical level (see Table 5). These take the form of questions like: 'What is the phenomenon of study?', 'What are the properties that are important?', and 'What aspects of the problem are we going to study?'. These are quite prevalent in psychology, being the kinds of questions that each researcher asks at the beginning of a study. For example: 'What is motivation?' 'What is personality?' or 'What is memory?'. The problem is that such empirical abstractions vary widely between different investigators. Galton's anthropometric laboratory test battery provides a well known historical example of initial abstraction in the area of intelligence (see Fancher, 1990, pp.211-212). Another more recent example of initial abstraction is the various "motivational theories built around hunger, thirst, pain, precipitate anger, aggression, and sex" (see Hilgard, 1887, p.380).

(b) Initial generalization. Then comes the stage of initial generalization which entails the formation of categories and classification of types. Many such contradictory but empirically supportable psychological theories are abstracted from collections of empirical observations (e.g., behavioral and cognitive theories of learning, Trait and Situational theories of personality, Associative and Information-Processing theories of memory) (Tolman, 1989b, p.18; also see Piekkola, 1987, 1990). In the area of personality, an operational definition such as a score on the MMPI (Minnesota Multiphasic Personality Inventory) provide a current example of initial generalization.

(c) Concrete description. The stage of concrete description asks the question of 'what are the relations between the classifications and also between the groups (categories) and other things (e.g., environment). In short, concrete description puts classifications in relation (i.e., in context), and looks at these relations temporally resulting in a descriptive outlining of the process. Because the object of study (say personality or memory) has its own pattern of contradictions, our task is to discover how those are formed and resolved by its transformations (e.g., Interactionist theory of personality and Contextualist theory of memory) (see Piekkola, 1990, p.ii; Piekkola, 1982, pp.9-20).

Once we recognize some developmental sequence and observe the concrete changes that take place, we need to ask why they have taken place. Thus, although concrete descriptions occur on the empirical observational level, they are also transitional to a higher extra-empirical (theoretical) stage of investigation. That is, concrete description both activates and structures subsequent theoretical (explanatory) thinking.

It is in the shift from the empirical descriptive to the explanatory theoretical that the traditional approaches to the subject matter break down. Interactionism in personality theory, for instance, while claiming a role for heredity and for environment, failed to explain what accounts for the interaction. Likewise contextualism in memory theory tried to describe the sequence of events in memory and also aimed at "reuniting memory with other cognitive processes and with the physical and social environment" (Piekkola, 1982, p.9) but it was hindered by a nondialectical view of development and hence of the sequence they were describing.

As Royce (1978) seemed to recognize, descriptive concepts perform the precarious task of establishing "a network of relationships" among the many abstractly generalized principles (Royce, 1978, p.272). He made the unfounded assumption, however, that since

descriptive concepts "must run the risk of conceptualizing at increasing distances from the data", they therefore "must become abstract" (Royce, 1978, p.272).

In contrast to that assumption, it should be pointed out that descriptive concepts are only abstract if they are attempting to draw relations between nonessential empirical classifications. For example, the various traditional indirect theories of perception have accepted the concepts of sense data, sensations, and sensory impressions as initial and founding premises. We have seen the self-contradictory abstractness of the attempt to explain perception on such a basis and its debilitating effect on philosophy and psychology (see Part I and Chapter 4).

Gibson argued, to the contrary, that sensations are "nonessential" and "incidental" to perception (Gibson, 1966, p.56, 277, 283, 319; 1979, p.246). His "ecological" theory of direct perception was based not on sensations, but upon the concepts of "stimulus information" and "affordances" (Gibson, 1966; 1979). Since the ecological theory of perception is based upon essential empirical classifications, it is both concrete, and allows the shift to an eventual unified explanatory-developmental understanding of the perceiving process and its practical relations with other psychological functions (see McCabe & Balzano,

1986).15

(d) Concrete concepts. What psychology also needs to develop is an explanatory account of learning, memory, and personality which is both concrete and theoretical. That is, an explanatory account which outlines both the general and the individual manifestations for each of these areas and also how these areas relate to each other. Tolman claims that it is just such a "methodological 'rising from the abstract to the concrete'" that can permit the "resolution of theoretical differences" and the production of "unambiguous theories" (Tolman, 1989b, pp.19-20).

The implications are "profound" for both psychology's subject matter and for its methodology (Tolman, 1989b, p.20). Subject matter that is defined abstractly and fails to sort out the concrete general, will be seriously limited. This is the case with psychologies of consciousness (whether act or content), and with psychologies of response and behavior (Tolman, 1989b, p.20).

(C) Summary at the Midpoint

To summarize thus far, the outlined dialectical analysis acts as a guide to theoretical unification through arrangement and selection of theories (see

Table 5). Resolution of the indeterminacy problem "requires new understandings of the nature of the empirical and the theoretical [levels of science], of notions and concepts, and of the concrete and the abstract" (Tolman, 1989b, p.22). The dialectical materialist approach recognizes the value of initial abstractions, but specifies its aim as the eventual concretization of the abstract through identification of concrete generalizations (Tolman, 1989b, p.18).

Tolman's main point in his 1988 article is that "theoretical indeterminacy is not the result of a metaphysically necessary pluralistic state of affairs but of a faulty [traditionally abstract] methodology" (Tolman, 1988b, p.10). The apparent metaphysical plurality is the result of the abstracting procedure (i.e., it is methodological). Tolman (1989) concludes that the result of accepting both pluralistic monism and such a dialectical materialist theoretical methodology would be "more conceptually concrete theorizing...and less fruitless chasing of empty abstraction" (Tolman, 1989a, p.192).

Royce's final call was for a deep and penetrating analyses of the <u>discovery</u> aspect of science, including a "valid method of theory appraisal", which is equally adequate for the full range of theories, thereby rendering them commensurate and amenable to critical analysis and comparison" (Royce, 1988, pp.59-60). The

dialectical materialist approach to theory assessment performs precisely that task.

Staats suggested that grand unifying theories must have effects on all the major areas of psychology, must show how the various methods contribute to the general structure, and also show specialists the wider meaning of their findings. The concept of activity will now be put forward as the unified explanatory principle which psychology has been lacking.

(III) The Activity Approach
(Achieving Conceptual Concreteness in Psychology)

Testimonials as to the usefulness of the Activity approach in solving psychology's problem of disunity are readily available. James Wertsch has described the activity approach as "one of the world's best examples of how a unified science of human kind might be constructed" (Wertsch, 1986, p.x). Likewise, Tolman has pointed out that it is "not fortuitous that the dialectical materialist psychology specifies its subject matter as 'activity'" (Tolman, 1989b, p.20). And most recently, Davydov writes: "I share the views of those authors who...clearly stress the fundamental and basic importance of the category of activity for the theory of human existence" (Davydov, 1990, p.154). The justification of those statements, however, is to

be found in the extent to which the activity theory approach provides a non-dogmatic alternative to the various forms of mentalist and behaviorist psychologies.

Two indications of the transformative status of the concept of activity are that: (1) it overcomes behaviorism's postulate of immediacy (i.e., the suggestion that the environment is the cause of internal psychological processes), and (2) it solves mentalistic psychology's crisis of relevance (i.e., the quagmire of chaotic diversity in which the strictly empirical-classificational approach gets bogged down). This section will, therefore, be split up into two subsections (A) and (B) which deal with those two issues. It must also be emphasized at the outset, however, that in solving these two problems the activity approach inevitably "alters the view of the subject matter of psychology, its method, and thus the units of psychological analysis" (Davydov, Zinchenko, & Talyzina, 1982, p.40).

(A) The Postulate of Immediacy

The concept of activity as developed by A.N. Leontyev stands in opposition to both behaviorism (which treats humans as if they were passive receivers of stimuli) and mentalism (which holds to idealistic theories of the world) (Wertsch, 1986, p.38).16

In particular Leontyev claimed that the category of activity has made it possible to go beyond what he called the "postulate of immediacy" which found "direct expression" in the early behaviorist S--R formula (Leontyev, 1972, p.42). According to this postulate, the "internal state" of the subject is determined directly by "external" objects in the world (Davydov, et al., 1982, p.33). In that conception, the subject is a reactive entity, totally subordinate to the effects of environmental factors. The mentalist position on the other hand harbored a similar and equally problematic idealist separation between an inner 'mind' (or consciousness) and an outer 'world'.

What was common to both mentalistic and behaviorist approaches was a "two part scheme" in which the relationship between the internal and external entities is seen as a formal opposition (Leontyev, 1972, p.42). Up to the point where a teleological form of determinism was reasserted (e.g., Dewey, Vygotsky), this fundamental (internal-external) objective contradiction remained a stumbling block for our science. For Leontyev, the unsatisfactory nature of the supposed two part scheme consists in the fact that it excludes the "actual processes" that active subjects use to form real connections with the world of objects.

Historically, the logical and methodological difficulties created by such an opposition produced

constant attempts to replace it. Notably the purposive neobehaviorism of E.C. Tolman depended upon the concept of the psychological intervening variable (S--M--R) where the effect of the external influences depend on how the subject interprets them (Leontyev, 1972, p.42).

The inclusion of some sort of teleological analysis into psychology was an important step, but according to Leontyev the inclusion of internal states evoked by an environmental influences merely enriched the descriptive analysis of behavior rather than doing away with the postulate of immediacy. That is, the S--M--R model has not replaced but merely elaborated upon the original S---R scheme. Although such variables are intervening, they are concerned only with the subject's internal states and thus leave open the issue of how to explain the actual observed concrete contact with the external world (Leontyev, 1972, p.44).

As Leontyev pointed out the S--M--R variant does not even, in principle, distinguish between animate and inanimate objects. "After all, by changing their states, we can see that even inanimate objects are influenced differently by various objects: footprints will be clearly imprinted in soft, wet ground, but not in dry, parched ground" (Leontyev, 1972, p.43). Consequently he suggested another approach to overcoming this "fatal postulate" (Leontyev, 1972, p.45).

(1) Activity as the Solution to the Postulate of Immediacy

According to Leontyev, the mental reflection of an object is not produced directly by external influences, but by processes through which the subject enters into practical contact with the object (Leontyev, 1972, p.49). It has been by recognizing, embracing, and investigating the history of this objective contradiction in living things that the concept of activity has broken down the abstract separation between the external and internal phenomena; replacing it with a concrete reciprocal relation. The way to overcome the postulate of immediacy is to introduce the category of objective activity into psychology (Leontyev, 1972, p.45).

For Leontyev, the object is defined as that toward which activity is directed regardless of whether the activity is external (e.g., playing a violin) or internal (e.g., thinking about the tonality of a violin). Thus, human activity is characterized by both objectiveness and subjectiveness. The previous logical separation between them is seen as an abstraction (Davydov et al., 1982, p.32).

> It is the practical contacts of the subject with the external world, not the simple [activeness]

> of the latter, that give rise to reflection in the subject's mind. (Davydov, et al., 1982, p.32; emphasis added)

Vygotsky had laid the foundation for this understanding of the relation between practical activity and conscious reflection of the world in his "basic law" of development of higher mental functions (Davydov & Zinchenko, 1980, p.42). The development of consciousness is not a simple transferal (or stamping in) of an external action to a preexisting internal plane it is the process in which this internal plane is formulated by virtue of external action (Leontyev, 1972, p.57). As Davydov, Zinchenko, and Talyzina (1982) put it: "Since reflection of reality in the mind is seen as something generated in the processes of development of practical activity, it cannot be understood independently of...activity" (p.34; emphasis added).17

It is plainly the case that the violin does not play the violinist, but then again, the issue is more complicated than it first appears. The relationship between the performer and instrument is a reciprocal one in which the instrument provides the possible parameters of the activities that may take place with regard to it and the performer brings to the instrument his previous individual and socially structured

abilities (both external and internal).

The initial premise of activity theory is, therefore, that subjects gain both knowledge and abilities through their activity with objects. This premise is elaborated in the principle of object relatedness: Activity is objective in the sense that it corresponds to the nature of the object to which it relates. This kind of correspondence (objectiveness) is possible no matter whether the particular activity (e.g., learning the violin) is manifested in internal mental action (e.g., silently counting the beat) or in external action (e.g., moving the bow across the strings).

As Asmolov writes, the principle of object-relatedness enables us to draw a clear distinction between the activity approach and the various behavioral concepts which are based on the stimulus--response or organism--environment approaches (Asmolov, 1983). If this principle is considered primary, then the former logical opposition between the world of stimuli and the world of responses is eliminated; and the subject and the object may be viewed as poles of a single integral system, a system of activity.

The former Cartesian-Lockean distinction between the external world (to which external material activity belongs) and the internal world of phenomena (consciousness), must yield to another more accurate

distinction between: (1) objective reality and its idealized forms, and (2) the activity of the subject (external and internal). That is, between the content of activity (external or internal) and activity itself (external or internal).

A simple example comparing the traditional psychological approach and the activity approach will serve to clarify the methodological significance of this conceptual shift but the ontological structure of this hierarchical, integral system of activity must first be outlined more fully.

(2) Activity as Psychology's Subject Matter

As the theory's label indicates, the emphasis is on activity rather than behavior. Leontyev defines activity as the "nonadditive, molar unit of life....[N]ot a reaction or aggregate of reactions, but a system with its own structure, its own internal transformations, and its own development" (Leontyev, 1979, p.46, In Tolman, 1989d, p.21).

The "structure" of activity, refers to Leontyev's three-tiered hierarchy of human activity (see Figure 6). In such a structure, operations (which are accompanied by the conditions in which they take place) are distinguished from actions (which are connected to goals), and also from activities (which are connected

to motives) (see Engestrom, 1982, p.67).

Although the activity is made up of and always expressed through actions and operations, it is an emergent whole that is not reducible to the component constituents. That is, the activities, actions, and operations never exist side by side but are integrated. In that sense the activity is the actions and operations, but is also distinguished analytically from them because it is connected to motives (which guide actions and operations). In this way, the overlying level of activity (and its accompanying motives) allows a concrete but general explanation of all the empirical-individual manifestations of action and operation within the context of their phylogenetic, ontogenetic, and socio-historical development. 18

In terms of analysis, the differentiation of the actions and the activities involved in a given human event can be drawn out by asking the subject: "What are you doing?". In the case of a child playing the violin answers such as the following are possible: "I'm learning my violin" (activity); "I'm practicing my music" (activity); "I'm playing this piece" (action); "I'm playing my violin" (action).

Another simple question can draw out the means and the methods used to perform those actions and activities: "How are you doing that?". Again for the child playing the violin possible answers would be:

"I'm practicing this new bowing technique" (action and operation); "I'm trying not to make it squeak" (action or operation); "I'm counting the beat" (action or operation); "The usual way" (operation); "By keeping my elbow in, making smooth bow strokes, and by relaxing my bow hand" (operations); etc..

(a) The methodological advantage of the activity approach. The methodological advantage of the activity approach over traditional behaviorist empirically centered methodology is that it is able to theoretically untangle ambiguous situations in which the external empirical structures of say two observed events are similar (or identical) but where the internal structure of the events may vary considerably. Take the example of two twins who have both practiced their violin for one hour five days a week and who perform a given piece with exactly the same level of tonality and technical proficiency.

In this case, behaviorist analysis would be insufficient because the characteristically human object transforming abilities (including transforming one's own abilities) can only be partially analyzed by sole reference to observable actions and results of actions (e.g., "behavior and reward"). That is, the behaviorist approach can not get inside to "see" the internal actions of the performers (e.g., the action of silently counting the beat, or the operational method

of counting the beat) and must therefore settle for analyzing only the external manifestation of these (e.g., the performance of the piece). Under the activity approach, more adequate assessment would be attained by having the performers externalize the means by which they were able to manifest their apparently equivalent performances. Subtle differences in the method of counting the beat for instance are bound to become manifest.

Even in the more likely case of the twins being unequal in their performances their abilities are not satisfactorily analyzed by the behaviorist assessment of environmental contingencies and reinforcement history. On the contrary, psychology must define the subject matter of its research more widely to include the goals of the actions and the overlying motives connected to the activity in which those actions lie (see Figure 6).19

In terms of analysis these differences in motives and goals can be drawn out by asking a question such as: "Why are you doing that?" or "Why did you do it that way?". It is in the answers to this question that we gain more insight into the incredible complexity and richness of psychology's subject matter. That is, any given concrete situation is more complex than Leontyev's simplified diagram of activity would suggest (see Figure 6). There is always a hierarchy of

'higher' and 'lower order' actions and activities (along with their concomitant hierarchically ranked goals and motives) in any given concrete situation. No figure or table of these hierarchies is possible because they are flowing dynamisms.

Take for example the occurrences observed during an introductory violin lesson. Everything from a lower order action (with its goal of say placing the second finger in the c-natural rather than c-sharp position), to a slightly higher order action (with its goal of say playing a given piece continuously to the end) must be taken into account if the assessment of the student's violin learning activity is to remain concrete.

Given the same opportunities, and relatively the same phylogenetic capacities, the progress or lack thereof in any given student takes place in accordance to this dynamic hierarchy of motives. That is, if asked "Why do you practice your violin each day?", the answers may vary considerably (e.g., attainment of proficiency, enjoyment, a break from work, pleasing the parents, the love of music). One would consequently expect differences in the list and in the ranking of these motives by the twins under consideration.

The previous behaviorist approach disregarded such motives just as the cognitive-mentalist accounts tended to abstract them from their sociohistorical context (placing them in organism's propensities or the

abstract personality of the individual). Thus in comparison to these, the activity theory approach appears to have an advantage in analyzing human existence in its concrete complexity.

Although good violin teachers have long known these ways of teasing out the internal workings of the events they observe, even without the attachment of such labels, it must be stressed here that the advantage of this new method of analysis to psychological science lies both in the enriched subject matter attained (i.e., the inclusion of internal as well as external activity) and also in the possibilities of applying the analysis to areas of psychology where they may not as yet have been naively applied (e.g., Gal'perin, 1969; 1974; Engestrom, 1987).

(B) Velichkovskii's Assessment of Cognitive Psychology (Solving the Crisis of Relevance)

This view regarding the methodological advantages of the activity theory approach has gained some degree of corroboration from the position taken by Velichkovskii (1982). He stressed the significance of the activity approach as an alternative to the stalemate attained in Cognitive psychology where the "shortcoming, acknowledged by all" is the "lack of a unified theoretical conception" (Velichkovskii, 1982,

p.29).

Velichkovskii's major point is that cognitive psychology, with its central problem of the "arbitrariness of its models" needs to overcome its own "neopositivist methodology of science" (Velichkovskii, 1982, p.68).

(1) History of the Crisis of Relevance

Ebbinghaus introduced empirical and quantitative methods to the study of higher mental functions (e.g., learning and memory). In doing so he corrected Herbart's earlier position (also adopted by Wundt) that this could not be done (Hilgard, 1987, p.209). But psychologists had been so pleased to be able to investigate psychological processes in the laboratory, they had neglected to carry out the usual "naturalistic scouting of the terrain" (Hilgard, 1987, p.217). Rather, they simply applied the prevalent positivist and neopositivist methodologies to this new area of investigation (see Danziger, 1990).

Consequently the traditional methods of conceptualizing man's psychological functions presented a distorted understanding of learning, perception, consciousness, and attention (Velichkovskii, 1982, p.34). Eventually, in an effort to make an appropriate theoretical advance, it was necessary to do some

"psychologizing" of the Jamesian sort (Hilgard, 1987, pp.217). That is, they needed to look at the larger issues of psychology and start to sort out more commonsense criteria of relevance.

In the 1960's as behaviorism faded, Cognitive psychology became more prominent and eventually even animal experiments had a cognitive flavor. The Information-Processing approach began looking at facts which had been neglected during the animal studies of the S-R model. The change in the model of memory and learning raised different issues which required a change in the tactics of experimentation (Hilgard, 1987, pp.214-216). A move toward more naturalistic types of experimentation where the investigators asked non-trained subjects to report aloud what was going on in their minds during learning tasks and where free-recall was recognized as significant took place. Mnemonic devices began to be studied and distinctions between episodic, semantic, and procedural memory were made (e.g., Tulving) (Hilgard, 1987, p.217).

But confusion eventually appeared when the various empirical models of cognitive processes did not have the general nature that had been ascribed to them. The proliferation of models of cognitive processes had "gotten out of control" and the area of investigation became increasingly disjointed (Velichkovskii, 1982, p.31).

(2) Developmental Analysis to Replace Operationalism

Velichkovskii calls specific attention to the fact that this "crisis of relevance" took place within a context of procedures being refined, the control of external factors becoming more rigorous, the accuracy of measurement increasing, and the scope of information being widened (Velichkovskii, 1982, pp.32-33). "The constant, decisive, and stabilized nucleus has simply been lacking for a hundred years" (Velichkovskii, 1982, p.34).

Velichkovskii therefore stresses that the call is now out for greater "ecological validity" in investigations of cognitive processes. But this entails the setting up some theoretical criteria of relevance (e.g., practical value, logical coherence, consistency of approach) because empirical operationalism that is not backed up by serious theoretical work produces a vast number of terms difficult to fit together (Velichkovskii, 1982, p.35). He considers Soviet psychology and the Gibsonian perception theory as important trends in that direction (Velichkovskii, 1982, p.68).20

In Velichkovskii's assessment, the main shortcoming of the traditional "Cartesian-Lockean psychology" was the implicit abstraction and isolation of the subject (Velichkovskii, 1982, p.60). Studying

any human internal mental process ahistorically (i.e., once it has already been acquired and perfected) can result only in a description of some of its aspects. The later Cognitive psychology, likewise, failed to deal adequately with problems of the acquisition of individual, social, and cultural norms, and therefore could not explain the interrelationships between psychological functions (e.g., perception, memory, emotion, learning).

In contrast to the empirical (neopositivist) attempts of the cognitive psychologists, Velichkovskii points out that the reliability of conclusions can be increased not only by more rigorous control of the experimental conditions, but also by testing them within the developmental theoretical "trio of disciplines" (phylogeny, ontogeny and socio-history) (Velichkovskii, 1982, p.66). That is, "in order to obtain explanatory power, the investigator must examine the phylogenetic, ontogenetic, and historical" development of the higher psychological processes (Wertsch, 1981, p.29).

Thus, although cognitive psychology has provided a descriptive analysis of the "microstructure" of "ossified" cognitive acts and operations (i.e., those processes which have already been learned by the individual), the results can be explained only by comparing them with the broader development of mental

processes (Velichkovskii, 1982, p.65; emphasis added). "The first psychological concept to provide the means of describing the functional structure of human forms of activeness was A.N. Leont'ev's theory of activity" (Velichkovskii, p.64).

(a) Activity theory and cognitive processes. Cognitive psychology, "whether in its moderate Neisseran variant or computer variant" stresses the role of "internal cognitive representations" in the processing and interpretation of sensory data (Velichkovskii, 1987, p.51). In an answer to such mentalism, Leontyev asked whether the process of learning can indeed be described as a result of such internal logical operations. His answer was that they could but he also specified that these internal operations are the product and not the cause of the learning process (contra Cognitive psychology). Any operation, including any logical operation, is the product of a transformation which the action undergoes when it becomes part of another action. To illustrate this developmental and integrated aspect of learning Leontyev supplied the example of the child learning multiplication skills.

The novice pupil must use conscious effort during basic multiplication tasks and hence this is an arithmetic action for him. Later, however, when the child is learning to solve larger arithmetical

problems, these same multiplication tasks acquire the character of automatic arithmetic operations. For instance one can get 7x8=56 either automatically (operation); or by 7x7+7, or by 6x8+8, etc. (operation and then an action). In the latter two cases the arithmetic problem still involves an action since it takes conscious effort to get to the end result. In the first instance, however, the problem has become stereotyped (ossified), and not available for introspective analysis except in the form of its end result (in this case the answer 56). Surely psychology should recognize both the similarities and the differences between these types of processes, especially with respect to their implications for teaching and assessment practices.

Consciousness (the primary 'given' for philosophers from Augustine to Husserl) has been provided with a genetic (developmental) explanation in the dialectical materialist philosophy and psychology (Velichkovskii, 1982, p.65). Velichkovskii's conclusion, therefore, is that the theory of activity could become the foundation for a general theory of psychological subject matter (Velichkovskii, 1987, p.69).

(3) A Unified theory of Perception and Knowledge

It is important to note that Velichkovskii has

considered the Western developments in theory (in particular Gibson's work) and has suggested that these should be combined with the advances made by Soviet psychology. The natural next step, he claims, is to compare data from genetic psychology (i.e., the instrumental and activity approaches) and general psychology. I think I can show how this "next step" can be carried out with regard to the progressive aspects of the various theories in the area of perception and knowledge (see Tables 3 and 4).

A unified theory of perception and knowledge would combine, mutatis mutandis, the progressive aspects of the dialectical materialist, Gibsonian, and Deweyian theories with the relevant neuro-physiological evidence. According to Gibson, perception is the direct (epistemologically unmediated) pick up of information. According to Soviet psychology and to Dewey, knowledge is the cognitive reflection of reality mediated by signs and symbols. The phychophysiologist, in turn, points out that both the perceptual and the more cognitive knowing processes must be ontologically mediated by neuronal and cortical pathways.

Stated in this way, it is more readily recognized that these diverse theories are, in principle, complementary positions. Thus a unified law of human perception and knowledge might be stated as follows: Perception is epistemologically direct and unmediated,

knowledge is direct yet socially mediated by signs and symbols, and both are ontologically mediated by their physiological basis.

This unified view furnishes the aspects of mediation necessary for a non-problematic explanatory account of error by rendering intelligible the partial dependence of what is perceived (or known) on the perceiver in his societal context without weakening the claim that nature (objects) is existentially given. Regardless of whether this is a law which everyone will be happy with or not, it does take its basis from the progressive aspects of the currently conflicting views as they have unfolded over the historical development of our science.

(IV) Conclusions

This chapter has established the methodological and ontological significance of the Activity theory approach for further theoretical classification and progress in the areas of personality, memory, learning, and perception. The dialectical materialist approach to unification seems to meet the criteria set by both Royce and Staats. First, with regard to the larger theoretical issues, pluralistic monism allows psychologists to have a better understanding of how the various areas of our science fit together (unity of

psychological subject matter). Second, with regard to the smaller-scale theory conflicts, while the former eclectic theory choices were open to the charge of dogmatism, theory choices can now be based on a non-dogmatic and conceptually coherent theory assessment methodology within the unified system of psychology provided by activity theory.

The Activity theory approach is the negation of the negation with regard to Behaviorism and Mentalistic psychology. That is, it subsumes the progressive descriptive aspects of each of these previous polar opposites and places them within a unified explanatory system.

(V) Summary of the Thesis

A workable conception of unification provides progressive arguments for what psychological science should be, rather than simply stating what it shouldn't be (e.g., Koch, 1981). "Pluralistic Monism" provides an approach to understanding how our various efforts as psychologists fit together. That is, it allows a concrete understanding of the ontological unity within and between the sciences. The theoretical assessment methodology allows us to compare the essentiality, relevance, and maturity of given psychological theories, thereby making principled choices between

them attainable. Such a theoretical methodology provides a basis for establishing theoretical unification in psychology.

There is a distinction to be made between theorists of different metatheories clashing on issues, and theorists disagreeing as to the explanation of a given event. In the first instance, this thesis has indicated that the clash between the metatheories is over and that naturalistic emergentism has won. The second instance is merely a description of a segment of the healthy and recurring cycle of scientific observation, debate, test, and reformulation. The specialization and disagreement between psychologists does not necessitate accepting metaphysical pluralism, but can, rather, reflect a productive and transitional disagreement between responsible and reasonable scientists within a unified system of psychology (e.g., Davydov, 1990; Engestrom, 1990).

A unified psychology should not be <u>either</u> descriptive <u>or</u> explanatory but both. Activity theory overcomes the shortcomings of both behaviorism and mentalism (e.g., Cognitive psychology) by supplying the explanatory account which augments these former merely descriptive accomplishments. That is, the concept of activity provides a non-dogmatic systematic approach to the pursuance of psychological science. Just as biology has Darwin's evolution (and its mechanism of

natural selection), psychology has Leontyev's activity theory as a means of explaining the guiding and directing of human actions within the context of joint-action, and by way of interiorization, and appropriation.

Under the unified system of psychology provided by activity theory, various theorists will support various theories referring to the same phenomena, but there will be one metatheoretical basis for those theories. While on a given issue there is an transitional stage of theoretical plurality it is always eventually followed by a relative stage of theoretical unification. Theoretical unification is never an absolute state, because new information leads to new questions and therefore again to relative disunity on those new questions. The whole process can be described as a forward moving cyclical pattern of discovery and justification that we can now confidently call unified psychological science.

Footnotes

1 The terms system and school as used in this thesis are consistent with those used in Hilgard (1987).

> A system calls to mind a logical structure to unify and make comprehensible the obtained observational data, whereas a school suggests a group of disciples or followers of a dominant person (Hilgard, 1987, p.69).

It should be pointed out, however, that the use of either term entails the presence of a formal or informal set of philosophical assumptions relative to what constitutes the proper object of study, and the acceptable methodology found in a given psychological project. As Hillner (1984) has pointed out, these philosophical assumptions, to a large degree, "determine both the preferred type of explanation subsumed...and effect the possible practical application or social utility value of the system [or school] in question" (Hillner, 1984, p.2).

Rather than separating out the various historical systems and schools of psychology, the aim in this thesis is to put the various attempts into historical relation. Thus, the distinction made here between Classical and Contemporary influences (in contrast to

Hillner (1984)) is made with reference to the metatheoretical influences which underlay the building of such systems and schools rather than the historical sequence of the systems themselves.

Ideally, the goal of the present analysis is to outline a system of psychology which is both practicable and also non-dogmatic (with regard to its assumptions). The term dogmatic in this thesis, therefore, is used to mean that a position is not supported by the basic assumptions and/or not supported by the demonstrable results attained.

2 Such a philosophy of science, would necessarily provide non-dogmatic answers to questions of both the ontological and epistemological types. Figure 4 thus represents, in pictorial form, the various philosophical choices which will be discussed in the thesis. One might also refer to the Appendices for the precise definitions of ontology and epistemology used in this thesis.

3 These philosophical issues, which are covered to greater or lesser depth in Philosophy of Psychology texts, include: the Free-will vs Determinism debate, the Problem of Reductionism, the Mind-Body Problem, the Problem of Knowledge, and the Question of Objectivity.

4 These positions may be anti-reductionist, but only in a dogmatic manner. The anti-reductionist positions found in Humanistic and Transcendental psychology is of that sort.

5 The following page is largely paraphrased from Anderson et al. (1986).

6 This is a problem for the statistical methods used in psychology, which are based upon the assumption of orthogonality. That is, the criterion of orthoganality is a demand made by the emprirical technique not by the object of study.

7 In the term dialectical materialism, the materialism is the ontology and the dialectics is the methodology. The position that ideas arise out of the functioning of matter is materialism. The content and internal dynamics of the ideas, on the other hand, is the dialectical side of the story. "In strict terminology, dialectical materialism is the ontology, materialist dialectics is the methodology" (Somerville, p.53).

8 Essentially there are but two basic kinds of answers to this problem: the first is that we perceive things directly, and objectively; the second, is that

we perceive things only indirectly and therefore subjectively through the effects which they produce upon us (Lowry, 1982, p.13). The first option is consistent with a materialist metaphysic (which assumes the primacy of matter as the initial premise upon which all further evidence is based) and also asserts a direct realism which allows objectivity. The second option is consistent with the idealist metaphysic (which assumes the primacy of idea as the initial premise upon which all further evidence is based), and thus asserts an indirect realism (see Figure 5).

This second position is split up into the Objective Idealism which accepts the existence of objects in the world, but which also denies our ability to reach them with our perceptual apparatus (Kant); and Subjective Idealism which goes as far as to deny the existence of objects in the world (Berkeley), stating that they are only complex constructions of the human mind. A third position Naive Realism (as a form of Agnosticism) had attempted an intermediary position which states that although we only perceive the world indirectly, we can still know the world objectively (e.g., Scheffler, Cunningham).

9 This was the publication resulting from the 1965 Banff Conference on Unification in Psychology funded by the Center for Advanced Studies in Theoretical Psychology (University of Alberta).

10 This is not an attack on Royce himself, it is simply an attempt to call attention to the need for the proper tools suited to a task (i.e., whether one is building a house or a methodology for research).

11 Arthur Staats is the founder of the Society for Studying Unity Issues in Psychology (SUNI). He is presently the editor of the International Newsletter of Uninomic Psychology, based in Honolulu, Hawaii.

12 Charles Tolman is a member of the International Standing Conference for Research on Activity Theory (ISCRAT) and is an editor of the international Activity Theory journal.

13 The dialectical view was implied in James' understanding of the self as a unity of identity and difference (in contrast to Hume who rejected the possibility of self) (Tolman, 1989a, p.182).

14 The use of the term "unification of methods" (Staats, 1983, p.292), is a misnomer unless we recognize that it is a complementary unity in diversity that is needed. To be fair, however, this was implicit in Staats' criteria for a grand theory (which necessitated that it show how the various methods complement each other). Tolman, in fact, has favorably

described Staats' ontological monism as non-absolute (Tolman, 1989b, p.180).

15 This issue of a unified theory of perception and of knowledge will be further outlined at the end of this chapter.

16 The chief defect of early materialism was that it viewed sensuousness only as a form of contemplation, rather than as human practice or activity. The active aspect of human sensuousness, therefore, was historically developed by idealism. It was this state of affairs which split the discipline into the natural science psychology of behaviorism and the idealist mentalistic (Cognitive) psychology (Leontyev, 1972, p.41).

17 The psyche is not an aggregate of reflexive reactions to the environment (behaviorism or neobehaviorism). Equally, there is no spontaneous ripening of the psyche cut off form the outside world (mentalism, introspectionism). Rather, the human psyci is formulated in activity (Brushlinsky, 1990, p.67).

18 Human activity is formed on grounds which are essentially different from the behaviorist S-R scheme

and from the S-M-R intervening variable scheme (Leontyev, 1957, pp.232-233). Motor actions cannot be completely determined by the direct effects of the external situation on exteroceptors. The occurrence of such an act is not merely a question of strengthening or suppressing movements by virtue of their reinforcement or nonreinforcement, it is a question of the readjustment and perfecting the system of movements in accordance with the objective conditions and the goals that were set before hand (Leontyev, 1957, p.233). For humans this pattern of objective conditions involve phylogenetic, ontogenetic, and sociohistorical influences.

The pattern of life peculiar to animals, which is characterized by adaptation to the actual biological conditions, is replaced in human beings by a pattern of life which is based on purposeful, premeditated change in these conditions taking place within a societal context. The general laws governing the conditioned reflex activeness of the spinal chord and brain stem retain their validity completely, but the development of the aggregate effect of these laws is now subordinated to new, more complex laws. These latter laws arise from development of those components in activity which, by their interconnections, form a reflection of the objective world in the brain of the higher organism. These are psychological laws and in

humans they must account for their sociohistorical nature (Leontyev, 1957, p.235).

In human beings, the formation of uniquely human functional systems takes place as a result of mastering tools (e.g., a violin bow, pencil), motor operations (e.g., bowing techniques, writing) and mental operations (e.g., timing, spelling techniques) (see Leontyev, 1972, p.67).

As an example of exactly how such a transformation is carried out, Leontyev provides the case of the child learning how to use a spoon. There is active intervention of the teacher (or caregiver) in the action which the child is performing. This "joint action" is divided between the teacher and the learner (Leontyev, 1957, p.238). What the child is capable of doing with the aid of another today, he will be able to do by himself tomorrow. The abilities of each individual arise in the context of this kind of guided joint action. In that sense, joint action is the action from which all other actions emerge. This means that human activity is essentially societal in all its development; it is not just under the influence of objects or biological contingency.

19 Thus Dewey is vindicated almost one hundred years later after his initial rejection of the reflex arc concept (see Chapter 3). According to Dewey the

disjointed distinction of sensation as "stimulus" and movement as "response" respectively is not descriptive of anything which holds of psychical events but is, rather, a rough methodological abstraction which followed from prior dualistic assumptions (Dewey, 1896, p.369). With an active organism the externally oriented, mechanical, S--R analysis is not sufficient. Some sort of "hierarchy of acts" is needed to allow "seeing things for reaching purposes" (Dewey, 1896, p.359; emphasis added). Roughly what he called "coordingation" we now call "activity".

20 Toward this end, he points out that teleological explanation "occupies in the biological sciences the position of an extremely important heuristic procedure, the same place that symmetry, internal rigor, and other aesthetic aspects occupy in the physical and chemical sciences" (i.e., the question 'For what?' is no less important than 'How?') (Velichkovskii, 1982, p.63).

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Table 1.

Definition Of Subject Matter and Method According To Classical Psychological System

System	Subject-Matter, * Methodology	Purpose--Influence
Structuralism 1880-1920	Structures of Consciousness. *Introspection (Mental Reduction).	Academic: Goal to set Psychology apart from philosophy-- Sensation, Attention, Affective states.
Functionalism 1880-1930	Functions (mental process). *Eclectic.	Utilitarian: Education, Mental Illness, Mental Testing.
Behaviorism 1913-1930 1938-1991	Behavior (Overt) (Operant). * Experimental (Physical Reduction).	Goal to objectify psychology-- Animal learning, Conditioning.
Gestalt 1912-1950	Phenomena as Molar Units. *Inner perception (Phenomenological analysis).	Reaction to Structuralism and Behaviorism-- Anti-reductionist.
Psychoanalysis 1885-	Unconscious, Personality. *Clinical, anecdotal.	Demystification of mental illness-- Outline of normal developmental stages.
Humanist and Existential 1960-1991	Models and problems of existence. *Subjective analysis.	Anti-behaviorist-- Stressed the 'intentional' nature of human life, Anti-reduction.

Sources: Chaplin & Krawiec (1974); Marx & Hillix (1973); Hillner (1984).

Table 2
Philosophical Underpinnings And Theoretical Conclusions
Of The Three Metatheoretical Systems

Metatheory	Method	Basic Ontological Position	Theory of Perception	Epistemic End-Point	Conception of Universe	Position on Science	Position on Unification
Positivism	Reductionism	Reductive Materialism	Indirect Perception (Humean Empiricism)	Dogmatic 'Absolute Objectivity'	Continuous Reductive Monism	Science = Empiricism (Applicable to any subject)	Unity of science through reduction (Evolutionary)
Metaphysical-Pluralism	'Anything Goes'	Objective Idealism	Indirect Perception (Kantian Antinomies)	Hopeless 'Absolute Subjectivity'	Discontinuous Pluralism	Science = Dogma (Not Applicable to Human Level)	Theoretical Pluralism and Incommensurability (Revolutionary)
Naturalistic-Emergentism	According to object of study	Functional Materialism	Direct (Naive) Realism, Direct Perception	'Objective Knowledge'	Pluralism with Continuity (Naive Dialectic)	Science = A form of Socio-Historical Pick-up of Information	Eclecticism (Cumulative)

Table 3

Progression Of The Objectivist View-Point

Adherents	Underlying Positions
Positivists	Aristotelian Laws, Either/or Logic, Representationalist
James, Dewey	Implicit Dialectic, Programatic Direct Perception
Scheffler & Cunningham	Implicit Dialectic, Naive Realist
Bitsakis	Explicit Dialectic, Naive Realist
Leontyev	Explicit Dialectic, Programatic Direct Perception
Gibson, Shaw & Bransford, Lombardo	Implicit Dialectic Direct Perception
C.W Tolman	Explicit Dialectic Direct Perception

Table 4

Important Movements In Psychological Thought

From	To
Reductionism	Emergentism
Mechanistic	Process
Mind-Body Dualism	Mind-Body Monism
Skeptical Epistemology	Optimistic Epistemology
Representationalism	Direct Perception
Either/Or Logic	Dialectical Logic
Aristotelian Laws	Galilean Laws

Table 5

Distinction Between The Empirical And Theoretical Levels Of Science

Scheffler	Davydov	Ilyenkov
Empirical		Initial Abstraction
	Abstr. Gen.	Initial Generalization
		Concrete Description
Theoretical		
	Subst. Gen.	Concrete Conception (Explanation)

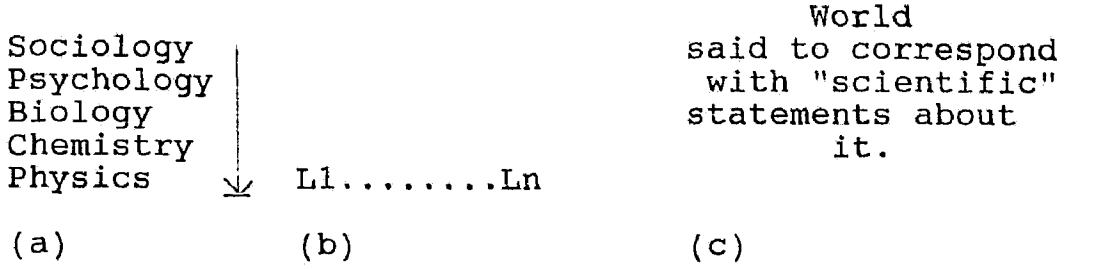
Table 6

Positions on Theoretical Unification in Psychology

Name	Position
Hilgard & Bower (1969)	Unsatisfied Eclecticist
Koch (1981)	Pluralist
Gergen (1987)	Pluralist
Royce (1988)	Unificationist (implicit pluralism)
Staats (1983)	Unificationist (systematic eclecticism)
Tolman (1987)	Unificationist (pluralistic monism)

Figure 1

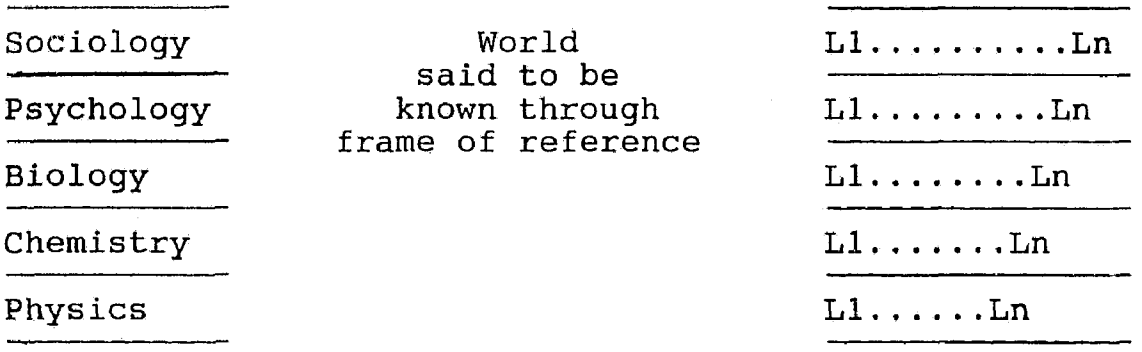
The Reductionist Hierarchy of Science



(a) An abstract, absolute continuity, with the elements at one level being explainable in terms of the more basic levels. (b) The laws of science match the world and are reducible to Physics which provides a base. A few 'general laws' could explain the universe. (c) A methodological side-step of epistemology.

Figure 2

The Metaphysical Pluralist Qualitative Distinctions Between Sciences



(a) (b) (c)

(a) An abstract, absolute discontinuity between each separate and distinct domain of study. (b) A Kantian understanding of knowledge. (c) A plurality of non-reducible scientific laws dependent upon the framework of each science.

Figure 3

The Naturalistic Emergentist Hierarchy of Sciences

Sociological	L1.....Ln	Sociology	
Psychological	L1.....Ln	Psychology	World known through social and ontological mediation of information.
Biological	L1....Ln	Biology	
Chemical	L1...Ln	Chemistry	
Physical	L1..Ln	Physics	
(a)	(b)	(c)	(d)

(a) A concrete recognition of the continuity and discontinuity between the levels of nature, as they exist in historical-evolutionary relation. (b) An increasing amount of non-reducible laws depending upon the complexity of each new qualitatively distinct but related level of existence. (c) The science which is developed to study the primary subject matter of each level will also reflect its relations with the other levels. (d) An evolutionary understanding of perception as both direct and mediated, and also, both continuous and discontinuous with conceptual abilities.

Figure 4

Scheffler's Standard View of Science

Theoretical Laws

Empirical Laws

Data

Figure 5

Relevant Philosophical Choices Covered In Thesis

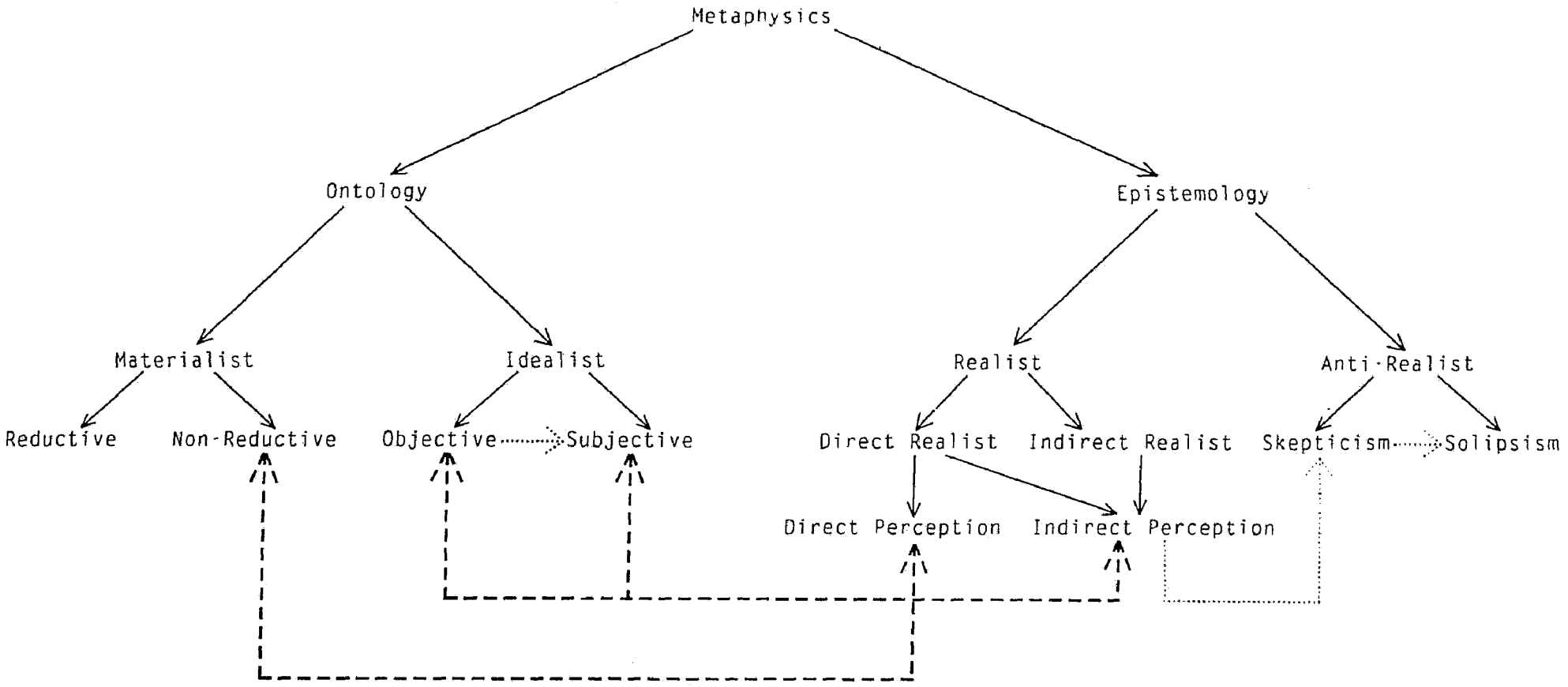
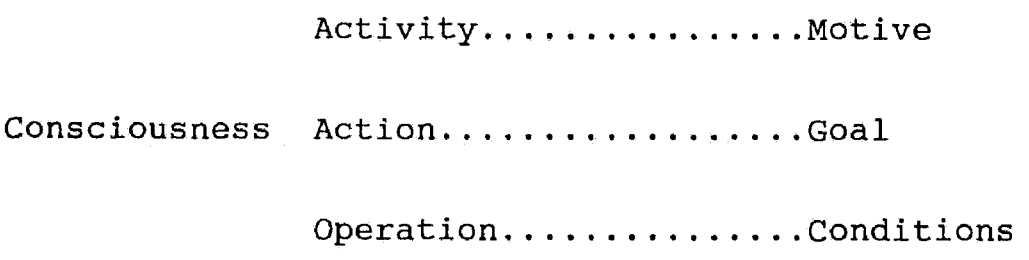


Figure 6

Leontyev's Structure of Activity



Appendix 1

RELEVANT PHILOSOPHICAL TERMS USED IN THE THESIS

The immediate concern in this appendix, is to draw attention to the various meanings of key terms used in this thesis (see Figure 5). Whereas epistemology can loosely be defined as relating to the question 'How do we know?', issues of ontology, can likewise be defined as concerning questions such as 'What is it that we know?', 'What exists?', and 'What is that made up of?'. The basic ontological issue is the choice between a materialist or an idealist philosophy. The basic epistemological issue is one of choosing between a realist or an anti-realist philosophy.

(I) Ontology

It may be necessary, to provide a clear contrast between the old metaphysical meaning and a modern, progressive, and useful, philosophical definition of ontology. As Lacey (1986) points out, metaphysics is the "study of nature in general". It is said also, however, to be concerned with issues which "arise out of, but go beyond, factual or scientific questions about the world" (Lacey, 1986, p.143). Ontology on the other hand, is defined as "the study of being and in particular, nowadays, what there is, e.g. material

objects, minds, persons, ...etc" (Lacey, 1986, p.143).

Part of the goal of this thesis then, is to investigate the claims as to the nature of the surrounding world, which are both contained in, and implied by given theorists, schools and systems of science and psychology.

(A) Use of the terms Materialism and Idealism

The two basic ontological positions of materialism and idealism, feature prominently in the differentiation and outcome of the three dominant historical metatheories. Over-simplification of what is meant by the terms materialism, and idealism, however, has historically hindered a progressive assessment of the resultant schools and systems of science. In this paper, therefore, I explicitly adopt the Feuerbach-Engels view that there are "two and only two fundamental but opposing philosophical [ontological] alternatives: idealism according to which mind is primary in the universe and matter is created by or dependent upon, mind; and materialism, according to which matter is the primary being and mind the subordinate and dependent feature of the world" (Acton, 1967, p.390; emphasis added). The scope of idealism as used here, includes positions such as Subjective Idealism (Protagoras, Berkeley, Hume),

Objective Idealism (Plato, Locke, Kant), and Theism (Aquinas, Descartes). The scope of materialism includes such positions as Vulgar or Mechanistic [reductive] Materialism (Hobbes, Loeb, Watson), and Modern or Dialectical non-reductive Materialism (Marx, Engels, Leontyev).

(II) Epistemology

The above more useful definition of ontology, needs to be distinguished not only from metaphysics but also from the complementary philosophical endeavor called epistemology. As Baldwin (1957) pointed out:

> Thus ontology is no longer the general theory of being, distinct from its special forms; it is the theory of the known reality as distinct from the theory of the process of knowing. English thought probably owes to Ferrier that clear-cut recognition of this latter distinction of ontology and epistemology. (Baldwin, 1957, p.204; emphasis added)

The philosophical dictionaries, provide a broad definition of epistemology as: (1) A "branch of philosophy concerned with the nature and scope of

knowledge, its presuppositions and basis, and the general reliability of claims to knowledge" (Hamlyn, 1967, pp.8-9); and (2) "The systemic analysis of conceptions employed by ordinary and scientific thought..." (Baldwin, 1957, p.333).

Figure 5, shows the epistemological choice of realism being further divided up into a choice between indirect and direct realism. The support of each of these, further entails a choice between adherence to a direct or an indirect theory of perception. The challenge over the years, has been to develop a sufficient conception of perception, in which an "essential connection" between perception and an objective world is recognized (Hamlyn, 1967, p.38). It will be put forward in this thesis that the direct theory of perception is the only nondogmatic epistemological support for a direct realist position. That is, it is the only way to avoid slipping into the Skepicism (hence Solipsism) so characteristic of the indirect realist and anti-realist positions.

Appendix 2

THE COMPLEMENTARY NATURE OF ONTOLOGY AND EPISTEMOLOGY

By complementary, I mean that one can not talk about what is known, without talking about how it is known. Figure 5 shows the ontological and epistemological choices which I have mentioned above, and which are necessary for any underlying philosophy of science. These choices are represented in Figure 5 means of solid lines. Beyond this however, this thesis will also put forward the argument that there is a clear and consistent relationship between the theory of perception held, and the ontological position held by a given theorist, school, or system, of science. These relationships are represented in Figure 5 by means of dashed lines.

(I) Variants in Ontological and Epistemological Positions

The relationship between ontological and epistemological choices is quite complicated. Figure 5 for instance, indicates that a given ontological materialist or idealist, can be an epistemological direct realist or an indirect realist. Likewise, a given materialist theorist can hold either a reductive or a non-reductive position. The epistemological side of the diagram, indicates that a given epistemological

direct realist can hold either a direct perceptionist or an indirect perceptionist position. In Part I of this thesis the aim is to indicate which choices are the best to make, and what the implications are for methodology and theory choice in psychology. Part of the solution may be highlighted by using figure 5 to contrast these general variants in philosophical positions with the equally important consistencies (invariants).

(II) Consistencies (invariants) in Philosophical Positions

In the modern philosophical positions, we find a number of consistencies. These invariants are indicated in figure 5 by means of dotted lines. On the ontological side of the diagram, we see that Objective Idealist positions slip inevitably into Subjective Idealism. On the epistemological side of the diagram, we find that Skeptical (anti-realist) positions slip inevitably into full-blown Solipsisms. Also on the epistemological side, we find that any Indirect or Direct realism, which relies upon an Indirect perception, slips likewise into a Skepticism (and hence Solipsism).

(III) How do these Ontological and Epistemological Consistencies Relate to Each Other?

First, it should be pointed out that indirect

perception leads both from and to, an ontological idealist position (see dashed lines Figure 5). There is a mutuality between them. Second, since all idealisms rely upon indirect perception they end logically (via Skepticism) in a dogmatic Solipsism. Third, any explicit materialist position which relies upon an indirect perception, ends likewise in a dogmatic Solipsism (via implicit idealism and skepicism). And fourth, direct perception both relies upon and supports a non-reductive materialism. There is a necessary mutuality between them. What I hope Part I of this thesis will demonstrate is that the only defendable philosophical basis for psychological science is a non-reductive ontological materialism, supported by (and supporting) an epistemological direct perception.

This discussion has, thus far, been fairly abstract. It has, however, been the concrete succession of historical metatheories (as covered in this thesis) which has allowed me to make the above observations. First, in positivism, we will see an objectivist materialism being undermined by both its methodologically reductive tendencies, and by an implicit acceptance of a Humean Skeptical epistemology. As a result of those tendencies a dogmatic and monolithic conception of unification between the sciences was put forward. Secondly, in metaphysical

pluralist positions, we will see an idealist back-lash against positivism, and a continuation of a more explicitly Skeptical epistemology, calling outwardly for support from an indirect perception. An appeal to an incomensurable theoretical pluralism is the result of such assumptions. Third, in naturalistic emergentism, we will see the assertion of a non-reductive materialism and the eventual development of a direct perceptionist position, which both supports and is supported by its non-reductive ontological foundation. This, I will argue, allows a nondogmatic explanation of the evolutionary succession of both scientific systems and scientific theories. Under naturalistic emergentism, a progressive understanding of both theoretical unification and the unity between the various sciences is attained.

In Part II of this thesis it takes only the addition of a non-arbitrary theoretical methodology to this firm foundation, in order to state clearly (and apply) the nondogmatic criteria for the production, assessment, and selection between smaller scale theoretical positions. Thus, this thesis attempts to address with equal weight, both, the larger questions of science, and the crisis of theoretical relevance in psychology.

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