

## ADVANCING HUMAN SCIENCE

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### Introduction

The purpose of this paper is to seek greater clarity about human science by scrutinizing some conceptual distinctions. We shall see that such distinctions, whether for inquiry or pedagogy, have given rise to the current difficulties. The demarcations and their consequences have not provided greater clarity, but rather controversy over the nature of human science in both content and method. In this paper, I will be using the phrase "human science" as a generic, collective reference to those sciences and disciplines which pertain directly to human beings.

My general thesis is that a more tactful and constructive approach is to advance a human science that draws and thrives on a multiplicity of sciences and disciplines. By achieving a transdisciplinary science, we would deepen our understanding of human beings, develop more useful methodologies, construct more fruitful theories, and address the major problems of our times. We must pursue human science in a cooperative, integrative, and transdisciplinary fashion. This pursuit is the promise I see in human science. Obviously, this paper's sweep across the centuries is intended to be representative of a proper look at the issue, but not an exhaustive examination of the subject. I begin with the person most often cited in reference to the origin of the human sciences: Wilhelm Dilthey (1833–1911).

### Dilthey

The man and his work are often used as the starting point for promoting the advancement of the human sciences in opposition to the natural sciences. Dilthey is often given the credit for a fundamental distinction among the sciences, expressed in the German words *Naturwissenschaften* and *Geisteswissenschaften*. The former has been translated into English to mean the natural sciences and the latter to mean the rational, cultural or moral sciences, the humanities, human studies, science of the mind (Adler, 1986; Dilthey, 1923/1988, Makkreel, 1975). But Dilthey did not introduce these words into the German

language or into the study of human beings. The German historian Johann Droysen used *Geisteswissenschaften* in his 1843 publication, *Geschichte des Hellenismus* (History of the Hellenic Period). Apparently, the words first appeared in opposition to one another in Schiel's rendering into German in 1849 of J. S. Mill's *A System of Logic*, six years after its publication in England (Makkreel, 1975). Furthermore, neither was Dilthey the first scholar to make this division between the sciences, nor did Dilthey intend the division to separate and inhibit interdisciplinary study among the human sciences as well as bridge building between the human and natural sciences (Dilthey, 1923/1988).

However, what Dilthey did do was write more than a dozen volumes and speak out vehemently against certain views of his day which took physics as a model for all the sciences, and relegated philosophy, history, and the less tangible disciplines to a back room status in the house of knowledge. He sought greater clarification of the human sciences through historical, phenomenological, and hermeneutic approaches in order to set the human sciences on an equal and complementary footing with the natural sciences (Dilthey, 1923/1988).

## Before Dilthey

Among the Greek philosophers Aristotle (384–322 B.C.) stood out in organizing the disciplines in his writings into the natural sciences, mathematics, and metaphysics (McKeon, 1947). Science and philosophy were synonyms and were used to refer to a hierarchy of distinguishable branches of knowledge (Adler, 1986). Where the natural sciences, involving the observation of natural phenomena, were situated at the bottom of the hierarchy, metaphysics was the most abstract and advanced level situated at the top. But Aristotle described other bases to group the sciences. For example, physics, mathematics, and metaphysics were sciences of theoretical knowledge to be studied for their own sake. Such sciences as ethics, economics, and politics were sciences of practical knowledge to be studied for the sake of prescribing, regulating, and judging the actions of others.

Although the Greek philosophers had their schemes for organizing knowledge, a look at the Second Book of the *Advancement of Learning* by Sir Francis Bacon (1561–1626), published in 1605, reveals a much more impressive, comprehensive, and detailed scheme upon which to organize the disciplines than the work of scholars before and after Bacon. Billed by Bacon as "a small globe of the intellectual world" (Bacon, 1605/1952, p. 101), he considered, as those before him, the sciences to be general studies and bodies of knowledge. Knowledge was divided into three general areas: history, poesy, and philosophy. Although history and philosophy were reunited through the study of natural history,

natural philosophy was thought to be a more encompassing subject than human philosophy. Human philosophy (humanity) focused on the study of human beings in isolation or as part of a group. Bacon viewed human philosophy as "...but a portion of natural philosophy in the context of nature" (Bacon, 1605/1952, p. 49). Noteworthy is that the body-mind dichotomy, associated later with René Descartes (1596–1650), appeared under the study of man in singularity, but was unified in Bacon's position. The study of mind, soul, and spirit collectively became the branch of human philosophy from which sprang both the rational sciences and the moral sciences.

The "globe" image may be misleading when presented in the form of hierarchical branching, for three concentric circles probably better represent Bacon's view that the study of human philosophy is encompassed within the study of natural philosophy, which is encompassed within the study of Nature.

In the First Book of his *Advancement of Learning*, Bacon reminds us of exactly how old the division is between natural knowledge and moral knowledge. He alludes to Genesis 2, which states:

...God caused to spring up from the soil every kind of tree, enticing to look at and good to eat, with the tree of life and the tree of knowledge of good and evil in the middle of the garden...God fashioned all the wild beasts and all the birds of heaven. These he brought to the man to see what he would call them; each one was to bear the name the man would give it. The man gave names to all the cattle, all the birds of heaven and all the wild beasts...(Jones, 1968, p. 6)

After studying the Old Testament, Bacon writes,

...the first acts which man performed in Paradise consisted of the two summary parts of knowledge: the view of creatures, and the imposition of names. As for the knowledge which induced the fall, it was...not the natural knowledge of creatures, but the moral knowledge of good and evil; wherein the supposition was, that God's commandments or prohibitions were not the originals of good and evil, but that they had other beginnings, which man aspired to know; to the end to make a total defection from God and to depend wholly upon himself. (Hutchins, 1962, p. 18)

It is upon such insights that Bacon based his *philosophia prima*. The fall from Paradise set into motion reason in the pursuit and study of the divine (knowing of God), the natural (knowing of Nature), and the human (knowing of oneself).

The primary interest in general studies, as suggested in the works of Aristotle and Bacon continued throughout the Renaissance and the Enlightenment. This general interest

can be seen in the collected works (Table 1) of not only Bacon and Descartes, but also Sir Isaac Newton (1642–1727), John Locke (1632–1702), and Immanuel Kant (1724–1804).

**Table 1. General Studies during the Renaissance and Enlightenment**

1605	Francis Bacon	<i>Advancement of Learning</i>
1620	Francis Bacon	<i>Novum Organum</i>
1637	René Descartes	<i>Discours de la Méthode</i> (Discourse on Method)
1640	René Descartes	<i>Meditationes de Prima Philosophia</i> (Meditations)
1644	René Descartes	<i>Principia Philosophiae</i> (Principles of Philosophy)
1649	René Descartes	<i>Traité des Passions de L'âme</i> (Treatise on the Passions)
1651	Thomas Hobbes	<i>Leviathan</i>
1686	Gottfried Leibniz	<i>Discours de Métaphysique</i> (Discourse on Metaphysics)
1687	Isaac Newton	<i>Philosophiae Naturalis Principia Mathematica</i>
1690	John Locke	<i>Essay Concerning Human Understanding</i>
1725	Giambattista Vico	<i>Scienza Nuova</i> (New Science)
1739–40	David Hume	<i>Treatise of Human Nature</i> 2 volumes
1781	Immanuel Kant	<i>Kritik der Reinen Vernunft</i> (Critique of Pure Reason)
1788	Immanuel Kant	<i>Kritik der Praktischen Vernunft</i> (Critique of Practical Reason)
1790	Immanuel Kant	<i>Kritik der Urteilskraft</i> (Critique of Judgment)
1794	Johann G. Fichte	<i>Einige Vorlesungen über die Bestimmung des Gelehrten</i> (The Vocation of the Scholar)
1798	Johann G. Fichte	<i>Das System der Sittenlehre nach den Principien der Wissenschaftslehre</i> (The Science of Ethics as Based on the Science of Knowledge)
1807	G.W.F. Hegel	<i>Phänomenologie des Geistes</i> (Phenomenology of Mind)
1817	G.W.F. Hegel	<i>Encyklopädie der Philosophischen Wissenschaften im Grundrisse</i> (Encyclopedia of the Philosophical Science in Outline)

Newton's main work, *Philosophiae Naturalis Principia Mathematica*, published in 1687, was not just about the laws of motion. Locke, often cited as the father of British empiricism, gave primacy to the acquisition of ideas via sensation, whereafter, when sufficiently developed and exercised, the faculty of reason in reflection could abstract and deduce other ideas (Locke, in Dennis, 1948). Kant wrote three treatises: one on the limits of human reason, one on the grounds of moral judgment, and the third on aesthetic

judgment. It was unnecessary to define a discipline in terms of either a natural science or a rational, moral science (Adler, 1986). These philosophers did not appear to restrict their ideas to particular disciplinary distinctions.

However, philosophers and scientists in the Renaissance did bring forth different general methods with contrasting underlying philosophical assumptions. Method gained greater importance as the basis for bifurcating the sciences than any difference discernible among the various schemes for organizing knowledge.

Bacon drew heavily on the writing of Greek philosophers, such as Plato and Aristotle, to refute for the most part their pronouncements about the sciences. He advocated experience, observation, and experiment to discover the knowledge of man and nature. Opposed to the more logical, deductive, and rationalistic approach of his Greek predecessors, his famous inductive method was articulated in the *Novum Organum*, published in 1620, wherein he also warned the reader of the idols of rational thought, which dilute and encumber the rational sciences. The approach to method articulated by Bacon was soon to find compatibility with the works of Galileo, Kepler, and others contributing to the natural sciences, but was considered to clash with continued developments in philosophy from the tradition of rationalism.

Bacon spawned an empiricism utilizing an inductive method. In contrast, Descartes vitalized a new rationalism utilizing a deductive method. Giambattista Vico (1668–1744) brought a new emphasis on historicity and an attempt to form a single science of humanity. Although there remained an emphasis on science as general studies, the focus turned increasingly to method as the basis for disciplinary distinctions. Inductive method appeared to lend itself more to the problems and types of content of the natural sciences, where deductive method seemed more suited to those of the rational sciences.

Aware of these bases for making divisions, Bacon continued an established tradition when he cautioned others, stating:

And generally let this be a rule, that all partitions of knowledges be accepted rather for lines and veins than for sections and separations; and that the continuance and entireness of knowledge be preserved. For the contrary hereof hath made particular sciences to become barren, shallow and erroneous, while they have not been nourished and maintained from the common fountain. (Bacon, in Hutchins, 1962, p. 49)

Despite Bacon's rule, method took a firmer footing as a basis for making distinctions among the sciences in the period of the Enlightenment. The split deepened between the natural and rational sciences, not so much on grounds of content as on method. For despite a continued interest in general studies spanning several knowledge areas, it became more

apparent to scholars that the questions of inquiry and subject matter yielded to differing approaches. This was particularly evident in the case of the natural sciences, but remained less discernible and more debatable among the rational, moral sciences.

But it was Auguste Comte (1798–1857) who laid the bricks and trowelled the mortar into the wrinkles but not the veins of Bacon. Comte distinguished genuine knowledge from mere opinion. As Bacon before him, he professed that genuine knowledge was to be gained, not by means of speculation and deductive reason, but through observation and experimentation. Unlike Bacon, Comte reconsidered the sciences in light of his positivism, and he designated those sciences which were empirical in nature and potential benefactors of the experimental method from those that were not. Specifically, the natural sciences included mathematics, astronomy, physics, chemistry, biology, physiology, and social philosophy, but not theoretical philosophy (mind, nature, metaphysics), practical philosophy (ethics and politics), psychology, history, physical anthropology, and the liberal arts. Comte's divisions of the sciences were very influential. They provided an early basis in establishing colleges and departments within universities and the development of specializations (Adler, 1986).

In contrast to positivism were other philosophic schools of thought, namely dialectics, hermeneutics, idealism, and phenomenology. The works of Johann Fichte (1762–1814), G.W.F. Hegel (1770–1831), Karl Marx (1818–1883), Max Weber (1864–1920), and many others became increasingly prominent toward the end of the 19th century (Wright, 1971). As a body of scholarly literature, it was construed generally as antipositivist and the foundation upon which advances were being made in the rational, moral sciences.

There was a strong reaction against the positivism of Comte and setting the standard of experimentalism for all the sciences. Droysen in 1858 introduced the distinction between *Erklären* (explanation) and *Verstehen* (understanding). This distinction was articulated by antipositivists in terms of the goals of science. Where the former applied to the natural sciences, the latter pertained to the rational, moral sciences. Windelband in 1894 was apparently the first to use the dichotomy nomothetic-ideographic. He indicated that sciences which emphasize the search for the laws of nature are nomothetic and those which describe the individuality of the subject matter are ideographic. Dilthey became identified with the antipositivist tradition, particularly because of his writings concerned with historical and hermeneutic method in the rational, moral sciences.

John Stuart Mill (1806–1873) was an empiricist. Although Mill is credited with rescuing associationism from rationalism by means of experimentalism (Boring, 1950, p. 231), he also touched in a fashion on the matter of human science in his major work on the scientific method, *A System of Logic*, published in 1843. Within this volume is his essay on "Psychology and Ethology." There are two chapters subtitled "That There Is, or May Be,

a Science of Human Nature" and "Of Ethology, or the Science of the Formation of Character" (Dennis, 1948, pp. 169–177). In Mill's time, ethology was the study of the fundamental character or spirit of a culture, group, or human being, in other words, the study of ethos.

Mill represents a refinement of earlier views. On the one hand, psychology is the science making use of inductive method. It leads to empirical laws which are approximate generalizations. On the other hand, ethology is the science making use of deductive method setting out general or real laws which are verifiable in one's specific experience. Empirical laws are culminations of experimentation. Real laws are derivatives, deduced from general laws of mind. One cannot study the mental and moral nature of character by experiment, just as one cannot study the associations of mind and states of consciousness by logic. Thus, Mill made it clear that psychology was to be included among the natural sciences and ethology was one of the rational sciences. Mill followed the Enlightenment and, with other empiricists and idealists, set the stage for Dilthey. As noted earlier, it was the translation of Mill's work that brought the dichotomy among the sciences to a new life through the pen of Dilthey.

From the Renaissance through the turn of this century, while the inductive approach that Bacon articulated and the experimental approach Galileo exercised became empiricism, the deductive approach from Aristotle through Descartes developed into forms of rationalism. The former became associated with the natural sciences and the latter with rational or moral sciences.

Of course, there were many other contributors after Comte and J.S. Mill, who fanned the flames of the split by further articulating the differences among the sciences (Table 2). Early psychologists, specifically Gustav Fechner (1801–1887), Hermann von Helmholtz (1821–1894), and Wilhelm Wundt (1832–1920), through word and deed, reconstructed the study of the human being into an object of experimentation. In so doing, they played out a familiar drama gaining favor since Bacon's time: reconceptualizing science. In this case, they rewrote science, making it an experimentalism, and severing it and psychology from philosophy.

**Table 2. Contemporaries of Wilhelm Dilthey (1833–1911)**

1830–42	Auguste Comte	<i>Cours de Philosophie Positive</i> (Course of Positive Philosophy), 6 volumes
1843	John Stuart Mill	<i>A System of Logic</i>
1843	Soren Kierkegaard	<i>Frygt og Baeven</i> (Fear and Trembling)
1844	Soren Kierkegaard	<i>Begrebet angst</i> (The Concept of Dread)

1848	Karl Marx	<i>Communist Manifesto</i>
1858–62	Wilhelm Wundt	<i>Beiträge zur Theorie der Sinneswahrnehmung</i> (Contributions to the Theory of Perception)
1859	Charles Darwin	<i>Origin of Species</i>
1860	Gustav Fechner	<i>Elemente der Psychophysik</i> (Elements of Psychophysics)
1868	Alexander Bain	<i>Mental and Moral Science: A Compendium of Psychology and Ethics</i>
1872	Alexander Bain	<i>Body and Mind</i>
1874	Franz Brentano	<i>Psychologie vom Empirischen Standpunkte</i> (Psychology from the Empirical Viewpoint)
1877	Charles S. Peirce	"The Fixation of Belief"
1883	Wilhelm Dilthey	<i>Einleitung in die Geisteswissenschaften</i> (Introduction to the Human Studies)
1885	H. Ebbinghaus	<i>Ueber das Gedächtnis</i> (Memory)
1890	William James	<i>Principles of Psychology</i> 2 volumes
1894	Wilhelm Dilthey	"Ideen über eine Beschreibende und Zergliedernde Psychologie" (Ideas Concerning a Descriptive and Analytical Psychology)
1897	H. Ebbinghaus	<i>Grundzüge der Psychologie</i> (Characteristics of Psychology)
1898	E.B. Titchener	"The Postulates of a Structural Psychology"
1900–01	Edmund Husserl	<i>Logische Untersuchungen</i> (Logical Investigations) 2 Volumes
1901–09	E.B. Titchener	<i>Experimental Psychology</i>
1906	Edmund Husserl	<i>Die Idee der Phänomenologie</i> (The Idea of Phenomenology)
1907	William James	<i>Pragmatism: a New Name for Some Old Ways of Thinking</i>
1910	Wilhelm Dilthey	<i>Der Aufbau der geschichtlichen Welt in den Geisteswissenschaften</i> (The Structure of the Historical World in Human Studies)
1910	John Dewey	<i>How We Think</i>
1914–75	Wilhelm Dilthey	<i>Gesammelte Schriften</i> 17 volumes

In psychology, as in many other disciplines, the gap was widened not only between natural and human philosophy as described earlier by Bacon, but also between the rational and moral aspects of human philosophy as presented by Kant, Locke, Comte, and J.S.



Mill. No doubt, these developments would be received with horror by the philosophers described earlier, but with many accolades by the founders of experimental psychology. Many years later, Koffka, of a less experimental bent, would acknowledge, "...philosophy is the mother of all sciences...and our science, psychology, was the last to gain her independence" (1935/1963, p. 6). The generation of experimentalists with whom Dilthey had to contend, namely Hermann Ebbinghaus, Ernst Mach, Richard Avenarius, Oswald Külpe, and Edward Titchener, were busy capitalizing on the works of Weber, Fechner, Helmholtz, and Wundt. It was in this tumultuous context of the "new psychology" of Germany that Dilthey wrote, particularly in reaction to and in debate with Ebbinghaus (Klüver, 1929).

## The University

During the last one hundred years, many disciplines became defined and established with the founding or re-establishment and development of universities in Continental Europe. Following the guidance of Comte and his disciples, demarcations among the disciplines based on content, method of inquiry, and philosophical assumptions continued in university settings.

In the latter half of the 19th century and well into this century, these disciplines became firmly rooted in the continental United States. I mention but one illustration with which I am most familiar. Inspired by their European predecessors and counterparts, the leading psychologists before the turn of the century went to Germany to study the "new psychology," brought it back across the Atlantic, and made it an established tradition in all their North American universities (Boring, 1950; Murphy, 1929).

But it was the establishment of the various colleges and departments within universities that have formalized the divisions among the disciplines. Mortimer Adler (1986) makes this point quite clear, particularly in his reference to the University of Chicago in the 1930s, where President Hutchins first introduced our present scheme and organization of the university. The ensuing competition for positions, resources, and finances have entrenched and hardened disciplinary boundaries. See also Kockelmans (1975, pp. 146-147).

Accompanying these developments over the last one hundred years has been a shift in the meaning of the doctorate degree. It is no longer a generalist degree, but a Doctorate of Philosophy awarded for specialties. Furthermore, journals, organizations, and specializations have contributed more to the ossification of the disciplines than any hybridization resulting from bold ventures across disciplinary borders. In fact, there is much activity still

to discourage transgressing, whether it be to participate in an interdisciplinary program or to research a marginal topic (Jantsch, 1970; Kockelmans, 1975; Romney, 1975).

It should be clear that there were two contrasting traditions (Wright, 1971), which I have hastily traced from the periods of Greek philosophy to Wilhelm Dilthey. The more rational, deductive approach striving for understanding became associated with the *Geisteswissenschaften*, and the more experimental, inductive approach striving for explanation became associated with the *Naturwissenschaften*. Moreover, the very concern Bacon had about allowing separations of knowledge has become an ingrained habit of thought and an occupational reality.

### **After Dilthey**

Since Comte introduced positivism, there have been continued, deliberate, and widespread efforts to "positivize" and "experimentalize" the rational, moral sciences, so that these sciences, to qualify as sciences, must fit the mold, even if such actions meant consequently the distortion of knowledge and the abuse of method. The influence of Dilthey and his antipositivist contemporaries was overshadowed by the lure of logical positivism after the turn of this century. The natural sciences maintained center stage with new theories, advances in technology, and technological applications to further natural science inquiry.

In spite of the domination of the natural sciences, there remains a continued interest through this century in the organization of the disciplines and the split among the sciences (Table 3).

**Table 3. Continued interest in the split among the sciences**

1938	H. Reichenbach	<i>Experience and Prediction</i>
1947	F.S.C. Northrop	<i>Logic of the Sciences and the Humanities</i>
1954	Edmund Husserl	<i>The Crisis of European Sciences and Transcendental Phenomenology</i>
1959	C.P. Snow	<i>The Two Cultures and the Scientific Revolution</i>
1959	E. Sprague and P. Taylor	<i>Knowledge and Value</i>
1965	W.T. Jones	<i>The Sciences and the Humanities</i>
1968	Jürgen Habermas	<i>Knowledge and Human Interests</i>
1971	G. von Wright	<i>Explanation and Understanding</i>
1978	Z. Bauman	<i>Hermeneutics and Social Science</i>
1988	J. Connolly and T. Keutner	<i>Hermeneutics Versus Science?</i>

After World War II, the methodological limitations of experimentalism and positivism for the rational, moral sciences became widely acknowledged (Allender, 1987; Manicas and Secord, 1983; Rabinow and Sullivan, 1979; Reason and Rowan 1981), and methods potentially of value for them began to attract the degree of attention seen previously in Dilthey's day (Barrell et al, 1987; Giorgi, 1970; Lincoln and Guba, 1985; Oliga, 1988).

There are several more recent developments especially relevant to matters of dividing the sciences and the nature of human science. They concern phenomenology, historicity, hermeneutics, interpretative social science, linguistics, humanistic psychology, field theory and social action research, and systems theory. As other authors in this issue of the *Saybrook Review* are focusing on some of the former, I will direct my points briefly to the latter three, before returning to Dilthey and the human science perspective, because they serve to illustrate the persistence, richness, and character of human science.

### Humanistic Psychology

A great debt is owed to those who have carried on the tradition of the human sciences in the United States in the form known historically as the Third Force in psychology. I am referring specifically to the humanistic psychologists, such as James Bugental, Abraham Maslow (1908–1970), Rollo May, and Carl Rogers (1902–1987), who were joined by others from related disciplines, such as Jacques Barzun, Gregory Bateson (1904–1980), and Rene Dubos (1901–1982).

The humanistic scholars have studied and articulated many of the core concepts central to a human science. Their interests can be traced to earlier European roots in existentialism, hermeneutics, history, humanism, and phenomenology. For example, in May (1983) there are several key concepts traced to European existentialism and phenomenology which reappear in a contemporary North American form familiar to humanistic-existential psychotherapists, theoreticians, and researchers.

Even though the historical thread may appear less discernible today, the publications of these scholars are one post World War II manifestation of the philosophical tradition found in the writings of Dilthey. Without their contributions and the First Invitational Conference on Humanistic Psychology (1965), held in 1964 at Old Saybrook, Connecticut, Saybrook Institute would likely not have been established as a center to discuss and develop further the human sciences and the foundation provided by the Old Saybrook Conference. For some discussion of this perspective and reference to exemplary contributions of those attending the Old Saybrook Conference, see Collen (1982).

### **Field Theory and Social Action Research**

Heavily influenced by the works of the Gestalt psychologists, Kurt Lewin (1890–1947) developed a field theory which made use of topology to study personality, life span development, and social relations. Lewin focused on the person in the environment and relied on abstract conceptualizations reminiscent of phenomenology, such as life space (Lewin, 1935, 1936, 1951). However, his action orientation led to real world demonstrations, such as the classic experiment in social change (Lewin, Lippett and White, 1939) and a participatory, interventionist posture toward change in the social relations and social structures of groups and organizations. Lewin's work is innovative and eclectic, sharing some common ground with systems theory and phenomenology.

There are those who have taken up Lewin's approach and continue to develop it (Cartwright, 1951; Rivera, 1976; Argyris and Schön, 1974, 1978). Lewin's disciples have concentrated their efforts on group process, personal-organizational development, and social action research. The Lewinian approach has become an important part of human science. Its importance is particularly evident more recently, where Argyris, Putnam, and Smith (1985) articulate the roots and foundations of the approach in both the natural and the human sciences.

## Systems Theory

Bateson is one scholar who has brought the systems perspective to human science. In *Steps to an Ecology of Mind* (1972, p. 481), he insightfully notes a connection between the contributions of Kant and the psychoanalyst Carl Jung (1875–1961). The connection leads him to formulate a key point in his systemic approach to human science. Specifically, Greek philosophy and its perpetuators have lead us astray with an emphasis on the idea. After all, philosophy is the study of ideas. However, it is the difference between ideas which is the substance of our study, not the ideas themselves. Paradoxically, it is the differences between ideas, or among ideas, that provide the ideas for discussion and inquiry.

Bateson stresses that, like Carl von Linné (1707–1778) and his followers, Darwin (1809–1882) perpetuated a misplacement of focus on the organism or species as the basic unit of survival. According to Bateson, the basic unit more aptly needs to be the organism-in-environment. Although Darwin was not aligned generally with the Linnéan school of ecology and had some propensity toward such structural concepts as the “web of life” (Worster, 1979), it is easy to see the merit of Bateson’s point when reading Darwin’s *The Origin of Species* (1859/1958). Bateson’s emphasis is the idea of relationship, but more importantly, relationships among the elements of the system that create activity and context. His chief interest is in the patterns and configurations which connect us to each other and our surroundings. This expression of relationship is a fundamental principle of systems thinking, which has an important contribution to make to human science.

Basic concepts, such as relationship, comprise the foundation of General Systems Theory. Its founder, Ludwig von Bertalanffy (1901–1972), introduced a general scheme for the organization of the sciences in *General Systems Theory* (1968/1940). James Miller (1978) has developed this theory in regard to living systems. Living Systems Theory, as it is now called, rests on a hierarchical structure arranged by level of complexity. The levels are as follows: living cell, organ, organism, group organization, society, and supranational system. These levels are both hierarchical and heterarchical, both between and within levels. Systems science involves the study of relationships at each level as well as the isomorphies which may exist between levels. The various disciplines, as organizations of knowledge and systems in themselves, can be placed at various levels. Human beings tend to socialize and work in groups, termed human activity systems. Naturally, it is the individual through the supranational level which captures our attention in the human sciences. In contrast to Miller and Bertalanffy, John van Gigch (1974) published a taxonomy of the sciences from a systems perspective. It shows clearer parallels to the distinction traced in this article before and after Dilthey than Bertalanffy’s scheme. Gigch considers general science as either hard or soft. The specific sciences can be grouped into four categories:

physical, life, behavioral, and social sciences. Although the life sciences span both areas of general science, it is largely the latter two categories which comprise the soft sciences. But what ties Giger to Bertalanffy and Miller is that the primary subjects of concern for the soft sciences are humans, social systems, and organizations made up of and run by human beings.

As interest has become more centered on human beings by systems scientists over the past two decades, systems science has in its philosophical assumptions, theory, and methods become increasingly more similar to a rational or moral science. Table 4 highlights several contrasts between the traditional scientific thinking of the natural sciences and current systems thinking. It is strikingly evident that a large portion of the characteristics of systems thinking resembles positions advocated by scholars in the rational, moral sciences.

**Table 4. Two perspectives in contrast.\***

<i>Aspect</i>	<i>Traditional scientific thinking</i>	<i>Systems thinking</i>
Focus	Single variables, parts, linear relationships	Multiple/dynamic interactions, wholes, patterns of relationship
Goal	Prediction, explanation	Understanding
Inquiry	Goal-driven, negative feedback (adjust for error)	Goal-driven, negative feedback and positive feedback (change of goals)
Mode	Analysis	Synthesis
Reasoning	Cause-effect determinism	Purposefulness, meaningfulness
Researcher	Objectivity, isolation, observer detachment	Subjectivity, interaction, observer involvement
Theory	Reductionism	Expansionism, emergence

\*Adapted from Banathy (1984)

However, unlike contemporary scholars furthering the development of established traditions such as humanism and existentialism (May, 1983), hermeneutics (Gadamer, 1976), and phenomenology (Giorgi, 1971), many of whom appear to maintain the distinction associated with Dilthey, contemporary systems scholars (Checkland, 1981; Jantsch, 1980; Laszlo, 1987; Prigogine, 1984) are attempting to go beyond the distinction by building bridges among the sciences based on systems thinking and General Systems Theory. Perhaps two examples will suffice.

Peter Checkland has developed a strategy for research and intervention in organizations that he terms Soft Systems Methodology (1981; 1988). A central concept in the methodology is *Weltanschauung* (Dilthey, 1957). In his use of this concept Checkland acknowledges his reliance on the work of Dilthey and his followers (Checkland and Davies, 1986). A critical examination of Checkland's methodology by Mingers (1984) reveals that Soft Systems Methodology shares some similarities and common problems with interpretative sociology, phenomenology, ethnomethodology, language philosophy, and hermeneutics.

Stanley Krippner et al (1985) have provided an informative comparison between Humanistic Psychology and General Systems Theory. In drawing out the similarities between the two, they have begun to articulate the complementarity of the human science and systems science perspectives.

## Dilthey Revisited

In the second half of this century, humanistic psychology, field theory and social action research, and systems theory have been three of the areas attracting human science practitioners, researchers, and scholars. Whether one finds them to be disciples or mavericks I do not know, but I believe that those who are advancing separate traditions are as important as those who are reuniting them. The efforts of all are needed to bring greater clarification to human science.

Beginning with the distinction between *Naturwissenschaften* and *Geisteswissenschaften*, I have touched selectively on those whose contributions spawned the dichotomy and those whose contributions have perpetuated it. But it is time to reassess the distinction; for the light some think it is may be a distant lantern leading us farther into the darkness instead of a distant light leading us out into the sunshine.

Like William James (1842-1910), scholars have debated Dilthey's intended use of terms such as *Naturwissenschaften* and *Geisteswissenschaften*, but Dilthey viewed the dichotomy as one for organizing knowledge based on two types of learning. The natural sciences on the one hand, as distinct from the rational, moral sciences and the humanities on the other represented two realms of general studies which would eventually contribute to an integrated view of human beings and humanity (Dilthey 1923/1988).

Adler (1986) helps us better understand Dilthey's perspective by tracing the roots of the distinction back to the two spheres of general learning, *episteme* and *paideia*, during the time of Ancient Greece. These spheres of learning continued as *scientia* and *humanitas* respectively during the Ancient Roman Empire. As an organizing principle (Table 5), this

distinction became central for Dilthey and an essential part of his philosophy, particularly in his *Weltanschauungen* or world views. (Dilthey, 1914/1957). The distinction was not intended to be used as a hatchet to sever the ties among the sciences, but as a band to maintain perspective and balance in the face of the growing popularity of the radical methodological monism espoused by the positivists.

**Table 5. Two traditions of general study.**

<i>Paideia</i>	<i>Epistémé</i>
<i>Humanitas</i>	<i>Scientia</i>
General knowledge	Specialized knowledge
Humanistic learning	Scientific study
Generalist approach	Specialization

Contrary to the popular belief, Dilthey's work is a key contribution to breaking down the barrier constructed and perpetuated by the likes of Comte and Mill. Dilthey focused his work on advancing those aspects of science which the positivists dismissed and relegated to a nonscientific realm of study. He recognized and acknowledged in his work the importance of the natural sciences, empiricism, and their relationship to human studies as part of the basic foundation for a fully comprehensive human science (Makkreel, 1975). Significant is Dilthey's evolution in thought over his lifetime. The early (pre-1900) Dilthey took a more subjectivist and psychological position on issues in his writings, whereas the later (post-1900) Dilthey took a more objectivist and hermeneutic position (Wright, 1971).

In the midst of all the flurry, furor, and volumes of text deliberating on the proper content and method for the proper study of humankind, I think Bacon, Dilthey, and others have been advising us over the centuries not to take the split among the sciences so seriously as to shut our eyes to a greater goal. Once again, I must return to emphasize the very appropriate statement by Bacon, "And generally let this be a rule, that all partitions of knowledges be accepted rather for lines and veins than for sections and separations..." But it is a phrase by Ralph Waldo Emerson (1803–1882) which provides a fitting stance in relation to all the controversy. He writes, "Every fact is related on one side to sensation, and on the other to morals. The game of thought is, on the appearance of one of these two sides, to find the other: given the upper, to find the underside" (Whicher, 1957, p. 284).

Having come this far, I want to capitalize on the concerns of Bacon, the reflections of Emerson, and the critique of Minger. The focal point here is not the dichotomy but the complementarity among the disciplines and the sciences. I find that a more pluralistic



approach seems to me to be the more fruitful path to take toward a clarification of human science.

### Human Science Perspectives

My examination of some roots and consequences of making distinctions among the disciplines and the sciences suggests to me several general points which may give some guidance toward the clarification of human science.

First, I think it would be a mistake to adhere to and profess the position that the human sciences are synonymous with the rational or moral sciences, or the humanities. It is tempting to jump to this conclusion based on the scholarly work of the last two centuries. It is tempting to affiliate the human sciences with the *Geisteswissenschaften* or a particular movement or school of thought such as hermeneutics, phenomenology, or psychohistory. But I think this temptation should be resisted. It is presumptuous and ill-advised. To yield to such a temptation would re-create the problems of positivism but in reverse. Past debates over differences in methods, content, and assumptions among the sciences have resulted in an overemphasis on one side to the detriment of both sides. One does not solve a problem by replacing it with the same problem in another form.

Second, the dichotomy associated with Dilthey has its usefulness and historical significance, but is a very limiting and, in my opinion, misleading clarification for human science. The dichotomy hides deeper dualisms in human nature between inductive and deductive logic, analytic and synthetic thinking, generality and specificity, explanation and understanding, historicity and contextuality. These dualisms are associable, but have no necessary equivalence. Thus, to separate a natural science from a moral one on the bases of inductive versus deductive method is like separating a beautiful object from an ugly one on the basis of its potential use for good or evil. Associations taken too seriously too easily take on attributes unintended by their originators and lead us down faulty paths of reason. But equally important, there is no necessary basis for a dichotomy. Bernstein (1976) discusses the intriguing trichotomy of the disciplines (empirical-analytic, historical-hermeneutic, and critical-emancipatory) proposed by the German critical theorist Jürgen Habermas. We recognize the natural and human science equivalents in the first two categories respectively. Argyris, Putnam, and Smith (1985) make use of all three to advance the social action research approach noted earlier in this paper.

Third, without question, it is essential that human science be built upon the contributions of the past, but equally important, it must be a human science which is relevant and contributive to the context of contemporary life. Drawing on the complementarity of

both *epistemé* and *paideia* provides a broad and stable foundation. I view human science resting necessarily on both traditions and sources of general learning.

Fourth, even though there is no widespread agreement as yet, I believe that there are concepts, assumptions, questions for inquiry, goals, content, and methods common to the human sciences. Take one example: if we can agree that the human being is the primary point of reference for inquiry, then all disciplines relevant to the study of human beings have a recognized and appropriate contribution to make to human science. Consequently, some core concepts, which would become fundamental in human science, are authenticity, being, becoming, context, experience, freedom, intentionality, knowledge, love, morality, power, relationship, responsibility, understanding, and will. The point is not to provide an exclusive or elite laundry list, but to emphasize that there is a common conceptual core to several disciplines and sciences which provides the heart of human science.

Fifth, human science is a collective of many sciences and draws on many disciplines. A discipline provides perspectives, systematized forms for learning, and organized knowledge. A science provides the tools and means for disciplined inquiry, discovery, and theory building. But the realms of the disciplinarians and the scientists should by no means be sacrosanct with implicit injunctions against all who wish to transgress from within or from without. Human science is a metascience in the same fashion that a rationale can be advanced for cognitive science, neuroscience, social science, and biological or life science.

Sixth, human science is not only metadisciplinary but also transdisciplinary. The human science perspective developed at the meta-level becomes manifest with greater focus at a disciplinary level. For example, psychology as a discipline and a human science becomes inherently transdisciplinary when conceptualized from a human science perspective. There are many practitioners, researchers, and scholars whom we take seriously from many disciplines and sciences, and who have provided us with psychology's common core, one part at the heart of human science. It is their combined thoughts, as expressed in their work, which support the contention that human science is by necessity transdisciplinary.

Seventh, several lines of contribution from the past appear centrally important to the formulation and development of a human science for our present context. Some, but not all, sources discussed in this paper are phenomenology, hermeneutics, linguistics, pragmatism, humanism, humanistic psychology, interpretative social science, systems thinking, and natural and moral philosophy. But these sources are exemplary, not inclusive. Attempts at convergence appear compelling and crucial to a viable future for human science. Convergence is evident in many works already cited, but striking in several edited

volumes, such as Dallmayr and McCarthy (1977) and Morgan (1983).

Eighth, there is a burning need to articulate and refine a set of emergent qualities that characterize and advance human science. Attempts at convergence, even synthesis, can breathe new life into the study of human beings, life often deadened by the institutionalization and specialization of the separate disciplines. Continued development of human science can make it more than and probably different from what it is now: a disparate array of disciplines, methods, and theories.

Ninth, there are important triangulations and opportunities for convergence which can stimulate further development of and strengthen the human science perspective. For example, understanding the ties among art, religion, and science is a pursuit heralded in former centuries, to reiterate an earlier point, but, with the shift to specialization, this is more difficult to value and appreciate in this century. Stated in another form, the matter of what binds aesthetics, spirituality, and technology is important to the human experience. A human science perspective encourages the researcher to pose integrative, convergent types of questions for inquiry, and multiple viewpoints become part of the process of inquiry.

Finally, until the explosion of the atom bomb, I think that most people thought of moral conduct and science as like oil and water. Though many may still believe that moral conduct is possible without science, the converse is no longer a respected and condoned position. The pursuits of science, without conduct which is morally responsible, find dwindling support; therefore, in this sense, the conduct of science must be both moral and pragmatic. Human science research has a crucial place here, and it serves to remind us of the important connection between science and morality.

## The Promise

Reflecting from the various benches upon which I have paused to rest over the course of this paper brings me to the view that human science is metadisciplinary and a meta-science. It is the landscape of a disciplinary and scientific pluralism. There are many fields of study, theories, methods, and principles central to our understanding and study of what it is to be human. Each makes an indispensable contribution to the whole endeavor. Our task is to discover, articulate, refine, and improve, not just the parts, but the whole itself. Certainly some disciplines and sciences are more relevant than others. But each has an essential contribution to make. No part should be left out or excluded, and boundaries should not be constructed to divide or trivialize. Human science is transdisciplinary. It cuts across disciplines and thrives on cooperative inquiry.

Thus, I return one last time to the general thesis on which this paper began. It is the promise of Aristotle and da Vinci, Bacon, and Dilthey. It is the use of a more generalist, pluralistic, integrative, and cooperative approach to learning and inquiry.

### The Problem

The approach I favor is not problem-free. Perhaps a pluralistic vantage point is too lofty, ideal, and abstract. Our understandings may become too shallow and our theories too diffuse. It may be fruitless to seek reconciliation of apparent differences into noncontradictory unities. The enterprise can be poorly directed, fractionated, and unintegrated. A pluralistic metadisciplinary stance has its difficulties.

However, as articulated earlier, we should not allow the apparent difficulties to overshadow the potentialities.

### Conclusion

In closing, I suspect that human science is more the infant of our present predicament than the offspring of our past achievements. Although human science is, in part, in reaction to continued specialization and fractionation among the disciplines and sciences, it is comforting to witness that the increasingly pressing problems of humanity are compelling us to combat the prevailing, now antiquated boundaries.

Human science can ill afford to encourage methodological monism or foster disciplinary boundaries. The challenge of the next century will be for human science practitioners, researchers, and scholars to articulate the common core, develop better explanatory theories and productive methodologies, advance our understanding of ourselves, and apply our discoveries and methodologies to the central problems of humanity. The problems of thinking in specialistic terms must be tempered by the promise which a transdisciplinary approach brings to human science.

It is becoming increasingly obvious to us all that the conditions of life on earth are undergoing a tremendous shift in this century, wherein humanity must exist more interdependently and work more cooperatively within one unifying context. It is in our interests to adopt as our *Weltanschauung* a complementary, cooperative, integrative, and transdisciplinary perspective to advance human science and better our world.

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