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Eastern Mysticism And The Sociology Of Knowledge: An Application Of Empirical Methodologies Of Mind To The Problem Of Ideology

Jeremy M. Brown

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MIND TO THE PROBLEM OF IDEOLOGY

BY
Jeremy M. Brown
B.A., University of California at San Diego, 1976

THESIS
Submitted in Partial Fulfillment of the 
Requirements for the Degree of 
Master of Arts, Sociology

The University of New Mexico 
Albuquerque, New Mexico 
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This thesis seeks to explore the connections between mysticism and science, focusing particularly on the problems of ideological and cultural bias in the social sciences which traditional methodologies have been unable to overcome. The first and second chapters trace the development of Western science and the social sciences in an effort to define the "problem of ideology," or the problem of cultural, ideological and individual bias. Chapters three and four are devoted to the analysis of the developments of Eastern science and holistic "empirical methodologies of mind" and a re-evaluation of Eastern and Western traditions in light of historical, cultural, and psycho-physiological evidence. In chapter five, the conclusion is drawn that holistic or integrative methodologies of mind may be a solution to problems found in the social sciences which narrower methodological approaches developed in the West have been unable to solve.
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INTRODUCTION

The concepts which this thesis seeks to develop have been an abiding personal concern since my undergraduate days at the University of California at San Diego. In various courses concerned with human knowledge, social communication, and social theory and research I was often unsatisfied with what seemed to me to be very simplistic or mechanical explanations of social phenomena which frequently over- or under-emphasized either micro or macro causal influences or under-emphasized the variability of individual and group consciousness. Further, my own deepest understanding of social dynamics which reflected itself in genuine predictive ability seemed to have been more intuitively than analytically derived. Even my own best efforts at structured social analysis seemed to have been initiated by an intuitive grasp of ideas or situations which was subsequently developed and expressed analytically.

At the same time I was involved in a personal pursuit into Eastern philosophies and experientially acquired forms of knowledge, actually learning to throw ceramic pottery on a potter's wheel and learning the art of Tang Soo Do, a Korean form of the weaponless martial arts. In these pursuits I found a means of expression and cultivation of the intuitive mode of understanding
which I felt was the basis of my own apprehension of
the social reality but which was neither fully appreciated
nor understood in the social sciences. As an under-
graduate, I attempted various approaches at a synthesis
of these intellectual and intuitive modes, at explaining
their relationship to myself and others, but with only
limited success.

Later, however, in graduate courses dealing with
social theory and the history of social theory I noticed
strong parallels between concepts expressed in
Emergentist social theory, Heidegger's hermeneutic
phenomenology, and the structural anthropology of Claude
Levi-Strauss and elements of Eastern mystical system. As
a result I began to seriously research the essential
features and the historical development of Western and
Eastern philosophies of science as well as related material
in the psycho-physiology of human cognition and perception.

This thesis, then, is the product of that
research, a comparative analysis of Eastern and Western
methodologies and philosophies of science, their historical
and social development, their bases in the actual dynamics
of human cognition and perception, and their consequences
for the social sciences, particularly Sociology and the
Sociology of Knowledge.
CHAPTER 1

THE EMERGENCE OF THE EMPIRICAL-EXPERIMENTAL TRADITION OF WESTERN SCIENCE

In order to understand the social sciences as they have developed in the West, it is necessary that we first grasp the historical conditions which gave rise to Western science. Systematic study of the historical origins of the Western scientific tradition is, surprisingly, a fairly recent development, undertaken from a variety of perspectives, including the history of ideas, the institutional development of science and the scientist's role in society, the social psychology of the scientific community, and the social relations of science. Each of these views of the growth and fundamental nature of Western science reveals different dimensions of the Western tradition, which this chapter will attempt to synthesize into a coherent overview of the nature of what could be called the empirical-experimental scientific tradition.

Joseph Ben-David has proposed that the emergence of modern science is something of an historical anomaly (1971: 32). While most philosophers and historians concerned with the rise of modern science have assumed that man's natural craving for knowledge, his innate curiosity, and his natural drive to control his environment must inevitably lead to the growth of science (Crowther, 1941: 1),
Ben-David points out that science as we know it has developed only in the West. He asks quite simply if the growth of science is so natural and unavoidable, why has it happened only in the West within a particular cultural and historical circumstance and not to all human cultures? The beginnings of an answer can be found in a basic theoretical distinction made by Claude Levi-Strauss (1966: 15) between what he calls Neolithic Science and Modern Science.

In his discussion of Neolithic Science, Levi-Strauss points out that primitive people are neither stupid nor blind. The basic technological developments of horticulture, the domestication of animals, and the fabrication of weapons, tools, and other artifacts from naturally occurring materials and metals simply could not have happened accidentally. They were developed through observation and trial and error experimentation; results were considered in the formulation of rudimentary theory. The weakness of Neolithic Science lay not in a lack of reason or intellect, for primitive conceptual systems are highly logical and internally coherent, nor did it lie in a lack of skill in observation; within their own sphere primitive people are every bit as sensitive to the world around them as modern men, often more so. The weakness lay rather in that the relationship between theory and observation was not a critical relationship.
Both the mythical-symbolic framework of primitive theory and the obvious appearance of the material world were taken for granted. Theory was not deliberately critically tested by observation nor was observation critically tested through abstract theory. Thus, Neolithic Science "plateaued" at a rather low level of development in a simple utilitarian technology (Taylor, 1949: 2). Nearly all human cultures share some form of Neolithic Science as a part of their historical origins or current existence.

The ancient Greeks have been given credit for advancing beyond this state of affairs in their development of the logical tools necessary for the formulation of abstract theory. In nearly all primitive conceptual systems logical connections are based on metaphor (some similarity of appearance in form, color, sound, etc.) and metonymy (physical proximity); logical connections are not necessarily causally based (Levi-Strauss, 1966: 51-52, 61, 105, 106). These conceptual systems serve the primary function of making the world intelligible within a logical framework and as a result are highly integrated, recognizing little or no separation between different spheres of knowledge; all forms of knowledge and belief exist together in a coherent though often objectively inaccurate world view (Dampier, 1961: xvii-1). This mixture of spheres of knowledge is also evident in the thought of the more advanced civilizations which preceded the rise of Hellenic civilization.
Another aspect of the origins of human knowledge is the role of the scientist, the man of knowledge, the explorer of the unknown. Science, neolithic or modern, is an activity pursued by a tiny minority of a society; it is probably one of the first specialized roles in human society. In primitive societies the obvious precursor of the modern scientist is the shaman, the original role of discoverer and holder of special or occult knowledge. At the time of the emergence of Greek civilization this role had evolved into formalized priesthoods in much of the ancient world. In Greece, the role remained relatively undifferentiated, the pre-Socratic philosophers performing as men of unusual wisdom much like great intellectuals, prophets, or mystics of other traditional societies with a following of students or disciples (Ben-David, 1971: 34-5).

Ancient Greece was situated geographically in such a way that it was exposed to conflicting ideologies, mythologies, and abstract formulations on the nature of things originating in the ancient civilizations of the Middle East, among them Sumer, Babylon, Assyria, Egypt, and India. Many theorists have attributed the intellectual dynamism and foment of early Greek culture to this multiplicity of forms of knowledge inherited from the ancient world.

During the early phases of its growth, the Greek
state was made up of relatively independent city states, a situation which allowed for considerable ideological flexibility (Ben-David, 1971: 35). Thus, the multiplicity of external input from other cultures was matched by an internal lack of fixity or centralized dogma or ideology. A surprising degree of tolerance to divergent ideas or even "heretical" minorities, at least compared with other traditional societies, is evidenced by the preservation over millenia of the teachings of radically different schools of thought; no single group was ever in a position to eradicate the teachings of its philosophical adversaries (Ben-David, 1971: 35). It was almost certainly out of this open and ongoing debate over anything and everything that the intellectual tools necessary for the development of abstract theory were developed (Dampier, 1961: 18).

In terms of theoretical movement toward what we call "modern science," the most notable group within ancient Greece was the Ionian philosophers who were most active during the 6th century B.C. This group was of a generally mystical turn of mind searching for a general understanding of the nature of things. Many of their theories such as the notion of all existent things being made up of atoms in motion in a void, as advanced by Epicurus, are quite close to theoretical orientations found in modern science (Dampier, 1961: 39). Most modern theorists dealing with the history of science dismiss
the appearance of mystical philosophical orientations and genuine scientific insights together as odd or amusing coincidences but as we progress, we shall see that their appearance together is not at all uncommon historically. Indeed these natural philosophers of Ionia were closer to being scientists than the general philosophers of Greece in their desire to penetrate the secrets of the universe (Ben-David, 1971: 27). However, they were a small minority on the periphery of the expanding Greek system, and for the most part, their views were rejected by the intellectual mainstream of Greece as excessively mystical and nonrational.

The growth of the Macedonian Empire and the centralization of political power in Athens led to the gradual restriction of the open-intellectual environment in Greece. As Athens gained prominence politically, it also advanced as the cultural center overshadowing the other city states of Greece, elevating Athenian philosophers and their teachings above all others.

The philosophy of Socrates was one of ascetic mysticism devoted totally to the inner search for truth. As approached by Socrates, this inner search necessarily involved the rejection of the material world and the search for the hidden nature of things in the external world pursued by the Ionians.

The main deviation of Plato, the foremost student
of Socrates, form Socratic mysticism was his elevation of reason, outside the realm of mystical intuition, as an ultimate virtue and the only basis of true knowledge. He rejected empiricism as an excessive preoccupation with the senses, the body, and sexuality. He further rejected any kind of experimental testing as impious or as a base mechanical art (Dampier, 1961: 28). In Plato's realm of pure ideas we find only ideas for "positive" material forms, chair, tree, love, etc. We find no pure ideas for "negative" material things, excrement, dirt, slime, etc. (Feuer, 1963: 98). On a psychological level such an orientation implies a revulsion for the material world in general, hardly a conducive attitude for the development of material sciences.

Probably the most telling reason for the overall rejection of empiricism and practical experience by the majority of Greek philosophers was the impact of slavery on Greek society. Plato's rejection of experimentation as a base mechanical art reflected the status of physical labor in Greek society, the status of slave. Thus slaves did the work and philosophers did the thinking and, though theory was much elaborated, theory and practice almost never met. One exception to this rule was the practice of medicine, which by virtue of its utility and necessity, was spared the stigma of common labor. The work of Hippocrates involved a truly scientific approach in the
theory involved in diagnoses, experimentation involved in treatments, and empirical observation of symptoms. Architecture also involved practical work but to the greatest extent possible, it was delegated to slaves. In this attitude toward physical experience and experimentation, the Greek philosophers simply reflected the values of their times, values which greatly hindered the emergence of science.

Though Aristotle was Plato's student, his philosophical system was quite different from that of Plato. He rejected Platonic "idealism" in favor of "nominalism," in which objects are seen as actually existing and for which we devise workable systems of categorization. He further advocated a "doctrine of the mean" involving reasonable pleasures and virtues without excess or indulgence (Feuer, 1963: 106). Aristotle was also responsible for developing formal logic which he applied to problems in all areas with varying results. His systems of logical classification in biology were quite advanced being based largely on observation. His theories in physics, though useful, were often wrong due to a lack of experimental testing.

The ascendance of the Athenian philosophers in Greece within the expanding empire was not without its price. With the growth of centralized power in Athens and the later expansion of the Macedonian Empire, the philosophers, who had been relatively free agents in the
past, were given the new role of founding centers of learning, training administrators, and dealing with the theoretical and ideological problems of the management of an empire (Ben-David, 1971: 37). Within the Macedonian Empire, the perceived need was for philosophers of stoicism who would promote philosophies and moral systems designed to help preserve the empire. Both Plato and Aristotle developed philosophical justifications for the institutional form of Greek society (Ben-David, 1971: 41). From the 4th century on, Greek culture sank slowly into intellectual stagnation from which it never really recovered.

Though the philosophers of ancient Greece did not develop science, they did lay the groundwork for the development of Western science in developing causally based rational thought and the tools of formal logical argument. From the time of the Greeks on, Western civilization has been highly dependent on rationalized forms of thought and organization. Though many of the theoretical conclusions arrived at by the Greek philosophers were quite erroneous, particularly in the area of the physical sciences as can be seen in Aristotle's notions on physics, they provided the necessary rational basis for later development (Taylor, 1949: 23). Unfortunately, that development did not take place for more than a thousand years.

The Romans did little to improve on the basic philosophical and theoretical notions they acquired from
the Greeks. Just as the Greeks were "all theory and no practice," so the Romans were "all practice and no theory" in being practical engineers and little else, at least in terms of the development of science (Taylor, 1949: 33). In Roman society the same negative influence persisted in aggravated form which had prevented the growth of an empirical science in Greece. More than three quarters of the population of Rome were slaves; so all manual occupations were of very low status. Social and material incentives for discovery or improved productivity or avenues for advancement through manual arts were virtually nonexistent (Crowther, 1941: 113-5). In both Greece and Rome the dominant ideology declared that knowledge existed for the ruling class (the products of Greek philosophy were assumed to be ultimate truth) while lies and superstition were to be given to and promoted among the ignorant masses. A counter philosophy of semi-democratic antidespotism did exist in both Greece and Rome advocated by Epicurus and Lucretius respectively, but these were never more than minority views. The isolation of those with formal knowledge at the top from the ignorant slaves who did the work at the bottom was very nearly total (Crowther, 1941: 122). Rome preserved its classical Greek inheritance but added little to it.

The decline of the Roman Empire was paralleled by a decline in science and the preservation and communication
of formal knowledge. As commerce and the productivity of agricultural land declined, taxes and inflation steadily increased, communications declined and increasing emphasis was necessarily placed on local self-sufficiency throughout the empire. As more and more successful encroachments on the empire were made by marauding barbarians from the north, it became apparent that "the world," at least the social, political, and cultural world of the empire, was coming to an end (Crowther, 1941: 121). During the decline of Rome and into the Middle Ages, the stoic philosophy of ethical and moral conduct despite deteriorating world conditions, and the anti-materialistic "idealism" of Plato became the dominant philosophies (Dampier, 1961: 62). The trend toward retreat from a world of overpowering crisis and deprivation was evident in the rise of mystery religious cults, the two with the largest following being Mithraism and early Christianity. They were essentially a denial of the material world and physical existence in favor of achieving some form of mystical union with the Divine (Dampier, 1961: 65). These mystery religions were at first popular primarily with the lower classes but as the empire fell on hard times, more and more converts were drawn from the upper classes. The attitude of these groups toward science and material knowledge was clearly expressed by St. Augustine who referred to it as "vain curiosity and investigation" (Crowther, 1941: 130-1). They wanted
nothing to do with the material world except as they were forced by physical existence.

Overall, the advances in technology or applied science made during classical times were not too impressive. Only a few minor advances were made over the technological inheritance from earlier cultures and from Neolithic Science (Crowther, 1941: 117). Aside from the development of abstract rational theory mentioned earlier, classical civilization produced one other cultural artifact which has greatly affected the development of science in the West, the Roman Catholic Church (Dempier, 1961: 67).

The Roman Catholic Church was the primary channel by which elements of Judaic culture became an established part of Western culture. Before the decline of Rome, Judea had had little influence on the empire, being a rather insignificant provincial outpost. But with the advent of Christianity, first the lower classes and later many from the upper classes were drawn into this new mystical religion, heavily influenced by Judaic culture. In many respects it was the opposite of classical Roman culture. The Hebraic tradition elevated wisdom but not pure reason; wisdom was seen as the result of experience and revelation as much as of reason. Many of the great intellectuals of Talmudic thought were also artisans and craftsmen. A primary value reflected in the Talmud is the nobility of
honest labor (Feuer, 1963: 91). Slavery of servitude of the sort found in classical culture did not exist in the Hebraic tradition. Hebraic cosmology reflected a universe of consistency ruled by a single all-powerful God. Though these elements of Judaic culture were unavoidably altered by their fusion with classical culture, they have had a major influence on the emergence of science in Western civilization.

The development of Christian theology was carried out by intellectuals and philosophers who were primarily products of the classical tradition such as Philo Judeas, Origen, and later St. Augustine. These men sought to reconcile Christianity with the classical philosophical tradition. One notable effect of their efforts was the insertion of the element of Platonic "idealism" into the mystical tradition of Judaism. This effort contributed to the synthesis that was the Roman Catholic Church, a mixture of Judaic culture and early Christian teachings combined with a highly rationalized philosophy of ascetic Platonic "idealism" and the hierarchial institutional and administrative legacy of Rome. In this combination were elements both favorable and unfavorable to the beginnings of modern science during the late Middle Ages and the early Renaissance. From the time of the collapse of the Roman Empire until the 12th century, however, the Church did little more than preserve some remnants of its classical
heritage and maintain a degree of basic literacy within its own organization.

During the Middle Ages, the center of scientific activity was the Islamic Empire formed by unification of the Arabic world through religious conversion and military conquest. Due to the fact that the Arabs, after the initial conquest, had to maintain an empire, they were forced to compromise ideologically in order to fulfill administrative needs. These needs were quickly filled by nonbelievers trained in the classical tradition, particularly from Alexandria, who were recruited to perform administrative, technical, and managerial roles (Crowther, 1941: 143-4). Also, the Byzantine Empire, the eastern remnant of the Roman Empire, had succeeded in preserving much of the classical heritage and was instrumental in the initial fertilization of the Islamic Empire with the knowledge of antiquity (Crowther, 1941: 163). Once the empire had expanded to its outer limits, by the 8th century A.D., it was in continual contact by land and sea with India and China to the east and Spain to the west. This contact with the Far East was maintained primarily for commerce in luxury goods but also provided for communication of abstract knowledge. For example, algebra and trigonometry were not actually developed by the Arabs but were borrowed from the Hindu culture in India (Taylor, 1949: 31). The technical know-how for making gunpowder
and paper were acquired from the Chinese. As we found earlier in the Greek Empire, much of the intellectual dynamism of the early Islamic Empire was generated by a diversity of input from other cultures. Again, external diversity was matched by internal ideological flexibility but for reasons quite different from those found in ancient Greece.

Though the Islamic religion was intensely dogmatic and the political system of the empire highly centralized, the effects of these circumstances on the conduct of science were quite mixed. A general tolerance of differing beliefs emerged very early in the growth of the empire since, according to scripture, believers could not legally be taxed; in order to have revenue to finance the administration of the empire, nonbelievers had to be tolerated (Crowther, 1941: 142). This tolerance was most evident in urban centers.

However, scriptural restrictions in the Koran against making drawings or representations of animals, humans, or of any living thing and against any kind of dissection prevented any significant advances from occurring in biology, zoology, or physiology. Also, because Islamic society was, like Greece and Rome, an intensely hierarchical and slave-based society, industry involving manual skills did not advance. Basic notions of physics and engineering were not improved upon.
Ultimately, science declined in the Islamic Empire for much the same reasons that it did in Greco-Roman civilization (Crowther, 1941: 160).

The advances made in Arabic science were primarily those of practical development based on experimentation using theoretical knowledge inherited from Greek culture (Dampier, 1961: 72-3). Probably the most notable of these developments were in the field of alchemy where techniques, procedures and experimental apparatus were invented, many of which are still in use in modern chemistry (Crowther, 1941: 151). Much of the scientific and philosophical thought which occurred within the Islamic Empire, particularly in Spain, was quite influential in Europe in later years.

Islam was the center of scientific activity in the Western world from 800 to 1100 A.D. while science was in nearly total eclipse in Europe. After 1100 A.D., however, activity in Europe was on the rise (Dampier, 1961: 60). European science, as it emerged during the late Middle Ages, was based to a great extent on the work of Arabic scientists in chemistry, mathematics, optics, and other fields served as textbooks in Europe well into the 16th century (Dampier, 1961: 75). At this point, we must return to the Middle Ages in Europe in order to appreciate the circumstances which both helped and hindered the emergence of Western science.
By late in the 6th century A.D., Pope Gregory succeeded in organizing and consolidating the administrative network of the Church throughout Europe and much of Britain. This network was made up of a variety of institutions including local parishes, monasteries, and estates held by the Church (Crowther, 1941: 136). Though political authority was held by barbarians whose rule was based on the right of conquest, the Church was left relatively unmolested by the political turmoil of the times and even wielded considerable power in its role as potential legitimator of earthly rulers. Though occasional clashes did occur, the Church and local political powers generally avoided open conflict. During this period, St. Augustine's synthesis of early Christianity and neo-Platonism remained the dominant philosophy (Dampier, 1961:61).

Ironically, in the lands touched by the Roman Empire but on its periphery, particularly in the British Isles, the collapse of the empire was not as cataclysmic, the darkness fell less heavily. As a result, learning did not decline as radically as it had toward the center of the empire. Church scholars from Ireland were particularly influential in the revival of learning initiated by Charlemagne toward the end of the 8th century as he consolidated the feudal chaos of Europe under one rule in the Carolingian Empire (Dampier, 1961: 70).
Much of the institutional inheritance of Europe from medieval times can be traced back to the social order which developed under the rule of Charlemagne. This featured a degree of economic and political stability based primarily on local self-sufficiency, stabilized relations between the Church and State reserving worldly power for the Monarch and the landed nobility, and ideological power and control of education for the Church. Charlemagne encouraged literacy and learning among his personal following and the nobility, though he himself never learned to read, depending on the Church to provide him with literate administrators (Taylor, 1949: 58).

The ideology of the medieval Church contained some elements which would ultimately favor the development of science. An essential assumption of Christian theology was the consistency of the Universe under a single divine rule, an assumption useful for science (Dampier, 1961: 89). Another important value of Christian dogma was the elevation of the status of honest labor, which eventually made experience and experimentation more acceptable among the educated classes (Crowther, 1941: 204-5).

On the negative side, neo-Platonic asceticism was still dominant within the Church. In fact, when a translation of the complete works of Aristotle was discovered and studied, it gave rise to considerable misgivings among Church leaders who recognized the fundamental difference.
between Aristotle's nominalism, natural philosophy, and doctrine of the mean, and the ascetic "idealism" of Plato (Dampier, 1961: 83-4). This relatively enlightened philosophy was not shared by the Church, which remained bound to the asceticism of neo-Platonism and the theology of St. Augustine.

Many writers have expressed disgust for the philosophy of self-degradation of medieval Christianity but none more eloquently than Michelet when he wrote, "Mille ans d'historie mais pas un sel bain." ("A thousand years of history but not a single bath.") (Feuer, 1963: 105). The decline of this ascetic philosophy was due largely to an increase in education and literacy in much of Europe as well as to the "failure" of the world to come to an end and Christ to return to Earth, as many had expected in the year 1000 A.D.

By the 11th century in Europe the demand for formal education was on the rise for a variety of reasons. The gradual growth of commerce and communication, the growing need for literate office holders in bureaucracies of feudal monarchies, as well as a growing interest in the philosophies of antiquity all contributed to the strain being put on religious centers of learning. It was during this period that the universities, groups of students and teachers with primarily secular interests, were formed in a number of European cities. These universities often operated in
conjunction with a religious institution or order, as did the University of Paris, but their general concerns and educational goals were primarily secular (Dampier, 1961: 78). The emergence of the secular role of the professional university professor is undoubtedly the direct institutional forerunner of the role of scientist in European society (Ben-David, 1971: 45-6). As a result, from this point on, a direct "institutional line of descent" can be traced from the medieval professor as a specialist in secular knowledge to the modern scientist.

As many church leaders had feared, the secularization of education led to what they considered to be an excess of unrestrained critical thought. Problems with unorthodox or even heretical views emerging out of this philosophical ferment were characteristic of the 12th century (Dampier, 1961: 80).

An example was Roger Bacon, who asserted that truth could be established only by observation and experiment. By his own account he was much less a scientist than others with whom he was acquainted. Unfortunately, no detailed accounts of their work have survived, and we know of them only through Bacon who was more a philosopher of science than a scientist. Bacon spent a number of years in prison for spreading his unorthodox views (Dampier, 1961: 90).

During the 13th century much of the work of intellectuals and philosophers with both secular and religious
orientation was aimed at resolving the ideological conflicts which had arisen between secular philosophy and the Church. Albertus Magnus was one of the first to attempt a reconciliation by separating natural philosophy and knowledge based on observation from religion. In this work he summarized most of the known philosophy of his time (Crowther, 1941: 195-6). Thomas Aquinas, a student of Albertus Magnus, was also intent on such a reconciliation. In his writing he expressed some sympathy for knowledge based on empirical observation but the main thrust of his work was to put Roman Catholic theology on a sound Aristotelian rational footing. Both of these men, although they were born into the aristocracy, were in a kind of middle ground in this conflict as members of the Dominican order, an order with ties to both the Church in Rome and the newly emerging bourgeoisie, the social class with the greatest stake in the growth of secularized education (Crowther, 1941: 201-2). Ultimately the resolution achieved by these and other philosophers was an "ideological standoff" in that it served to isolate Church doctrine from ideologically dangerous critical philosophy and it provided a secular or nonreligious realm in which critical theory was allowed to operate (Ben-David, 1971: 49).

The resolution was, at best, partial and temporary, the fundamental conflict remained unresolved.

The trends so disturbing to the Roman Catholic
Church and to much of the feudal nobility were inseparable from the historic rise of the bourgeoisie. The concerns of the new bourgeoisie were naturally quite worldly and materialistic; as merchants and craftsmen they dealt with the sale and production of commercial goods and aspired through secular education to advance themselves and their children as administrators, office holders, or teachers (Crowther, 1941: 179-80).

The rise of the bourgeoisie was gradual at first, becoming evident along the coast of Italy as early as the 9th century. By the 11th century, the rise of the bourgeoisie at least in nascent form, was evident through much of Europe though primarily in Italy and France. By the 13th and 14th centuries the new bourgeoisie had become a prominent part of the social landscape of most of Western Europe, with the exception of Spain. With their economically based power and position, the members of the bourgeois classes began attempting to achieve upward mobility socially as well as economically (Crowther, 1941: 237-8). The reception they received in different parts of Europe greatly affected the evolution of the societies involved and the growth of science within those societies.

The Italian Renaissance of the late 15th and early 16th centuries was directly connected with a marked rise in commercial activity which in turn provided a basis for growth in the arts, science, and advanced education. During the 16th century, Italian centers of learning enjoyed
considerable prestige and attracted students from all over Europe (Crowther, 1941: 290). At the center of this economic and cultural expansion was the commercial bourgeoisie whose economic success provided the basis for the Mercantile Republics of Venice, Florence, Genoa, and Milan. These republics and their bourgeois-educated rulers were nominally Catholic but on many occasions demonstrated a surprising degree of autonomy. Venice was boldly anti-clerical, successfully defying a Papal interdict in 1607 forbidding the admission of non-Christian students to the local university (Feuer, 1963: 145). Largely because of its independence, the University of Padua was one of the most popular schools with foreign, particularly English, students.

The rise of mercantilism in Italy also brought about a dramatic rise in the status of artists and craftsmen. On the basis of concern over common technical problems a dialogue emerged between architects, artists, craftsmen and scholars, for a time uniting theory and practice and paving the way for advances in both theory and applied technology (Ben-David, 1971: 55-7).

Other technological advances such as the introduction of cannon and musketry into the conduct of warfare greatly affected the economy and technology of the republics, requiring more financial support from the commercial bourgeoisie in the form of increased taxes and craftsmen...
and professional military men capable of producing and operating the new weaponry (Crowther, 1941: 247). The growth of industries in Italy also created a demand for raw materials, particularly metals, a demand which greatly stimulated the expansion of mining in Germany. This expansion required considerable innovation and improvement in mining technology from the chemistry of assaying ores to the mechanics of air and water pumps (Crowther, 1941: 292-3). The economy of Germany was also stimulated by the trade carried on between Italy and areas further north which necessarily passed through Germany. These positive influences were not, however, the only active forces in Italy. The Inquisition was still quite active.

The Inquisition was initiated during the 12th century by Pope Lucius III in response to the philosophical ferment of that period and gained momentum during the 13th century under Pope Gregory IX. From a historical perspective the Inquisition can be seen as an understandable natural response by the oldest and most conservative existing institution to the ideological challenge of radically new forms of thought and religious activity (Crowther, 1941: 222-3). Its primary goal was to eliminate heretical sects such as the Catherians of southern France, the Waldensians, and some of the more extreme followers of St. Francis. Mystically inspired groups which could not be brought into line with established dogma and Church organization could
not be tolerated if the Church was to maintain its position. The Inquisition was also used for political purposes such as the elimination of the Templars, a monastic order of considerable power which was destroyed in the early 14th century by the Inquisition at the request of King Philip of France who was deeply in debt to the Templars (Crowther, 1941: 225-7).

Fortunately for most scientists or independent intellectuals, they were not the primary target of the Inquisition. Their intellectual productions and abstract theories could be troublesome ideologically but they were not nearly as dangerous as heretical sects which seemed to proliferate with the general increase in social change in Europe (Crowther, 1941: 228). Most men of science, by keeping a relatively low profile, escaped the persecution if not the attention of the Inquisition.

The scientific community of Western Europe during the 16th century was a small group of intellectuals with similar theoretical concerns who knew each other by reputation and kept in touch. The means of support for these men of science varied considerably from one country to another. Some were independently wealthy, some were given official posts in government as a form of support for their pursuits, while others supported themselves by teaching. In Italy support for artisans and men of science was primarily in the form of feudal patronage.
Galileo Galilei is probably one of the best known scientists of the Italian Renaissance, famous not only for his many achievements as a scientist but also for his persecution by the Inquisition for his heliocentric theories in astronomy. He was in many ways representative of other scientific intellectuals of his time. He was a member of the Accademia dei Lincei in Rome, an unusually liberal academy in competition with the more closed universities still dominated by medieval scholasticism, and taught at the University of Padua (Ben-David, 1971: 64). It is important to note that the scholastic Aristotelian academic establishment, as well as the Roman Catholic Church, resisted new discovery; both had a strong vested interest in perpetuating established forms of knowledge (Dampier, 1961: 113). Galileo was one of the first researchers in science to deal with observation and experiment without seeking to rationalize his results immediately; he worked from observable facts and took them only as far as they could be taken logically without excessive speculation. He emphasized empiricism over reason (Dampier, 1961: 129) and was one of the first scientific theorists to reject wholly the teleological categories of scholasticism from his analysis as being irrelevant.

Italian science flourished during the 16th century but by the 17th century it had declined to a position of relative insignificance. This decline was the result of
a number of factors: First, the new commercial bourgeoisie was absorbed into the Italian nobility and adopted its aristocratic pretensions and values so the feudal disunity of Italy remained unchanged (Crowther, 1941: 250-1). Second, no clear role for the scientist emerged since the activity of men like Galileo or Leonardo da Vinci depended largely on personal patronage to continue; no institutional continuity existed to maintain and promote scientific work (Ben-David, 1971: 57). Third, the Roman Catholic Church and the dominant scholastic academic establishment were able to resist the encroachments of the scientifically oriented minority until its economic and social backing disappeared as Italy lost its dominant position in the European economy. And fourth, the Italian economy, as a whole, was declining as Atlantic sailing routes were established and used by Portugal and Spain initially and later England, the Netherlands, and France. European trade began to by-pass Italy (Crowther, 1941: 300-1). The active development of science and the growth of the European economy continued further to the north.

The rising bourgeois classes in northern Europe encountered a very different situation than that faced by the bourgeoisie in Italy. In Italy, the nobility absorbed the bourgeoisie and "co-opted" science so major alterations of the social structure did not occur. In northern Europe, however, the bourgeois middle classes were blocked in their
social and economic advancement by the combined interests of the landed nobility and the Church. Also, due to a desire for independence from the nobility, feudal monarchs in much of Europe had begun to ally themselves with bourgeois economic interests. As a result, the situation became polarized with the bourgeois middle classes, the feudal monarchs, heretical religious movements (Protestant) and the nascent scientific community standing against the landed nobility, Catholicism, and Scholasticism (Ben-David, 1971: 59). This polarization and eventual open conflict resulted in the rise of the absolute monarchs and the bourgeoisie to a position of political dominance, the Protestant Reformation, and the partial liberation of science from constricting religious dogma. The capitalism of the bourgeoisie, Protestantism, and the growth of material science were parallel developments which most certainly influenced one another but out of which no one could be seen as the central cause of the others.

Both Luther and Calvin were as intolerant of Copernicus' heliocentric astronomy as was the Pope; they saw it as not only foolish but also heretical (Feuer, 1963: 122). However, the Protestant doctrine of individualism and relative social freedom made it possible for scientists to continue research in the material realm where it was expected that critical thought would not encounter Church dogma. Science was at best tolerated by Protestantism
in areas where its control was not absolute; in rural areas or cities under rigid Protestant control, such as Geneva under Calvin, scientific activity was all but non-existent. To a limited extent, some theologians adopted the progressive, utopian notions not uncommon within the scientific community providing a partial legitimation of science but this remained a minority view until much later in the 17th and 18th centuries (Ben-David, 1971: 69-71). The growth of science can hardly be seen as a product of the Reformation or Calvinist dogma.

Neither can we credit the rise of capitalism with causing the development of Western sciences. Though the growth of the European economy depended to a great extent on the technological improvements provided by science and scientists depended on commercial support, directly or indirectly, for much of their work, neither can be seen as the cause of the other. Many developments on either side were independent of the other; science and capitalism did stimulate each other's advancement but they were separate developments.

During the foment of the 15th and 16th centuries of the Italian Renaissance and the Protestant Reformation, science and the scientific community can best be characterized as a relatively weak "third force" (besides those aligned with Protestantism and Catholicism) with only minor support from the universities, some governments, and the bourgeoisie.
They received virtually no support from the masses who were totally absorbed in the problems of daily survival and polarized religious ideologies. Though the members of the scientific community held a general philosophical position which was quite independent of all dominant religious ideologies of their time, they were in no position to "compete" ideologically and generally allied themselves with Protestantism, the ideology which was the least antagonistic toward their activities and the cultivation of secular knowledge and education (Feuer, 1963: 124). However, as economic, colonial, and military competition between the emerging nations of Western Europe increased, so did the recognition of the importance of technological development and the advancement of science.

The elevation of the relative importance of science and technology in public policy can be found in England during the 16th century when the Crown deliberately encouraged the development of local mining, metallurgy and basic industry in order to compete better with Spain commercially and militarily. Monopolies were granted to encourage capitalist development of production and the immigration of skilled refugees was encouraged, particularly Germans with skills in mining (Crowther, 1941: 335-6). Interest in science and technology and the rationalist philosophy was of interest not only to the government but
to the bourgeois-educated classes as well.

During this period the works of the Continental rationalist philosophers as well as the English empiricists reflecting the two sides of philosophical scientism were quite popular. Also during this period and into the 17th century the hedonist-atomist philosophers of classical times, Epicurus, Democritus, and Lucretius enjoyed considerable popularity while the works of Plato and Aristotle, identified with medieval scholasticism, were little read (Feuer, 1963: 201).

Probably the most influential proponent of philosophical scientism was Francis Bacon, considered by many to be the father of modern science. He was admittedly much more of a philosopher of science than a scientist having made relatively few discoveries himself (Crowther, 1941: 351). The approach which he advocated for research was, in fact, overly inductive and empirical lacking in appreciation of the place of intuition and imagination in forming tentative hypotheses and of analytical rationality in the formulation and interpretation of experiments (Dampier, 1961: 126). Still, he was far ahead of his time in emphasizing the need for basing knowledge on empirical data. Bacon's philosophy was widely accepted in 17th century England for a variety of reasons, the most important of these being that in the ideological and political turmoil of the times it functioned as a unifying philosophy.
Baconism could do this because it was relatively free of theological claims; it required no philosophical consensus but appealed to actual observation and experiment and allowed for a degree of inconclusiveness; it provided the basis for a limited pluralistic consensus among the disputing sects of England; and it opposed the scholastic philosophy connected with Catholicism which was considered by many Puritan Protestants to be a heathen, pagan philosophy (Ben-David, 1971: 73-4). Bacon's philosophy, due to its utility in English society, paved the way for the acceptance of scientific enquiry as a legitimate role in society. This new social role was not a product of Protestant asceticism, as has been proposed by some theorists, but was rather the product of a semi-religious independent philosophy which had been held by an intellectual minority and which had finally gained social acceptance (Feuer, 1963: 7). With the general social acceptance of science, the role of the scientific intellectual emerged as a permanent feature of English society. The place of science and the scientific intellectual was further institutionally established in England by the founding of the Royal Society in 1662.

The informal group which eventually became the membership of the Royal Society was made up primarily of individuals from the mercantile classes and the leisured upper class who shared a common interest in natural philosophy and science. A fundamental rule of their meetings
and discussions was that topics relating to politics or religion would not be allowed. After the official founding of the Royal Society under the patronage of Charles II, the group met regularly at Gresham College (Feuer, 1963: 23-5). Though most of the members of the Royal Society were of the middle or upper classes, they upheld a definite policy backed by the Crown to admit any tradesman who shared their interests and pursued scientific inquiry (Crowther, 1941: 375). The creation of the Royal Society was very much an historic first in that it clearly set science apart from religion and general philosophy and created a specific institution for the scientific community with internal norms and a stable position in the larger society (Ben-David, 1971: 75-6).

In Robert Boyle, a distinguished member of the Royal Society, we find characteristics common among the Society's membership. Robert Boyle was independently wealthy as a result of his inheritance from his father, a shrewd businessman who made a fortune in Ireland. Boyle, like most of the members of the Royal Society, depended on his own position and financial resources to maintain his research. He was quite outspoken in his advocacy of experience and experiment in scientific research and "getting one's hands dirty" with "common craftsmen who have no education and speculative theory but do have refined skills dealing with tools and materials" (Crowther, 1941: 365-9).
Probably the most famous member of the Royal Society was Sir Isaac Newton, best known for his mathematical demonstration of gravitation as the basis of planetary motion. In his discovery he brought astronomy and the "heavens" out of the realm of religious ideology and into the realm of science (Dampier, 1961: 154). The fame of Newton's work with gravitation and the three laws of motion has been due not so much to the substance of the discoveries but to the philosophical consequences which they brought about in the cosmology of Western civilization. Though Newton hardly intended it, being quite religious himself, his theories provided the basis for a mechanical view of the universe which came to be widely accepted. The universe was seen as a huge machine, grinding away, having been set in motion at some unknown time in the past and no longer requiring the active intervention of its creator. This view was obviously quite instrumental in advancing the erosion of religious dogma and ideology which had been progressing steadily with the growth of Western science (Dampier, 1961: 172). This growth was related directly to the increase of activity and communication within the scientific community during the 16th and 17th centuries.

The interdependence of individuals within the scientific community can readily be seen in a sequence of discoveries, each depending on the one before it. Boyle's work with gases was possibly only because of
Improved vacuum pumps invented by Otto von Guericke of Magdeberg on the river Elbe; Newton's mathematization of atomic theory was based on Boyle's work with gases; Dalton's refinements of atomic theory were based on Newton's work; all of which led into the development of theories of thermodynamics and the development of the first vacuum steam engine by Newcomen (Crowther, 1941: 358-61). Much of the value of the Royal Society to the advancement of science lay in its facilitating communications within the scientific community through regular meetings and the publication of research results which were circulated throughout Europe.

Due to the dependence of the members of the Royal Society on their own resources for the conduct of research, much of their work was directed toward scientific solutions to pragmatic technological problems, solutions which would have an economic payoff. Still, their work was quite valuable in terms of the production of abstract scientific theory. Their orientation was a necessary consequence of a lack of direct economic support for scientific research in 17th century England (Crowther, 1941: 381). The situation for the Academie des Sciences in France was altogether different.

The Academie des Sciences was founded in 1666 by the French Crown. Its founding was to some extent a response to the establishment of the Royal Society in England but its purpose and operation were quite different.
Unlike the Royal Society, the Académie des Sciences was not autonomous but was rather controlled directly by the Crown. French society was much more rigidly controlled by Church and State than English society and these conditions were reflected in its institutional response to science (Ben-David, 1971: 81). The establishment of the Académie des Sciences was intended not only to encourage and materially support the advancement of science and technology; it was also intended to enclose and contain the critical thought necessary to scientific endeavor and isolate the scientific movement from the larger society to prevent the growth of dangerous ideas of liberalism and pluralism which were current in England at that time. The need for free thought for the advancement of science was recognized but so was the need for its containment (Ben-David, 1971: 82). In this way the neutrality of the scientific community in matters of religion and politics were enforced by way of its dependence on the state for its support and its isolation from the larger society (Ben-David, 1971: 86-7). Generally, the growth of science within the other nations of Europe tended to follow the decidedly conservative model developed by France, insulating science within the academy apart from society. Very few independent scientific societies emerged in Europe and those that did were often persecuted as potentially subversive organizations (Ben-David, 1971: 85).
During the 17th century the primary thrust of French science was toward cataloguing and clarifying the French language and improving the language of scientific classification (Crowther, 1941: 430). Through the 17th and into the 18th centuries most of the nations of Europe were increasingly occupied with economic and colonial competition, rising nationalism, and an elevation of national culture with increasing emphasis on education and writing in vernacular language over the use of Latin (Dampier, 1961: 288).

On a philosophical level, the compromise of spheres of knowledge first formulated in the 13th century to quell the conflict between the Church and natural philosophy, a compromise which had been elaborated by Descartes' dualist philosophy and Newton's and Boyle's distinction between "mechanical" and "ultimate" causes, a compromise which had been embraced by most 17th century scientists, was being challenged (Dampier, 1961: 145). Up to the 18th century the majority of men involved in scientific pursuits were quite religious, expressing a distinctly mystical view of the universe, often as a fundamental part of their motivation for seeking to discover the "secrets of the universe." However, largely due to the successes of a limited mechanistic science, much of this openness to an ultimate reality was lost and was replaced by simplistic materialism. More and more the hard line philosophy of mechanistic
determinism became the philosophy of scientism, challenging religious ideology "head on." As Europe moved into the 18th century, many believed that the universe was indeed a great machine and that the only questions worth asking were the "how" questions of science, not the teleological "why" questions of religion (Barbour, 1966: 17-8).

This philosophical shift was a part of the rise of France toward the end of the 17th and into the 18th centuries as the center of scientific activity in Europe. The relative decline in active research in England was due to a number of factors including a growing emphasis on practical application of existing theory, a change from the "movement" phase to the "institutionalized" phase of the establishment of science, and a reopening of philosophical and religious debate and exchange (Ben-David, 1971: 79-80). Numerous groups founded in the tradition of the Royal Society became focal points of philosophical debate attracting leading industrialists, scientists, and nonconformists of various persuasions. These private societies of clubs tended to be quite liberal overall and were eventually subject to public discredit due to their general sympathies with the French Revolution and their close ties with figures who were to become prominent in the American Revolution. As a result of their preoccupation with philosophical and political issues, these societies did little scientific research and the Académie des Sciences in France became
the leading center of scientific research in Europe (Crowther, 1941: 423-4).

During this period great emphasis was put on developing rationalized systems of classification based on observable structures. This trend resulted in considerable development in botanical and zoological classification based on physical structures rather than on philosophical, metaphorical association (Dampier, 1961: 184-5). Further, advances in experimental procedure were achieved which provided the basis for the discovery of oxygen by Lavoisier and the disproof of Stahl's "phlogiston" theory, the last reworking of the Air, Earth, Fire, and Water model of chemistry which had survived since the time of the Greeks (Crowther, 1941: 426). Great advances were also made in improving the accuracy of many forms of measurement with resulting improvement in many areas of science from cartography to the quantitative chemical analysis developed by Lavoisier.

These developments were impressive but probably the most important product of 18th century French science was the French Encyclopedie, an attempt at cataloguing all scientific knowledge discovered up to its time mixed with a good deal of philosophical scientism. This thirty-five volume work, edited by Diderot and Alembert, first published in 1751, served not only to focus scientific thought on general theoretical problems, but also to
attack Roman Catholic ideology and the feudal monarchy (Dampier, 1961: 173). The materialist philosophy promoted in the Encyclopédie was popular during the 18th century for a number of reasons: it was easily comprehended; it was useful materially; it was useful in ideological battles, particularly against the Church; it helped to foster scientific research; and it was a "simple but natural overstatement" of what had been discovered by science (Dampier, 1961: 199).

Though France was the main center of scientific activity in Europe during the 18th century, it was not the only center. From 1535 to 1725, under strict Calvinist rule, Geneva had been a scientific backwater but after a liberalizing change in government and social philosophy, the city began to open up and by 1740, scientific thought and activity had begun to flourish (Feuer, 1963: 206). Similarly, Scotland experienced a renaissance during the mid-18th century stimulated by economic growth; the universities of Edinburg, Glasgow, and Aberdeen became well known as centers of learning in philosophy and the sciences (Feuer, 1963: 209). Sweden also experienced an extended period of economic prosperity and political freedom during the 18th century with the death of the absolute monarch, Charles XI, and the rise to power of the Swedish Parliament. This period of material prosperity was paralleled by a flourishing of Swedish science (Feuer, 1963: 219).
As we can see, France had no monopoly on scientific activity in Europe; she did, however, have the most outspoken advocates of philosophical scientism in the philosophy of the Enlightenment whose views were known to most of the Western world. As a result, when France exploded into revolution, the whole world was watching. Though the American Revolution had attracted much attention, it was essentially a limited conflict over economic and political issues, not an attempt at totally cutting ties with past tradition or creating an entirely new society. This was, however, the declared intent of the revolutionary element of French society.

The input of the French Revolution on material science was primarily positive. The centralized state support of scientific research which had been initiated by the French Crown was continued through the revolution and eventually expanded by Napoleon for reasons of both technical need and national prestige. The French educational system was also restructured along new lines emphasizing competition, a standardized curriculum, the material sciences, and centralized state control. The policy of containment of critical scientific thought established before the revolution was continued, for obvious reasons, and the section of the Institute of France devoted to the social sciences was abolished (Feuer, 1963: 290-1). After 1830, French scientific activity declined as a result of
its bureaucratic centralization, lack of innovation, and
its continuation of the individualistic orientation of
its research positions (Ben-David, 1971: 104).

Despite their apparent differences, there are
some striking similarities between the English and French
experience in the rise of science during a period of
social upheaval. In both England and France, the rise of
scientism was involved in a social revolution. In both
cases, a "peak" of scientific activity occurred during the
revolutionary period to be followed by a decline in activity
as talented individuals pursued other courses opened to
them by the revolution. Once the new perspective has been
established, interest in it declines (Ben-David, 1971: 102).

Another general parallel between the two cases is the
ambiguity expressed toward intellectuals and scientists
by the masses and by revolutionary leaders who alternately
fear them for the power inherent in their knowledge and
elevate them for their identification with social and
technical progress (Feuer, 1963: 279-80). After its
revolution, France, like England, declined as a center of
scientific activity to be replaced by mid-19th century by
Germany.

Unlike English society which was quite open, or
French society which was very controlled but somewhat
open to influence from the upper middle classes, 19th
century German society was very closed. Intellectuals
and members of the bourgeoisie had very little influence on economic or governmental policy (Ben-David, 1971: 90-1). Rather than being the product of a social upheaval as in England or France, the rise of science in Germany was a totally contained process initiated by a reform of the German university system, the first step of which was the establishment of the University of Berlin in 1809. The inspiration for the reform came primarily from a minority of intellectuals who had been influenced by French philosophical thought but whose orientations were more idealistic and romantic than pragmatic or revolutionary. This group, however, was quite powerless on its own; the real power behind the reform was that of the feudal German aristocracy and the government bureaucracy (Ben-David, 1971: 109-10).

The new form given to the German universities was based on the advice of the German idealistic philosophers to make philosophy the center of the university, primarily for nationalistic reasons, including an overt rejection of the Franch model of the university, an assertion of the "German Spirit" in elevating its own culture and philosophy as the center of the university, and a re-assertion of the solidarity of Church and State as expressed by the university (Ben-David, 1971: 116-7). The early emphasis in this reform was not on the physical sciences but rather on the humanities and philosophy with a new conceptual approach
involving scientific or empirical-rational models. The natural or physical sciences were held to be secondary to the humanities and philosophy. This policy was very much a reversal of the English and French emphasis (Ben-David, 1971: 111-4).

In effect, it was not the overt policy of the reforms which encouraged the rise of science in the German universities but rather a consequence of the new academic institutional structure. Each university was allowed to remain relatively autonomous as a corporate entity governing its own internal affairs. An environment of free thought and freedom of investigation was encouraged and promoted as long as it did not spread outside the walls of the university. The role of any paid faculty members was assumed to involve privately conducted research (Ben-David, 1971: 119-20). Also, positions were established for assistants to aid faculty members with research reflecting a policy shifting toward a collective emphasis in the conduct of research (Dampier, 1961: 289). This change was to be of particular importance in the physical sciences where research problems were becoming increasingly complex, beyond the reach of individualistically oriented research.

The growth of research within the universities was the product not only of internal institutional flexibility but also of competition between universities and of open communication between professional groups. Thus, the
universities were constantly adapting to the development of new areas of scientific study and to the demands of students for expanded curricula in growing fields (Ben-David, 1971: 123). By mid-19th century, the importance of research in university positions was fully recognized as positions were created for full-time research requiring no teaching, funding was made available for extended research projects, and major group efforts at extended research became possible in permanent laboratories. The unification of the German state culminating in 1871 was paralleled by the development of heavy industry. During this period of growth in national industries, science and applied technology were in increasing demand outside the scientific community and the university. A recognition of the need for expanded research prompted the founding of independent research institutes manned by professional researchers whose primary contacts were with particular sectors of German society such as industry, medicine, or the military (Ben-David, 1971: 124-6).

The steady growth of German universities and institutes was accomplished from the mid-19th to the early 20th centuries without any alteration of basic institutional structures. The adaptability of the old structures was limited, however, and strains appeared in the form of a lack of opportunities for advancement for new students, excessive differentiation within old disciplinary categories,
and established faculties becoming highly conservative (Ben-David, 1971: 129-36). Due to its isolation from the larger society and elitist orientation, university intellectuals had nowhere to turn to solve their institutional dilemma. From shortly before the advent of World War I, German science went into decline and the United States became the center of scientific activity in the world.

Before the American Revolution, scientific activity in the English colonies of New England was very much in the tradition of Francis Bacon and the Royal Society. The Philosophical Society of Philadelphia was founded with the same goals in mind as the Royal Society.

The small number of American colonials who were allowed membership in the Royal Society in recognition of their scientific activity were men of a distinctly liberal turn of mind, some of whom figured prominently in the American Revolution, most notably, Benjamin Franklin (Feuer, 1963: 328-30). The fact that the scientific philosophy was still very much a minority view in the colonies, where Calvinist doctrines were still quite prominent, can be seen in the objection of some of the clergy to Franklin's lightning rods as impious attempts to "interfere with the Divine wrath of God." The work of men like Franklin was, however, supported by the more influential commercial bourgeoisie of the colonies whose interests were also reflected in the American Revolution.
(Feuer, 1963: 338). In fact, the prestige of Franklin
in the world scientific community, gained through his
experiments with electricity, was instrumental in winning
support from the French for the cause of independence in
the colonies (Crowther, 1941: 444).

After the American Revolution and the French
Revolution, however, scientific activity all but died out
in the United States. Much like the Romantic-Conservative
reaction in Europe, the Great Revival of early 19th
century America was a reaction to the excesses of
revolutions and economic and political turmoil seen as the
products of the rationalism of the Enlightenment and the
scientific philosophy. Anti-intellectualism and religious
fundamentalism were dominant not only in the lower and
upper classes but among the bourgeois middle classes as
well (Feuer, 1963: 351-2).

By the 1840's, however, some of the anti-intellec-
tualism of the Great Revival was on the wane and interest
in intellectual and scientific topics on the rise as can be
seen in the popularity of the Lyceum circuit, a program
of lecture tours around the country dealing with secular
and scientific topics of general interest (Feuer, 1963:
366-8). Religious ideology was still dominant, however,
and in response to Darwin's theory of evolution "intelligent
men seriously proposed that fossils were put in the rocks
to test men's faith" (Dampier, 1961: 310-11). By the end
of the Civil War, much of the intellectual lethargy produced by the Great Revival was gone and a reunited nation began its rapid economic expansion into the Progressive Era.

This period was marked by rapid changes as the West was settled and Eastern cities became industrialized. Further, the Eastern universities which had been dominated by the Protestant clergy were opened to secular science and new universities were founded, such as Johns Hopkins University in 1876, which were devoted to the advancement of science. These new universities were initially structured on the German model as the most advanced example of a scientifically oriented institution. A positivist-empiricist approach to knowledge became a generally accepted model (Feuer, 1963: 371).

The economic expansion of late 19th century America also made possible the rise of an entirely new approach to research, the entrepreneurial research center. The prototype for this kind of research center was created by Thomas Edison in Menlo Park. Its success was based not on production but rather on producing inventions which could be patented and sold to industrial interests. The development of this approach to research is particularly important because it was the immediate institutional forerunner of private research laboratories devoted to developing marketable items, laboratories which are now
a standard feature of many large corporations (Crowther, 1941: 455).

As a result of the growth of science in Germany and the United States within new, more dynamic institutions and the improvement of research facilities in other nations of the West, the 19th century was nothing less than an explosion of scientific discovery and development (Dampier, 1961: 200-1). Major advances were made in virtually all areas of science. This was also the period during which the social sciences emerged out of social philosophy, the growth of which will be discussed in greater detail in the next chapter.

Probably the most important developments of the late 19th century were in the field of electrical engineering, for they paved the way not only for the emergence of 20th century technology but also for the development of electron theory which led to Einstein's theory of Mass as a form of Energy \( (E=mc^2) \) and the theory of relativity, theories which displaced the most fundamental notions of Newtonian mechanics concerning the ultimate nature of the physical universe (Crowther, 1941: 454-5). In this development the growth of science through the 19th century had profound consequences for Western philosophy.

During the 19th century the philosophical currents of the West followed two very different paths of development resulting from a split created initially by the
radical philosophical idealism of Hegel. A fundamental premise of German idealism was the denial of material causal primacy which stood as a direct contradiction to the mechanistic-deterministic assumptions of the scientific philosophy of the Enlightenment. As a result two separate philosophical communities developed with only occasional communication occurring between them (Dampier, 1961: 291-2). This split generally ran between those actually involved in research in the material sciences and those involved in critical philosophy in the humanities and in the social sciences. Most of those within the scientific community, in trying to avoid metaphysics, simply ended up making rather simplistic metaphysical assumptions about the nature of their work, that the universe was simply a big machine, that their discoveries were of ultimate reality, and that the theoretic "truths" which had been established up to that time would not be overturned (Dampier, 1961: 294).

In the general philosophical polarization of the 19th century between various forms of idealism and materialism, the scientific community stood on the side of materialism, though generally without much theoretical sophistication (Dampier, 1961: 306). A few members of the scientific community such as Ernst Mach, Lobatchewski, and W. Stanley Jevons, attempted a reconciliation between philosophy and science with the hope of improving both, but their attempts were ignored, for the most part, by the scientific
and philosophical communities (Dampier, 1961: 295). Thus, much of the scientific community waltzed naively into the 20th century believing a science based utopia to be just around the corner (Dampier, 1961: 296), while many in the humanities and social sciences, being more aware of the growing conflicts within Western society, held considerably less optimistic predictions.

Though the German model of the university was adopted initially by the United States in the expansion of its educational system, this model was adapted to new demands and a system developed which displayed numerous innovations. Emphasis was placed on the natural sciences but with more consideration being given to the development of practical professional research and professional roles in engineering not necessarily tied to a single theoretical discipline. This shift toward applied science was particularly evident in the Land Grant Colleges and other schools created by the federal government to foster technological and economic development (Ben-David, 1971: 144-5). Further, the single level degree system characteristic of European universities became less workable with the rapid expansion and differentiation of new fields. The solution found for this problem was the creation of the system of degree levels, bachelors, masters, and doctoral degrees now in operation throughout the United States (Ben-David, 1971: 140). This expansion made possible a tremendous growth
and proliferation of practical and theoretical specializations and a tremendous diversity in possible career paths open to ambitious students (Ben-David, 1971: 147). Another innovation of the U. S. system was the creation of "departments" for various fields of study replacing the system of "chairs" found in the European system. This system provided tremendous flexibility overall for institutional expansion and adaptation within departments, within universities, and between universities in competition with one another for academic status. This flexibility was evident in both private and state universities (Ben-David, 1971: 153-5). The economic and social basis for this expansion was undeniably the rise of the United States as a major industrial power in the world economy.

In the U. S., as in other developed nations of the world, the 20th century has been characterized by the movement of science into a crucial and central position in human society. It is an essential element of both capitalist and socialist national economies. As a result of two increasingly technologically sophisticated world wars, science has also become central to national defense and international political strategies of the world's major powers. In these and other ways, science has become a bulwark of the state.

Despite the objections of a minority within the scientific community, since World War II, the directed
scientific research and productive capacity of industry of the world's major powers have been increasingly devoted to the science and technology of destruction. The bureaucratized institutional structure of scientific research and its total dependence of government and/or corporate support have resulted in its nearly total subordination to the priorities of international conflict and power (Feuer, 1963: 399). This and other trends of this century have gravely affected the image the scientific community has of itself, its relationship to the larger society and to the power structure, and the naive philosophical scientism we have inherited from earlier times.

Our century has been one of radical changes in all areas of life, many of them direct results of the growth of science, all of them matched by radical changes within science itself. The more visible and obvious changes, such as the development of aviation, electronic communications, nuclear power, and space flight have been paralleled by fundamental changes in scientific theory. At the center of these changes is the birth of "new physics" which began in the late 19th century with the discovery of X-rays and other forms of invisible radiation. As a result of these and other discoveries, the Newtonian conceptual model for the universe became less and less comprehensive as an explanation of known phenomena. By the '20s and '30s, Einstein's theory of relativity had all
but replaced Newtonian mechanics as the accepted conceptual model for the universe (Dampier, 1961: 370-1, 409). Further, with the development of quantum mechanics, the theory of relativity served as the basis for other major theoretical shifts including the debunking of Euclidian notions of time and space as absolutes, the reintroduction of the notion of the unavoidable experiential perspective of any observed, and a loss of confidence in conceptions of hard linear determinism (Dampier, 1961: 402-7). The philosophy of Phenomenology developed by Edmund Husserl was one of the most influential attacks on the supposed "objectivity" of science and assumptions concerning the nature and validity of human knowledge (Gurwitsch, 1974: 17-22). Various forms of materialist reductionism were also discredited by developments in substomic physics which demonstrated conclusively the whole cannot be explained in terms of discrete individual parts but rather depends on a set of structural relationships (Barbour, 1965: 296-7). The repercussions of these theoretical changes have yet to be fully felt in the larger society or even the scientific community where in daily practice the simple conceptual approaches of Newtonian mechanics still predominate for reasons of conceptual and material utility. The general trend has been toward this nominalist-relativist model admitting to the subjective limitations of perspective, that we
perceive relations and not an objective "ultimate reality," and that the observer is inextricably involved with and a part of the phenomena which he seeks to examine (Dampier, 1961: 490-1).

These shifts in philosophical position relative to basic theory have been matched by major philosophical shifts concerned with the relationship of science to society. As we verge on the destruction of our planetary biosphere with the spread of industrial pollutants, radio-active wastes and chemical pesticides; as we live under the threat of nuclear holocaust, the naive scientific assumption of man's "natural drive" to master his environment and the ultimate "positive consequences" of all scientific discovery have come to be subject to considerable doubt. The themes expressed in works of fiction of naive scientism and progress of birth, growth, and discovery toward a science-based utopia, themes evident well into this century, are being replaced by themes of destruction and decline by nuclear holocaust, social and economic collapse, disastrous climatic changes induced by industrial air pollution, as well as plague and famine (Feuer, 1963: 400-1). The tendency toward pessimism and despair is evident not only in the common culture but within the intellectual and scientific community as well. In 1954, Einstein shocked the world scientific community by declaring publicly that if he were young again, "I would not try to become a scientist,
scholar, or teacher. I would rather choose to be a plumber or a peddler" (Feuer, 1963: 400). Over the more than two decades since Einstein made this comment, many have come to share his disillusionment with the pursuits of science, the place of science within political and economic systems, and the ominous trends apparent in the directions being taken by Western civilization and the world as a whole.

CONCLUSIONS

In reviewing the history of Western science, it becomes apparent that the growth of science has occurred during historical periods and within societies which have a number of basic features in common. The first of these is a general social environment of tolerance of free thought and intellectual competition. This was the general social environment in which science developed in nascent form in Greece and Islam and developed more rapidly in Renaissance Italy, 17th century England, and later in the United States. This essential environment of tolerance and competition need not necessarily be a reflection of the larger social order.

First in France and later in Germany and other nations of Europe, state controlled "enclaves" of tolerance of free thought and intellectual competition were created for the advancement of science in the form of universities.
and institutes. In fact, this model, based on the containment and isolation of critical thought, has been the most widely applied throughout the world, particularly in socialist nations. Be that as it may, whether it is a reflection of the larger society or an artificially created enclave, an environment of tolerance and competition is essential to the development of science.

The second general feature which becomes apparent is that the pursuit of science involves a community effort. From the time of its early development during the Renaissance, the existence of a scientific community has been a crucial element in the advancement of science. Though this community was and still is a tiny fraction of the larger society, it has provided the social context which made possible the intellectual exchange of ideas and experimental results which fostered individual and collective creativity and discovery. The history of science is written most often in terms of individuals but their activity and the preservation of their discoveries were highly dependent on the existence of an open scientific community.

A third consistent feature of the growth of science since the Renaissance has been its dependence on support from the larger society in some form. Whether in the form of feudal patronage as in Renaissance Italy, direct economic profit as in 17th century England, state
support as in France or Germany, or corporate support as in the United States, science has been tied directly to the pursuits or other institutions in society. As a result, though the scientific community has maintained claims to the value of the pursuit of knowledge for its own sake, science has necessarily been bound to justify itself to the larger society in practical terms. This has generally meant the expansion of human power over the material environment, over other human beings and existence in general. As science has grown, it has become increasingly important to and increasingly controlled by powers in the larger society.

Aside from these consistencies in the historical conditions which have encouraged the growth of Western science and determined its relative position within the larger society, certain "internal" characteristics also can be found. These too are relative to a historical context but are concerned with the fundamental conceptual form of Western science, the actual pursuit of valid knowledge, and how those within the scientific community have seen themselves.

Beyond the functional demands of research in specific areas, probably the only true prerequisite for the existence of a "science" is an effectively, mutually critical relationship between abstract rational theory and empirical experience and observation with respect to
a specific realm of knowledge and experience. As we have seen, the Western scientific tradition has developed other characteristics which go far beyond this basic theoretical prerequisites.

First, the general empirical approach for establishing truth became the more specific experimental approach as a result of its "ideologically permitted" and "economically encouraged" subject matter. Men of science were limited in their empirical investigations to the material realm of natural philosophy. "Bits" of the material realm could be manipulated experimentally so a general methodology developed around this type of empirical procedure. Also, as a result of the emphasis on experimentation, the critical relationship between empiricism and rationalism was heavily weighted on the side of rationalism in increasingly rationalized structuring of experiments very narrowly limiting the quantity and form of empirical evidence allowed into the dynamic production of theory. The dominance of philosophical reductionism in Western science is a product of a dependence on and the limitations of highly rationalized empirical-experimental methodology which deals with simple small-scale phenomena very well but not so well with complex large-scale phenomena.

Second, empirical investigation as a basis for producing valid knowledge was given no place in the formal doctrine of either Catholic or Protestant Churches,
neither of which could incorporate it into their absolutist dogma. Still, empirical investigation remained a "highly religious" personal pursuit for most of those involved in it. As has been previously noted, the religious orientations of men of science have often been genuinely mystical (as opposed to the rationalized mysticism of Church dogma) involving a personal search for truth outside the realms of established human knowledge whatever its form. As a result of these circumstances, though many philosophical and symbolic connections remained, science and religion became institutionally separated.

Quite probably this separation was a necessity for the survival of science in the West. Moreover, it has been the basis for much of the belief system promoted by Western science. Due to the dominance of Catholic dogma, the ideology of science was initially defensive from the 13th through the 17th centuries claiming a sphere of knowledge separate from that of religious ideology. The justification for scientific activity was deliberately neutral relative to religious or political ideology; science was on the defensive and of necessity promoted an ideology of absolute neutrality for the sake of survival. By the 18th century, however, science had developed sufficiently to begin to challenge the dominant religious ideologies. It has continued to do so successfully up to the present and has come to provide a major element of
dominant ideologies around the world.

Third, with its growing success, the empirical experimental approach, based on external procedures developed in narrow manipulable contexts, slowly grew in its influence in the West, eventually to be elevated to the level of a universal epistemology determining the validity of all knowledge. Objectively this universalization of the experimental approach cannot be justified since it was derived from limited subject matter within narrow contexts. The assumption of its universal validity, utility, and applicability has constituted an ironic act of faith on the part of the scientific community. Though this universalization of the experimental approach is itself empirically unsupportable, it has been widely accepted and has been a central feature of the philosophical scientism of the Enlightenment and the technological and political transformation of the world over the last two centuries.

Though these characteristics of modern Western science have been assumed by many to be essential to the existence of any science, we shall see they are not. In fact, these are the primary reasons for the very limited success of the social sciences in the West, as will become more apparent in the next chapter.
REFERENCES

Barbour, Ian G.  

Ben-David, Joseph  

Crowther, J. G.  

Dampier, Sir William Cecil  

Feuer, Lewis S.  

Gurwitsch, Aron  

Haskins, Charles Homer  

Levi-Strauss, Claude  

Taylor, F. Sherwood  

Weber, Max (trans. Talcott Parsons)  
CHAPTER 2

THE DEVELOPMENT OF THE SOCIAL SCIENCES IN
THE WEST AND THE PROBLEMS OF IDEOLOGY

The initial development of the social sciences during the early 19th century was the result of the first serious application to the study of human society of empirical methods developed in the physical sciences since the Renaissance. The use of these general methods necessarily involved the adoption of many of the fundamental assumptions of the scientific philosophy of the Enlightenment, including the mechanistic nature of the physical universe and human society as a part of that universe. Though most theorists readily acknowledged that human society was of a much higher order of complexity than the relatively simple natural phenomena dealt with in the physical sciences, they could see no reason why the methods of science could not be adapted and applied to the study of human society to resolve, once and for all, many of the age old questions concerning the nature of man and human society.

Though the methods and analytical approach of the new social sciences were "borrowed" from natural philosophy and the physical sciences, most of the central issues, the content of these new disciplines came directly from Western social philosophy. Again, ancient Greece can be seen as an
historical turning point at which social as well as natural philosophy began to develop separately from religious mythology (Ellwood, 1944: 7-9). Many of the fundamental concepts and perspectives of modern social theory can be found expressed in the social thought of the Greek philosophers. As with natural philosophy, however, these concepts remained untested and underdeveloped in classical culture.

Just as with natural philosophy, the Romans did little to improve on the social philosophy of the Greeks but rather accepted and applied it in the organization and administration of the Roman Empire in the development of Roman Law (Ellwood, 1944: 66-69). During the later days of the classical period the utilitarian, materialistic, and individualistic philosophy of Epicurus was dominant but as the Roman Empire declined, this philosophy gave way to the more theological thought of men like St. Augustine characterized by Christian teachings mixed with elements of Platonic and Stoic philosophies (Ellwood, 1944: 61-63, 70-72). Medieval Europe was dominated by the theology of St. Augustine until the 12th century when it was shaken by the rise of the universities and the re-emergence of natural philosophy and critical thought (Ellwood, 1944: 79-85).

As noted earlier, the conflict between natural philosophy and the Church was resolved in a compromise
which defined two separate realms of knowledge for natural philosophy and the Church. This compromise allowed critical thought in the realm of natural philosophy to continue toward the development of the physical sciences but prohibited the growth of critical social philosophy since it would constitute a direct threat to the dominance of religious ideology. As a result, the physical sciences developed through the Renaissance and into the 17th century while social thought remained speculative social philosophy constrained by the religious ideology of Catholicism or Protestantism.

Despite these constraints, however, social philosophy did develop haltingly toward the social sciences. During the 16th century the early development of the comparative historical method can be found in the works of John Bodin who traced cultural forms to environmental causes (Ellwood, 1944: 98-107). Similarly, the writings of Machiavelli in _The Prince_ were based on direct observation of the political corruption and intrigue of 15th and 16th century Italy (Ellwood, 1944: 86-90). The writings of Utopian philosophers of the 16th and 17th centuries, Sir Thomas Moore, Thomas Campanella, James Harrington, and Sir Francis Bacon all expressed the expectation that human society could be improved and perfected through the application of science and critical reason to human problems (Ellwood, 1944: 113-15). In the mechanistic philosophy of Thomas Hobbes
advocating the development of a science of human society which he termed "social physics" we find the rejection of the religious conceptual framework in social philosophy which was prevalent through the 17th century. This position made Hobbes something of a maverick in 17th century England but it came to be common among the philosophers of the Enlightenment (Ellwood, 1944: 116).

The 18th century was particularly important to the later development of the social sciences in that the social philosophy of the Enlightenment raised the basic theoretical issues which were to become central to the social sciences (Harris, 1968: 8-11). In the works of Montesquieu, Voltaire, Rousseau, and Turgot in the continental rationalist tradition as well as philosophers of the English empiricist tradition the first clear definitions of fundamental theoretical problems can be found including the origins of social structure, the evolution of human society, basic distinctions between social forms, etc. In these efforts the philosophers of the Enlightenment made the first serious attempts at bringing together the rational and empirical currents in Western philosophy in the realm of social philosophy to produce a science of human society (Zeitlin, 1968: 7-8). Montesquieu was one of the first to draw attention to the interdependence of particular forms of thought and social reality, a central feature of the Marxian concept of ideology (Zeitlin, 1968: 15).
Though the theories of the philosophers of the 18th century were often somewhat crude, they reflected the growing concerns of the rapidly changing social landscape of Western Europe, of the inadequacy of the feudal social order, and the growth of capitalist industrial society.

The serious development of the social sciences as "empirical sciences" began during the first decades of the 19th century largely in response to the political and economic turmoil produced by the Industrial Revolution and the French Revolution. As might be expected, the different forms this response took varied in the extreme. This can be seen in the philosophical and theoretical positions which developed ranging from radical anarchism to staunch feudal conservatism. All were attempting to come to grips with problems of the condition of the working class, the growth of urban industrial capitalism, the emergence of bourgeois democracy, and the collapse of the feudal order (Nisbet, 1966: 24).

Without exception, all of the major theorists of the 19th century took their theoretical orientations from the philosophies of the Enlightenment, adopting or rejecting different basic propositions depending upon their social and political positions. Though the variation of these positions served as the basis for the polarization of social theory as it developed through the 19th century, theorists of widely differing persuasions were in agreement
on a number of essential propositions.

Both radical theorists and liberal/conservative theorists recognized the chronic social ills of 19th century European society and industrial capitalism; both supported collective values and condemned the commercialization of property; both advocated the application of science and reason to the solution of human problems (Nisbet, 1966: 26-7). They differed in the extreme, however, on theoretical explanations for existing conditions and just what could or should be done about them (Zeitlin, 1969: 248-9). These differences, to a great extent, reflected basic philosophical orientations.

The liberal/conservative orientation in social theory developed initially out of the works of major figures of the Romantic-Conservative reaction such as Bonald and Maistre. These men were not social scientists but philosophers who condemned modern European society and yearned for a restoration of the feudal order. They saw the excesses of the French Revolution and the breakdown of the social order as a direct result of the rationalistic and progressive philosophies of the Enlightenment. The empirical research and analysis of medieval history of Tocqueville and others was inspired and greatly influenced by their works (Zeitlin, 1968: 43). Unlike the conservatives, however, men like Tocqueville realized that there was no going back to feudal society; though their sympathies were
conservative, politically they were liberal more often than not adapting to existing political realities. As a result, the work of Tocqueville and many who shared his orientations, Simmel, LePlay, Taine, Durkheim, and others, reflected a conservative critique of modern democratic, capitalist mass society and an idealized conception of feudal society (Nisbet, 1966: 196-9).

Like the conservative philosophers they rejected the more radical aspects of Enlightenment philosophies though they did support the elevation of science and reason in dealing with social problems.

Conversely, theorists of a more radical persuasion generally accepted the ideals of the Enlightenment and the condemnation of the feudal order. They regarded the failure of the French Revolution and the excesses of industrial society as a betrayal of, rather than a reflection of, Enlightenment ideals (Zeitlin, 1968: 84). Probably the most brilliant and articulate advocate of this position was Karl Marx. The widely differing theoretical approaches of these polarized positions can be readily seen in their treatment of two major theoretical issues, the questions of the social class or status based nature of modern society and the concept of alienation.

In their critique of the evolving mass society of Europe, Tocqueville and those who followed his lead emphasized the loss of the feudal hierarchical social
structure and predicted that the position of the individual within the social order would come to result from relentless individual competition. Marx, however, claimed that the economic structure of industrial capitalism would produce a highly stratified class based society made up of various levels within two major divisions, the bourgeoisie and the proletariat (Nisbet, 1966: 183-8). Though both positions were based on empirical evidence and analysis, both were overstated as a result of philosophical and political sympathies; Tocqueville saw the loss of class structure in evolution of democracy and mass society while Marx saw an economically based class structure evolving as a result of economic inequality inherent in the capitalist system which he hoped would provide the basis for a popular revolution (Nisbet, 1966: 200).

This divergence of perspective can also be clearly seen in the development of the concept of alienation (Nisbet, 1966: 264-6). On the liberal/conservative side alienation was seen as the product of the individual loss of community and social orientation, the impersonal nature of mass society and the inaccessibility of its institutions to the individual. This concept of alienation was central to Durkheim's classic work, *Suicide*, and the concept of anomie. Marx's conception of alienation was much more economic in identifying the relations of production and
the conversion of labor into a commercial commodity as the primary source of alienation (Hisbet, 1966: 284-5). Again, both concepts were empirically derived and are defensible; the difference in emphasis was a product of fundamentally different philosophical sympathies and political orientations.

These sympathies and orientations had an even more profound effect on theories of the nature of human knowledge and the concept of ideology. For the most part the problem of the nature of human cognition and the production of knowledge was not explored in any depth in the English or French schools of philosophical scientism. Both empiricist and rationalist schools tended to take the facts of consciousness and rationality for granted pursuing more objectifiable problems of formal logic and empirical validity. Ironically, it is within the philosophy of German idealism that the questions of the nature of human cognition, knowledge, and culture became central (Ben-David, 1971: 115). The main thrust of German idealism was, to a considerable degree, in direct opposition to the simplistic mechanistic assumptions of philosophical scientism dealing very much with philosophical intangibles, "mind," "spirit," etc. In the idealistic philosophy of Hegel we find an attempt to achieve a synthesis of the rationalistic philosophy and progressive ideals of the Enlightenment, and essentially mystical and conservative
elements of the philosophy of the Romantic-Conservative reaction (Zeitlin, 1968: 40-1). In this work Hegel's central concerns were the processes of social change and the evolution of human consciousness. Though he claimed that his views were rationally consistent and defensible, many of the key elements of his philosophy were distinctly mystical, his essentially religious concept of alienation, the "truth" as "the whole," and the "absolute spirit" as the foundation of all being. Indeed, it is interesting to note that Hegel himself recognized the distinct parallels between his idealistic philosophy and Buddhist philosophy to the extent that he found it necessary to deny any connection between the two. Despite its ambiguities and inconsistencies, Hegelian idealism has exerted a tremendous influence on the development of Western philosophy and the social sciences. As we shall see, this has been especially true in the area of theories of the nature of human cognition, knowledge, and the nature of ideology.

Though Karl Marx departed from Hegelian idealism on a number of key issues, many of the issues he did deal with were derived from Hegel and others in the German idealistic school. As a result of his radical philosophical and political sympathies Marx adopted many of the progressive ideal of the Enlightenment expressed in Hegel's philosophy. These idealistic elements were central to his revolutionary philosophy. As it turned out, however, the most valuable
production by Marx in the realm of social theory have been, at least in part, a consequence of his departures from Hegelian idealism.

Marx's greatest departure from Hegel was in reversing the direction of causation between the material and ideal/cultural realms giving primacy to the material/economic realities of existence rather than to ideas of culture. In this theoretical framework, which Marvin Harris has termed "cultural materialism," forms of thought and culture are traced to origins in the material conditions and economic relations of a given society. As a result of this theoretical shift the excessive dependence on "reason" in explaining social change present in German idealism was overcome (Harris, 1968: 230-32). A second and related departure from Hegelian philosophy was Marx's emphasis of empirical investigation over pure reason in arriving at theoretical conclusions. In this move, Marx brought many of the philosophical issues of German idealism into the realm of empirical science.

In his analysis of the development of sociological and anthropological theory during the 19th century, Harris credits Marx for establishing the basis for the production of valid social theory in the strategy of "cultural materialism." According to Harris, this strategy consists of five basic elements:
1. The trisection of socio-cultural systems into techno-economic base, social organization, and ideology

2. The explanation of ideology and social organization as adaptive responses to techno-economic conditions

3. The formation of a functionalist model providing for interactive effects between all parts of the system

4. The provision for analysis of both system maintaining and system destroying variables

5. The pre-eminence of culture over race (Harris, 1968: 240-1).

In identifying these elements, Harris has altered and expanded the original terminology developed by Marx, which applied almost exclusively to European history, into more general concepts as they have influenced the growth of social theory up to the present. Harris regards Marx's dialectical materialism as an unfortunate product of Hegelian influence and his revolutionary (as opposed to scientific) orientations (Harris, 1968: 230). It was, however, an essential part of Marx's theoretical solution to the problems raised by the concept of ideology.

Though various philosophers in earlier periods had discussed the possible connections between culture, society, and material conditions, Marx was the first to clearly define ideology as a self-serving system of beliefs reflecting the interests of dominant social classes, supporting his theoretical propositions with
historical evidence (Zeitlin, 1968: 101-2). The concept of ideology is a key element in his analysis of the growth of bourgeois democracy and industrial capitalism out of medieval Europe (Zeitlin, 1968: 103-8). Aside from application to specific historical analyses, the strategy of cultural materialism and the concept of ideology raised two basic theoretical issues for the conduct of research in the social sciences, the first concerned with the object of research, the second with the subject, the observer himself.

The first problem, approaching an objective social reality for the sake of research, is dealt with satisfactorily by Marx's cultural-materialist analytical approach outlined by Harris. This approach can be further expanded to include a three level analysis of religion and/or ideology:

1. Religious or ideological statements are false in that they are empirically unverifiable and have no truth value in the real world.

2. Religion and ideology perform functional social roles, consolation, system justification, etc.

3. Religious or ideological mythology is isomorphic reproducing patterns found in the real social structure in a supernatural or natural realm. (Huaco, 1971: 253-4).

In these elements and levels of analysis the approach of the researcher/theorist to the object of study
is fairly well developed. The problems of the position of the researcher himself is much more difficult. Like the objects of his study, the researcher's position is ideologically and culturally relative. How does the researcher overcome his own cultural biases, class origins, economic and political dependencies, and personal distortions of perception in order to perceive an objective "truth" about the society he is observing? Marx's answer to this problem is twofold.

First, he identifies science as separate from ideology in that its truth value is empirically verifiable, it may or may not perform a social role, and it does not project societal realities onto a supernatural or natural realm. He does, however, include nearly all other areas of human knowledge under the heading of "ideology," literature, philosophy, religion, history, the arts, etc. This position is derived from the philosophical scientism of the Enlightenment in its "faith" in empirical investigation in overcoming distortions of perceptions or ideas. In other words, the problem of ideology is presumed to be circumvented by the use of empirical/observational verification as with the experimental method in the physical sciences. In its general aspects this view was shared by virtually all social theorists of the 19th century.

Marx's second answer to this problem was a central element of his revolutionary orientation derived from the
Emergentist side of Hegelian philosophy. Like Hegel, Marx regarded all human knowledge as it itself incomplete but progressing, emerging by stages of improvement toward some ultimate goal (for Hegel union with the Absolute Spirit, for Marx a classless society). Marx saw the historical-dialectical process toward this goal as a process of class conflict, the most advanced social class, the revolutionary class, as the bearer of the most advanced or true class consciousness. Marx identified the revolutionary class of his own time as the proletariat and himself and other revolutionary intellectuals as the "vanguard of the proletariat." In this way, Marx elevated critical social theory and his own theoretical productions as the most advanced, the most true, in his time. Though this claim has some validity, as we shall see, it provides no real solution to the problem of ideology for the researcher-theorist in the social sciences. In formulating this position, however, it is clear that Marx was very much aware of his own ideological position and the problems of ideology in the formulation of social theory. The vast majority of 19th century theorists in both sociology and anthropology were not.

Though virtually all of the liberal/conservative theorists from Tocqueville to Weber were concerned with the nature and functions of belief systems in society, particularly with religious systems and the "sacred,"
they did not deal effectively with the problem of ideology as it related to their role as theorists (Nisbet, 1966: 226-31). In reaction against critical social theory, such as that of Marx, many theorists sought to create an image of social theorists as "managerial problem solvers" within the system or as a political "pure scientists" detached from and no threat to existing power. August Comte's "positivism" was a direct attack on the supposed "negativism" of critical theory (Harris, 1968: 58-60). In effect, these theorists were readopting the "pre-18th century" defensive ideology of scientific neutrality which had served to protect the physical sciences through the 17th century. These theorists found that despite the fact that a generally scientific and materialistic world view had replaced the religious ideology of medieval Europe, the social sciences were still in a defensive position. New political nationalist ideologies and economic powers had emerged which fostered the development of the physical sciences, as we have seen in chapter 1, but had little use for the nascent social sciences. In response to this situation some theorists such as Saint-Simon, Comte, and Durkheim proposed to re-establish the stability of European society with a new pseudo-religious moral order based on a science of human society. Comte even went so far as to develop rituals and an organization for this new scientific "priesthood"
(Zeitlin, 1968: 74-9). Quite obviously these men were offering their services in the creation of a new ideology devoted to maintaining the existing system (with some hoped for humanistic modifications), a system which tolerated and in some ways patronized them but didn't really need them.

Many specific theoretical schemes such as Durkheim's distinction between mechanical and organic solidarity in the division of labor are quite obviously ideologically loaded. Directly contradicting Marxian theory concerning the alienating nature of the wage labor system, Durkheim claimed that it was a "higher" form of organization beneficial to all within it. Ultimately, he withdrew support from this theory admitting that it was contrary to empirical evidence. In fact it was a reflection of Durkheim's hopes for the humanization of a harsh system and an attempt to view the existing structure in more positive terms, however erroneous (Zeitlin, 1968: 242-6). Though much of Durkheim's social theory has been of lasting value, this conservative bias supporting existing ideologies and evading the issue of ideology can be seen throughout his work (Zeitlin, 1968: 258).

The development of anthropological theory through the 19th century was also highly ideological though with a somewhat different slant. While most theorists on the continent all but ignored primitive societies (with the
exception of Durkheim), theorists in England dealt almost exclusively with primitive societies with data acquired in exploratory contacts and colonial conquest of primitive and non-Western societies (Harris, 1968: 64). This early development of anthropological theory took its issues not from continental philosophers but rather from major figures of the Scottish Enlightenment, Ferguson, Millar, and Robertson (Harris, 1968: 29-34).

Theorists in the anthropological tradition were concerned with both the emerging capitalist industrial system and colonial conquest around the world. Almost universally it was presumed from the start that the "white race" of Europe was superior to all others and that the capitalist system of brutal competition and exploitation were "in the nature of things." Consequently, much of anthropological theory was aimed at explaining and, in so doing, justifying these "facts," the dominance of "superior" individuals in capitalist society and the conquest of the non-Western world by European powers, particularly Britain (Harris, 1968: 80-4). The distortions of racist and social evolutionist themes which were empirically indefensible are evident in the works of Morgan, Taylor, and Spencer. Their popularity was a direct consequence of their ideological utility (Harris, 1968: 137-41). Such biases were also evident in the works of European theorists but played a less important role. As was noted
earlier, the work of Marx was an exception to this rule in recognizing racism as a reflection of economically based colonial domination (Harris, 1968: 101). In this and other profound insights into the nature of human society, Marx clearly stands out as the most influential social theorist of the 19th century. As a result his theoretical approach has served as the basis, directly or indirectly, for much of the later development of social theory.

To a great extent the work of Max Weber was a refinement and elaboration of Marxian theory. Weber's departures from Marxian theory were generally departures from its revolutionary elements. Weber saw clearly that much of the destructive and alienating nature of modern society resulted not only from the relations of ownership but from industrialism itself, capitalist or socialist. In his emphasis on the trends of rationalization, bureaucratization, and mechanization in modern society Weber corrected a prominent deficiency of Marxian theory (Nisbet, 1966: 145). Weber's writings also tend to express a tone of pessimism and melancholy reminiscent of Tocqueville; both saw the profoundly negative side of mass industrial society whether capitalist or socialist (Nisbet, 1966, 292-4). In his formal analysis, however, Weber is very much in the Marxian tradition in analyzing relations of political and economic groups and their alliances, conflicts,
and ideologies. In these analyses, he refined Marxian notions with conceptual gradations of economic influence which served as the basis for his classic studies of institutional structure and evolution (Zeitlin, 1968: 113-4). Weber's work dealt primarily with ideology as an aspect of a society being studied. In dealing with the problem of ideology for the researcher he fell back on the scientific ideology of his predecessors appealing for the maintenance of moral and intellectual objectivity and political neutrality with no explanation of how that might be done. Though he did a great deal to refine Marxian theory, Weber did not deal with the problem of ideology.

In his adoption of the non-revolutionary side of Marxian theory, Karl Mannheim, like Weber, has often been referred to as a "bourgeois Marx." Unlike Weber, however, Mannheim took as his primary focus the problem of ideology both as an aspect of the object of research and as the more difficult problem of the ideological position of the researcher (Zeitlin, 1968: 181-2). Mannheim's conceptual approach to both aspects of the problem of ideology involved a reintroduction of Hegelian idealism and emergentism asserting that human consciousness is an historical emergent, each stage of consciousness being an improvement over that which went before it (Zeitlin, 1968: 291-3). Like Weber, Mannheim's most productive work was in the
substantive analysis of specific historical circumstances detailing the emergence of limited ideologies among particular social groups. In his attempt to develop a more general theory and epistemology of the nature of human consciousness which he termed the "Sociology of Knowledge," he was much less successful in that he failed to establish a coherent abstract framework for analysis (Coser, 1971: 433). In attempting to solve the problem of ideology for the researcher, Mannheim used a non-revolutionary emergentist rationale claiming that the "free-floating" intelligensia of post WWI Germany constituted a socially and ideologically non-aligned group and as such were capable of an undistorted perception of historical and social realities (Zeitlin, 1968: 298). Ultimately, this rationale for the supposed transcendence of the limitations of normal consciousness is no more convincing or defensible than Hegel's perception of the "absolute spirit" or Marx's revolutionary "vanguard of the proletariat" (Coser, 1971: 436-7). Like Weber, Mannheim developed and refined some aspects of Marxian theory in the analysis of ideology in specific historical circumstances but was unable to solve the problem of ideology for the researcher.

Taking the opposite approach, theorists such as George Lukacs have rejected the more grounded and scientific side of Marxian theory in favor of its radical or
revolutionary side. Lukacs asserts that the most important feature of Marxian theory is the concept of dialectical materialism, the historical revolutionary process. He further fully accepts and defends the emergentist conception of the "vanguard of the proletariat" as the carrier of the "true class consciousness" (Lukacs, 1968: 46-7). In view of the political events of this century, it becomes obvious that this position is indefensible and is itself highly ideological; the tenets of revolutionary critical theory are rapidly transformed into the elements of an intensely conservative ideology when the locus of power is shifted through social revolution as can be readily seen in the case of Soviet Russia. The distortions of political polarization remain present, the problem of ideology unresolved.

In the works of other social theorists can be found concepts and observations which can lend some depth to our understanding of the problem of ideology and possibly to its solution. The work of Thorstein Veblen was very much influenced by Marxian theory though his analysis tended to emphasize the influence of specific elements of technology and specific as opposed to broad historical social contexts. This was at least in part a reflection of the influence of American Pragmatist philosophy. Veblen's overt rejection of Marxian theory was based on a rejection of its Hegelian unscientific
side and some of the more simplistic assumptions of classical economics (Coser, 1971: 291). Veblen's style was critical, even satirical of the existing social order as much in the tradition of Swift as of Marx. Though some basis for Veblen's iconoclastic approach to critical theory can be found in his rural mid-western background in late 19th century populism, his own position can be better understood in terms of his theory of the "marginal man" (Coser, 1971: 270-1).

In his essay entitled "The Intellectual Pre-eminence of Jews in Modern Europe," Veblen proposed "that the Jewish man of ideas is saved from being intellectually passive

'at the cost of losing his secure place in the scheme of conventions into which he has been born...of finding no similarly secure place in the scheme of gentile conventions into which he is thrown!' As a consequence, 'he becomes a disturber of the intellectual peace, but at the cost of becoming an intellectual wayfaring man, a wanderer in the intellectual no-man's-land, seeking another place to rest, farther along the road, somewhere over the horizon. (Such Jews) are neither a complaisant nor a contented lot, these aliens of the uneasy feet." (Coser, 1971: 275).

This description applies not only to the Jewish intellectual of 19th century Europe but to intellectuals of many historical periods as well as to Veblen himself. Veblen's concept of the "marginal man" is paralleled by as aspect of Simmel's notion of alienation in which he
notes a positive consequence of social alienation in its fomenting intellectual activity and promoting social dynamism during particular historical periods (Nisbet, 1966: 310-1). This concept is similarly expressed by Troeltsch in observing that historically a flowering of social theory often occurs in societies making a transition from a traditional to a secularized mode of existence resulting in social disruption, tension, and individual alienation (Nisbet, 1966: 315). Thus we can identify an individual and somewhat social-psychological dimension to the role of the critical social theorists, a necessary personal detachment or alienation from the existing social order and the dominant ideology.

Other theorists have attempted to develop the "Sociology of Knowledge" first proposed by Mannheim but generally with little success. Max Scheler developed a conceptual scheme based on Hegelian notions distinguishing between the "actual" and the "real," the "actual" being the empirical social reality and the "real" being in a non-material realm of pure ideas. In fact, this insertion of a Platonic realm of pure ideas or essences carried the problem out of the realm of science and was consequently a theoretical dead end (Coser, 1971: 454-5). Basing their work largely on American Pragmatist philosophy, W. I. Thomas and Florian Znaniecki developed a "micro sociology of knowledge" analyzing distinct social situations and
roles. Due to its micro focus this micro approach, particularly as pursued by Znaniecki, tended toward a rather naive situational subjectivism (Coser, 1971: 513, 527).

Other dimensions to the conceptual and perceptual limitation of human knowledge and social theory which are not, strictly speaking, a part of the concept of ideology have been developed in the structuralist theories of Claude Levi-Strauss and Michele Foucault and the linguistic theories of Benjamin Whorf. Levi-Stauss' analysis of primitive classificatory systems and mythic systems is aimed at adding an atemporal or synchronic dimension to the explanation of cognitive and ideological systems which would be complimentary with the historical or diachronic analysis of ideology developed by Marx. Being as much a philosopher as a structural anthropologist, Levi-Strauss has attempted to deal with the problem of ideology for the social scientist on a philosophical level. He suggests that the task of anthropology is to fulfill three basic criteria in the production of theory: objectivity, totality, and meaningfulness (Levi-Strauss, 1963: 262-5). These criteria will be discussed at greater length later in the thesis but for now it will be sufficient to note that no specific methodology is advocated as a means to achieving these almost transcendental requirements.

From a more idealistic perspective, Michele
Foucault considers the emergence of "man" as the object of empirical research to be a unique element of the "modern episteme" which came into being around the start of the 19th century and which he expects will soon metamorphose into a totally new set of forms (Foucault, 1970: 344-5). Like many other theorists he failed to develop any explanation for his own implicit transcendence of his cultural milieu in comprehending more than his own historical "episteme." He elaborates but does not give an answer to the problem of ideology.

At an even more fundamental level, Benjamin Whorf has proposed that the underlying structure of the language of a culture predetermines basic patterns of thought and modes of perception of members of that culture. Whorf was particularly interested in Native American languages which he believed to express a set of underlying structures fundamentally different from those found in Indo-European languages. Whorf was especially impressed with the Hopi language which he found expressed a high degree of refinement and flexibility in expressing shades of meaning in cognitive relationships not found in European languages (Whorf, 1959: 85).

By bringing these different theoretical perspectives together we can identify a number of "levels" involved in the "problem of ideology": The limitations of the linguistic structure of a given culture, the
conceptual containment of culture-cognitive wholes or epistememes, and the distortions of knowledge resulting from the social relations within a given historical period, as well as distortions of perception produced by individual personality. Certainly these levels are interconnected, not discrete; together they constitute the cognitive impasse presently faced by the social sciences in the West, an impasse which I have termed the "problem of ideology." This impasse has come to be a major preoccupation not only of social theorists but of major philosophers of this century as well.

Ludwig Wittgenstein concerned himself very much with the relationship between language and living experience. In his earlier works Wittgenstein proposed that the structure of language was derived from experiential universals somewhat consistent with ideas expressed earlier by Kant. In his later work, however, particularly in *Philosophical Investigations*, published after his death, he reversed his position and held that language tended to predetermine the nature of conscious experience and the nature of supposedly "objective" logical discourse (Pears, 1969: 1-4). This shift constituted a reversal of longstanding philosophical assumptions concerning the individual nature of thought and reasoning which had lasted from the 17th and well into the 20th century.
Edmund Husserl dealt with similar problems in his philosophy of Phenomenology. His criticism of science and the scientific method was essentially that they ignored teleological questions concerning the consciousness of the researcher and conscious motivations in social phenomena; he traced his elimination of teleological considerations, quite accurately, back to Galileo. Husserl's concepts of intersubjectivity and intentionality were intended to overcome the objective/suggestive conceptual dichotomy of the scientific philosophy. In this work, however, Husserl tended to deal primarily with the problems of individual consciousness rather than with the societal predetermination of individual consciousness, resulting in what amounted to a kind of Cartesian subjective rationalism. As a consequence, attempts at applying Husserl's philosophy in the social sciences have led primarily to limited forms of micro-sociology which could not recognize or deal with the problem of ideology. It was left to Husserl's student, Martin Heidegger, to further develop the philosophy of phenomenology.

Heidegger's work is much less bogged down than Husserl's in worrying about the limitations of individual consciousness in itself and deals with broader issues such as the collective social determination of individual consciousness and the tremendous difficulties involved
in attempting to achieve independent thought and perception. This concern is reflected in Heidegger's conception of man as finding himself "thrown" into the world, into a material and social context which he must adapt to and deal with it whatever way he can. In this consideration of the broader contexts to which consciousness is relative Heidegger developed hermeneutic Phenomenology which is much more illuminating than the narrower work of Husserl. In his later works Heidegger has developed a distinctly mystical turn of mind as can be seen in his On Time and Being, a collection of lectures in which he posits a kind of "quasi-mystical" source of Being and Time. Somewhat enigmatically he explains:

Time is not. There is, it gives time. The giving that gives time is determined by denying and withholding nearness. It grants the openness of time-space and preserved what remains denied in what has been, what is withheld in approach. We call the giving which gives true time an extending which opens and conceals. As extending is itself a giving, the giving of a giving is concealed in true time (Heidegger, 1972: 16).

Many readers of Heidegger's work have noted its dependence on this apparently non-material (but not particularly other-worldly) mystical source which is reminiscent of the Tao of Lao Tzu's Tao Te Ching and other Taoist writings. In this turn, Heidegger is appealing for a fundamentally different approach in understanding individual and collective existence, an approach which
is a radical departure from the simplistic "objectivism" of philosophical scientism and the individualistic "subjective" rationalism of Descartes.

Both of these philosophers, Wittgenstein and Heidegger, have addressed themselves to the problem of ideology, more often than not by posing paradoxical questions or through enigmatic exposition. Neither has really proposed a solution though they have helped to clarify the problem. Both acknowledge it to be beyond the reach of simple rational discourse.

CONCLUSIONS

In reviewing the development of the social sciences within the Western tradition it becomes apparent that those conditions which fostered the growth of the physical sciences have not necessarily helped and have often hindered the development of a science of human society. This has been the case for a variety of reasons.

First, the social sciences took their theoretical departure primarily from the physical sciences and the doctrines of philosophical scientism. Though many theoretical issues were inherited from Western social philosophy, the social sciences were created largely by the adoption of a pre-existing ideology which, as we saw in Chapter 1, was very much a product of historical circumstance. Thus, the social sciences were bound from
the start to an ideology of simplistic rationalism, empiricism, and reductionism, characteristic of the experimental approach of the physical sciences. This ideology contained an element of ambiguity in its relationship to the larger society in the contradiction between the aggressive rationalism and critical theory of the philosophy of the Enlightenment and the earlier defensive position of natural philosophy and the natural sciences. Whether theorists took the aggressive stance, as did Marx, or the defensive stance, as did the liberal/conservatives, they shared the other assumptions of the scientistic philosophy.

Second, the ideologies of the larger society, of the nations of Europe, did not promote the social sciences as they did the physical sciences. This was not the consequences of any reasoned choice but rather of the fundamental difference between the physical and social sciences. In the intense political and economic competition of the 19th and 20th centuries, the physical sciences were promoted and encouraged to produce valid theory to improve technology and achieve greater mastery of the environment; theory and to be valid to produce desired material results. The effect on the social sciences was quite the opposite. Conflicts within and between the nations of the West channeled the development of social theory toward polarized radical and
conservative ideology. The demand of economic and political power was not for valid social theory but for nationalist ideological propaganda and managerial research which would achieve social results, pacification of troublesome groups, national mobilization for economic competition and war, etc. Though radical theorists were much less contained than their liberal/conservative counterparts, their theories were, as we have seen, still much distorted by their opposition to existing powers.

Thus the three conditions which promoted the development of the physical sciences mentioned in Chapter 1, (1) an environment of tolerance and free thought, (2) a coherent scientific community, and (3) support from the larger society, were present only to a very limited degree for the nascent social sciences. Free thought has been limited by the dominance of both the scientistic and nationalist ideologies; the scientific community of the social sciences has lacked solidarity due to political polarization and dependencies; and support from the larger society has been conditional greatly affecting the content of social theory produced.

As a result of the influences of the ideology of early scientism and the ideologies of the larger society, the internal characteristics of the conduct of the social sciences are equally weak. The experimental method of
the physical sciences is difficult to apply to the social sciences except in very limited situations. The experimental method was developed to deal with a subject matter which could be isolated in narrow "causal contexts" and manipulated mechanically. Social phenomena are relative to a much broader "causal context" in time and space; communities, societies, cultures cannot be truly experimented with, only observed. As a result the social sciences developed with no "hard" methodology, only simple observation, leaving far too much room for interpretive error and the influence of erroneous theory and ideology.

Another consequence of the attachment of the social sciences to philosophical scientism was the rejection of all religion and mysticism as superstititious nonsense. Radical and liberal/conservative theorists alike believed that science would and ultimately should replace religion, that rationalism would replace mysticism. As a result the integrative and holistic modes of consciousness reflected in concepts such as Pascal's "understanding of the heart" were seen as irrational sentimentalism or superstition. In short, the sharp distinction drawn between science and religion or mysticism in the philosophical scientism of the Enlightenment eliminated even the possibility of considering mystical or non-rational methodologies of mind as possible

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solutions to problems concerned with the production of valid knowledge, problems concerned with science. Such a notion would have been totally contradictory to the fundamental assumptions of the scientific ideology shared by radical and liberal/conservative theorists alike. As we shall see, this orientation all but eliminated the possibility of discovering a solution to the problem of ideology.

The only real though partial exception to this trend has been in the work of those social theorists who have adopted the Hegelian emergentist perspective, particularly in the Marxian tradition. Though Hegel's attempt at bridging the gap between mysticism and Western rationalism was at times ambiguous and contradictory, it has served as the philosophical basis for the development of a holistic approach to social theory and an awareness of, though not a solution to, the problem of ideology. This limited development is a direct consequence of the dominance of rationalism over empiricism which has characterized Western philosophy and science, Western civilization as a whole. In the next chapter we will examine the development of a philosophical and scientific tradition in which this differential emphasis is reversed.
REFERENCES

Ben-David, Joseph

Coser, Lewis A.

Ellwood, Charles A.

Foucault, Michele

Harris, Marvin

Heidegger, Martin

Levi-Strauss, Claude

Lukacs, George

Mannheim, Karl

Nisbet, Robert A.

Pears, David
Whorf, Benjamin Lee
Cambridge, Mass. MIT Press

Wittgenstein, Ludwig
New York: The MacMillan Company

Zeitlin, Irving M.
CHAPTER 3

THE EMERGENCE OF THE EMPIRICAL-EXPERIENTIAL TRADITION OF EASTERN SCIENCE

One of the first problems encountered in approaching the historical development of Chinese civilization from the West is that of the inapplicability of Western analytical categories derived from historical experience (Moore, 1966: 162-3). Certainly many legitimate parallels can be drawn between the sequences of development taken by these two great civilizations but similarities can be overstated; care must be taken to identify the unique aspects of each culture as well. In order to accomplish this task we must pay particular attention to those ways in which the development of the empirical-experiential tradition of Eastern Science does not fit the conceptual mold of the West. Indeed, these divergences are by far the most important for our current discussions.

From the outset, the development of Chinese civilization has been unique. Unlike nearly every other great civilization, China emerged in relative isolation, having little or no contact with other major civilizations for nearly two millenia. As a result, Chinese civilization has shown a remarkable degree of cultural and institutional continuity and stability in its development (Wilhelm, 1929: 58-9).
This continuity and stability is clearly reflected in many specific features of Eastern culture.

The fundamental pattern of mythology and cosmology in China has been one of essential unity. In the West, we find mythic themes characterized by dichotomized conceptual dualism with cosmic powers pitted against one another; in the East, we find the reverse, complementary conceptual dualism in which polarities alternate within a mutually sustaining dynamic process (Mote, 1971: 26-8). In the mythology of the West, we find absolutism expressed in the form of mythical "law givers" and proclamations dictating acceptable forms of thought and action; no such absolutist themes are evident in Chinese cosmology (Needham, 1956: 214-15). In fact, the legends and mythology of prehistoric origins in China reflect a surprising degree of genuine insight, being quite consistent with modern anthropological concepts of the growth of neolithic culture and concepts of the nature of the physical universe found in modern physics (Mote, 1971: 19).

This emphasis toward conceptual unity and integration has also been expressed and developed in the ideographic system of Chinese writing. Like so many other elements of Chinese culture, the ideogram appears to have developed with great continuity out of primitive picture writing based on conceptual associations of metaphor and
metonymy. This system has developed over millenia into a highly abstract and complex symbolic system with its prehistoric roots very much intact (Needham, 1956: 231). This system of symbolic representation differs dramatically from the phonetic alphabet used in the West which is founded in utility, brevity, and simplicity, lacking the symbolic depth and integration of the Chinese system. This divergence is paralleled by a fundamental difference in patterns of conceptualization in East and West, the West being characterized by causal, linear models and the East by synchronic configurational models. However, one may explain these cultural patterns causally, they are objectively pervasive and already apparent early in the development of the cultures of East and West (Mote, 1971: 22).

There is little doubt that the unusual degree of intellectual tolerance which has been evident through most of Chinese history has been largely a consequence of this cultural heritage (Blofeld, 1974: 31-2). It has also been the basis for the unique path taken by the Chinese in developing the physical and social sciences. It is not, however, an easy path to investigate.

Very little has been written on the history of Eastern science as such. Most of what has been written about Chinese civilization has been concerned with political and cultural history and with the growth of
science only tangentially, if at all. The single most noticeable exception to this trend can be found in the works of Joseph Needham who was both a respected research scientist in embryology and a lifetime student and scholar of Chinese civilization. Due to his unique qualifications, I have drawn heavily on Needham's work in researching the growth of Chinese science and the empirical-experiential tradition.

As Needham has pointed out, if we are to be able to identify anything outside of the Western tradition as "science," we must depend on flexible definitions of what constitutes a "science" based on a general history of the development of human knowledge. To base our research on rigid definitions derived purely from the Western experience would be little more than a tautological exercise in futility (Needham, 1973: xviii). For the purposes of this investigation we will use the general definition of "science" as "an effectively, mutually critical relationship between abstract rational theory and empirical experience and observation with respect to a specific realm of knowledge and experience" as discussed in Chapter 1. As we shall see, from the perspective of this general definition a scientific tradition did develop within Chinese culture quite unlike that found in the West.

Archeological finds in China indicate that, on
a material level at least, Eastern and Western civilizations shared similar origins in primitive neolithic culture, characterized by rudimentary forms of knowledge and a utilitarian technology. Chinese history for us begins with the ancient Hia and Shang dynasties whose existence has been verified by archeological evidence dating roughly from 1500 B.C. These dynasties, particularly the Shang, can be seen as parallel to the civilizations of antiquity in the West, Egypt, Babylon, Sumer, etc. in that they served as sources for central elements of later cultural development (Mote, 1971: 6-7). The actual crystallization of these elements into a cultural unity which has served as the foundation for the growth of Chinese civilization was accomplished by the Chou dynasty which deposed the Shang in the 11th century B.C. Though the political and military dominance of the Chou dynasty lasted only through the 8th century B.C., it maintained political influence and its central position in legitimating feudal power into the 3rd century B.C. (Mote, 1971: 10-11). This was accomplished through the identification of Chou rulers with the "Great Tradition" of antiquity and the Ju, the carriers and teachers of traditional knowledge and wisdom (Mote, 1971: 34). As in the West, the tradition of the social role of the "wise man" or "holy man" as a teacher, the Ju tradition in China, appears to have developed directly
out of the primitive role of shaman (Mote, 1971: 30). In many respects, the Chou dynasty seems to be comparable to ancient Greece in its historical position in creating many of the philosophical, linguistic, and intellectual bases upon which later developments depended.

Another parallel can be seen in the fact that the initial intellectual foment and flowering of Greek culture and the Chinese culture of the Chou both occurred during periods of social and political unrest (in Greek culture the unification of the Macedonian Empire, in China the decline of the Chou feudal order before and during the period of the warring states) (Nourse, 1942: 59-61). That such a flowering of culture should appear during periods of unrest has been recognized by many historians and social theorists, as was noted in Chapter 2. It was during this period that virtually all of the fundamental philosophies, values, and social institutions of Chinese culture came into being and began evolving along lines quite different from those followed in the West.

Much like European theorists of the 19th century or the Athenian philosophers of Greece, the intellectuals and philosophers of varying persuasions in China during the decline of the Chou dynasty were attempting to come to grips with real social problems, with the decay of the feudal order and the growth of new social values.
Probably the most influential of these thinkers in directing the ultimate form of Chinese culture was Confucius. A common error committed by many Westerners in examining Confucianism is their conclusion that it is a religion. Clearly it is not. The work of Confucius was primarily rational and materialistic in its approach, attempting to reassert traditional, conservative, and humanistic values of the Chou feudal order. Confucius' views were generally agnostic on the subject of "other worldly" problems; he advocated the performance of rituals for the same reasons he advocated political loyalty and filial piety, to promote social stability. Some elements of Confucian philosophy were reformist in nature reflecting new values, such as his advocacy of office holding being determined by merit through competitive examinations rather than on social class origins (DeBary et al, 1960: 15-20). His goals, however, remained consistent, the re-establishment and preservation of the Chou feudal order. Historians are in general agreement that it has been through the vehicle of Confucian philosophy that Chou society was established as the foundation of the Chinese tradition.

Though Confucian philosophy was quite ideological in its political and social views, it was not overly rigid; in fact it was quite flexible. In time, nearly all of the various positions reflected in classical philosophical
contraversies were developed within the Confucian tradition (Needham, 1956: 18). The adaptability of Confucian philosophy was a direct result of its broad scope emphasizing general philosophical principles. These principles were eventually translated into permanent institutional features within Chinese society, some of the most important being the creation of the role of the private teacher/scholar, the establishment of the basic content, methods and ideals of education, and the promotion of office holding based on individual merit rather than on social class origins (Note, 1971: 37-8). This flexibility also served to promote an unusual degree of intellectual and philosophical tolerance throughout most of Chinese history, a tolerance found only during specific historical periods in the West. Though Confucius' teachings were not widely accepted during his lifetime, (6th century B.C.) they grew gradually in their influence socially and politically as students trained in Confucian schools were sought by feudal rulers as intellectually able office holders. By the 3rd century B.C. Confucian philosophy, in widely varying forms, had become dominant.

Ultimately, Confucianism was not favorable to the development of the physical or social sciences. It emphasized rationality within an ideological framework but not critical rationality or empirical observation.
Confucius was not concerned with the observation of natural phenomena nor with society as a part of a natural order but rather with the rational ordering of human affairs (Needham, 1956: 27-8). In fact the mysticism of Lao Tzu, a contemporary of Confucius and the progenitor of Taoism, was much more favorable to the development of empirical science than the rationalism of Confucius. Joseph Needham has concluded:

Hence, not for the last time in history, nor only in China, rationalism proved itself less favorable than mysticism to the progress of science. (1956: 12)

As with Confucianism, Taoism has been widely misinterpreted in the West as simply an "ethical religion" all but totally ignoring the distinctly proto-scientific and political/social aspects of its philosophy and practice (Needham, 1956: 34-5). Like Confucianism, Taoism was very much concerned with fundamental existential social and individual dilemmas during a period of social upheaval. The solutions proposed by Lao Tzu in the Tao Te Ching and by Chuang Tzu and others in the Taoist tradition differed radically from those found in the early Confucian tradition.

The Taoist philosophy was fundamentally relativistic in viewing all ethics, forms of knowledge, and conscious experience as relative to a material and social context (Note, 1971: 83). The Taoists saw the key to solving human problems in the natural order rather
than within existing social order as did the Confucians. They also rejected the conformism and scholastic formalism of Confucian education and advocated a passive or yielding acquisition of knowledge (Needham, 1956: 33). Though their approach was distinctly non-teleological as a consequence of its naturalistic and relativist orientation, viewing the natural order as utterly impartial toward humanity, they were very much concerned with consequences and implications of the dynamics of nature for human existence. From the outset, their primary concerns were material, social, and psychological (Needham, 1956: 55). This view is clearly expressed in Chapter 5 of the Tao Te Ching:

Heaven and Earth are ruthless;  
They see the ten thousand things as dummies.  
The wise are ruthless;  
They see the people as dummies.  
The space between heaven and earth is like a bellows.  
The shape changes but not the form;  
The more it moves, the more it yields.  
More words count less.  
Hold fast to the center. (Lao Tzu, trans. Gia-Fu Feng, 1972)

In other words, nature is impartial, it does not adapt itself to humanity nor can the wise be depended upon to protect the people; only through knowledge of the natural order and adaptation to it can conflicts be resolved or avoided altogether. This concept is reflected repeatedly in Taoist writings in the use of
the terms "wei" (action or "action contrary to nature") and "wu wei" (non-action or "action in accordance with nature") (Needham, 1956: 68-9). This conceptually approach, eliminating teleological questions and narrow ethical judgements from the search for valid knowledge, has been essential to the development of science in whatever historical context (Needham, 1956: 48-9).

In his search for true knowledge of the natural order as the basis for individual liberation and peace of mind the Taoists paralleled the approach of the mystically oriented Ionian philosophers, Democritus and Epicurus, in their pursuit of ataraxy or comprehension of the "great mysteries" (Needham, 1956: 63-5). This view was also clearly expressed by Sir Francis Bacon when he said, "We cannot command nature except by obeying her," and by Thomas Henry Huxley when he stated:

Science seems to me to teach in the highest and strongest manner the great truth which is embodied in the Christian conception of entire surrender to the will of God. Sit down before fact as a little child, be prepared to give up every preconceived notion, follow humbly wherever and to whatever abysses Nature leads, or you shall learn nothing. (Needham, 1956: 61).

Despite the similarity in basic philosophy between these two traditions, their expression differed radically in practice. This difference was due at least partially to the way in which Eastern and Western cultures viewed and formulated questions about ultimate reality. For
most of Western history the question was, "What is a thing in itself? What is its essence?" In the East, the question was, "How is it that this form exists? How does it begin, continue, and end within a field of related events?" In other words, in the West preoccupation was with "static identity" while in the East it was with "dynamic process" (Needham, 1956: 200). This cultural difference seems to have played a major part in determining the form of scientific questions and the development of science East and West quite aside from the influence of more obvious social conditions. The emphasis on "static identity" in the West is directly related to the rational-analytical approach developed in Greek culture. The emphasis on "dynamic process" in the East was directly related to the non-rational empirical methodologies of mind preserved and promoted in the Taoist tradition.

In effect, the methodologies of Taoism were radical empiricism in practice. The concept of the "empty mind" freed from all distorting preconceptions and emotions, transformed into a calm pool mirroring an ultimate reality both internal and external, is found throughout Taoist literature (Needham, 1956: 89). This approach to reality and the goals which it is believed to attain are expressed in Chapter 16 of the Tao Te Ching:
Empty yourself of everything
Let the mind rest at peace.
The ten thousand things rise and fall
while the self watches their return.
They grow and flourish and then return
to the source.
Returning to the source is stillness,
which is the way of nature.
The way of nature is unchanging.
Knowing constancy is insight.
Not knowing constancy leads to disaster.
Knowing constancy, the mind is open.
With an open mind you will be open hearted.
Being open hearted, you will act royally.
Being royal, you will attain the divine.
Being divine, you will be at one with the Tao.
Being at one with the Tao is eternal.
And though the body dies, the Tao will
never pass away. (Lao Tzu, trans. Gia-Fu Feng,
1972).

Like most mystical systems, the Taoist philosophy,
in opposition to Confucian rationalism, claimed that only
through a mystical union of the knower and the known,
of the individual and the totality, could true knowledge
be attained (Note, 1971: 101-2). Unlike other mystical
systems, however, Taoism avoided ascetic extremes and
approaches involving conceptual dichotomy between body
and mind, the physical and the spiritual, humanity and
nature. Taoist mysticism was quite the opposite of the
Platonic idealism which permeated much of the mysticism
of the West. For the Taoist all things are of the Tao,
both positive and negative, nothing is rejected; all
existent things have a place in the natural order
(Needham, 1956:47). This form of mysticism reflects
the fundamental concept of complementary dualism (as
opposed to the dichotomous dualism of the West)
characteristic of Chinese culture. While the Christian mysticism of the West, inspired by the neo-Platonism of St. Augustine, was anti-materialistic and antagonistic to the development of physical or social sciences, the mysticism of the Taoists was devoted to the acquisition of valid knowledge at all levels of existence, material, social, psychological, and spiritual.

Also unlike other mystical systems, particularly those of the West, the Taoists did not seek mystical union with the totality purely as an end in itself. They were concerned with the consequences of that union on a practical level for dealing with the exigencies of individual and collective existence in a material world. Thus, the Tao was not seen as a diety, benevolent or otherwise, but rather as an inexlicable mystery, both the foundation of and the key to an ultimate reality which could only be individually perceived. The argument for pursuing this union was based primarily on the consequences it could produce ("ote, 1971: 78-9).

This emphasis is reflected in passages, particularly in the writings of Chuang Tzu, which Joseph Needham has referred to as stories of "the knack." These writings repeatedly praise knowledge reflected in specific practical skills developed through years of experience. Again we find a parallel in terms of basic philosophy with the development of Western sciences, a
recognition of the importance of practical skills and experience in understanding the real world. The truth of the Tao is to be found not in abstractions but in experience (Needham, 1956: 122).

In the Western empirical-experimental tradition such practical experience was channeled into the rationally controlled testing of abstract theory and the discovery of specific "facts" and the formulation of natural "laws." In the Taoist tradition practical experience was channeled into the development of individual insight relative to a broad experiential context in time and space, promoting an experiential rather than an abstracted apprehension of the fundamental processes of the cosmos. While the West developed along rationalist and reductionist lines, the East developed along lines which were fundamentally non-rational and holistic; the former narrowing the focus of empirical experience in examining the microcosm, the later broadening its focus to apprehend the macrocosm. The growth of Western science depended on the refinement of intellect in its dissection of the universe; the Taoist depended on the subordination or rejection of intellect recognizing the tendency of rational thought to focus on the specific, narrowing the context of consciousness. This approach is expressed in Chapter 48 of the Tao Te Ching:

In pursuit of learning, every day something is acquired.
In pursuit of Tao, every day something is dropped. Less and less is done. Until non-action is achieved. When nothing is done, nothing is left undone. The world is ruled by letting things take their course. It cannot be ruled by interfering (Lao Tzu trans. Gia-Fu Feng, 1972).

Thus, the Taoists saw the intellect and an active or aggressive mode of perception as obstacles to apprehension of ultimate reality. In this position, the Taoist philosophy has shown strong ties with its shamanistic origins, with beliefs in the importance of transcending mundane consciousness. Another side of Taoism's close ties with early shamanism is evident in the general belief in the efficacy of various forms of magic. This position constituted another dimension of Taoism's function in Chinese culture as a counterpoint to Confucian rationalism, scholasticism, and materialism, maintaining a highly creative, intuitive, and heterodox tradition with its prehistoric roots very much intact (Mote, 1971: 67-8).

Though the connection between Taoism, shamanism, and magic might seem to some to belie any claim to Taoism's proto-scientific orientations, in fact it supports them. Until quite recently, magic and science have been historically closely connected. In the West, the mixing of what we would now call "magical beliefs" and
scientific theory is evident well into the 17th century in the works of prestigious members of the Royal Society (Needham, 1956: 34). The belief that the natural order can be understood and manipulated in specific ways is common to both magic and science.

Such an orientation is evident in the parallel development of the alchemical traditions of East and West. In both cases truly scientific lines of inquiry and the development of experimental techniques were mixed with magical incantations, beliefs in an elixir of immortality, and the search for the "philosopher's stone" which would transform base metals into gold. What was "legitimate science" and what was "magic" or "superstitious nonsense" remained to be seen. In fact, many of the physical techniques developed by Taoist adepts were quite effective in promoting well being, if not immortality (Needham, 1956: 145) Ultimately science and magic have come to be differentiated through the gradual clarification of methods of investigation and the relationship of theory to observation. Even today, however, the line between science and magic is not absolute. For much of the history of the development of science the distinction was not even drawn.

This lack of a clear distinction had profound political consequences for the development of science. In the West, the alchemical tradition and related forms
of science and/or mysticism have been periodically condemned as evil or heretical as a result of their association with magic or sorcery and were persecuted or eliminated altogether. As we have seen, this persecution and the weak political position of early forms of science in the West greatly influenced the development of the empirical-experimental tradition of the West producing first a very defensive ideology and relationship to the larger society and later a much more aggressive ideological and political stance as science became materially and ideologically central to modern society. The response of established powers to "science/magic" in its early development was much less extreme in China than it was in the West.

The position of Taoism within Chinese culture was much more stable and continuous than the proto-scientific groups in the West. Though Taoist philosophy was openly contradictory to the dominant Confucian ideology, it was not generally suppressed, only held in a politically subordinate position (Zeitlin, 1968: 142-3). While Confucian philosophy was essentially an affirmation of the institutions and values of Chou feudalism (with a few reforms included), Taoist philosophy advocated a return to essentially pre-feudal forms of primitive communalism and naturalism. Many Taoist writings are in fact indictments of feudal society condemning the
distortions it produced in human society (Needham, 1956: 110-20). In this criticism the Tao Te Ching reflects a high degree of insight into the nature of social processes. In Chapter 18 we find an expression of the concept of ideology, recognizing values and beliefs as products of social conditions:

When the great Tao is forgotten, 
Kindness and morality arise. 
When wisdom and intelligence are born, 
The great pretense begins. 
When there is no peace within the family, 
Filial piety and devotion arise. 
When the country is confused and in chaos, 

In other words, the Taoists saw the Confucian assertion of conservative humanistic values as little more than a symptom of the loss of those social or human qualities which Confucius sought to promote. The Taoists believed that these human qualities could only be restored by returning to the primitive social structure of which such qualities were naturally a part.

The symbolism employed by the Taoists similarly demonstrates their sympathy for pre-feudal social forms and simplicity in their emphasis on the "feminine" as passive and receptive (characteristic of primitive matriarchal societies), and on "water" as yielding before all things and yet pervasive and the source of life (Needham, 1956: 56-8). The negative symbols associated with the feudal order were consistently masculine aggression, rigidity, and violence. These symbols are
directly related to the concepts of "wei" (action) and "wu wei" (non-action) mentioned earlier.

Though generally passive politically, the philosophical orientation of Taoism made it fundamentally skeptical and iconoclastic in relation to the dominant social order and ideology (DeBary et al, 1960: 62). For this reason the Taoists were at times distrusted by dominant political powers, particularly by despotic rulers and foreign dynasties (Needham, 1956: 160). This distrust was not altogether unwarranted since Taoist political views the critical social theory of Chinese society in many ways paralleling the political views of free thinkers of the scientific movement in the West (Needham, 1956: 89-93). Though the Taoists tended to be quite moderate and passive (in keeping with their general philosophy), periodically their social criticism was quite direct as can be seen in the work of Pao Ching-Yes written during the 4th century A.D.

The Confucians say that heaven created the people, and planted lords over them. But they should illustrious Heaven be brought into the matter, and why should it have given such precise instructions? The strong overcame the weak and brought them into subjection, the clever outwitted the simple, and made them serve them — this was the origin of lords and officials, and the beginning of mastery over the simple people. Corvée labor was imposed by the strong upon the weak and by the clever on the simple. Heaven had nothing whatever to do with it....(Needham, 1956: 435).
Though the Taoists were critical of the feudal social structure and the Confucian bureaucracy, they did not see themselves as separate from Chinese society nor as a polarized revolutionary group. The multi-dimensional role which the Taoist sage played in human affairs was well developed and defined in Taoist writings. The most fundamental of these dimensions is the recognition of the role of "wise man" or sage as a minority pursuit as can be seen in Chapter 41 of the Tao Te Ching:

The wise student hears the Tao and practices it diligently. 
The average student hears of the Tao and gives it thought now and again. 
The foolish student hears of the Tao and laughs aloud. 
If there were no laughter, the Tao would not be what it is.

Hence it is said:
The bright path seems dim; 
Going forward seems like retreat; 
The easy way seems hard; 
The highest virtue seems empty; 
Great purity seems sullied; 
A wealth of virtue seems inadequate; 
The strength of virtue seems frail; 
Real virtue seems unreal; 
The perfect square has no corners; 
Great talents ripen late; 
The highest notes are hard to hear; 
The greatest form has no shape. 
The Tao is hidden and without name. 
The Tao alone nourishes and brings everything to fulfillment. (Lao Tzu, trans. Gia-Fu Feng, 1972)
The Taoists recognized the pursuit of a deep understanding of nature, highly esoteric and often paradoxical, as necessarily possible only for the few. This recognition was based not on any elitist philosophy but rather on an awareness of the great difficulties involved in such a pursuit.

The role of the sage also involved giving counsel to political leaders and administrators on the proper conduct of government, counsel based not on rationalized ethical considerations, as would be the case with the Confucians, but rather on an awareness of actual social processes and consequences. This dimension of the role of the sage is expressed in Chapter 30 of the Tao Te Ching:

Whenever you advise a ruler in the way of Tao.
Counsel him not to use force to conquer the universe.
For this would only cause resistance.
Thorn bushes spring up wherever the army has passed.
Lean years follow in the wake of a great war.
Just do what needs to be done.
Never take advantage of power.

Achieve results,
But never glory in them.
Achieve results,
But never boast.
Achieve results,
But never be proud.
Achieve results,
Because this is the natural way.
Achieve results,
But not through violence.
Force is followed by loss of strength.
This is not the way of Tao.
That which goes against the Tao comes to an early end. (Lao Tzu, trans.
Gia-Fu Feng, 1972).

This concern for natural social processes and consequences is apparent throughout Taoist writings reflecting their preoccupation with individual and societal as opposed to purely material theoretical problems. Chapter 80 of the Tao Te Ching distinguishes the sage and political leaders from the common people in its simple general prescription for happiness and social stability for the common people:

A small country has fewer people. Though there are machines that can work ten to a hundred times faster than man, they are not needed. The people take death seriously and do not travel far. Though they have boats and carriages, no one uses them. Though they have armour and weapons, no one displays them. Men return to the knotting of rope in place of writing. Their food is plain and good, their clothes fine but simple, their homes are secure; They are happy in their ways. Though they live within sight of their neighbors, And crowing cocks and barking dogs are heard across the way, Yet they leave each other in peace while they grow old and die. (Lao Tzu, trans. Gia-Fu Feng, 1972)

This chapter also expresses an aspect of Taoist philosophy which seems to have escaped Joseph Needham who found himself at a loss to explain why the Taoist
tradition did not develop the physical sciences, the experimental method, and the emphasis on applied technology found in the West (Needham, 1956: 124-5). This chapter seems to explain the Taoist emphasis.

Though the Taoist tradition developed alchemy, basic biology, medicine, astronomy, and many other scientific fields of knowledge, it resisted the development of elaborate mechanical technology as a result of its social philosophy. The development of a complex technology resulted in an expanded division of labor and the growth of the feudal social order (which the Taoists disliked) out of simpler pre-feudal social forms (which the Taoists idealized). Thus, the Taoists resisted the development of an elaborated mechanical technology because of the negative social consequences they believed it would produce.

Beyond these social and philosophical positions, the Taoist tradition served many other functions within Chinese society. While Confucianism served as the primary ideology of the upper classes, Taoism functioned on one level as a highly flexible "religion of the masses" incorporating a broad range of popular beliefs, local pantheons, astrology, fortune telling, and shamanistic practices into a very loosely organized system (DeBary, 1960: 258). It has been primarily because of this popular side of the Taoist tradition or "low Taoism" that it has
been dismissed by many as simple superstition. The much more profound side of this extraordinarily heterodox tradition or "high Taoism" is by far the most important for our discussion.

Though the Confucian and Taoist traditions have been the most influential in the development of Chinese culture, other schools of thought did emerge out of the social instability of the Chou decline. Probably the most significant of these was the philosophy of Mo Tzu. The Moist philosophy was unusual during this period in its emphasis on rational argument and formal logic. In fact, the systematic formal logic of the Moists was quite similar to that of the Athenian philosophers which eventually served as the basis for the formulation of scientific theory. It was, however, never fully developed nor applied in China (Needham, 1956: 182-4). Moist social philosophy differed from both Taoism and Confucianism in promoting a very materialistic and utilitarian view of human society and the ideal of the equality of all men (Note, 1971: 87-9). These philosophical views and others found in the Ming Chia or school of Logicians and the naturalists bear a striking resemblance to rationalist philosophers which became dominant in the West; in the East, they were minority positions which eventually disappeared or were absorbed and transformed by the broader Confucian and Taoist traditions. One
philosophical school which has greatly influenced the development of Chinese culture remains to be discussed, the Legalist philosophy of the Ch'in. If we cast the development of the Chinese philosophical tradition in terms of positions on a political spectrum, the Confucians would be roughly in the center as moderates, the Taoists would be left of center, and the Legalists would undoubtedly appear far to the right. The Legalist tradition developed during the 3rd century B.C., fully two centuries after the emergence of the other major philosophical schools as a response to continued political instability. It was essentially opposed to the naturalism of the Taoists and the humanistic conservatism of the Confucians and promoted a philosophy of state power and central control as the solution to the problems of Chinese society. This philosophy was actually implemented by the Ch'in dynasty through the reunification of China by conquest. Through the Legalist philosophy, Ch'in rule was absolutist, uniformitarian, and exceedingly harsh, promoting power and political control as ends in themselves (DeBary, 1960: 122-38). It further emphasized the rule of strict laws rather than the observance of ritual or tradition; a view of the common people simply as a state resource to be controlled and exploited; and efficiency in agricultural production and military operations as the only legitimate organized pursuits.
(Note, 1971: 116-20). The Legalist philosophy is in many ways comparable to the philosophy of power expressed by Machiavelli in *The Prince*.

The Legalists were also exceedingly intolerant of any opposing philosophical views and attempted to systematically eliminate them. Some groups like the Moists were actually exterminated while others were persecuted. Also, many large collections of literature maintained by Confucian scholars were burned (Note, 1971: 90). As a result of these extremes and its radical rejection of deeply rooted Chinese traditions, the Ch'in dynasty and the Legalist philosophy were very short lived. After only 15 years in power, the Ch'in dynasty was overthrown by the Han. Despite its short tenure in power, the Ch'in exerted a tremendous influence on Chinese culture. As the first dynasty of a centrally unified empire, the Ch'in established the basis of Imperial administration and moved to standardize weights and measures and the ideographic system of writing (Needham, 1956: 209-10). Though Confucian philosophy returned to its dominant position after the fall of the Ch'in, the principles of the Legalist philosophy survived as a covert element of the Chinese imperial system, a harsh but pragmatic side of real political practice (Note, 1971: 111-15). The continuity of imperial institutions initiated by the Ch'in can be seen
in the title "August Supreme Ruler of the World"
created by King Cheng of the Ch'in for himself, which
was readopted by every succeeding dynasty for over two
As a result of the extremes of Ch'in rule, Confucianism
and particularly Taoism gained prominence "on the
rebound" after the defeat of the Ch'in by the Han.

In overthrowing the Ch'in dynasty and reasserting
a more traditionally oriented imperial administration,
the Han dynasty observed not only the dictates of Confucius
but many of the principles of social dynamics expressed
in Taoist philosophy. Of particular importance was the
principle of non-interference (which the Ch'in had
obviously violated) expressed in Chapter 75 of the Tao Te
Ching:

Why are the people starving?
Because the rulers eat up the money in taxes.
Therefore the people are starving.

Why are the people rebellious?
Because the rulers interfere too much.
Therefore they are rebellious.

Why do the people think so lightly of death?
Because the rulers demand too much of life.
Therefore the people take death lightly.

Having little to live on, one knows better
then to value life too much. (Lao Tzu, trans.
Gia-Fu Feng, 1972)
The stability of the Chinese political and economic system was very much a product of the relatively moderate exploitation of peasant agricultural production (compared with the agrarian empires of the West) and the interdependence of local aristocracies and the imperial government established along Confucian lines with some Taoist input (Moore, 1966: 181). This structure was first established by the Han dynasty and lasted, with periodic alterations, for over two millennia. The first 70 years of Han rule were devoted to stabilizing the imperial system. Once this was accomplished, however, the Han, under the rule of Wu Ti, initiated the expansion of the empire to the North, South, and West. Probably the most important acquisition during this period was the Yangtse river valley which provided a much expanded resource base for the empire (Nourse, 1942: 83-6). It was also during this period that China first made contact and began to engage in trade with India and the West, though only to a very limited degree due to the great distances and geographical barriers involved (Nourse, 1942: 88-9). It was also during the rule of the Han that the first major input from another culture made its way into China with the arrival of Buddhist missionaries from India, probably during the 1st century A.D. (Nourse, 1942: 91).

In many respects the Vedic tradition of Indian
culture, which served as the basis for the development of Buddhism, parallels the shamanistic Taoist tradition of China. Probably the most fundamental of these parallels is the concept of ultimate reality as the unity of all things existing in a state of flux and emanating from a single undifferentiated source, Atman in the Vedic tradition, the Tao in the Taoist tradition (DeBary et al, 1958: 31). Another fundamental parallel between these two great traditions is that both openly praised the path of mystical perception as the highest path of all, unlike Christian and Moslem teachings in the West which were often intolerant of mystics who could not be counted upon to conform to rationalized, absolutist dogma (Blofeld, 1974: 18). In both Indian and Taoist philosophies, the doctrines of various systems were recognized as symbolic approximations at best, necessarily falling short of expressing ultimate truth. This recognition has been the basis of their elevation of mysticism and religious and philosophical tolerance.

Like the classical philosophies of Greece and the traditional philosophies of China, Buddhism emerged in India during a period of social and political upheaval and intellectual foment, lasting roughly from the 7th to the 5th centuries B.C. (DeBary et al, 1958: 35-40). Though the new religious philosophies which emerged during this period, most prominently Jainism and Buddhism,
retained much of the Vedic tradition and its mythic conceptual framework, their interpretation of that framework was radically altered. In Buddhist teachings, the theistic and ego oriented concepts of Hinduism were reversed producing a non-theistic, anti-egoist system with "self-annihilation" and escape from an endless "cycle of rebirths" as its primary goal through attainment of Nirvana via meditational practices. A secondary goal on this path was the acquisition of various psychic powers, telepathy, precognition, levitation, etc., which were regarded as "by-products" of the meditational path (Needham, 1956: 402-3). In its departure from Hinduism, Buddhism developed a psychologistic philosophical approach similar to but somewhat more negative than that found in Taoism. The essential ideas of Theravada or "early" Buddhism are: (1) that all is in flux and impermanent, (2) that craving for permanence or "attachment" leads to sorrow, and (3) abandonment of "self" is necessary to escape "samsara," or entrapment in the pain of physical existence and the cycle of rebirths, and attain Nirvana (DeBary et al, 1958: 92). Another side of Buddhism which could be considered more cultural than doctrinal was its tendency toward speculative rationalist thought concerning very nearly every aspect of nature and human existence. This tendency has resulted in the production of one of the greatest bodies of literature connected with any religious
philosophical tradition. Much of this speculative theorizing paralleled the work of Greek philosophers on the nature of the physical world (Needham, 1956: 408).

In India, Buddhism was never dominant but rather coexisted with many other religions and philosophical systems (DeBary, 1958: 188). It became dominant only outside of India when exported in its initial Theravada form through missionary efforts sponsored by King Asoka into Southeast Asia during the 3rd century B.C. (Lester, 1973: 66-7).

Mahayana Buddhism, the form eventually brought to China, was a later development, probably during the 1st century A.D. The Mahayana system or the "greater vehicle" differed from the Theravada (Hinayana or "lesser vehicle") system in a number of ways. First, the Mahayana system incorporated a pantheon of lesser buddhas and bodhisatvas thought of as "demi-gods," entities who have transcended physical existence but have not yet achieved Nirvana and who can be appealed to for guidance or aid. The second addition was the adoption of a form of idealistic metaphysics quite similar to that found in Platonic philosophy. Finally, the Buddha was himself deified and came to be seen as somehow residing at the top of the new pantheon. Though the historical causes for these changes are uncertain, it has been proposed that they may have developed as a consequence of contact
with the West, the self-sacrificing image of the Bodhisatva from the influence of early Nestorian Christianity and idealist metaphysics from contact with classical Greek philosophy (DeBarv et al, 1958: 151).

Though some contact was maintained between India and Han China through the 1st and 2nd centuries A.D. and though Buddhist missionaries were present in China, Buddhism did not become popular in China until the 3rd century A.D., during the decline of the Han dynasty. In many ways the rise of Buddhism in Han China can be seen as parallel with the rise of Christianity in Rome. With the breakup of the empire and consequent social, political, and economic chaos, retreatist religious philosophies became understandably more popular (Nourse, 1942: 100-5). The growing popularity of Buddhism eventually resulted in the formation of retreatist communities and monasteries throughout China, a pattern somewhat similar to that found in medieval Europe (Wilhem, 1929: 196-7). Conclusions which can be drawn from such parallels are, however, limited. The so called "Dark Ages" in China after the breakup of the Han Empire were much less "dark" than those of medieval Europe. Though the imperial Confucian philosophy was in relative eclipse, literature was preserved and schools continued to function, sponsored by the smaller "kingdoms" which remained intact.
after the breakup of the empire.

The decline of the Han dynasty and the Confucian philosophy also promoted a rise in the popularity of Taoism and concern for the nature of things outside the social order. Consequently, the decline of the empire in China did not stunt the growth of science in China as it did in the West. The idealism and retreatism of Buddhist philosophy was balanced by the naturalistic and pragmatic philosophy of Taoism producing a dynamic interaction between these two approaches to the realities of physical and social existence (DeBary et al, 1960: 239).

The Buddhist philosophy brought with it a number of positive elements to be added to the Chinese philosophies already discussed. One of the most important inputs of Buddhism into Chinese culture was its development of logical discourse and speculative rational theory. Many specific elements of Buddhist theory such as conceptual progressions scaling phenomena within the infinitude of time and space, cycles of creation and destruction on a geological scale, and dialectical conceptions of natural processes and the nature of logic found their way into Taoist and Confucian writings (Needham, 1956: 419-20). These conceptions based on actual processes in nature were also prominent in Hegelian philosophy, as was noted in Chapter 2. Further, the
Buddhist emphasis on meditational practices as the only possible path to "enlightenment" and understanding the deepest secrets of nature and the cosmos reinforced the similar emphasis found in Taoism and began to alter the rationalist emphasis of Confucianism (Needham, 1969: 176-83). Joseph Needham has concluded that this reinforcement of the mystical path in Taoism undermined its development as a scientific tradition. To the extent that this emphasis slowed the development of the experimental method and practical technology as they are found in the West, Needham is correct (Needham, 1956: 85-6). It seems, however, that he has overlooked the positive side of the development of these meditational systems and the part they did and could play in the development of the social sciences.

Aside from these philosophical and methodological contributions, Buddhist institutional forms were also adopted by Taoists during this period. Taoism had been previously very loosely organized without any coherent institutional structure, only a general philosophical and cultural tradition. By the 3rd century, the Taoists had adopted Buddhism's monastic forms, authority structure, and ritual forms with only slight alterations. Thus, Taoism became quite Buddhist in many of its institutional forms.

Beyond these positive interactions of the Buddhist
and Taoist systems, some important fundamental differences remained. In posing its fundamental questions concerning the nature of things the Indian tradition, including Buddhism, was more Western than Eastern in asking "What is a thing in itself? What is its absolute identity?"

In other words, for a thing to be real it had to be permanent, absolute. Since the Buddhists saw all physical things as impermanent and in a state of flux, it was seen as unreal, as being illusion. This was also the basis for their rejection of individual identity or "self" as being unreal, seen only as a transient aggregate, an illusion. This perspective was the basis of the ascetic practices and the goal of escape espoused by the Buddhists as well.

The Chinese or Taoist formulation of questions on the nature of things was fundamentally relativist in asking "How is it that this form exists? How does it begin, continue, and end within a field of related events?"

Since no absolute was demanded for phenomena to be considered "real" the Taoist could accept impermanence and a state of ongoing flux as real. Further, the "self," however malleable and changing, was seen as real and, since change was not seen as unacceptable, no escape from physical existence was necessary or desirable. The life of physical existence in the natural world was to be understood and adapted to, not simply to be escaped.
from (Needham, 1956: 404-5). The Taoist accepted physical existence, the Buddhists did not. These and other fundamental differences provided the basis for an ongoing debate between these three great philosophies Confucianism, Taoism, and Buddhism, for centuries to come. Though many attempts were made during the 3rd, 4th and 5th centuries at producing some kind of synthesis of these traditions, the fundamental distinctions and a separation of currents of thought remained (Needham, 1956: 409-10).

By the end of the 6th century, the empire was again reunified under the Sui dynasty which was replaced after only 30 years by the T'ang dynasty which was to rule for nearly 300 years. Under the T'ang, the empire was expanded into Tibet, Manchuria, and Mongolia and experienced a high degree of general prosperity and cultural development. The success of the T'ang dynasty was due in part to its observance of Taoist principles in administration and government. This observance was due not only to the fact that such principles were quite workable, but also to the fact that the ruling Li family claimed descent from Lao Tzu and promoted Taoism generally (Norse, 1942: 108-11). As a result, much work by those in the Taoist tradition was supported, work or "research" which often mixed fantastic magical ideas with genuinely scientific principles. In their material
investigations Taoist "researchers" depended upon general observation and some trial and error experimentation which was too loosely structured to be comparable to the experimental method developed in the West. In its holistic or general principles Taoist theory appears to have been correct, though it was often erroneous in narrow specifics, (Needham, 1956: 444-5). It has also been proposed that some elements of Western religion found their way into Taoist mythology during this period by way of Nestorian Christian and Zoroastrian refugees fleeing the Islamic conquests in the West, particularly the trinitarian concept of the "Three Pure Ones" found in Taoist writings from this period onward (Needham, 1956: 159-60).

The most important product of the T'ang dynasty in the way of cultural synthesis was the development of Ch'an Buddhism during the 6th and 7th centuries. In placing total emphasis on meditational practices and rejecting all sutras and doctrines of karma and reincarnation as superfluous, Ch'an Buddhism emerged as a distinctly Chinese or Taoist form of Buddhism blending the naturalist philosophy of Taoism with the highly developed methods of Buddhist meditational practice (Blofeld, 1974: 64). As a result of its distinctly Chinese nature, Ch'an fared much better than other forms of Buddhism when, during the later half of the 9th century
when the T'ang administration reacted against the growing influence of the "alien Buddhist philosophy" and destroyed Buddhist monasteries and retreats, forcing monks and nuns to return to normal life (Nourse, 1942: 121). This unusual expression of intolerance may well have been related to the decline of the T'ang dynasty which was probably in progress by that time.

Early in the 10th century, the T'ang dynasty collapsed and the empire was again splintered into small independent states. As before, despite a degree of political turmoil, local and regional administrations remained relatively intact preserving traditional culture. In some areas development continued as in the state of Shu in Western China where techniques of block printing were perfected during this chaotic historical period (Nourse, 1942: 130-3). In 960 A.D. the empire was again reunited under the Sung dynasty which was to rule well into the 13th century.

The work of synthesis of the traditions of Confucianism, Taoism, and Buddhism continued in the development of the neo-Confucian philosophy. In its emphasis on the development of a coherent rational philosophy this school was primarily Confucian though it incorporated many aspects of the Taoist philosophy. Like the Taoists, the neo-Confucians adopted a form of retreat into small groups in secluded rural settings
for study and individual development (Wilhelm, 1929: 246). Further, in order to counter the elaborate cosmology of the Buddhists, the neo-Confucians found it necessary to adopt and rationally develop the holistic naturalism of the Taoists and the concept of the human order and morality as rooted in the natural order, as inseparable from a total "field," suspended between "heaven and earth" (Needham, 1956: 452-4). Also, like the Taoists, the neo-Confucians rejected the ideas of actual physical "heavens" or "hells" and the doctrines of reincarnation and karma found in Mahayana Buddhism (Needham, 1956: 415). Despite their emphasis on rational philosophy, the neo-Confucians also incorporated some aspects of the Taoist and Buddhist meditational disciplines into their system as a necessary part of individual development and understanding.

Conceptually, the neo-Confucian philosophy is quite close to theoretical systems found in modern science, particularly in "new physics." In its emphasis on emergent levels of organization in nature, the "wave" conception of natural phenomena, and the observer as involved in the phenomenon he observes, the neo-Confucian philosophy parallels the general concepts of modern theorists such as Bohr, Rutherford, and Whitehead (Needham, 1956: 466-7). Like the Taoist philosophy of earlier periods, the neo-Confucian conceptual system was instrumental in promoting advances in many areas of human knowledge, particularly
those which would now be related to science, such as, algebra, astronomy, geology, botany, zoology, medicine, etc. (Needham, 1956: 493-5). The Taoist tradition was less influential in promoting science during this period because the Sung actively suppressed the shamanistic or "wu" aspect of Taoism which involved occult or magical techniques and unorthodox sexual practices. As a result Taoism went underground in the formation of various kinds of secret societies which preserved Taoist teachings well into the 20th century (Needham, 1956: 137-9).

The Sung dynasty went into decline through the latter half of the 12th and into the 13th centuries as a result of inept rule and external conflicts with barbarian groups to the North, the Kins, Khitans, and the Mongols. After varying alliance with the Kins against the Khitans and later with the Mongols against the Kins, the empire was conquered by the Mongols (Nourse, 1942: 138-40). For Chinese culture, the rule of the Mongols and succeeding dynasties (the Ming and the Manchu) was essentially a period of prolonged stagnation. The foreign rule of the Mongols and the Manchus as well as that of the indigenous Ming dynasty was quite oppressive, promoting a ritualistic preservation of tradition but little in the way of innovation or development (Needham, 1956: 496). As a result, the
cultural products of earlier periods, the Taoist tradition, Ch'an Buddhism, and neo-Confucianism survived but remained relatively unchanged.

Probably the most important events for Chinese culture from the 13th century onward were its growing contacts with the West, particularly with Europe. In fact, this early contact with Europe, direct and indirect, provided much of the initial stimulus for the Renaissance and the rise of Europe. It could be said that these contacts were of great benefit to Europe but to the detriment of China all of the way from the 13th through the 20th centuries, through the Mongol, Ming, and Manchu dynasties (Wilhelm, 1929: 252). This was especially true during the 19th century when the colonial powers of Europe dominated and all but partitioned China under the enfeebled Manchu dynasty. Most of the history of China during the 20th century can be understood as attempts at adopting and re-interpreting the aggressive philosophies, social structures, and science and technology of the West for the sake of cultural, economic, and political survival. Though this "Westernization" is far from complete, as some have observed in comparing certain aspects of Taoism with the Legalist philosophy of the Ch'in, the Western influence is, still, the most important reality of 20th century China.

In terms of the independent development of science,
Chinese history presents an interesting problem. As Joseph Needham has observed, as of the 13th century A.D. Chinese science was, in every respect, far superior to Western science. In terms of abstract theory, collection and preservation of data, and practical technology China was without equal having developed sophisticated metallurgy, ceramic art, suspension bridges, deep well drilling, a superior horse harness, paper, gunpowder, to name only a few (Needham, 1970: 30-9). Many now believe, in fact, that the rise of Europe, the Renaissance, and the development of science in the West was based not only on the rediscovery of the classical heritage of antiquity, but also on inputs of practical technology from China by way of Islamic culture both in the form of artifacts and reports of "what was possible" brought back by traders such as Marco Polo (Needham, 1970: 14-21). The question remains, if China was so advanced, why didn't the physical sciences develop as they did after the Renaissance in the West? The answer appears to be twofold, both cultural and social.

First, from its inception, Chinese culture has approached the problems of human existence from a holistic, integrative, and primarily empirical as opposed to a rationalized perspective. This difference from the West is not absolute but is rather one of emphasis, a leaning in one general direction rather than in another. Thus,
the absence of the narrow empirical-experimental approach in China can be attributed, in part, to a cultural bias in favor of a broader holistic as opposed to a reductionist perspective producing the Eastern empirical-experiential tradition.

Second, the kind of social dynamism and competition on an economic or material level which resulted from the rise of the bourgeoisie in the West was absent in China. As we have seen, this dynamic competition between social classes and nations was an essential feature in the development of the experimental method and the physical sciences in the West, motivating the expenditure of human and material resources on an ever increasing scale from the Renaissance to the present (Zeitlin, 1968: 138-9). Though science was promoted during various periods during Chinese history and knowledge was preserved, the integrative nature of Chinese culture and society all but precluded the emergence of the kind of "dynamic instability" which has characterized Western society for much of its history, particularly the last five centuries.

Despite his appeal for a non-ethnocentric evaluation of Chinese science and history (1973: 2), Joseph Needham has arrived at primarily negative conclusions concerning Chinese science since it "failed" to develop the experimental method and the modern physical sciences. It seems that Needham, like so many students
or Oriental culture, has only been able to appreciate those aspects of culture which in some way parallel the Western experience. This has been especially true of views expressed on meditational or transcendental methodologies developed in Taoist and Buddhist traditions which Needham has dismissed as "obscurantist" and detrimental to the development of science. Though other aspects of Chinese culture are certainly of great value, I believe that these approaches to reality, the object of all science, are the most valuable and unique products of oriental culture. They are certainly the most important for our current discussion and the problem of ideology.

One of the most generally recognized forms of meditational discipline derived from this tradition is that of Zen Buddhism, the Japanese variant of Ch'an Buddhism discussed earlier. I have chosen Zen for this discussion, though other meditational systems do exist, because it is quite probably the most direct approach to meditation and the least involved in religious mythology. The simplicity and lack of complex doctrine of Zen as well as its paradoxical quality are undoubtedly a reflection of the Taoist input into its formation.

One of the best known proponents of Zen to Western readers is D. T. Suzuki, whose writings have been widely circulated. In his book, An Introduction to Zen, Suzuki explains the goals and practice of Zen, to the extent that they can be rationally explained. The
ultimate goal of all Zen practice is "satori," an opening up or an unfolding of consciousness beyond the restrictions of rational, symbolic structures (Suzuki, 1973: 88-98). The primary methods used to attain satori are "zazen" or sitting meditation and the "koan," an apparently enigmatic or paradoxical statement or question on which the meditator concentrates (1973: 99-102). Despite its apparently negative approach, rejecting all rational or intellectual understanding of reality as well as the subjective emotional reactions of the individual as obstacles to the attainment of true enlightenment or satori, Zen is ultimately an affirmation of living consciousness requiring only the negation of those illusory restrictions which would limit it (1973: 66-71). This rejection of intellect is not, however, absolute but is rather a technique used to realize the full consciousness of the individual; when the "whole mind" or satori is realized, the intellect takes its place as a necessary but subordinate part of the whole (1973: 38).

The ultimate and paradoxical goal of Zen is to liberate the mind from all restrictions, disciplines, approaches, even the initial approaches of Zen itself, bringing the fully realized consciousness into the realm of everyday life, away from abstract metaphysics and abstract doctrines. It is aimed at the demystification the full realization of consciousness in every aspect of
life (1973: 45-6). Ultimately, however, the truth of Zen or satori cannot be understood through rational explanation, only through direct experience.

Others in the Western tradition have pursued the study of various forms of Eastern mysticism and have recognized its uniquely oriental character and its importance for the west. John Blofeld, a lifetime student and observer of various forms of Eastern mysticism has remarked on the apparent universality and validity of the mystical experience:

That the mystical experience is no fantasy is demonstrated by the extraordinary degree of unanimity found among mystics of every age and clime. If a reasonable allowance is made for three diverse factors - differences of religious and cultural background, the need of each mystic to employ terms familiar to those about him, and the immense difficulty of bending language to describe what lies beyond the furthest confines of conceptual thought - it is apparent that all the world's mystics have spoken with one voice of an experience common to them all. (Blofeld, 1973: 198).

Blofeld further declares:

Of one thing I am sure - a mystical experience whether vague or intense, is nothing less than direct intuition of Ultimate Reality. Suddenly the universe is seen, as it were, in another focus; the myriad objects are recognized as being simultaneously being many and one; all kinds of contradictions fall into place; tranquility and joy supervene. All previous perceptions of oneself and one's surroundings are seen to have been blurred and distorted as if by a wrongly focused telescope; dimness having given place to blinding clarity;
what once seemed commonplace presents a shattering loveliness. (Blofeld, 1974: 20)

From a somewhat different perspective, Fritjof Capra has approached Eastern mysticism as a physicist analyzing the striking parallels between the "new physics" and mystical conceptions of reality in his book, The Tao of Physics. Commenting on the methodological approaches of these two traditions Capra says:

Anybody who wants to repeat and experiment in modern subatomic physics has to undergo many years of training. Only then will he or she be able to ask nature a specific question through the experiment and understand the answer. Similarly, a deep mystical experience requires, generally, many years of training under an experienced master and, as in the scientific training, the dedicated time alone does not guarantee success. If the student is successful, however, he or she will be able to "repeat the experiment." This repeatability of the experience is, in fact, essential to every mystical training and is the very aim of the mystics' spiritual instruction.

A mystical experience, therefore, is not any more unique than a modern experiment in physics. On the other hand, it is not less sophisticated either, although its sophistication is of a very different kind. The complexity and efficiency of the physicist's technical apparatus is matched, if not surpassed, by that of the mystic's consciousness - both physical and spiritual - in deep meditation. The scientists and the mystics, then, have developed highly sophisticated methods of observing nature which are inaccessible to the layperson. A page from a journal of modern experimental physics will be as mysterious to the uninitiated as a Tibetan mandala. Both are records of enquiries into the nature of the universe. (Capra, 1975: 36)
CONCLUSIONS

In reviewing the development of Chinese science it becomes apparent that its unique characteristics are directly related to its distinct cultural and historical situation. This situation involved many of the elements which were identified in Chapter 1 as essential to the development of science, though their cultural expression differed.

First, with only periodic exceptions, Chinese society has been characterized by a high degree of tolerance for a variety of beliefs and philosophies. Unlike the West, Chinese culture was fundamentally relativistic generally rejecting absolutist philosophies such as the Legalism of the Ch'in.

Second, the tolerance and relativism was reflected in social ideologies such as Confucianism and the naturalist and religious philosophies of Taoism and Buddhism. As a result of this lack of ideological absolutism, science or the empirical investigation of reality was neither antagonistic nor threatening to religious institutions. In fact, as we have noted, the empiricism of the mystical path was considered the highest path of all by virtually all Eastern religions. Consequently, science and religion were never institutionally or ideologically separated in the East.
as they were in the West.

Third, though a general tolerance was evident, a considerable degree of competition did exist between varying philosophies during the rule of the Chou, Han, and particularly the T'ang and Sung dynasties. This competition encouraged a refinement and synthesis of the philosophies involved producing the highly developed neo-Confucian philosophy and the direct methodology of Ch'an or Zen Buddhism, both of which were greatly influenced by the Taoist tradition.

Turning to general or societal conditions, it can be seen that the social structure of Chinese society also greatly influenced the development of Chinese science. Due to the highly integrated nature of Chinese society, scientific investigation and the development of practical technology generally received support from the imperial government, though never to the degree found in the West. Further, since it was not constrained by religious ideology, Chinese science was, from the start, interested in social and psychological phenomena as much as if not more than in the natural phenomena of the physical world. Chinese science was never promoted by or tied to the interests of a distinct social class as was Western science to the bourgeoisie and dominant political powers. As a result, its emphasis, general concerns, and methodologies are quite different from those found in the West.
Because of this social and psychological emphasis, both Buddhism and Taoism were interested in the problems which the mind itself produced in perceiving an ultimate reality or truth. As a result their primary concern was to overcome the limitations of mind which we have generally labeled "the problem of ideology" in the last chapter. In pursuing a holistic and integrative emphasis, they rejected rationalism as a primary approach recognizing its narrowing influence on consciousness and adopted an unrestricted perception of "the whole." This approach is obviously the opposite of that produced by the assumptions of Western rationalist reductionism which has sought to find reality or truth in what could be called "unitary absolutes" at the smallest scale possible. The Taoist and Buddhist traditions developed internal as opposed to external techniques for insuring the validity of perceptions and conclusions since they approached the broadest context of reality, the totality, which allowed no experimental manipulation. It should be noted, however, that the rejection of rationalism was not absolute in Taoism or Buddhism; rationalism was rather subordinated and used to maintain a coherent tradition and direct the early stages of individual development along the mystical path. Thus, in the mutually critical relationship between abstract theory and empirical observation the Eastern or empirical-
experiential tradition the greatest emphasis was placed on empiricism rather than on rationalism as it was in the West.

In the next chapter we shall examine anthropological, cultural, and psycho-physiological evidence which will help to clarify the fundamental relationship which exists between these two very different traditions and the implications which this relationship may have for the social sciences.
REFERENCES

Blofeld, John

Blofeld, John

Capra, Fritjof

Chuang, Tzu, trans. Gia-Fu Feng and Jane English

DeBary, Wm. Theodore, ed.

DeBary, Wm. Theodore, ed.

Lao Tzu, trans. Gia-Fu Feng and Jane English

Lester, Robert C.

Moore, Barrington Jr.

Mote, Fredrick W.

Nakayama, Shigeru and Nathan Sivin, ed.
Needham, Joseph
Cambridge: Cambridge Univ. Press

Needham, Joseph
1969. Within the Four Seas: The Dialogue
of East and West. London: George Allen & Unwin
Ltd.

Needham, Joseph
Cambridge: Cambridge Univ. Press

Nourse, Mary A.
1942. A Short History of the Chinese. Philadelphia:
Blakiston Co.

Suzuki, D. T.
1973. An Introduction to Zen Buddhism. New York:
Ballantine Books

Wilhelm, Richard
London: George G. Harrap & Co. Ltd.

Zeitlin, Irving M.
1968. Ideology and the Development of Social
Inc.
CHAPTER 4

THE BASES FOR A RE-EVALUATION OF
EASTERN AND WESTERN TRADITIONS

In the preceding chapters our discussion has been based primarily on social and cultural factors involved in the development of Eastern and Western scientific traditions. Despite the clear picture in differences in philosophical orientation, cultural and social development, and methodological emphasis which has been presented, the applicability of Eastern meditational methodologies to problems found within the Western tradition, particularly the "problem of ideology" within the social sciences, could still be doubted. The historical data which have been presented up to this point could be considered inconclusive or circumstantial in establishing the value of the Eastern empirical-experiential tradition. Indeed, to genuinely evaluate and compare these two traditions it may be helpful to draw on evidence that is, at least to some degree, independent of either tradition. Such evidence can be found in three apparently universal dimensions of human consciousness: the nature of myth, the universality of the shamanistic role, and the psycho-physiology of human cognition and perception.
THE NATURE OF MYTH

Until recently, the dominant view of myth in Western culture has been primarily negative reflecting the rationalistic and scientific philosophies of the Enlightenment. Primitive mythic conceptual systems and more developed religious mythologies of advanced cultures were assumed to be attempted factual though erroneous explanations of the physical world. A deeper examination of the universal bases and functions of myth in all human societies reveals the fact that myth is far more pervasive in all human culture than had previously been imagined.

As Claude Levi-Strauss has observed, the need for a logically coherent conceptual system for explaining man's relationship to the totality is universal (Levi-Strauss, 1966, 9-10). This universal need can be further broken down into more specific functions such as providing a framework for interpreting individual and collective experience, validating the social order, structuring social behavior, defining the relationship of human society to the totality, etc. (Larsen, 1976: 20). These functions can be related directly to the levels of analysis of religious myth or ideology in Marxian theory discussed in Chapter 2. In even the most primitive
societies mythic symbolic systems which have fulfilled these functions have often been quite complex reflecting a high degree of intellectual refinement. The criticism of myth found in scientific or rationalist philosophy, however, was based not on a lack of symbolic refinement but rather on a lack of empirical validity and critical rational evaluation. As we have seen, this challenge of myth and traditional beliefs was the philosophical basis for the development of the empirical-experimental tradition in the West.

This criticism, though partially valid, was based on a limited understanding of human perception, cognition, and the role of myth. As we have seen, the scientific ideology itself became a kind of myth, a limited symbolic conceptual system used to interpret the external reality. As with other mythic systems, the scientific philosophy developed its own criteria for determining the validity of knowledge and interpreting phenomena (critical rationality and experimentation) and rejected other views on the nature of reality because they appeared to be irrational. The fact that other criteria could serve as the basis for rational thought and symbolic systems was not generally recognized. What Western rationalist thinkers did not appreciate was that the validity of primitive and religious mythological belief systems was founded not in critical
empiricism and rationality but in analogical thought, in associations of metaphor and metonymy (Levi-Strauss, 1956: 61). Thus, their total rejection by proponents of rational philosophical scientism was itself a kind of mythic ethnocentrism on the part of the scientific community. The real value of the criticism of myth found in philosophical scientism lay in its recognition of the degree to which myth can function as a trap for the mind when symbolic expressions and representations prevent the perception and understanding of realities in the physical world and within the mind.

Indeed, though symbols are the channels through which we expand our capacity to integrate experience, to grasp a broad context in time and space, they also function to contain and limit experience, directing consciousness to "this" and not "that," to look "here" and not "there." The symbols of any mythic conceptual structure can act as barriers to clear perception as much as they can act as bridges or metaphors (Naranjo & Ornstein, 1971: 73). This limiting function is true of any symbolic structure, even the philosophy of science which seeks to overcome it. Any symbolic system can become a barrier to true perception when it is taken as the reality and not a symbolic approximation or representation of something beyond it (Malville, 1975: 55-6).
Any symbolic system becomes a myth, in the negative sense, something ultimately untrue, when it is believed in, in and of itself.

A moment's reflection will reveal that the problem of "mythic entrapment" is quite similar to, if not identical with, the problem of ideology. As was noted in Chapter 1, science has emphasized rationalism first and empiricism second. Though the need for empirical observation and testing has been recognized, the approach of Western science has been primarily rationally directed in reworking symbolic structures, existing theory, etc. As a result, Western science has remained at least partially enmeshed in a restricting symbolic system. Though this highly conservative approach has been in some ways quite successful in reworking existing symbolic systems and generating valid theory (producing modern science) some major drawbacks are now becoming apparent.

In a number of ways the rationalism of Western science has functioned as a constraining mythical system limiting the dimensions of consciousness. This limitation can be seen generally throughout the history of the development of science in the West in the formation of what Thomas Kuhn has called paradigms or inclusive philosophical-theoretical systems which have hardened into a kind of "scientific dogma" during particular
historical periods. These paradigms tend to direct and restrict the form and content of theory and research while they are dominant since they are assumed by most within the scientific community to be "true."

Ultimately, advances in science have depended on the displacement of paradigms through research directed at discovering apparent anomalies in nature which could not be accounted for within existing theory, eventually requiring totally new theoretical explanations (Kuhn, 1962).

Quite recently, the ideological and emotional side of scientific theory was demonstrated by the uproar within the scientific community caused by the unorthodox astronomical theories of Immanuel Velikovsky relating to legends of cataclysms found in many ancient traditions. A study carried out by Robert McCauly (1975) clearly demonstrated that opposing views in this controversy were the results not only of professional commitments to theoretical positions, but also of religious background in progressive-liberal or fundamentalist religious ideologies. Such controversies and conflicts within the scientific community regarding both physical and social theory involve far more than objective testing and evaluation of theories and evidence. They are deeply involved in and a part of mythos of both traditional and modern Western culture.
Somewhat closer to the social sciences we can see an example of theorists becoming lost in their own metaphors. In dealing with the enigma of time as a dimension of reality Western culture has almost universally applied the metaphor of two dimensional linear movement, attempting to express the dimension of time in simplified spacial terms (Ornstein, 1972: 96). The conceptualization of developmental sequences, progress, and historicity itself are based on this chronological metaphor. We talk of the near and distant "past" or "future" almost as if they were factual "places" where we have been or to which we could go. In fact, as mystics of both East and West have pointed out, there is no past, there is no future; there is only an ongoing present. It is all that truly exists (Levi-Strauss, 1966: 258). To the extent that we accept this linear metaphor as truth, we are trapped by a myth.

Some of the greatest minds of Western science have been very concerned about this restrictive function of existing scientific theory. Albert Einstein was highly critical of the authoritarian form of education in Germany and felt that his development of radically new theories in physics occurred in spite of rather than because of the rigor of his earlier educational experience (Dalville, 1975: 104-5). On a more general level, Sir Arthur Eddington's analogy of science as a fishing net
designed to catch certain kinds of fish illustrates the limitations of any theoretically structured approach to reality (Taylor, 1949: 348-9). Indeed, the elaborated theories, definitions, procedures and approaches of the various scientific disciplines do very much pre-determine what they will discover in the real world. When dipped into the water, the net will tend to catch what it has been designed to catch.

To the extent that we accept modern science as "truth" and interpret the world in terms of its more general concepts and symbolic expressions, science is the myth of modern society in the West and much of the rest of the world (Malville, 1975: 37). In its logical essentials scientific thought is not really different from other forms of mythical thought; it is only different in the elements of experience to which and the way in which it is applied to the world. Like other mythic systems, science has its own criteria for maintaining internal consistency. In terming his study of primitive mythic systems as the production of a "myth of mythology" Claude Levi-Strauss has recognized the extent to which any abstract formulation, even if based on objective observation and rational analysis, functions as a myth in its formation and direction of human consciousness (Levi-Strauss, 1975: 12-13).

Though Western science was directed at overcoming
the constraints of myth and traditional belief, its
dependence on critical rationality and the rationally
structured experimental method has narrowed its focus
and limited its success in the study of human phenomena
on a societal and historical scale, where it has functioned
primarily as a new mythology. As we have seen in
Chapter 3, the meditational systems developed in the East
recognized all symbolic knowledge as ultimately untrue
and sought to perceive reality directly. "Many Western
thinkers have, ironically, rejected Eastern systems as
"myths" since they were identified with religion. Yet,
a case can be made that Western rationalism is more
bound up in its own symbolic structures, in its own myths
than the mystical systems of the East. Indeed, the
intuitive and integrative mode of consciousness cultivated
in Eastern meditational systems is being increasingly
recognized as an essential element in human creativity
and the process of genuine discovery (Malville, 1975:
136-9). The problem of the containment of consciousness
within "common sense" beliefs or any abstract framework
was a primary concern of the Pragmatist philosopher,
William James, who wrote:

Our normal waking consciousness, rational
consciousness as we call it, is but one
special type of consciousness, whilst all
about it, parted from it by the flimsiest
of screens, there lie potential forms of consciousness entirely different. We may go through life without suspecting their existence; but apply the requisite stimulus, and at a touch they are there in all their completeness, definite types of mentality which somewhere have their field of application and adaptation. No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded. (Ornstein, 1972: 61-2).

Access to these realms beyond mundane consciousness and escape from the cultural constraints of symbolic structures has been an everpresent problem and concern throughout human history. To better understand myth and its transcencence, we must now turn to another apparently universal dimension of human culture, the role of the shaman, who preserves, reworks, and transcends the symbolic structures of myth.

THE UNIVERSALITY OF THE SHAMANISTIC ROLE

Until recently, as with myth, most philosophers and theorists in the West have regarded primitive shamanism as superstition, nonsense, or just primitive stupidity. The negative view, again, was based on the rationalist bias of Western culture which, as we have seen, has repressed mystical practices for most of its history (Pelletier & Garfield, 1976: 105). A great deal
of evidence has accumulated, however, which clearly demonstrates that the shamanistic role is not unique or ideosynchratic to any culture, in fact it appears to be very nearly universal.

In terms of its symbolic representations, the dimensions of the shamanistic role appear to be cross-culturally quite consistent. In mythic terms, the role is "archetypal" expressing a fundamental dimension on human social and psychological structures. The shaman is seen as the mediator between two worlds, between the mundane reality of accepted myth and the world beyond the "veil of symbols." Even beyond this basic definition of role, the mythic representations of elements of the world "beyond the veil" encountered by the shaman show a high degree of cross-cultural consistency. This archetypal unity across cultural lines clearly shows that the shamanistic role is an expression of very real and fundamental dynamics of human consciousness (Larsen, 1976: 59-60). The process through which an individual becomes a shaman within a given society also evidences a high degree of cross-cultural consistency and further reveals the fundamental psychological dynamics involved in the creation and activity of the shaman.

In mythic terms the individual who is to become a shaman must go through death and dismemberment in the mythic realm after which he is reassembled in a new
form with new and unique powers. This theme of ritual sacrifice, death, and rebirth is universal in virtually all primitive societies as well as in the Christian and Buddhist traditions; the self must die in order to be transformed and reborn (Larsen, 1976: 62-3). Though this transformation can be sought through specific means in most traditions, it is generally believed that the "greater shaman" is one who has not chosen to become a shaman himself, but rather has been chosen by the spirits, by powers beyond the human realm (Larsen, 1976: 60-1). Very often, this transformation is not sudden but takes place over an extended period of time during which the individual sinks into increasing depression, becoming more and more despondent and alienated from society and his own identity. In the Christian tradition, this stage in growth of mystical consciousness was referred to by St. John of the Cross as "the long night of the soul." This extended ordeal is ended by a transforming transcendent climax in which the individual is "reborn" as the mystic or shaman.

In psychological terms, the stages of psychic disintegration of the mystical path and various types of altered states of consciousness involved appear to be parallel to specific kinds of mental illness, particularly schizophrenic psychosis (Pelletier & Garfield, 1976: 24-5, 46-51). The primary difference between the
psychotic and the mystic, however, is that the mystic has developed a tolerance for and control of altered states of consciousness while the psychotic or schizophrenic is utterly overwhelmed by and unable to control them (Pelletier & Garfield, 1976: 110-12). In both cases, the individual's consciousness has gone beyond the bounds of normal consciousness, beyond the "veil of symbols." In many primitive societies this connection is well recognized in understanding the shaman as one who has "gone mad" and returned to the normal world.

The rationalist bias of psychological theory in the West labeling virtually all abnormal or altered states of consciousness in negative terms has recently been challenged by theorists who have claimed that many altered states may, in themselves, be quite neutral, that their negative manifestations may be primarily a consequence of our negative normative reaction to them (Weil, 1972: 65-6). Along these lines, Andrew Weil has proposed that neurosis is simply the negative experience of fundamental ambivalence which in itself is neutral and can be experienced positively; that paranoia is the negative experience of "environmental wholism" which can be experienced positively, the universe as a positive unity operating to the benefit rather than the detriment of the individual; and that psychosis is the experience of a strongly altered state of consciousness which can
be channeled in positive or negative directions (Weil, 1972: 177). Recognizing the parallels between these observations and dynamics of primitive shamanism, Stephen Larsen has stated:

The shaman obviously has access to dimensions of consciousness usually unavailable to us. Whether in trance or awake, he seems to be able to see things that others do not see. In our culture, this condition is regarded invariably as a symptom of psychotic episode. Yet the shaman is not psychotic; he is a fully functional member of his local social order, and, as many investigators have pointed out, often among the most intelligent and creative people of the community. (Larsen, 1976: 80-1).

Unfortunately, the understanding of the dynamics involved in altered states of consciousness by the scientific community is quite limited. In characteristic Western style, research has been based on external observation and reductionist explanations producing little more than vague descriptions of abnormal behavior and mechanistic explanations which all but ignore the fact that a conscious individual is involved (Pelletier & Garfield, 1976: 35-6, 89-1). The most notable exception to this trend can be found in the work of Carl Jung whose research probed both the depths of the individual and collective unconscious and their connectedness with the totality. Jung himself was a mystic and a student of both Eastern and Western forms of mysticism and fully recognized his own unique position in an excessively
rationalized Western culture.

Indeed, though the consciousness of the mystic or the shaman is based on fundamental dynamics of the human psyche, its expression in the world depends very much on how he is received by society. Jung was fortunate in being able to work his mysticism into the highly rationalistic field of psychotherapy with very positive results. At an early age, Jung learned to conceal the more profound side of his psyche, an unusual awareness of his own unconscious mind, which would have led to his being labeled as mentally ill or deficient, and eventually channeled his psychic development through the study of various forms of mysticism not available within his immediate cultural milieu (Jung, 1965).

In many primitive or non-Western societies such concealment is unnecessary. When certain unusual forms of behavior or expression are observed in a young person (such as high sensitivity, solitary activity, and dreams, visions, or unusual perceptions) he or she can be identified as a potential shaman, thus directing unusual psychological characteristics or capacities into a positive social role (Levi-Strauss, 1963: 173-5). In this way, the individual with unusual psychic capacities as well as the group of which he is a part adapt to each other in a positive manner. Such flexibility has been much less evident in the ideologically constrained
rationalist milieu of the mainstream of Western culture.

Many observers of primitive cultures have been unable to overcome their own cultural bias and have focused almost exclusively on the normative dimensions of shamanism regarding altered states of consciousness as "anti-social" expressions of repressed aggression (Pelletier & Garfield, 1976: 33-4). They seem unable to comprehend the fundamental reasons for the deliberate suspension of normative behavioral constraints for the shaman which are based on the recognition that his behavior is exceptional, his consciousness having passed beyond the social realm. Similarly, Sigmund Freud regarded expressions of the unconscious mind as "regressions," as a lesser form of consciousness, reflecting his own rationalist bias. Opposing the rationalist bias, Jung regarded expressions of the unconscious mind as primal consciousness, as deeper, broader, and in many ways superior to normal rational consciousness (Larsen, 1976: 25).

In this view, Jung made a fundamental distinction between two modes of consciousness and meaning. The first or "primary consciousness" he saw as immediate, direct, integrative, and experientially based. This is the mode of the unconscious mind. The second or "secondary consciousness" he saw as symbolic, reflective, indirect, speculative, and often fragmenting. This is the mode
of the conscious or rational mind (Larsen, 1976: 28). As we shall see, this distinction between two fundamental modes of consciousness, recognized in all shamanistic traditions, many religious traditions, and some branches of modern psychology is verified not only by psychic experience but also by a mass of steadily accumulating evidence concerning the function and physiological structure of the human brain.

THE PSYCHO-PHYSIOLOGY OF HUMAN PERCEPTION AND COGNITION

A great deal of research in both the biological and human sciences has been directed toward gaining a deeper understanding of the fundamental physical structures and dynamic processes which provide the physical bases for the phenomenon of living consciousness. Though our understanding of these processes is far from complete, what is known can provide us with further evidence for comparing and evaluating Eastern and Western traditions.

Probably the most fundamental discovery in the psycho-physiology of consciousness is that perception is selectively oriented toward the environment. This is true of all conscious living beings; our awareness is directed for reasons of immediate survival to focus on specific aspects of our environment, what is dangerous, what is
safe, what is food and what isn't, what objects are useful, etc. (Ornstein, 1972: 33). As we have seen, this fundamental biologically based selectivity of perception is expanded and elaborated by the symbolic structures of culture which we have referred to at the most general level as myth. As a result of this multi-leveled selectivity, we tend to ignore a great deal of what is going on all around us (Naranjo & Ornstein, 1971: 171).

A moment's reflection will reveal, however, that this selectivity is essential to survival and the management of normal physical and social existence; we must attend to the problematic aspects of life which demand our attention most immediately and "tune out" many of the constancies which apparently have no bearing on immediate problems. This selectivity actually operates at the neurological level through a process of adaptation to stimuli which has been labeled "automatization" through which "relative constants" in the environment are not consciously perceived but are relegated to the status of "background noise," (Ornstein, 1972: 43-4). This basic priority of selectivity has also operated on an evolutionary scale providing all animals and man with the sensory apparatus to "focus" on those aspects of the totality of stimuli most closely related to their survival. Aside from these dimensions of selectivity
consciousness appears to be founded in variability as well.

The requirement of variability appears to be fundamental to the physical processes of consciousness; anything that is an absolute constant cannot be perceived. The biological structures involved in perception operate on the basis of dynamic variability, the pulse of the neuron, the nystagmatic movement of the eye, etc. (Naranjo & Ornstein, 1971: 164-6). Thus, though we experience the world and ourselves as stable and in many ways constant, our perception of it and ourselves is based on continuous dynamic processes without which our physical consciousness could not exist (Naranjo & Ornstein, 1971: 188).

In their search for a true understanding of the universe, the scientific traditions of both East and West have recognized the selectivity of normal consciousness in its emotional and cultural bias and its basis in limited experience. In recognizing dynamic variability they have differed; in the West, the emphasis on rationalism has led to a very "mechanical" conceptualization of human consciousness while in the East, the emphasis on direct empirical experience resulted in a much greater appreciation of the dynamic nature of perception and cognition. The distinction between these two modes of consciousness has been further developed.
and supported by studies on the specialization of functions of the left and right hemispheres of the human brain.

As early as the later part of the 19th century physicians had become aware of the localization of particular cognitive functions as a result of observing the consequences of injuries and destruction of tissues in the brain. It was initially observed that the structures underlying the capacity for verbal expression and rational abstract thought appeared to be localized in the left hemisphere. As a result it was assumed for some time that man was only using half of his brain; this conclusion being based on the idea that the whole of consciousness was equivalent with rational, analytical thought. As more data accumulated and was interpreted, however, it became apparent that the right hemisphere was neither idle nor dormant but that it was involved with only partially understood non-rational processes of perceptual integration and relational interpretation of experience (Ornstein, 1972: 67-8). As with many new ideas and theories, however, the case for lateral specialization of brain functions was soon overstated and much oversimplified in the production of theoretical conclusions which went far beyond available clinical evidence (Gazzaniga & LeDoux, 1978: 47-8). In an attempt to overcome these overstatements and over
simplifications, Michael Gazzaniga and Joseph LeDoux have conducted a comprehensive review of theories and clinical evidence in their book, The Integrated Mind, with the aim of clarifying not only the differentiation of functions between the left and right hemispheres of the human brain, but also how these functions are interrelated and integrated into individual consciousness (1978: 45-6).

Much of the research concerned with lateral specialization in the last two decades has been directed toward experimentation with "split-brain" patients, individuals whose left and right cerebral hemispheres have, for a variety of medical reasons, been isolated by surgery, cutting the connecting neural tissues of the corpus callosum. Experiments with these patients have provided a unique body of data for analyzing lateral specialization of right and left hemispheres operating together and in relative isolation from one another.

Gazzaniga and LeDoux have found, through a critical reconstruction of earlier experiments, that both right and left hemispheres are involved with visual and auditory perception, the only difference between the two, in this respect, being one of emphasis, the right hemisphere being more involved with visual and auditory perception within a field. The strongest difference
between the two hemispheres appears to be between verbal-analytical skills (left) and manipulo-spatial skills (right) involving not only integrative perception but manual skills as well. Further, the specific portion of the hemispheres in which these functions are centered, on either side, appears to be the inferior parietal lobule (Gazzaniga & LeDoux, 1978: 56-7). Experiments with primates have found that, unlike the human brain, the left and right inferior parietal lobules in primates perform identical manipulo-spatial functions. Gazzaniga and LeDoux have proposed that the development of this manipulo-spatial capacity was connected evolutionarily with the development of binocular vision, refined depth perception, and a vastly expanded capacity for tactile sensing and manipulation of the environment and bodily movement in time and space (1978: 56). It has further been hypothesized that the lateralization of specific brain functions occurred at that evolutionary juncture at which human language first developed, when a uniquely new behavioral and neurological dimension was added to the evolutionary process. That this new function should "compete" for neural synaptic space previously devoted to manipulo-spatial functions can be readily explained by reference to linguistic theory which generally recognizes language as rooted in the early development of tools, the use of which is a
manipulo-spatial function. So, though separated, the two functions are closely related (Gazzaniga & LeDoux, 1978: 59-60).

Though these conclusions are partially speculative, they are circumstantially supported by other evidence. In some cases of stuttering it has been found that the expressive speech function was not lateralized but was divided between the two hemispheres producing dissonance in the control of a unitary function, verbal expression (Gazzaniga & LeDoux, 1978: 80-1). Further, right hand actions (integrated in the right hemisphere but channeled through the left hemisphere) and verbal expression often interfere with each other since they are involved with the same synaptic space (Gazzaniga & LeDoux, 1978: 92). As a result of these and other observations, a fairly accurate picture of lateral specialization and integration has emerged.

The left hemisphere operates as the locus for verbal, linguistic, and symbolic capacities which are the bases of abstract human culture, individual social identity, and the categories of rational or linear analytical thought. The left hemisphere is the foundation of the "self" and the structures of rationality, ideology, and myth which impose their forms on individual consciousness. These operations are not, however, independent; they rest on the foundation of
right hemisphere functions (Gazzaniga & LeDoux, 1978: 146-50).

The right hemisphere is the locus of sensual awareness of body and environment in an existential continuum unmediated by symbolic structures. It is the seat of physical coordination of movement, intuitive and emotional modes of understanding, and the fine perception that is the foundation of the arts. Though these modes interact, the left generally providing direction and form and the right providing content and substance, they remain distinct (Gazzaniga & LeDoux, 1978: 96-7).

Experiments based on anesthesia of specific portions of the brain have clearly shown that the left and right hemispheres of the brain, in their specialized functions, remember or "encode" data in unique modes that do not transfer from one side to the other. Only sensory data and mutual influence between the form and content of thought can cross over (Gazzaniga & LeDoux, 1978: 14-15). The dynamic interdependence of these two distinct sides of the human mind has been demonstrated by what Gazzaniga and LeDoux have referred to as "the need for consonance." This is the fundamental need for a "fit" between the content of experience and the form of symbolic structures. A lack of fit between the two can create an internal tension which can be resolved
from either side through the rejection or repression of experiential or sensual knowledge in favor of symbolic or rational consistency, or the suspension or rejection of symbolic structures in favor of direct experiential knowledge (Gazzaniga & LeDoux, 1978: 155-7). As we have seen, the path of "mythic entrapment" parallels the former, the path of science and true mysticism parallels the latter.

This physiological distinction of modes of consciousness provides a new dimension for and a confirmation of theories of the conscious and unconscious minds and their paradoxically distinctive yet integrated functions. Tests with split brain patients have demonstrated that the two hemispheres arrive at assessments of reality on fundamentally different criteria; usually they are in relative agreement but occasionally they are not. When they are not it is usually along lines paralleling the psycho-analytic distinction between the conscious and unconscious minds (Gazzaniga & LeDoux, 1978: 151). These dynamics will be discussed at greater length relating them to myth, shamanism, and the scientific traditions of East and West toward the end of the chapter.

In clinical and cultural studies of the theory and practice of different forms of mysticism, many researchers have concluded that virtually all
transcendental states, whether they are produced by sensory involvement or deprivation or are spontaneous or a part of some traditional discipline, involve the process of "de-automatization," a suspension of the categories and restraints of normal consciousness (Ornstein, 1972: 202-3). Actual physiological studies of adepts in meditational disciplines, monitoring the neural activity of the brain via EEG, have verified the basic claims of these traditions. Hindu yogis are able to eliminate all awareness of external stimuli in deep meditation focusing exclusively on the inner mind (this goal being consistent with the conception of the external world of material phenomena as illusion or maya). On the other hand, Zen monks do not shut out external stimuli completely; they remain aware but allow no emotional or rational response, only clear unadulterated perception (this goal being in keeping with the Taoist ideal of allowing the mind to be a "still pool" mirroring the external reality) (Smith, 1975: 112-13). Each breath, each tick of the clock, even the minutest phenomenon is an event in itself whose "suchness" is to be perceived but neither "attended to" nor ignored.

A great variety of methods involving manipulations of the relationship between mind and environment and internal mental states have been developed to achieve a state of "de-automatization" or transcendence ranging
from extreme physical ordeals of many shamanistic traditions to the simple "just sitting" meditation of Zen. To these physical and psychological practices we must add the dimension of psycho-active drugs which have been used in many cultures throughout human history for inducing altered states of consciousness or "de-automatization."

Interest in consciousness altering substances has increased greatly over the last two decades with the expansion of drug use and abuse in modern society. The terms used to refer to the most psycho-active of these drugs have reflected interpretive biases, i.e. psychomimetic (inducing psychosis), psychedelic (mind expanding), and hallucinogenic (producing unreal perception), etc. Each of these terms reflects one dimension of the process of "de-automatization" and its possible consequences, the breakdown of normal conscious structures, the expansion of awareness into new dimensions of experience, and the influx of materials from the unconscious mind when conscious constraints are lifted (called Makyo in Zen, the third level of development immediately preceding true enlightenment)(Johnston, 1970: 9-10). In relating the psychedelic experience to mystical experience, John Blofeld has said:

On the only occasion when I ventured to try one of the hallucinogens and was

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rewarded by an experience of an
agonizing tension - far worse
than physical pain - I did what I had
been taught to do in dire extremities
with the result that I was transported
to a state of bliss in which I came
face to face with several realities
which I had formerly understood and
accepted only at the intellectual level.
Besides comprehending with perfect
(though, alas, temporary) clarity how
things may simultaneously by one and
many. I experienced consciousness
as the rise and fall of an infinite
number of successive impulses that
emerged and vanished like quickly
bursting bubbles. (Blofeld, 1974: 96-7).

Ram Dass (formerly Richard Alpert), with training
in both Western psychology and Hind mysticism gave to
his guru, upon request, 1500 miligrams of LSD (a very
large dose) and observed no apparent results. When
questioned, the guru replied that the drug was "useful,"
that it allowed you to "visit" a "place" or "higher form
of consciousness" but that it was not true samadhi. It
was better to learn how to go to that "place" in such a
way that you could stay, so you would be that higher
form of consciousness (Ram Dass, 1974: 112)

Indeed, though psychedelic drugs can be useful,
their effects are often difficult to predict or control.
Experience has shown that the dissolution of linear
rational thought and even the symbolic conception of self
can be very difficult for many people to deal with and
is as likely to produce negative results (genuine psychosis) as positive ones (positive transcendence) (Ornstein, 1972: 104). The negative consequence is particularly likely in individuals characterized by a high degree of emotional repression, i.e. tension between the conscious and unconscious minds. When used within a controlled and stable situation some psycho-active drugs can function as positive tools with predictable results for dealing with the conscious and unconscious minds. When used without such precautions, as they often have been in modern drug subcultures, their effects can be very negative.

Through the application of these dimensions of our understanding of human culture and consciousness, it is now possible to clarify our comparison of Eastern and Western scientific traditions. The uniquely human dynamism of consciousness between the symbolic structuring of the left hemisphere and the integrative, experiential holism of the right hemisphere of the brain are the basis of human society, culture, civilization. Though the symbolic structures of the left brain provide the basis for abstract knowledge, communication, and culture (the attributes which make humanity unique), they are dependent upon the foundation of experiential knowledge provided by the right hemisphere. In even the most primitive societies, however, the majority of individuals
depend on cultural knowledge in orienting their lives; their lives, cognition and perception, their consciousness is symbolically structured and contained. The dynamism between the two modes of consciousness, between form and content, is limited; symbolic form tends to determine the content of consciousness. Thus, man is separated from the totality, his primal consciousness restricted; he has lost direct consciousness of the universe and of his own being. The awareness of this split is expressed in the mythos of virtually all human cultures.

As we have seen, the shaman is the solution to this very human problem in acting as the mediator between the human realm and the totality of powers beyond mundane comprehension, between the conscious and unconscious minds. In transcending or escaping from the bonds of symbolically structured and contained consciousness the shaman bridges the gap between human society and the totality, between the conscious mind and its unconscious primal roots. As Levi-Strauss has observed, the mythical thought of the shaman is a kind of "intellectual bricoulage" a reworking of symbolic cultural bits and pieces in order to adapt to and account for new realities, adjusting the mythos of a human society to its living experience (1966: 17). Thus, the shaman is both intellectual and mystic in preserving, transcending, reworking, and
elaborating the mythic symbolic structures of his society. His role is an expression of realized dynamism between the two fundamental modes of human consciousness. The dynamic balance between these two modes was not, however, preserved as the shamanistic role was culturally elaborated and developed in the advancing cultures of East and West.

As we have seen, Western civilization has elevated rationalism throughout most of its history. As a result, its belief systems and mythology have tended toward ideological rigidity and dogmatism. Further, it has generally restricted and persecuted various forms of mysticism or the "other mode" of consciousness in its various manifestations. Though it has been less extreme, having introduced the ideal of empirical investigation, the development of science in the West has continued with this rationalist emphasis.

In appealing to empirical experience and observation, the scientific philosophy initiated a degree of dynamism between the two modes of consciousness, between abstract theory and direct experience, but this dynamism, as expressed in the experimental method, leaned heavily on rationalized structuring of empirical phenomena (Ornstein, 1972: 56-7). Thus, the relatively narrow empirical-experimental approach developed for a variety of cultural and societal reasons discussed in Chapter 1. Indeed, the limitations of Western sciences,
and particularly the social sciences, have been a product of this approach which we could refer to as a "left hemisphere" biased approach.

The development of the Eastern tradition has taken the opposite "tack" in pursuing the elaboration of methodologies of transcending the limiting structures of language, culture, myth, and individual identity. In the East, the dynamism between the two modes of consciousness came to be biased toward integrative, holistic perception, the right hemisphere function. As a result, Eastern science developed a broad focus arriving at valid general conclusions but dealing poorly with specifics.

Cultural and institutional developments in East and West have followed these divergent paths, Western education dealing almost exclusively with verbal and intellectual training, and Eastern education placing much more emphasis on the cultivation of the intuitive or holistic mode of consciousness (Ornstein, 1972: 80). Each path represents a cultural refinement of the distinct but complementary modes of consciousness, each tradition with its own value.

If we view human consciousness taking both sides of the mind into account, a number of conclusions can be drawn. Symbolic structures or abstract theories (myths) cannot be evaluated as "true" or "untrue" but
must rather be seen as "effective" or "ineffective" as approximations of or approaches to reality. In the broadest sense, myth is an essential part of human consciousness but its role must be kept in balance (Campbell, 1969: 3-8). Further, the intellect or abstract ego is not the whole "mind" or "self." The concept of isolate identity or social identity and the expressive intellect which maintains it rest upon the broad foundation of the unconscious mind whose dimension must be experienced to be understood (Pelletier & Garfield, 1976: 123) (Weil, 1972: 120-21). There is more to existence and the human mind than the intellect or conscious mind.

A number of prevalent misconceptions about Eastern mysticism must also be rejected. The term "meditation" is often taken in the West to mean "passive reasoning" or quiet contemplation. As we have seen, this is not what meditation means within Eastern systems (Ornstein, 1972: 121-2). It has also been asserted that Western science is "objective" while Eastern systems are "subjective." In fact, such a distinction is erroneous; the rational distinction of subject from object and the foundation of both rationalized/objective and self-oriented/subjective thought are symbolically structured left hemisphere functions. Mystical systems are neither objective nor subjective; they are genuinely and actively
holistic (Jung, 1976: 92-3). Another common misconception reflecting the aggressive bias of Western thinkers is that mystical systems are masochistic in nature being "metaphysical paths of self defeat" (Feuer, 1963: 256-8). This position ignores the cultural and psycho-physiological evidence which we have reviewed in this chapter and the distinctly positive approach of the Taoist system reviewed in Chapter 3. Such conclusions also ignore accounts of individuals such as John Blofeld who states:

Also one may judge the tree by its fruits. Besides reading some impressive accounts of European mystics, I have been privileged occasionally to meet Chinese and Tibetans far advanced along the way. Always they have struck me as loveable people whose very presence was a source of happiness. Spontaneous, merry, tranquil, kind, these accomplished adepts may be taken for simpletons by one unfamiliar with the signs of attainment; their wisdom is not worldly wisdom and they behave in ways startlingly different from conventional notions of sanctity. (Blofeld, 1974: 27).

Though some forms of mysticism in the West have included a masochistic dimension in advocating the "mortification of the flesh," only the grossest misunderstand-
James says:

The mind, in short, works on the data it received much as a sculptor works on his block of stone. In a sense, the statue stood there from eternity. But there were a thousand different ones beside it. The sculptor alone is to thank for having extricated this one from the rest. Just so the world of each of us, however different our several views of it may be, all lay embedded in the primordial chaos of sensations, which gave the mere matter to the thought of all of us indifferently. We may, if we like, by our reasoning unwind things back to that black and jointless continuity of space and moving clouds of swarming atoms which science calls the only real world. But all the while the world we feel and live in will be that which our ancestors and we, by slowly cumulative strokes of choice, have extricated out of this, like sculptors, by simply rejecting certain portions of the given stuff. Other sculptors, other statues from the same stone! Other minds, other worlds, from the same monotonous and inexpressive chaos! (Naranjo & Ornstein, 1971: 190).

Though this view is accurate in identifying the selectivity of human perception, cognition, and culture, its characterization of the totality as "monotonous and inexpressive chaos" is anathema to the concept of empirical science, East or West. Such extreme idealism all but denies the existence of discoverable dynamics or recurrent patterns in the world of experience. In essence, this view is an elevation of the collective self deception of "mythic entrapment" or the ideological
restriction or consciousness. An opposing view, more consistent with the ideal of both Western and Eastern science is expressed by Henry Miller:

...the world is not to be put in order; the world is order incarnate. It is for us to put ourselves in unison with this order, to know what is the world order and in contradistinction to the wishful thinking orders that we seek to impose on one another. The power which we long to possess in order to establish the good, the true and the beautiful would prove to be, if we could have it, but the means of destroying one another. (Naranjo & Ornstein, 1971: 206-7).

Both Eastern and Western science seek to discover the nature of this order by bringing the mind into direct experience of the ultimate reality, in the West through relatively narrow experimental methods, in the East through integrative or holistic meditational methods (Larsen, 1976: 40-1). In the West, a theoretical problem is formulated in such a way that it can only be resolved by appealing to external experimental evidence, a very carefully and narrowly selected "bit" of the universe or totality of possible phenomenal evidence. In the East internal methodologies and devices such as the koan in Zen practices are used to force the suspension of symbolic structures, opening the mind to a totality of internal and external evidence.

The need for a synthesis between these two approaches, these cultural refinements of the two fundamental modes or dimensions of human consciousness,
has been widely recognized (Ornstein, 1972: 28-9) (Weil, 1973: 175-6). Such a synthesis must involve a reorientation of the scientific community recognizing that the fundamental conflict in scientific investigation of whatever sort, is between genuine openness or curiosity and restrictive dogma, not between "science" and "religion." For the methods of true investigation into the nature of the universe are to be found in both religion and science as well, unfortunately, as the restrictions of dogma (Ornstein, 1972: 26). An awareness of the need for this synthesis has been expressed by Robert Oppenheimer who wrote:

These two ways of thinking, the way of time and history, and the way of eternity and timelessness, are both parts of man's effort to comprehend the world in which he lives. Neither is comprehended in the other nor reducible to it...each supplementing the other, neither telling the whole story. (Naranjo & Ornstein, 1971: 139).

Indeed, it appears that throughout the history of science, the greatest achievements of discovery and communication have been an expression of a high degree of integration between the two modes of consciousness. Such integration is essential to the creative process of discovery, theoretical formulation, and communication within a culture (Ornstein, 1972: 80). Thus, the mystical
orientations of many great figures of Western science are no anomaly; mysticism was an essential though somewhat concealed element in the development of Western sciences. In the East, the role of mysticism and intuition was much more openly recognized.

Aside from this synthesis at the level of individual consciousness, another possibility is the philosophical synthesis of Eastern and Western science. As was mentioned in Chapter 1, the ideals of science have come to be questioned and criticized in the West in attacks claiming that its promise has been subverted by its aggressive rationalism, social and environmental excesses, and service of economic and political power. Consideration by the Western scientific community of some of the discoveries of Eastern science might help to clarify the dynamic nature of man's relationship to his physical and social environment and the universe as a whole.

Unfortunately, though characteristically, Western intellectuals have generally only recognized the value of Eastern philosophies and meditational systems on a micro level, primarily in individual psychology. Meditational techniques are being used increasingly at the individual level in Western psychology as therapeutic tools and to deal with the physical symptoms of stress. Even as Western theorists
approach holistic Eastern systems, the rationalism and reductionism of Western culture limit their understanding and appreciation of a profoundly different approach to reality. Cultural biases are still quite strong.

Even those individuals in the West who have accepted the value of Eastern systems have tended to miss the mark as a result of cultural bias. Even when approaching a non-intellectual form of consciousness, the Western tendency is to intellectualize it: Westerners analyze its history, its concepts and philosophical orientations, its organizations, etc. but they do not do it. They learn all about it but they do not learn it. This probably is the greatest obstacle for those in the West to overcome in approaching Eastern systems, especially those highly trained and educated in the rationalistic Western tradition (Ornstein, 1972: 249). This problem was recognized by Carl Jung as one of the greatest obstacles to be encountered in approaching the unconscious mind. The more formidable the intellect, the greater the initial difficulty in transcending its direction and containment of consciousness.

Beyond these problems and implications for science as a whole, Eastern science and the evidence discussed in this chapter have specific implications
for the social sciences. These will be discussed in the concluding chapter.
REFERENCES

Benson, Herbert

Blofeld, John

Campbell, Joseph

Eliade, Mircea

Feuer, Lewis

Gazzaniga, Michael S. and Joseph F. LeDoux

Johnston, William

Jung, Carl G.

Jung, Carl G. et al.

Kuhn, Thomas S.
1962. The Structure of Scientific Revolutions. Chicago: Univ. of Chicago Press

Larsen, Stephen

Levi-Strauss, Claude
Levi-Strauss, Claude

Levi-Strauss, Claude

Malville, Kim

McCauly, Robert

Naranjo, Claudio and Robert E. Ornstein

Ornstein, Robert E.

Pelletier, Kenneth P. and Charles Garfield

Ram Dass

Smith, Adam

Taylor, Sherwood F.

Tart, Charles T. ed.

Weil, Andrew
CHAPTER 5

CONCLUSIONS FOR THE
SOCIAL SCIENCES

When considered as a whole, the evidence and arguments presented in the preceding chapters hold profound implications for the social sciences. This is true in terms of our general views of and approaches to human history and social evolution, our conceptions of our own role as social scientists, as well as our methodological approaches to the human realm of natural phenomena.

If we take into account the dynamic nature of individual and collective consciousness, within narrow or broad historical contexts, we are led to the conclusions that simple mechanistic explanations of cultural and material determinism are in themselves inadequate. Such theories help to identify cultural and material variables involved in historical processes, but they fall short of producing a full explanation of those processes. Ultimately, the emergentist view of human social evolution which takes into account the dynamics of human consciousness, of cultural and experiential limitations of individuals, groups and societies, is the most defensible general framework.

Further, the evidence presented appears to
indicate that in the realm of social dynamics, the dynamics of human consciousness, "causal primacy" is relative. The relative influence of cultural forms and beliefs as well as immediate material circumstances on human consciousness is a variable thing. Undeniably very nearly all human behavior is very much determined by cultural symbolic structures (myth) and material economic circumstances (immediate experience in the material world). Yet, this determinacy is not absolute and the exceptions to it, though rare, are crucial in understanding the dynamics of social and cultural evolution. The tremendous impact of the relatively small groups within a society, the scientific community in the West, Taoist science in the East, which have achieved a degree of transcendence or separation from immediate material/economic and cultural/ideological determinism is virtually undeniable.

The concept of "levels of consciousness" recognized both in the Emergentist tradition and virtually all mystical systems reflects this variability of the determinacy of consciousness, that consciousness can be more or less constrained by cultural and material influence, that limitations can be transcended. Consciousness is relative to a historical, cultural, and material context, but the dimensions, the limitations of that context are relative. These concerns are
particularly apparent in the work of Claude Levi-Strauss.

Though Levi-Strauss was educated in the philosophical tradition of Cartesian rationalism, his works are characterized by a distinctly integrative, intuitive, even mystical orientation. This orientation can be seen in his comparison of Marxism and Buddhism as "liberating critiques" of normal consciousness operating at different levels, Marxism attacking material or economic bondage and Buddhism attacking psychological or spiritual bondage at the broadest possible level of consciousness. He further asserts the Emergentist conception of the "truth as the whole," that the validity of knowledge is relative to the context in time and space from which it has been derived. Such a conception is central to virtually all mystical systems.

Levi-Strauss states:

For we live in several worlds, each truer than the one it encloses, and itself false in relation to the one which encompasses it. Some are known to us through action; some are lived through in thought; but the seeming contradiction resulting from their coexistence is solved in the obligation we feel to grant a meaning to the nearest and to deny any to those furthest away; whereas the truth lies in a progressive dialating of the meaning but in reverse order, up to the point at which it explodes. (Levi-Strauss, 1975: 412).

In other words, the normal human tendency is to focus on, examine, and derive meaning from relatively
narrow contexts in time and space, whereas, the most valid knowledge is derived from the broadest possible context, the totality. Levi-Strauss' orientations are further demonstrated in his discussion of "the particular task of anthropology."

In this discussion he defines the three primary goals of anthropology, "objectivity," "totality," and "meaningfulness." By "objectivity" he means more than the simple suspension of personal or cultural values but rather the cultivation of "methods of thought" aimed at achieving a "higher level" of consciousness, of objectivity within the broadest possible context. By "totality" Levi-Strauss means that the social scientist must recognize the connectedness of social phenomena within a cultural and material context, that particular patterns are repeated at various levels of culture, that social phenomena do not occur in isolation but are highly dependent upon and relative to a very broad cultural and material context in time and space as well as to the timeless realm of myth and the unconscious. Though he does not fully define the goal of "meaningfulness," it appears that Levi-Strauss is, at least by implication, recognizing a fundamental dimension of the shamanistic role and its institutional descendant, the role of the social scientist, this dimension being the provision of a genuinely meaningful explanation of phenomena for his own culture,
(Levi-Strauss, 1963: 363-5). These requirements are direct parallels of the conceptual elements of Eastern mystical systems as well as the mystically oriented phenomenology of Martin Heidegger.

Further parallels have been drawn between Levi-Strauss' preoccupation with patterns or integrating structures and the Chinese cognitive system (Shin Pyo Kang, 1974: 204). Thus, in a most fundamental manner, Levi-Strauss' approach to the analysis of kinship systems, cultural patterns and myth is more "Eastern" than "Western" in emphasizing the examination of relations of elements within a field rather than elements in themselves. Indeed, the majority of his critics, such as Edmund Leach, attack him for his integrative, holistic, and intuitive approach asserting in characteristic Western fashion that "thinking is a purely intellectual-symbolic operation" (Leach, 1976: 127).

Despite his own intuitive capacities, Levi-Strauss has made no connection between his own ideas and approaches and the methodologies of Eastern mystical systems. Though he views himself within a broad historical context, he is unable to define his role as a social scientist except in essentially negative terms of existential alienation, a condition not uncommon among Western intellectuals. As was noted in Chapter 2, however, this is the most crucial dimension of the problem of ideology,
the role, the activity, and the consciousness of the researcher himself.

If we refer back to the shamanistic role, the prototype of the physical or social scientist in the most general sense, it becomes apparent that he is, at least potentially, if not actually, the "vanguard of humanity," the explorer of unknown realms. Obviously, in the case of the social scientist in the modern era, this potential has not been realized, for reasons discussed in Chapter 2. Yet, if we re-examine the "attempts" at transcendence or "objectivity" (in Levi-Strauss' sense of the term) it can be seen that the Emergentist social theorists have been at least moving in the right direction.

In Marx's concept of the "vanguard of the proletariat," Mannheim's "free-floating intelligensia," and Veblen's concept of the "marginal man" we can find a common theme, a recognition of an essential feature of the true social scientist, a profound detachment or alienation from his own social and cultural order. In these conceptual schemes, however, this detachment was a product of circumstance, of membership in a particular social class, cultural group or profession which found itself in an alienated or detached position. The problem of ideology and the need for its transcendence was recognized, at least in part, though no real solution
to the problem was found, no methodology proposed. Caught by their own rationalist cultural bias, these theorists were unable to see Eastern systems and their methodologies as anything but religious mythology. We are now in a position to correct this error.

It is no coincidence that both the rationalist scientism of the West and the intuitive empirical systems of the East were referred to by their adherents as paths of "Enlightenment," ways of achieving a valid understanding and knowledge of nature, living existence and the universe. Though by different methods, both cultivated the dynamism of human consciousness. Though they have not recognized Eastern systems and the value of their methodologies, many theorists have recognized the crucial role of intuition in the formulation of social theory.

Robert Nisbet has stated:

It is important to keep in mind, if only as a prophylaxis against vulgar scientism, that not one of the ideas we are concerned with - ideas that remain, let it be emphasized, central in contemporary sociological thought - came into being as a consequence of what we are today pleased to call 'problem solving' thought. Without exception, each of these ideas is a result of thought processes - imagination, vision, intuition - that bear as much relation to the artist as to the scientist. If I seem to stress this point, it is only because we are living in an age when well meaning and eloquent teachers of sociology, and of other social sciences as well, all too often insist that what
is scientific (and therefore important!) in their discipline is the consequence solely of problem-defining and problem solving thought. (Nisbet, 1956: 18-19).

Max Weber arrived at a similar conclusion in his classic essay on "Science as a Vocation." In this essay he attacks the simplistic assumptions of vulgar scientism:

Nowadays in circles of youth there is a widespread notion that science has become a problem in calculation, fabricated in laboratories or statistical filing systems just as 'in a factory,' a calculation only involving the cool intellect and not one's 'heart and soul.' First of all, one must say that such comments lack all clarity about what goes on in a factory or a laboratory. In both some idea has to occur to someone's mind, and it has to be a correct idea, if one is to accomplish anything worthwhile. And such intuition cannot be forced. It has nothing to do with any cold calculation. (Weber, 1975: 135).

These words are as applicable now as when they were written over a half century ago. Despite the recognition of the importance of intuitive capacities in true scientific investigation and discovery, little has been done to discover how it could be cultivated as distinct from the cultivation of the intellect. In our emphasis on the accumulation of data and interpretive concepts in developing the intellect, we often fail to spark any creative dynamism. Rather than setting the stage for an "illumination" which "appears in a non-verbal
form and develops in the mind like a seed crystal dropped into a super-saturated solution" (as the creative vision was described by Albert Einstein) (Malville, 1975: 79-81), we construct an intellectual edifice of solid rock, of existing belief, ideologies, myths; we cultivate the assertion of static structure rather than open, conscious dynamism. When true creativity does occur, as with the case of the great classical social theorists or physical scientists such as Einstein, it is usually more a product of fortunate circumstances than of any deliberate design.

Yet, the means for overcoming these limitations, for deliberately cultivating a genuine dynamism of consciousness between the intellect and intuition, abstractions and experience, and the conscious and unconscious minds are available to us. Through the transcendental methodologies which we have discussed, the structuring of perception and cognition by the intellect can be suspended, the mind opened, the stone edifice of myth dissolved into a clear pool allowing at least the possibility of new perception and cognition, the formation of new crystalline structures within the solution of consciousness. The means available for cultivating detachment or "positive alienation" from the restrictive structures of culture, ideology, and individual personality. The transcendence of culture
no longer need be a circumstantial historical product
but can be cultivated through deliberate methodologies;
the problems of ideology can be overcome directly.

As simple and direct as this solution may seem,
in fact it is quite difficult when viewed in practical
terms. Cultural, ideological, and institutional inertia
weigh heavily against the changes in conceptual
orientations and behaviors that the adoption of these
methodologies would necessarily ultimately involve.
Ironically, this cultural inertia, this rigidity of abstract
belief and contained behaviors, is precisely what
transcendental methodologies are intended to overcome.

This general problem has been recognized by a
number of critical theorists. In his book, Against
Method, Paul Feyerabend has concluded that true scientific
inquiry is an "anarchistic" enterprise which must
necessarily be separated from restrictive dogma of
whatever sort, be open to a variety of methodologies
and perspectives, and must be unrestricted in identifying
its own goals. Feyerabend further states:

Thus, science is much closer to myth than
a scientific philosophy is willing to
admit. It is one of the many forms of
thought that have been developed by man,
and not necessarily the best. It is
conspicuous, noisy, and impudent, but
it is inherently superior only for those
who have already decided in favor of a
certain ideology, or who have accepted
it without ever having examined its
advantages and its limits. And, as the accepting and rejecting of ideology should be left to the individual it follows that the separation of state and church must be complemented by the separation of state and science, that most recent, most aggressive, and most dogmatic religious institution. Such a separation may be our only chance to achieve a humanity we are capable of, but have never fully realized. (Feyerabend, 1975: 295).

This dogmatic and restrictive side of the scientific ideology and its "unholy alliance" with state power and ideologies has been further recognized by Joseph Needham who in his essay, "Science and Religion in the Light of Asia," declared:

Thirty years ago, I wrote: 'Not to be awake to the iniquity of class oppression, that is religious "opium."' But, I added that there was something we might call 'scientific hashish' as well. Not to be awake to the tragic side of life, and to the numinous elements of the world, was how I thought of it, but today it seems to me far more dangerous than in the pre-atomic age. Scientists who, dismissing religion and even philosophical experience as nonsense, think only of cultivating their talents as mathematical physicists or experimental biologists to the utmost, and training others to follow them in this, while refusing to make any judgements within the political field, and ignoring the society in which they live does with their discoveries, are truly in danger of becoming 'hashish,' assassins, (for this is the derivation of the word), the destroyers of the innocent on a scale infinitely exceeding Herod. (Needham, 1969: 196).

In these attacks on the scientific ideology and
its separation of the concerns of science and religion these individuals and others have challenged the traditional distinction of the material and spiritual or physical and moral realms of knowledge and inquiry. When non-Western traditions are taken into account it becomes apparent that science and religion are not essentially antagonistic; they have become antagonistic in the West as a consequence of historical circumstance and dogmatic ideologies (Needham, 1969: 198-9). Despite these criticism, the social sciences in the West remain very much within this ideological dichotomization of religion and science.

This perspective is clearly expressed in Weber's classic essay on "Science as a Vocation" in which he denies that science can or should provide "meaning" for humanity. He even quotes the great mystic Tolstoi, who declared that, "Science is meaningless because it gives no answer to our question, the only question important for us: 'What shall we do and how shall we live?' " (Weber, 1975: 143). Science, as these men understood it, was the rationalized, mechanical, factually oriented science of the West in which objectivity was equated with a "non-value-laden" orientation which was meaningless except in direct factual terms. Yet, this traditional position has been increasingly criticized from political and moral philosophical positions.
as we have seen.

Viewing this controversy in terms of the evidence discussed in this thesis, a possible solution or resolution becomes apparent. This solution is implicit in Levi-Strauss' definition of the three primary goals of anthropology. For Weber and the traditional scientific community, objectivity required a "value-free" orientation; for the Emergentist tradition, objectivity involved a necessary position of social or cultural marginality; in the mystical traditions, objectivity is a product of psychic transcendence based on proven methodologies. It is now widely recognized that a value-free orientation is impossible; all goal directed activity involves values. Further, social and cultural marginality can produce a degree of objectivity but it is still somewhat limited, as we have seen in the case of many radical ideologies. Genuine transcendence, however, as implied by Levi-Strauss' conceptual orientation and expressed in mystical systems, achieves true objectivity, undistorted perception and cognition, without a loss of fundamental human, moral, or religious values, mercy, compassion, love. That this is true, can be seen in accounts of those such as John Blofeld, who have actually met mystical adepts. The true detachment of the sage or mystic requires no rejection of emotion or fundamental human concerns.
Indeed, Levi-Strauss' third goal of "meaningfulness" contradicts the traditional view expressed by Weber. This third goal requires the re-introduction of that element of the shamanistic role, the prototypical scientist, which has been all but lost in the Western tradition but developed in the East.

For, if the scientist, particularly the social scientist, the modern shaman, cannot "pass through the veil," cannot see readily beyond existing categories and beliefs, cannot provide new meaning for humanity in dealing with the exigencies of physical, social, and spiritual existence, who can? When Max Weber and his generation of social theorists in Germany found themselves unwilling or unable to do so, the need was filled by others, Adolf Hitler and the Nazis. The demand and challenge as well as the promise of higher consciousness, of science or mysticism, to the social scientist, the would-be modern shaman, is great. It demands more than intellectual and technical expertise.

As Joseph Ben-David has observed, the relationship between science and society is fundamentally unstable; its pursuits are marginal or "anarchistic" in nature (in Feyerabend's terms) being at least partially outside of normative constraints. Yet, in all but the most restrictive societies, allowances are made for such activity, from the suspension of normative expectations.
for the primitive shaman to the degree of freedom allowed the modern scientist. As we saw in Chapter 1, before the modern era, Western societies have been particularly restrictive in this respect. Where these allowances are made, however, they are based on a recognition of the value of these individuals in helping the society as a whole to deal with existence in general, mediating between society and realities apparently beyond mundane comprehension (Ben-David, 1971: 182). In the West, this has been far more the case with physical than social scientists, as we have seen.

The relative lack of support for the social sciences is, however, quite understandable. Though valid theory and explanations of factual historical data have been produced, social theorists as a whole have not been too impressive in dealing with essential human dilemmas, social, psychological, etc. This lack of performance is largely a result of the adherence of social scientists to the ideology and methodological epistemology of the physical sciences, as we saw in Chapter 2. It could be said that in their adherence to the ideology and epistemology of the scientific philosophy, the social sciences have fallen prey to a very real danger in either religion or science, that danger being the use or performance of methodologies or techniques in a ritualistic manner along lines prescribed
by dogma (religious or scientific) without a real understanding or justification for their use in terms of real dynamics or consequences (Naranjo & Ornstein, 1971: 159).

It has been observed that much of the activity now found in the social sciences is little more than "empty ritual," a "going through the motions" of data gathering and analysis. The use of sophisticated statistical analysis, whether applicable or not, and the investigation and categorization of social trivia are all too evident in contemporary research. Such activity provides no new understanding of social phenomena, no real meaning, only more bulk. If current trends toward the ritualization and trivialization of the social sciences are to be overcome, a new dynamism must enter into social investigation based on the fundamental ideal of science, East and West, and a recognition of the dynamism of consciousness and the need for a methodological synthesis of Eastern and Western science. The need for such a re-introduction of creative dynamism and a rejection of relatively sterile methodological approaches has been recognized by Robert Nisbet:

If such a new idea system does appear to give new life and impetus to the realities of contemporary Western society, it will not be the consequence of methodology, (in the narrow Western sense) much less of computers, of mass
data gathering and retrieval, or of problems definitions however ingenious, or research design, however sceptic. It will be the consequence, rather, of intellectual processes which the scientist shares with the artist: iconic imagination, aggressive intuition, each given discipline by reason and root by reality. So it has always been and so it is now in the contemporary intellectual areas of most intense creativity. Foremost is the passion for reality - reality not obstructed by layers of conventionalization, but reality that is direct and unmediated. (Visbet, 1966: 318-19).

Though Visbet does not argue for the application of transcendental methodologies, his expression in this passage elevates those qualities of mind which, aside from accidents of personal circumstance, are rarely developed in any other way. The "direct and unmediated" perception of reality is no simple task.

Beyond advocating the cultivation of these methodologies, it would be a mistake, at this point, to attempt to elaborate any new and detailed theoretical scheme. In general, however, we can identify those conceptual theoretical approaches which appear to be based on an appreciation of the dynamics of human consciousness recognized in mystical systems. Such an appreciation can be found in the Emergentist tradition in general, as was noted earlier, as well as in the structural theories of Claude Levi-Strauss and the hermeneutic phenomenology of Martin Heidegger. All of
these theoretical schemes involve a recognition of levels of material and cultural dynamism within a historical context as well as levels of individual and group consciousness, levels of limitation or transcendence within a potentially infinite or unbounded context to which individual consciousness may be relative. Further development of these theoretical approaches could be accomplished through the application of the transcendental methodologies which we have discussed. That this conceptual approach is central to the Eastern traditions, particularly Taoism, can be seen in chapter 54 of the Tao Te Ching. In this passage, the term "Virtue" may be interpreted as harmony with the Tao or natural law rather than as conformity to norms.

What is firmly established cannot be uprooted. What is firmly grasped cannot slip away. It will be honored from generation to generation.

Cultivate Virtue in yourself, And Virtue will be real. Cultivate it in the family, And Virtue will abound. Cultivate it in the village, And Virtue will grow. Cultivate it in the nation, And Virtue will be abundant. Cultivate it in the universe, And Virtue will be everywhere.

Therefore, look at the body as body; Look at the family as family; Look at the village as village; Look at the nation as nation; Look at the universe as universe.

How do I know that the universe is like this?
By looking!
(Lao Tzu, trans. Gia-Fu Feng, 1972)

In other words, each level of social dynamism has its own unique properties, its own unique character which must be perceived directly in order to be understood. Thus, the Taoists were aware of a major problem in perceiving social reality, the tendency to explain more "distant" or macro phenomena in terms of metaphors based on more immediate or micro phenomena. This problem has been a major one for theorists dealing with macro or historical social processes (Nisbet, 1969: 240). For the Taoists, the radical empiricism of meditational or transcendental methodologies was the answer to the problem. It could be an answer to other problems as well.

If Michele Foucault is correct in his conclusion that the outer limits of the human sciences of the modern episteme are "historicity" and the "unconscious" (1970: 373-86), then those who would seek to understand society and man, beyond these barriers, must move beyond the limitations of the rational, conscious mind into the realm of mysticism and integrated consciousness. For the rationally oriented scientist, psychologist, sociologist, anthropologist, man's historical and unconscious roots are only dimly perceived at a great
distance; for the mystic they are everpresent, immediate realities, not barriers or distant realms. The highly developed methodologies of Eastern mysticism may well be the means by which this transition is made, beyond the limitations of normal rational consciousness, the modern episteme, and the problem of ideology.
REFERENCES

Ben-David, Joseph

Feyerabend, Paul

Foucault, Michele

Kang, Shin-Pyo

Lao Tzu, trans. Gia-Fu Feng and Jane English

Leach, Edmund

Levi-Strauss, Claude

Levi-Strauss, Claude

Malville, Kim

Naranjo, Claudio, and Robert E. Ornstein

Needham, Joseph
Nisbet, Robert  

Nisbet, Robert  

Weber, Max, trans. H. H. Gerth and C. Wright Mills  