The Consciousness Disciplines and the Behavioral Sciences: Questions of Comparison and Assessment

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In recent years a number of assessments of the non-Western consciousness disciplines have been undertaken by Western behavioral scientists. The author suggests that a variety of conceptual, methodological, experiential, and content inadequacies render the conclusions of these investigations of doubtful validity. He then describes the models of human nature postulated by these disciplines and the Western behavioral sciences, suggesting that comparing them results in a paradigm clash. The failure to recognize this clash seems to have resulted in inappropriate pathologizing interpretations. Attention is drawn to the relevance of recent findings in state-dependent learning, meditation studies, peak and transcendental experiences, transpersonal psychology, and quantum physics to an assessment of the consciousness disciplines, and suggestions for more adequate investigation are provided.

> The history of science is rich in the example of the fruitfulness of bringing two sets of techniques, two sets of ideas, developed in separate contexts for the pursuit of truth, into touch with each other.
>
> —Oppenheimer (1)

The term "consciousness disciplines" refers to a family of practices and philosophies of primarily Asian orgin. Their central claim is that through intensive mental training it is possible to obtain states of consciousness and psychological well-being beyond those currently described by traditional Western psychologies as well as profound insight into the nature of mental processes, consciousness, and reality. Some of these disciplines have been associated with the esoteric core of certain non-Western philosophies, psychologies, and religions, e.g., Buddhism and Hinduism. The term "consciousness disciplines" has thus sometimes been used more or less interchangeably with terms such as "Eastern traditions," "mysticism," and "spiritual disciplines." However, these terms have been so loosely used and misused that it is important to distinguish the consciousness disciplines from the religious dogma, beliefs, and cosmologies to which most religious devotees adhere, and from the occult popularisms of both East and West. The consciousness disciplines represent specific mental trainings designed to enhance perception and consciousness. If the individual desires, this enhancement may be used to deepen religious understanding, but it may also be employed and interpreted within a psychological framework.

Within the last decade consciousness disciplines have become the subject of both popular and research interest in the West, and a number of attempts have been made to evaluate them from the perspective of the behavioral sciences. However, these attempts have been marred by a number of conceptual, paradigmatic, methodological, and experiential deficiencies.

In this paper I intend to outline the criteria for adequate assessment of these disciplines. To do this I will discuss the nature of paradigms and then outline and compare the models of human psychology proposed by the consciousness disciplines and the behavioral sciences, which are both paradigms. It will be seen that this comparison results in what Thomas Kuhn (2) called a "paradigm clash" and that unrecognized paradigmatic assumptions necessarily lead to erroneous conclusions. I will then discuss the methodological errors that most investigators have fallen into and, finally, describe recent advances in areas of Western science that are relevant to an adequate investigation.

Since the aim of this paper is primarily one of defining the criteria for adequate assessment, a full assessment and critique will not be presented here. This should not be seen as advocating a blanket acceptance of the consciousness disciplines because, like all psy-

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chologies, they have their quota of inconsistencies. The first step must be to determine the criteria and processes by which we are to assess them.

PARADIGMS AND PARADIGM CLASH

A paradigm is a kind of "super theory," a theory or formulation about the nature of reality of such scope that it is capable of accounting for most of the known phenomena in its field (2). Because of their success, paradigms tend eventually to be taken for granted and insinuate themselves into the researcher's psyche in such a way that they become implicit, unquestioned conceptual frameworks and filters that supply the "only natural and sensible" way of looking at things (2, 3). Once a paradigm becomes implicit, it acquires tremendous unrecognized controlling power over its adherents (4), determining the investigation, perception, and interpretation of data in a self-fulfilling manner (4–6). The introduction of a new paradigm at this stage becomes extraordinarily difficult and results in a paradigm clash (2). In paradigm clashes, antagonism and poor communication between factions are common (2, 4, 7), and even the greatest scientific innovations have frequently been discounted initially. Maruyana (7) described the communication problems as follows:

> If the communicating parties remain unaware that they are using different structures of reasoning, but are aware of their communication difficulties only, each party tends to perceive the communication difficulties as resulting from the other parties' illogicality, lack of intelligence, or even deceptiveness and insincerity. He may also fall into an illusion of understanding while being unaware of his misunderstandings.

We may now be confronting a paradigm clash between traditional Western psychological models and the models of the consciousness disciplines. If this is so, to judge the validity of the consciousness disciplines' paradigm we must also examine the presuppositions and logic of our own paradigm. Let us therefore begin by examining the assumptions and logic of each.

THE CONSCIOUSNESS DISCIPLINES PARADIGM

Most of the consciousness disciplines describe models of human nature that show a degree of consistency across cultures and ages. These have been variously named "the perennial philosophy" (8), "the perennial religion" (9), and the "perennial psychology" (10). Obviously I cannot hope to do full justice to them here but will attempt to delineate some of the dimensions that underlie such models and refer the interested reader elsewhere for more complete descriptions (5, 10–12).

Many traditions view consciousness as their central concern and make several claims that run counter to Western assumptions. These include statements that 1) our usual state of consciousness is severely suboptimal, 2) multiple states, including true "higher" states, exist, and 3) these states are attainable through training, but 4) verbal communication about them is necessarily limited. These tenets will now be examined in more detail.

Fully developed mystics state unequivocally that our usual state of consciousness is not only suboptimal, it is dreamlike and illusory. They assert that whether we know it or not, without mental training we are prisoners of our own minds, totally and unwittingly trapped by a continuous inner fantasy-dialogue that creates an all-consuming illusory distortion of perception and reality ("maya" or "samsara"): "We are all prisoners of our minds. This realization is the first step on the journey to freedom" (13). However, this condition is said to go unrecognized until we begin to subject our perceptual-cognitive processes to rigorous scrutiny, as happens, for example, in meditation.

Thus the "normal" person is seen as "asleep" or "dreaming." When the "dream" is especially painful or disruptive it becomes a nightmare and is recognized as psychopathology, but since the vast majority of the population "dreams," the true state of affairs goes unrecognized. When the individual permanently disidentifies from or eradicates this dream he or she is said to have awakened and can then recognize the true nature of both the former state and that of the rest of the population. This awakening or enlightenment is the aim of the consciousness disciplines (10, 14–17).

To some extent this is an extension rather than a denial of the perspective of Western psychology and psychiatry, which have long recognized that careful experimental observation reveals a broad range of perceptual distortions unrecognized by naïve subjects. The consciousness disciplines merely go farther in asserting that we are all subject to distortions, that they affect all aspects of our perception, that without specific remedial mental training we remain unaware of them, and that the consensual reality we share is thus illusory. This has also been suggested by a number of Western investigators, such as Erich Fromm (18), who suggested,

> The effect of society is not only to funnel fictions into our consciousness, but also to prevent awareness of reality. . . . Every society . . . determines the forms of awareness. This system works, as it were, like a *socially conditioned filter;* experience cannot enter awareness unless it can penetrate the filter. . . . What is unconscious and what is conscious depends . . . on the structure of society and on the patterns of feelings and thoughts it produces. (18, pp. 98, 99, 106)

The implications of this are awesome. Within the

Western model we recognize and define psychosis as a suboptimal state of consciousness that views reality in a distorted way and does not recognize that distortion. It is therefore important to note that from the mystical perspective our usual state fits all the criteria of psychosis, being suboptimal, having a distorted view of reality, yet not recognizing that distortion. Indeed, from the ultimate mystical perspective, psychosis can be defined as being trapped in, or attached to, any one state of consciousness, each of which by itself is necessarily limited and only relatively real (19, 20).

To hold this as an interesting objective concept is one thing. To consider it as something directly applicable to our own experience is of course considerably more difficult. Tart (21) noted,

> We have studied some aspects of samsara (illusion, maya) in far more detail than the Eastern traditions that originated the concept of samsara. Yet almost no psychologists apply this idea to themselves. They assume . . . that their own states of consciousness are basically logical and clear. Western psychology now has a challenge to recognize this detailed evidence that our "normal state" is a state of samsara. (21, p. 286)

Of course it is very difficult, if not impossible, to recognize the limitations of the usual state of consciousness if that is all one has ever known. However, mystics repeatedly claim that those who are willing to undertake the strenuous but necessary training to extract awareness from the conditioned tyranny of the mind will be able to look back and see the formerly unrecognized limitations within which they lived. This process of reevaluating one state of consciousness from the perspective of another is called subrationing (22). A common present-day analogy is that of people who live in a chronically smog-ridden urban environment but recognize the full extent of the pollution only after they get out of it.

Most traditions acknowledge a wide spectrum of states of consciousness. In some disciplines, especially those emphasizing the importance of meditation (e.g., Buddhist psychology), this spectrum is described in considerable detail. Descriptions of the phenomenology of individual component states, and the techniques for attaining them, provide an articulate cartography of altered states (10, 16, 17, 23-25).

Although knowledge of this multiplicity of states is best obtained by direct experience, their existence has been recognized and acknowledged by some nonpractitioners. Perhaps the earliest and most eminent among these in psychology was William James (26), who around the turn of the century remarked,

> Our normal waking consciousness is but one special type of consciousness, whilst all about it, parted from it by the filmiest 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 probably somewhere have their field of application and adoption.
>
> No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded. How to regard them is the question. . . . At any rate, they forbid our premature closing of accounts with reality. (26, p. 298)

It is not just the existence of multiple states that is held to be important, but the fact that they may be associated with state-specific properties, functions, and abilities. Perceptual sensitivity and clarity, attention, responsivity, sense of identity, and affective, cognitive, and perceptual processes may all vary with the state of consciousness in apparently precise and predictable ways (17, 24, 27).

Some of these states are held to be functionally specific, and a few are held to be true higher states. Functionally specific states are those in which specific functions can be performed better than in the usual state, although other functions may be less effective. True higher states are those which possess all the effective functions of the usual condition plus additional ones (21, 28). Such states may be accompanied by perceptions, insights, and affects outside the realm of day-to-day untrained experience, some of which are held to be central to the growth of true higher wisdom.

Different traditions emphasize different techniques and combinations of techniques to obtain control over consciousness and perception, and the interested reader is referred elsewhere for a detailed classification of these practices (10, 12, 17). In general it can be said that all involve training in controlling one or more aspects of perceptual sensitivity, concentration, affect, or cognition. The intensity and duration of training usually needed to attain mastery in these disciplines may be quite extraordinary by Western standards and is usually reckoned in decades. In the words of Ramana Maharishi, perhaps the most respected Hindu teacher of the last few centuries, "No one succeeds without effort. Mind control is not your birthright. Those who succeed owe their liberation to perseverance" (25).

The Swiss existential psychiatrist Medard Boss (29), one of the first Westerners to examine Eastern and Western literature *and practice* noted that, compared with the extent of yogic self-exploration, "even the best Western training analysis is not much more than an introductory course" (29).

It may be therefore that we have underestimated the degree of dysfunction of our usual state as well as the potential and the work required for observing and removing that dysfunction. Jacob Needleman (30) observed,

> In our modern world it has always been assumed . . . that in order to observe oneself all that is required is for a person to "look within." No one ever imagines that self

> observation may be a highly disciplined skill which requires longer training than any other skill we know of. . . . In contrast to this one could very well say that the heart of the psychological disciplines in the east and the ancient western world consists of training at self study. (30, p. 98)

The different levels and aims of psychotherapeutic intervention may be broadly categorized as traditionally therapeutic (reducing pathology and enhancing adjustment), existential (confronting the questions and problems of existence and one's response to them), and soteriological (enlightenment, liberation, and transcendence of the problems first confronted at the existential level). Western psychologies and therapies focus on the first two levels (31) but have, as Gordon Allport noted, "on the psychology of liberation—nothing" (6).

Yet the human condition appears to include further possibilities: what has been called "salvation" by the Christians, "liberation" and "enlightenment" by the Buddhists, and love and union by the nontheistic humanist (32). It is this last level which is the primary goal of the consciousness disciplines (24).

Interestingly enough, although these disciplines may start from different places and employ different approaches they all aim for a final common soteriological state of consciousness, known by a variety of names, such as "enlightenment," "samhadi," "nirvana," and "liberation" (9, 13, 15, 17, 19, 33, 34). This might be seen in such general systems terms as "equifinality," in which a common end stage is attained independent of the pathway by which it is reached (35).

Although the instructions for attaining them may be quite explicit, the verbal descriptions of the states themselves are often considerably less so. This brings us to the last tenet of the consciousness disciplines in this section, namely, the claim that language and even thought are inappropriate and inadequate modes with which to fully comprehend some of these phenomena. For example, the Buddha, although clearly capable of the most sophisticated logical analysis (36) and "a thinker of unexcelled philosophic power" (37), repeatedly stated that "the deepest secrets of the world and of man are inaccessible to abstract philosophical thinking" (38). Rather, students are told that they must experience these things directly for themselves if they are to have any true understanding.

THE BEHAVIORAL SCIENCES PARADIGM

> There is nothing more difficult than to become critically aware of the presuppositions of one's own thought. . . . Every thought can be scrutinized directly except the thought by which we scrutinize. (39, p. 44)

Perhaps the hardest part of assessing any paradigm or model is to examine the paradigm or model with which we are doing the assessing. The latter paradigm is hard to look at because it is this with which we are doing the looking. Thus, we need to first become aware of our own (usually unrecognized) assumptions and beliefs in order to begin to recognize their possibly distorting and biasing effects. The failure to take this difficult but essential step seems to have marred most assessments of the consciousness disciplines. Often what has not fitted within our own a priori system has automatically been assumed to be either false or pathological (40).

What, then, are some of these relevant implicit assumptions of Western science? Concerning consciousness, the behavioral sciences recognize only a limited number of normal states, such as being awake, dreaming, and sleeping without dreaming. Very few others are recognized and are inevitably held to be pathological, e.g., delirium and psychosis. In addition, the usual awake state is held to be optimal, predominantly rational, and under good intellectual control (4, 41). Thus, no serious consideration is given to the possibility of the existence of either functionally specific or true higher states.

A similar situation exists for perception because it is commonly assumed that ordinary perception is as close to optimum as is humanly possible. For example, concentration, the ability to consciously focus and fix perception, has been tacitly assumed to be only slightly trainable ever since William James at the turn of the century suggested an upper limit of three seconds for concentration on any one object (26). This is very different from the statements of advanced yogis from a variety of cultures and disciplines, who have frequently been observed to remain motionless for hours or days and who claim that during that time they remained unshakably concentrated on their object of meditation (17, 24, 42).

In the Western sciences the intellect and objectivity reign supreme. All phenomena are held to be ultimately capable of examination by intellectual analysis, and such analysis is viewed as the optimal path to knowledge. A corollary of this is that all experiences are usually thought to be essentially verbally encodable and communicable. A final premise, which Western critics of mysticism have accepted, is that an intellectual, nonexperiential, nonpractical examination and appraisal of other traditions and practices represents an adequate approach for determining their worth.

COMPARING PARADIGMS

We can now examine each paradigm from the perspective of the other and observe how the two conceptual frameworks interact to produce a paradigm clash. Let us first view the claims and models of the consciousness disciplines from within the Western framework.

Since the Western model holds the usual state of

consciousness to be optimal, all claims for the existence of true higher states will automatically be dismissed. Not only will they be dismissed, but because these experiences are unknown to the usual state, they are necessarily viewed as pathological. For example, the experience of satori and shorter-lived transcendental experiences include a sense of unity or at-oneness with the universe (10, 26, 43). However, since unity experiences have been recognized by Western psychology and psychiatry only when associated with severe psychopathology, reports of transcendental experiences have frequently been interpreted as evidence of severe regression (e.g., to fetal stages) or union with the primal breast (44). This is a classic example of the problem of confusing pre-egoic and trans-egoic stages of development (12, 45).

On the other hand, the yogi's claim that our usual state of consciousness is limited, fantasy filled, unclear, and illusory necessarily makes little sense to the Western scientist or mental health practitioner who has neither experienced clearer states nor rigorously examined his or her own consciousness. Fortunately, this is one claim in which personal testing is relatively easy by any individual willing to undertake intensive practice of any of those meditative disciplines which aim specifically at examining the workings of the mind. Even within a few days of intensive investigation, the irrational, unclear, and uncontrollable nature of the untrained mind will rapidly become apparent, and the investigators will find themselves amazed that they had previously remained so unaware of these phenomena (16, 25, 46-48).

The claim that the intellect is an inadequate and inappropriate epistemological tool for the comprehension of the reality revealed by the consciousness disciplines will meet with little understanding among traditional behavioral sciences. However, those who have examined the implications of recent advances in physics will be less surprised (49, 50).

Traditionally, three distinct modes of acquiring knowledge have been recognized in Western philosophy: perception, cognition, and contemplation/meditation (51). Each of these modes has its own unique properties and areas that are not fully overlapping and that cannot be fully reduced one to another without producing what is called category error. Thus, in Western epistemological language the consciousness disciplines' claim for the inappropriateness of the intellect as the sole judge of yogic insights may be seen as a plea against category error.

When the yogi claims that physical empirical approaches are never appropriate or the scientist denies the validity of contemplation, both are guilty of category error, meditation becomes pseudophilosophy, and science becomes scientism. It may be that these modes and types of knowledge are complementary, just as the wave and particle descriptions of subatomic particles are complementary. Thus, neither mode of knowing may encompass the totality but, rather, may see only that portion for which it is adequate, so that what is required for a fuller picture is a "dynamic epistemology" (52, 53).

The claim that mystical experiences cannot be verbally communicated has traditionally met with little sympathy. However, this statement may be reasonable if we remember that language is conceptual and hence may result in category error when applied to nonconceptual material. Also, language may be excellent for communicating about experiences people have in common but otherwise surprisingly inefficient (54). No overlapping experiences means very little or no communication, e.g., the description of the color green for a blind person. This limitation is particularly evident in communication about altered states of consciousness and will be discussed in more detail below.

Mystics are not the only ones who claim that it is impossible to fully conceptualize and communicate symbolically the fundamental nature of reality. A number of scientists working at the farther edges of their field have reached the same conclusion, and nowhere is this clearer than in the realms of quantum physics. For example, the renowned physicist Walter Heisenberg has stated,

> In quantum theory . . . we have at first no simple guide for correlating the mathematical symbols with concepts of ordinary language; and the only thing we know from the start is the fact that our common concepts cannot be applied to the structure of atoms. (55, p. 177)

It seems that English is poorly equipped to deal with precise descriptions and analysis of consciousness, having a very limited descriptive vocabulary in this area compared with some others, e.g., Pali (21). Since "we dissect nature along lines laid down by our native languages" (56), which form the basis for our social construction of reality (57), our linguistic limitations may limit our understanding and development in the areas of the consciousness disciplines.

Let us now shift perspectives and examine the Western model from the viewpoint of the consciousness disciplines. Since it involves a significantly wider range of states of consciousness and perceptual modes, the model of consciousness disciplines is seen to be a broader one than that of the Western behavioral sciences. Indeed, the Western model might be seen as a limiting case of the mystical model. The Western model may have a position in relationship to the mystical model comparable to the Newtonian model in relationship to an Einsteinian model in physics. The Newtonian model applies to macroscopic objects moving at relatively low velocities compared with the speed of light. When applied to high velocity objects the Newtonian model no longer fits. The Einsteinian model, on the other hand, encompasses both low and high speeds, and from this broader perspective the Newtonian model and its limitations are all perfectly logical

and understandable (employing Einsteinian and not Newtonian logic, of course). However, the reverse is definitely not true, for the Einsteinian logic is not comprehensible within a Newtonian framework. Furthermore, for a Newtonian physicist reports of such incongruous findings as the constancy of the speed of light and objects increasing in mass at high speed are incomprehensible and suspect.

In terms of abstract set theory the Newtonian model can be seen as a subset nested within the larger Einsteinian set. The properties of the subset are readily comprehensible from the perspective of the set, but the reverse is necessarily untrue. The general principle is that to try to examine the larger model or set from the perspective of the smaller is inappropriate and necessarily produces false conclusions.

The implications of this for the comparison and assessment of the consciousness disciplines and Western behavioral sciences should now be clear. From a multiple-states-of-consciousness model the traditional Western approach is recognized as a relativistically useful model provided that, because of the limitations imposed by state dependency, it is not applied inappropriately to altered states outside its scope. From the Western perspective, however, the consciousness disciplines' model must *necessarily* appear incomprehensible and nonsensical.

Once the possibilities of a multiple-states model and the resultant paradigm clash are recognized, it also becomes possible to obtain a different perspective on the relationships between different psychologies. Proponents of individual psychologies have usually argued for the superiority of their system and the incorrectness of others. However, recently it has been suggested that various Western and non-Western psychologies and consciousness disciplines may, in part, address themselves to different states of consciousness and strata of the unconscious (4, 9, 10, 12, 25, 45, 58). Therefore, different psychologies may not necessarily be oppositional. Rather, they may to some extent be complementary, describing different perspectives, dimensions, states of consciousness, and layers of the unconscious, all of which may be relatively but incompletely correct.

An interesting aside to this discussion concerns the implications of this spectrum-of-consciousness, or multiple-states, model to the great religions. At their most esoteric and practical, certain aspects of the great religions are synonymous with the consciousness disciplines and can be considered as state-specific technologies whose teaching and practices are designed to induce transcendental states. Thus it may be possible to develop a state-dependent psychology of religion and to recognize that the potential for achieving deeply transcendent and noetic states, which may be interpreted either religiously or psychologically as one chooses, may be inherent in all of us (4, 5, 10, 12, 45).

METHODOLOGICAL PROBLEMS IN APPRAISAL

In addition to the paradigmatic clash described above, a substantial number of deficiencies of logic, knowledge, methodology, and experience mar most appraisals of the consciousness disciplines. Western investigators of the mystical literature almost invariably focus on the powerful, dramatic, and unusual experiences that yogis encounter. These span the whole range of human experience from unpatterned sensations to muscular spasms, complex images, and intense affects. Such experiences are quite common for individuals commencing intensive practices and appear to reflect a deepening sensitivity to formerly subliminal mental processes as well as the appearance of formerly repressed material (48, 59). What investigators have not realized is that such experiences are not the goal of mystical traditions. Advanced practitioners view these experiences merely as epiphenomena to be treated with detachment and benign neglect (60).

A well-known Zen story tells of a student being taught to meditate on his breath. One day the student rushed to his master saying that he had seen images of a golden Buddha radiating light. "Ah yes," said the master, "but don't worry, if you keep your mind on the breath it'll go away." As this story suggests, Western investigators have tended to base their assessment of mysticism on the very phenomena that the mystics themselves warn against taking seriously.

This assessment has also been founded on an intellectual analysis of the mystical literature without examination or personal experience of mystical *practice*. However, mystics have explicitly warned against this, stating that deep conceptual understanding is dependent on adequate personal experience.

> Without practice, without contemplation, a merely intellectual, theoretical, and philosophical approach to Buddhism is quite inadequate. . . . Mystical insights . . . cannot be judged by unenlightened people from the worm's eye view of book learning, and a little book knowledge does not really entitle anyone to pass judgement on mystical experiences. (61)

Several lines of evidence lend support to this claim. Several initially skeptical Western behavioral scientists with personal experience of these disciplines have remarked that only after they began to practice did some of the statements and claims which initially made little or no sense gradually become comprehensible (46, 47, 60). The discussion above that noted the different modes and types of knowledge (51, 55) is also supportive because it recognizes that to equate conceptual and contemplative knowledge may result in category error. Similarly, the recent recognition of state-dependent phenomena such as state-dependent learning and communication (to be discussed in more detail below) is consistent with the claim that this "is a

learning in which a basic requirement is: First change your consciousness" (62).

Two philosophical principles are also relevant. The first is "adequatio" (adequateness), which states that the understanding of the knower must be adequate to the thing to be known (39). Closely related is the concept of "grades of significance." The same phenomenon may hold entirely different grades of meaning and significance to different observers with different degrees of "adequatio." Thus for an animal, a particular phenomenon may be merely a colored object (which it is), and to a savage it may represent marked paper (which it is). For the average educated adult it may be a book (which again it is) that makes patently ridiculous claims about the nature of the world, while for the physicist it may be a brilliant treatise on relativity that reveals new insights and depths to reality. In each case the phenomenon remains the same, but its level of meaning and significance is a function of the capacity and training (adequatio) of the observer. The facts themselves do not carry labels indicating the appropriate level at which they ought to be considered, nor does the choice of an inadequate level lead to factual error or logical contradiction. All levels of significance are equally factual, equally logical, equally objective. The observer who is not adequate to the higher levels of significance will not know that they are being missed (39). Robert Laing (63) observed, "If I don't know I don't know, I think I know." This is precisely the claim of the consciousness disciplines: that only through personal mental training does a person become fully adequate to and apprehend all grades of significance of the knowledge that is the concern of these disciplines. This claim, then, is in principle similar to the claim that scientific research is best judged by those with appropriate scientific training; only the type of training is different.

This, of course, does not mean that *only* advanced practitioners can make assessments of the consciousness disciplines, or that Western scientists must all first become yogis. However, it does mean that Western-trained scientists must recognize that without specific preparation there may be epistemological and paradigmatic limits to one's ability to comprehend and assess these disciplines, that scientific objectivity may need to be balanced (in at least some researchers) by personal experience and training, and that cautious openmindedness to yogic claims may be a more skillful stance than automatic rejection of anything not immediately logical and comprehensible.

RELEVANT ADVANCES IN WESTERN SCIENCE

Any examination of the consciousness traditions should take into consideration certain recent advances in Western science. These areas include transpersonal psychology, state-dependent learning, meditation research, clinical and sociological studies of peak and transcendental experiences, advanced psychedelic therapy, and the frontiers of modern physics.

Transpersonal psychology emerged in the 1960s as the so-called fourth force of Western psychology (after behaviorism, psychoanalysis, and humanism) to study areas such as extreme psychological well-being and consciousness and to integrate Western and non-Western perspectives (5, 10, 11, 64). As such it has been especially concerned with such topics as states of consciousness, meditation, models of psychological health, peak experiences, mystical experiences, and implications of modern physics. It has thus already examined many of the issues raised anew by investigators of the consciousness disciplines, who should thus be familiar with this literature.

A second area of recent advances concerns research and theorizing in the field of altered states of consciousness. Both animal and human studies have shown that learning, understanding, and recall may be dependent on and limited by the state of consciousness (65). Thus, information acquired in one state by an individual may be neither recallable nor comprehensible by that same individual in another state. Similarly, another individual may be quite unable to understand the communication from someone else in an altered state (state-dependent communication) but may be able to do so if he or she enters that same state (21, 28). In some cases information initially available in only one state may subsequently be retained or may be more easily learned in others (cross-state retention).

Since the mystical traditions employ a range of altered states, the relevance of these recent findings is readily apparent. Mystics may enter altered states and acquire formerly inaccessible knowledge. However, due to the limits set by cross-state communication this information may make little sense to another individual with no experience of that state. The easiest but also the most superficial judgment would then be that the mystic is speaking incomprehensible nonsense resulting from either psychopathology or an impaired state of consciousness. However, such a conclusion is premature because only by experiencing that same state is the observer able to rule out the possibility that the mystic is expounding valid but state-dependent knowledge.

It has sometimes been suggested that mystical phenomena, even the supposedly highest and most illumined transcendental experiences, are essentially pathological, representing psychotic or near-psychotic ego regressions toward an undifferentiated infantile state of consciousness (66). Thus, for example, Freud (67) interpreted oceanic experiences as indicative of infantile helplessness, and Alexander (68) regarded meditation training as self-induced catatonia and nirvana as regression to intrauterine stages, while the Group for the Advancement of Psychiatry (69) saw "forms of behavior intermediate between normality

and psychosis." Such interpretations do not seem to consider the problem of paradigm clash or the now sizable body of experimental data on the psychology or sociology of transcendental experiences.

For the purposes of this discussion the term "transcendental experience" will be confined to an experience of an altered state of consciousness characterized by 1) ineffability: the experience is of such power and so different from ordinary experience as to give the sense of defying description, 2) noesis: a heightened sense of clarity and understanding, 3) altered perception of space and time, 4) appreciation of the wholistic, unitive, integrated nature of the universe and one's unity with it, and 5) intense positive affect, including a sense of the perfection of the universe.

Such experiences have been called by many names, including cosmic consciousness (70) and peak experiences (71, 72). Several lines of evidence suggest that such experiences tend to occur most often among those who are psychologically most healthy (73). People working at advanced stages of psychotherapy may experience them (5, 11, 74), as may self-actualizers, those individuals identified by Maslow (72) as most healthy. Incipient experiences may occur in most people but may be repressed or misinterpreted due to fear of loss of control and intolerance of ambiguity. Indeed, those who report such experiences tend to score lower on intolerance of ambiguity scales (71). Sociological surveys suggest that transcenders are likely to be better educated, more economically successful, and less racist and score substantially higher on scales of psychological well-being (75–78).

Such experiences may apparently produce long-lasting beneficial changes in the individual; more than 120 positive residual effects have been catalogued (references 71, 72, 79 and footnote 1). Carl Jung was the first Western therapist to affirm the importance of transcendental experience for mental health. He wrote,

> The fact is that the approach to the numinous is the real therapy and inasmuch as you attain to the numinous experiences you are released from the curse of pathology. (80, p. 377)

Maslow (81) stated that the transcendental or, as he called it, "peak" experience is "so profound and shaking . . . that it can change the person's character . . . forever after." On his return to normal experience the person "feels himself more than at other times to be the responsible, active, the creative center of his own activities and of his own perceptions, more self determined, more of a free agent, with more 'free will' than at other times." In his final formulation of the concept of the "hierarchy of needs" Maslow came to see the seeking of transcendence as the highest of all goals, even above self-actualization (82).

It therefore seems inappropriate to equate transcendental experiences with psychopathology and psychosis. This is not to say that similar experiences cannot occur in the mentally ill or even that they might not be disturbing for some individuals. Only further research will tell. What is clear is that it is no longer tenable to view transcendental experiences as necessarily, or even usually, pathological.

Recent empirical research in two other areas also supports the idea of the existence of a spectrum of transcendental states of consciousness. Meditation research is still in an early stage, but most psychological and physiological data appear to be consistent with its claims to be able to induce a range of altered states and greater mental health (42, 48, 83–85).

The second area, recent advanced research with psychedelics, appears to provide an independent line of evidence supporting the existence of multiple layers of the unconscious, states of consciousness similar to those described by the consciousness disciplines, and the phenomenon of state-dependent learning (58).

Another supportive research area is, strangely enough, modern physics. In recent years the physicists' picture of the world has undergone a shift that is so radical and far-reaching in its implications as to shake the very foundations of science. The reality revealed, especially that of the subatomic level, is so discordant with our usual picture of reality, so paradoxical, as to defy description in traditional terms and theories and to call into question some of the most fundamental assumptions of Western science and philosophy. The traditional descriptions of the universe, which were largely based on Greek philosophical concepts, as atomistic, divisible, isolated, static, and nonrelativistic, are being replaced by models that acknowledge a holistic, indivisible, interconnected, dynamic, relativistic reality, which is inseparable from and a function of the consciousness of the observer (10, 49, 50, 86, 87).

These same findings, which do not fit at all with our usual pictures of reality, are strikingly reminiscent of those descriptions given repeatedly across centuries and cultures by advanced practitioners of the consciousness disciplines. Indeed, physicists themselves have suggested that some discoveries can be viewed as a rediscovery of ancient wisdom.

> The general notions about human understanding . . . which are illustrated by discoveries in atomic physics are not in the nature of being wholly unfamiliar, wholly unheard of, or new. Even in our culture they have a history, and in Buddhist and Hindu thought a more considerable and central place. What we shall find is an exemplification and encouragement, and a refinement of old wisdom. (1, pp. 8–9)

[1]D. Livingston: Transcendental states of consciousness and the healthy personality: an overview, University of Arizona, 1975 (Ph.D. thesis).

> For a parallel to the lesson of atomic theory . . . [we must turn] to those kinds of epistemological problems with which already thinkers like the Buddha and Lao Tzu have been confronted, when trying to harmonize our position as spectators and actors in the great drama of existence. (88, p. 20)

Indeed, it is sometimes difficult to decide whether descriptions of this reality are excerpted from a textbook of physics or of the consciousness disciplines (49). Compare, for example, the description of space-time by the Buddhist master Suzuki with that first introduced into physics by Hermann Minkowski in 1908. Suzuki is first:

> We look around and perceive that . . . every object is related to every other object . . . not only spatially but temporally. . . . As a fact of pure experience, there is no space without time, no time without space; they are interpenetrating. (89, p. 33)

> The views of space and time which I wish to lay before you have sprung from the soil of experimental physics, and therein lies their strength. They are radical. Henceforth space by itself, and time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality. (90, p. 75)

At the most fundamental and sensitive levels of modern physics, the emerging picture of reality appears to parallel the most fundamental picture revealed by the consciousness disciplines. Thus it may be that whether perceptual sensitivity is enhanced by instrumentation or by direct perceptual training, the resultant view of the fundamental nature of reality may be similar and may be radically different from our usual assumptions (91, 92).

ADEQUATE ASSESSMENT

What must Western behavioral scientists do if we are to conduct truly adequate investigations of the consciousness disciplines? First and foremost we need to recognize that the task is considerably more demanding than previously thought. With a recognition of the possibility of paradigm clash, the first essential step requires a thorough examination of the beliefs, models, and paradigms that we ourselves bring to the investigation. Along with this goes the need for a willingness to be open to the possibility that these disciplines may represent systems and paradigms that, although different, are as sophisticated as our own. Initially unfamiliar or incomprehensible phenomena should not immediately be assumed to be evidence of either inferior intelligence or psychopathology. Rather, the first response must be to inquire whether the investigation process is adequate to the task.

For example, it is especially important to remember such factors as state-dependent learning, the different modes of acquiring knowledge, and the different types of knowledge they reveal. Investigators therefore need to examine both the literature *and practices* of these disciplines and to recognize the need for some investigators to have personal experience of these practices.

It may be necessary to adopt new research paradigms, as Tart (21, 28) suggested. In one such design the subject would be a participant experimenter or "yogi-scientist" trained in both the behavioral sciences and the consciousness disciplines. This is obviously an extremely exacting requirement but one that may be necessary for the fullest possible understanding of these practices.

It seems prudent to heed the warnings of the advanced practitioners of the consciousness disciplines and, at least initially, to focus on those phenomena which they consider central. It is also necessary to distinguish between the central consciousness disciplines and the degenerate popularisms with which they are so often confused.

One of the most subtle yet important tasks facing investigators may be the recognition that we may experience active resistances to some of the ideas and experiences presented by these disciplines, since our most fundamental beliefs and world views may be called into question (10, 12, 45, 60, 62, 93). These difficulties and resistances have been specifically noted by mystics, who warn the investigator that at first "he will see only his point of view of today or rather the loss of his point of view. And yet if we only knew how each loss of one's viewpoint is a progress" (94).

Any viewpoint, theory, or paradigm is necessarily limited and selective in what it allows us to see, and there always exist undreamed of realms beyond its range (95, 96). It is this recognition and the willingness to explore both novel realms and novel viewpoints which, when combined with the conceptual and methodological rigor of the behavioral sciences, offer the optimal approach to exploring any paradigm, including the consciousness disciplines.

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