

INTRODUCTION TO VOLUME 2

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SCIENCE, CONSCIOUSNESS, AND THE CREATION OF AN IDEAL SOCIETY

The investigation of human consciousness presents the greatest challenge of the scientific age and brings the attention of the scientist back to the very foundation of science—the awareness of the observer—the ground upon which all discoveries are ultimately made. During the past century, many of the greatest scientists have come to the conclusion that not only is consciousness worthy of scientific scrutiny, but further that understanding the nature of consciousness holds the key to the most profound secrets of existence. The growth of research on Maharishi's technology of consciousness, the Transcendental Meditation and TM-Sidhi programme, bears witness to the current surge of interest in this field.

Modern science has always had as an implicit goal the development of a unified understanding of nature's functioning. In the twentieth century this goal has become explicit in the search for a unified field theory, towards which rapid progress is now being made in quantum physics. The view now being expressed by a number of leading theoreticians in quantum field theory is that consciousness is of prime importance in the structure of physical law at the basis of the universe.

It was, in fact, over fifty years ago that physicists began to recognize the importance of consciousness in quantum theory. This realization emphasized the need for an experimental approach to clarify the nature of consciousness. Yet it seemed that such investigation was all but impossible since science lacked a systematic means to isolate and examine consciousness directly. The entire area remained one for philosophic debate and speculation rather than the subject of rigorous scientific experimentation.

The revival of the ancient Vedic knowledge by Maharishi has brought about a complete reversal of this situation such that, from a position of almost total obscurity, the study of consciousness has risen to the very forefront of scientific inquiry.

The Technology of Consciousness

The Vedic maxim 'knowledge is structured in consciousness' identifies consciousness as the foundation of science. Furthermore, the ancient literature of the Vedas locates pure consciousness as the unified basis of existence and provides a systematic account of how conscious-

ness gives rise to the manifest universe and the infinite diversity of creation. At the heart of the Vedic approach to knowledge lies a precise and practical technology for the systematic exploration of consciousness in its most elementary and least excited state—pure or transcendental consciousness. In the Transcendental Meditation technique, the Vedic tradition provides the means through which the individual experiences directly the state of pure consciousness as the simplest form of his own awareness. During this practice progressively less excited states of the thinking process are experienced until even the finest level of thinking is transcended, leaving the experiencer awake in himself. Since both the object and process of observation have then been transcended, this state of pure consciousness is the ultimate value of subjectivity—the Self.

Maharishi's continuing scholarship in rediscovering and reviving the knowledge contained in ancient Vedic sources led to the introduction, in the latter part of 1976, of the TM-Sidhi programme, derived from the *Yoga Sutras* of Maharishi Patanjali. These advanced procedures are designed to enliven and activate pure consciousness, in order to train the individual in the ability to project thought and action from this least excited state of consciousness. The adoption of specific procedures at the level of pure consciousness so as to make use of fundamental physical laws for the fulfilment of specific desires provides striking evidence to support the Vedic understanding that the state of least excitation of consciousness is the seat of all the laws of nature that govern creation and hence, in Maharishi's words, 'a field of all possibilities'. The TM-Sidhi programme therefore reveals that pure consciousness is the basis not only of subjectivity (the Self) but also of the objective structure of reality.¹

Research on Higher States of Consciousness

As with all scientific endeavour, the ultimate purpose of the development of consciousness brought about by the Transcendental Meditation and TM-Sidhi programme is not merely to enhance man's understanding of nature but also to increase his ability to utilize the laws of nature in practical life. By enabling the individual to own the home of all the laws of nature in his awareness, the technology of consciousness ensures that all thought, speech, and action are spontaneously in accordance with natural law. As consciousness expands, the ability to fathom more and more fundamental levels of nature's functioning unfolds to individual awareness, leading to the realization of higher states of consciousness in which every aspect of life enjoys the support of the full potential of natural law. The resultant growth of orderliness, integration, and creativity is expressed throughout the life of the individual and in his environment, as is evident from the results of the research contained in the volumes of this series.

From this perspective, it can be seen that in the study of higher states of consciousness theoretical, experimental, and applied sciences find a common ground on which to investigate the full potential of natural law, its origin, its nature and dynamics, and the ultimate destination of its

1. For a more extensive discussion of these techniques, the reader is invited to refer to the section on the TM-Sidhi programme in *Collected Papers, Volume 1*.

evolutionary progression. It is a measure of the importance given by Maharishi to the thorough scientific investigation of higher states of consciousness that he chose to found a university—Maharishi European Research University—entirely dedicated to research in this field. At the inauguration of MERU in April 1975, Maharishi summarized the primary goal of the new institution:

The first goal of Maharishi European Research University is to realize the ultimate goal of all scientific research by developing complete knowledge of the growth of human consciousness on the theoretical, experimental, and experiential levels, and by applying this knowledge so as to eliminate the causes of pain and suffering in all areas of human life, to render society free from problems, and to contribute maximum to progress and fulfilment—thereby creating an ideal society and ushering in the Age of Enlightenment.

The complementary contributions of theory, experiment, experience, and applications to the present understanding of higher states of consciousness, and their implications for the individual and society, form the central theme of our introduction to this volume. In particular, we shall consider the role played by these different facets of knowledge in providing the essential background to Maharishi's recent celebration of the rise of invincibility for every nation.

Advances in the Theoretical Understanding of Higher States of Consciousness

In the years following its establishment, MERU has been host to numerous conferences and seminars with a variety of themes centred on the relationship between science, consciousness, and natural law. These conferences have been characterized by a lively interchange between the most ancient knowledge of the Vedic tradition, represented by Maharishi, and the most profound theories of modern science, represented by some of the foremost thinkers of our time. As a result, many important advances have been made in the understanding of the common ground that exists between the description of the laws of nature given in the Veda and that unfolded by the different disciplines of modern science, particularly by quantum physics.

The theoretical discussions at these conferences have been illuminated by the growing body of experimental research on the technology of consciousness and, very importantly, by the increasing richness of experiences of higher states of consciousness being reported by those taking advanced training courses in the Transcendental Meditation and TM-Sidhi programme at MERU. In turn, the theoretical framework which has developed has proven indispensable in providing a comprehensive perspective from which to understand and organize the experimental findings and experiential reports.

Furthermore, during the MERU conferences, it became clear that Maharishi's exposition of the Vedic principles underlying the development of consciousness, together with the results of experimental research on the Transcendental Meditation and TM-Sidhi programme, throw light upon fundamental issues regarding the basic structure of nature and the operation of

natural law. Many of these issues bear on the central questions that lie at the core of the modern scientific endeavour: questions such as the source of order in the universe; the nature of change and evolution; the nature of space and time; the issue of the observer and his relation to the object of observation; and the nature of life, intelligence, and consciousness.

While many of these questions may have been put aside by scientists working in the more routine kind of experimental research, and considered difficult or unanswerable owing to the lack of experimental procedures or sufficiently powerful theoretical models for their conceptualization, this has never been the view of the authors of truly great advances in science. From Galileo, Kepler, and Newton, through the great scientists of the 18th and 19th centuries, to Einstein, Bohr, Pauli, Schrödinger, Heisenberg and many others in our own day, these ultimate questions regarding the nature of reality have been the central concern and guiding element in science.

The Vedic Description of Nature

From the earliest days of his teaching, Maharishi always emphasized that the state of least excitation of consciousness (pure consciousness) experienced during Transcendental Meditation is the fundamental reality of creation, the unmanifest field out of which all manifest phenomena—from abstract entities such as the thought process and mathematical constructs, to the concrete structure and behaviour of the physical universe—are generated as specific states of excitation. To illustrate this point, Maharishi has often used his famous analogy of the flower: the unseen, transparent, and formless sap in the interior of the plant nourishes and composes all the outer visible aspects—the beautiful petals with their exquisite form and colour, the green leaf with its own texture and shape, and all the many values that go to make up the harmonious wholeness of the plant. In the same way, the unmanifest field of pure consciousness generates out of itself, and actually comprises, all manifest values of creation.

Maharishi has shown that in the Vedic literature the properties of the fundamental field are described in precise and rigorous detail. The laws by which it interacts with itself to generate the observable universe as well as the structure of the mind and the functioning of all physiological processes, are fully elucidated and, moreover, are available for conscious exploration and voluntary operation by the observer. Transcendental consciousness is thus both understood and experienced as the common source of all structures and processes in nature, as well as the origin of the laws governing them.

Perspectives from Physics: Thermodynamic Models

From the side of modern science, perhaps the most significant and far-reaching insights into the nature of consciousness have been provided by physics. Early work in this field, most notably by Domash, had already produced a number of models with which to understand pure

consciousness, the physiological correlates of this state, and other experimental findings on the effects of Transcendental Meditation. Of these, a useful first approximation was derived from thermodynamics, which provides a general description of the behaviour of order and disorder (entropy). Of particular interest in the present context is the Third Law of Thermodynamics, from which it is evident that lower excitation is associated with lower entropy and that, in the ultimate case, least excitation (corresponding to the absolute zero of temperature) is associated with zero entropy or perfect order.

The process of de-excitation unmasks features of orderliness—including regularity, purity, and symmetry—that are inherent in the system but are usually obscured at higher levels of excitation. As excitation is reduced, a system may display a sudden change or *phase transition* to a state of much greater order. The most striking examples of such phase transitions are those giving rise to superconductors and superfluids. The extraordinary properties of these zero entropy systems, including completely frictionless flow, the ability to cross apparently rigid boundaries, and to resist disturbance from outside, are due to coherence of the quantum waves of the individual particles constituting the system, giving rise to a macroscopic coherent quantum wave state.

Physiological Changes During Transcendental Meditation in the Light of Thermodynamic Principles

Domash has noted the general similarity of the subjective experience of Transcendental Meditation to the operation of the Third Law in physical systems: progressive reduction of mental activity leads to a 'phase transition' to the state of pure consciousness, which exhibits features of unboundedness and perfect orderliness reminiscent of superfluidity and superconductivity. The pattern of physiological changes found during the Transcendental Meditation technique also fits well into this model. For example, lower excitation is seen in marked reductions in overall metabolic rate and glycolytic metabolism in red blood cells, decreased breath rate and heart rate, reduced plasma cortisol, and high basal skin resistance, while the corresponding increase in orderliness is particularly well illustrated by high intra- and interhemispheric phase coherence in the EEG and a reduced incidence of random phasic skin resistance responses.² EEG coherence during Transcendental Meditation was, in fact, first studied in the laboratory precisely because an increase was predicted by Third Law theoretical models of the transcending process.

Most interestingly, the experience of pure consciousness during Transcendental Meditation has been found to be closely associated with periods of complete suspension of respiratory excursions, a large drop in heart rate, very high EEG coherence, and absence of phasic skin

2. For a concise summary of the findings of specific studies on Transcendental Meditation and their relevance to other research in this field, the reader is invited to consult the introductions to the different sections contained in these volumes.

resistance responses.³ Thus, pure consciousness is not only a zero entropy state from an experiential point of view, but also the state of minimum excitation and maximum orderliness in physiological functioning.

Useful though this perspective is, a straightforward Third Law model must, of course, be modified when considering physiological changes since the body is an open system which is not at equilibrium. At MERU we have been indebted to Ilya Prigogine, of the Solvay Institute and Free University of Brussels, for insights into the non-equilibrium phase transitions characteristic of dissipative structures which are more likely to be directly relevant to the physiological mechanisms that underlie the change from the ordinary waking state to pure consciousness.

However, even when considering the physiological effects of Transcendental Meditation, a Third Law-like principle can be approximated as superimposed on dissipative processes. From this perspective, the marked reduction of externally and internally induced stimulation brought about by Transcendental Meditation may be viewed as allowing dissipative self-ordering processes to proceed to completion, and even to generate phase transitions to total ordering, uninterrupted by excitations from outside the system.

Effects of Regular Practice

With the regular practice of the Transcendental Meditation and TM-Sidhi programme, pure consciousness becomes a stable continuum upon which all perception, thinking, and action take place. Experimental findings contained in the first two volumes of this series indicate that the properties of orderliness, integration, stability, and adaptability accumulate at every level of physiological, psychological, and behavioural functioning. This is evident, for example, in the maintenance of restfulness during activity, greater autonomic stability, faster recovery following stress stimuli, enhanced efficiency of homeostatic mechanisms (including those regulating blood pressure, sleep patterns, and temperature), and improvements in a variety of physical disorders.

A wide range of effects indicate improvements in the functioning of the central nervous system, including increased mind-body co-ordination, greater efficiency of information processing and transfer, improved perceptual acuity, and increases in intelligence, creativity, learning ability, memory, and academic performance.

Psychological studies also reveal a comprehensive development of personality with reduction of negative traits and enhancement of features indicating positive mental health. The latter effect is emphasized by studies demonstrating benefits of Transcendental Meditation in the

3. J. T. Farrow, 'Physiological Changes Associated with Transcendental Consciousness, the State of Least Excitation of Consciousness', paper 7, Volume 1. This study emphasizes the value of investigating specifically the physiological correlates of the periods of pure consciousness that occur during Transcendental Meditation, and has shown that the physiology of this state is even more strikingly distinct from that of other states of awareness than was evident from earlier research. Larger studies are currently being undertaken and should throw further light on this issue.

prevention and treatment of psychiatric illness, and in the context of criminal correction. Important behavioural effects include marked and sustained reductions in the use of all types of non-prescribed drugs, reflecting the greater self-sufficiency and sensitivity of the individual to his own needs predicted by the findings of psychological studies.

From this brief overview it is clear that many of the effects of Transcendental Meditation are commensurate with a Third Law type of principle involving the unmasking of inherent orderliness and removal of physiological impurities and imbalances, consequent upon the regular de-excitation of the physiology during the practice. The facilitation of dissipative self-ordering processes is suggested especially by the improvements in homeostatic feedback mechanisms, which are responsible for the maintenance of an optimal internal physiological milieu in the face of constant environmental change.

It is particularly noteworthy that many of the effects of Transcendental Meditation on physical, mental, and behavioural functioning are in the opposite direction to those that are known to occur with the ageing process; studies on the TM-Sidhi programme reported in Volume one have shown an even more powerful effect in this direction. Ageing, which is characterized by accumulation of mistakes, wear-and-tear, instability, inflexibility, and disintegration at all levels of the organism is a global expression of the failure of self-ordering mechanisms. The apparent reversal of this deterioration brought about by the Transcendental Meditation and TM-Sidhi programme is therefore a further strong indication of the enhancement of such mechanisms. Studies are currently underway to examine this effect more closely using standardized indices of biological age. It can be expected that research on the Transcendental Meditation and TM-Sidhi programme will provide us with new standards of normality for physiological and psychological parameters, reflecting truly normal human life, free from the statistically common but biologically abnormal influence of stress.

Quantum Field Theory and Consciousness

At the MERU conferences it became apparent that simple models such as those based on thermodynamic principles, while of remarkably good theoretical fit and predictive power for many experimental findings on the neurophysiological and general effects of Transcendental Meditation, were inadequate to match the full description of the dynamics of consciousness found in the Vedic tradition. The rapid progress in the experiential verification of this description occasioned by the introduction of the TM-Sidhi programme added a new impetus to the search for a more profound perspective from physics. This inquiry led inevitably to a deeper exploration of the properties of fields and their relationship to consciousness.

The progress made between 1976 and 1978 in relating the structure and dynamics of consciousness to those of quantum fields was greatly assisted by the contributions to the MERU conferences of many visiting physicists, especially Brian Josephson of the University of Cambridge, England; E. C. G. Sudarshan of the Center for Particle Theory at the University of

Texas at Austin, U.S.A.; Jan Nilsson of Chalmers University, Göteborg, Sweden; John S. Bell of CERN, Geneva, Switzerland; O. Costa de Beauregard of the Centre National de Recherche Scientifique, Paris, France; K. P. Sinha of the Indian Institute of Science, Bangalore, India; and Franco Selleri of the Instituto di Fisica, Bari, Italy.⁴

It had already been observed by Domash and others that the Vedic perspective of reality brought to light by Maharishi is strikingly parallel to the picture of the universe emerging from quantum field theory, which locates the fundamental particles and forces of nature as excitations of an underlying unmanifest field. As discussed by Domash in the introduction to Volume one, the properties of the ground state of the quantum field are in many important respects identical to those of pure consciousness. For example, both are states of least excitation, and exhibit the characteristics of perfect orderliness, infinite correlation, and unboundedness in space and time; although non-changing, both are found to be the source of all change, and both may be described as a field of all possibilities.

A most fundamental requirement of the field predicated by the Vedic understanding of nature and by experiences during the TM-Sidhi programme is that the state of least excitation of the field should not be empty, but instead contain a great richness of fine structure in the form of unmanifest impulses. The Vedic tradition locates the 'fine fabric' of the field of pure consciousness as the *Veda*, the totality of the laws of nature which structure and govern the entire universe.

In the state of least excitation of a quantum field, the fine structure is evident in the form of virtual fluctuations. These impulses of intelligence, or impulses of natural law, are shown to have a remarkable consequence in the Reconstruction Theorem, which states that complete knowledge of the state of least excitation of a field provides complete information about all its possible excited states. The corresponding Vedic principle describes how experience of the unmanifest field of pure consciousness is the key to complete knowledge of all manifest values of existence: 'Know that by knowing which everything becomes known'.⁵

Unified Quantum Field Theories

Although valuable as a starting point in this inquiry, the state of least excitation of a quantum field was found to be insufficiently rich to provide a model for all the aspects of the field of pure consciousness described by the Vedic literature. Very importantly, from the perspective of

4. During the course of this theoretical research it was natural to recall the deep interest of the founders of quantum physics in many of these issues, even at a time when the mathematical tools, experimental data, and techniques for exploring consciousness were not yet available: for example, Niels Bohr's persistent interest in the application of complementarity to the observation of the thought process; Erwin Schrödinger's description of the quantum wave function as a non-physical reality only made physical by the act of observation (the 'collapse' of the wave function); and Wolfgang Pauli's extensive publication of his thoughts on the relationship between consciousness and the physical structure of nature.

5. This principle is expressed in many parts of the Vedic literature. See, for example, *Brihadaranyaka Upanishad* (II, 5, 14, and V, 1, 1); *Mundaka Upanishad* (I, 1, 1-9); *Prashna Upanishad* (IV, 10-11); and *Bhagavad Gita* (VII, 2).

the highest state of human consciousness, which Maharishi terms *unity consciousness*, pure consciousness is appreciated not only as the state of least excitation of the field but also as the ultimate reality of all excited states. With the advent of the TM-Sidhi programme, this understanding is being more and more widely confirmed through direct experiences of unity consciousness. From the standpoint of modern physics, therefore, the field of pure consciousness may best be modelled as the field itself, rather than the state of least excitation or any other specific state of the field.

Furthermore, the insights into the mechanics of the creation of specific qualities and phenomena from the undifferentiated field of pure consciousness, revealed by the practice of the TM-Sidhi programme, made it necessary to seek a model which permitted greater self-sufficiency of the field in spontaneously giving rise to its manifestations.

These requirements led to an examination of unified quantum field theories, notably the highly successful unification of the electromagnetic and weak forces developed by Glashow, Weinberg, and Salam,⁶ and models now being put forward for the unification of the electroweak field with the strong force ('grand unified field theories').⁷

These theories describe the unification of apparently very diverse aspects of nature by locating fundamental symmetries which are not evident in the low energy world (i.e., at distance scales in excess of 10^{-16} cm). Such unified theories indicate that the deepest levels of unification can be revealed by taking the attention to more fundamental time and distance scales where, according to the quantum principle, the intrinsic dynamism of natural law is so great that the fields which mediate deeply hidden symmetries are always operative. Thus modern physics suggests that, at least in mathematical terms, the degree of unity which is apparent in the physical world depends largely upon the level to which the attention of the observer is directed.

In the light of this principle, it is interesting to recall the famous Vedic tenet that knowledge is structured in consciousness, from which follows the Vedic understanding that the individual's level of consciousness determines the extent to which he is able to perceive the unity of nature. In ordinary waking consciousness, diversity and change dominate the individual's perception of both subjective and objective reality, while in unity consciousness the entire objective universe is experienced in terms of the unity of one's own Self—the field of pure consciousness.

It is a remarkable indication of the depth of the connection between the field of consciousness and quantum physics that it is only at these deeper levels of conceptualization in physics that the most important properties of the field described in the Vedic literature begin to become evident in the physical fields.

6. S. Weinberg, *Physical Review Letters* 19 (1967): 1264; A. Salam, in *Elementary particle theory: relativistic groups and analyticity* (Nobel Symp. no. 8), ed. N. Svartholm (Stockholm: Almqvist and Wiksell, 1968): p. 367.

7. See, for example, J. C. Pati and A. Salam, *Physical Review Letters* 31 (1973): 661, and *Physical Review D* 8 (1973): 1240; H. Georgi and S. L. Glashow, *Physical Review Letters* 32 (1974): 438.

For example, the fields which mediate the unification of fundamental forces and particles are non-Abelian in character and thus display the capacity for *self-interaction*. This property, which becomes increasingly evident at more profound levels of unification, is highly reminiscent of the self-referral quality that is so characteristic of consciousness, especially the field of pure consciousness. Also of particular interest is the fact that unified quantum fields can generate diversity from their initially unified structure through a process of dynamical symmetry breaking.⁸ In the Vedic literature, the self-referral activity of the field of pure consciousness is described, in terms of direct experience, as the essential mechanism of creation:

प्रकृतिं स्वामवष्टभ्य विसृजामि पुनः पुनः

Prakṛitiṃ svām avasṭabhya visṛijāmi punaḥ punaḥ

Curving back on myself I create again and again.

(Bhagavad Gita, IX, 8)

These features of the field are mentioned not only for their intrinsic interest, but also because they are proving to be of great value in the interpretation of experimental findings on the Transcendental Meditation and TM-Sidhi programme. From the results mentioned above, it may be seen that the direct experience of pure consciousness appears to amplify and project the self-ordering properties of the field in the patterning of biochemical, neurophysiological, psychological, and behavioural functioning. This picture, while not yet fully adequate to parallel the Vedic perspective, certainly provides a more satisfactory explanation than earlier models of how so many different aspects of the individual's life could be influenced simultaneously through a single procedure. Moreover, the discovery of long-range effects of the Transcendental Meditation programme on the whole society, which we shall now consider, would seem to demand an explanation in terms of an underlying field of consciousness in which the property of infinite correlation is inherent, as in quantum fields.

The Maharishi Effect

Certainly the most striking result of experimental research on higher states of consciousness is the discovery that the benefits of the Transcendental Meditation programme are not limited to the individual and his immediate contacts but rather extend to society as a whole. In the initial study of this effect, Borland and Landrith reported data indicating that when the number of individuals practising Transcendental Meditation in a city reaches one percent of the total population, there is a quite sudden improvement in the quality of life of the whole community, as evidenced by a reduction in crime rate in the following year. Prior to this, crime had been increasing steadily from year to year in the cities studied (and continued to do so in matched control cities).⁹

8. See, for example, S. Weinberg, *Physical Review D*13 (1976): 974.

9. C. Borland and G. Landrith III, 'Improved Quality of City Life Through the Transcendental Meditation Program: Decreased Crime Rate', paper 98, Volume 1.

These researchers suggested that their observations reflected a sociological counterpart of the phase transitions and threshold phenomena familiar in physics and biology. In the present volume, Hatchard reports a similar relationship between participation in the Transcendental Meditation programme by a small fraction of the population and crime reduction, and again finds evidence that the effect only becomes apparent when a critical threshold is reached.¹⁰ This phenomenon of increased orderliness throughout society was named the Maharishi Effect by the researchers who first discovered it, in honour of Maharishi who had predicted it as long ago as 1960.

Physical Models for the Maharishi Effect

In physics, the occurrence of a phase transition to coherent, orderly behaviour, induced by the existence of orderliness in a small fraction of the units of a system, is a common phenomenon in many-body systems. While the exact mechanisms involved depend upon the nature of the system, certain general features emerge from the study of such transitions. From the viewpoint of the statistical properties of many-body systems, coherently functioning units have a proportionally more powerful effect than those with random behaviour. In this way, a small proportion of the constituents of the system functioning coherently leads to coherence in the entire system.

From the standpoint of phase-transition theory and percolation theory, the existence of coherent interactions between a certain critical fraction of the population of the system leads to fluctuations of infinite range, resulting in the onset of a phase transition to coherent behaviour in the entire system. From yet another perspective—that of quantum field theory of solid state physics—the production of order can be understood in terms of the existence of long-range quantum correlations in the system inducing orderly behaviour.

The existence of the Maharishi Effect, operating as it does over large distances without the intervention of any interaction at a social level, supports the view that the Transcendental Meditation programme enlivens the fundamental values of natural law at the level of the quantum fields, where the property of infinite correlation is intrinsic to the functioning of nature.

Creating Coherence in Collective Consciousness

In Maharishi's analysis, the primary determinant of the well-being of any society is the quality of its *collective consciousness*. When collective consciousness is integrated, the community enjoys harmony, strength, and prosperity. Conversely, when collective consciousness is incoherent, problems and negativity dominate society. The collective consciousness of any level

10. G. Hatchard, 'Influence of the Transcendental Meditation Program on Crime Rate in Suburban Cleveland', paper 166, Volume 2. In both this study and that of Borland and Landrith, other factors influencing crime rate were considered and found to be unlikely as explanations for the changes observed. Research controlling more rigorously for such extraneous factors and studying variables other than crime is currently underway and will appear in subsequent volumes of this series.

of social organization—whether a family, city, state, nation, or even the entire world—is the summation of the consciousness of its individual members. The higher the level of consciousness of the individuals in society, the more coherent will be the collective consciousness.

The Maharishi Effect illustrates that the development of individual consciousness brought about by the Transcendental Meditation programme leads to increased coherence in collective consciousness, and presents a unique formula for the enrichment of every sphere of human life. Maharishi has emphasized that it is the actual twice daily practice of Transcendental Meditation which is responsible for the radiation of orderliness from the individual to his environment seen in the Maharishi Effect, rather than overt changes that may occur in his behaviour outside the practice. This perspective is in keeping with the Vedic principle that pure consciousness is not only the basis of individual consciousness, but also of the collective consciousness of society and, moreover, of the physical environment. By enlivening the field of pure consciousness in his own awareness during Transcendental Meditation, the individual also creates a corresponding influence of coherence throughout his social and physical environment.

It was the discovery of the Maharishi Effect, in particular, which had inspired Maharishi to recognize the coming of a better era for all mankind, and thus to inaugurate, on 12th January 1975, the dawn of the Age of Enlightenment:

In this scientific age it is no longer necessary for any nation to live with problems. It is in the hands of a few individuals to change the direction of time and guide the destiny of their nation for all harmony, happiness, and progress. A good time for the world is coming—through the window of science we see the dawn of the Age of Enlightenment.

The World Government of the Age of Enlightenment

The recognition of consciousness as the prime mover of both individual and collective life is the guiding principle at the heart of the World Government of the Age of Enlightenment, the organization founded by Maharishi in 1976 in order to usher in and perpetuate the Age of Enlightenment. At the inauguration of the World Government, Maharishi addressed the question of why it is necessary to establish yet another government when so many levels of administration already exist:

National, provincial, state, county, and city governments exist for the maintenance of well-being and progress on their respective levels, but despite all the power and resources at their disposal and despite all the intelligent people serving their cause, governments throughout the ages have been submerged in problems. No government has yet succeeded in creating an ideal society. Something has been universally lacking and this has paralysed the capabilities of all governments throughout time.

In his Absolute Theory of Government,¹¹ Maharishi explains that the fundamental of

11. Maharishi Mahesh Yogi, *Creating an Ideal Society* (Rheinweiler, West Germany: MERU Press, 1977).

government which has been missed throughout the ages is the knowledge that it is a nation's collective consciousness which governs every action of government and rules over each one of its members. Every government, irrespective of its system, is an innocent mirror of the nation. The success of government, the integrity of the nation, and the influence of the nation in the international arena are all, Maharishi observes, determined by the degree of coherence in national consciousness.

It was to remedy this one fundamental deficiency in the administration of society that the World Government of the Age of Enlightenment was established. Maharishi emphasized that the sovereignty of the World Government is the domain of consciousness. Its strength is not based on territorial power, nor does it usurp the functions of any other government. Rather, the World Government enjoys a parental role in the family of nations, existing only to support and nourish all governments by developing and maintaining higher consciousness in the individual.

The Rise of World Consciousness

By the end of 1977, there were nearly two million people practising Transcendental Meditation in over 140 countries, and almost 1,000 cities around the world where participation in the Transcendental Meditation programme had reached the level required to generate the Maharishi Effect. Furthermore, in the latter part of that year, Maharishi had made the more advanced TM-Sidhi programme widely available, thereby opening the door to even more rapid growth of higher states of consciousness for many thousands of individuals. A detailed examination of the trend of world events since the dawn of the Age of Enlightenment, conducted by scientists at MERU, led to the conclusion that the influence of coherence being created by the increasing number of individuals practising the Transcendental Meditation and TM-Sidhi programme was now taking effect on a global scale.

In Maharishi's evaluation, the growing orderliness and harmony evident in world consciousness had become sufficient to enable nations to step on to a completely new level of security and prosperity—in fact, to rise to invincibility. Maharishi explains that invincibility for a nation means not only absolute impenetrability of its defences, but also encompasses an inviolable integrity of its culture, strength and growth in the economic sphere, the highest standards of health, balance in nature, and freedom from both man-made and natural catastrophes. Behind this comprehensive definition, Maharishi locates a single fundamental principle which is evident in physical and biological systems throughout nature: the property of invincibility is displayed when the internal structure of the system is maintained in a state of maximum orderliness, with perfect coherence in the collective functioning of its component parts.

The Physics of Invincibility

One of the most graphic examples of invincibility in physical systems is displayed by superconductors. As we have already mentioned, the phase transition from ordinary conductivity

to superconductivity has proved to be a useful parallel for the understanding of the transition from localized waking consciousness to pure consciousness during Transcendental Meditation.

At ordinary temperatures the metal lead, for example, offers resistance to the flow of electric current due to the disorderly motions of its electrons. In the superconducting state, electrons of the metal atoms form pairs having equal and opposite momenta; these 'Cooper pairs' no longer display the fermionic (or mutually excluding) characteristics typical of electrons, but instead exhibit bosonic properties which allow them to become coherently related to one another, forming the macroscopic coherent quantum wave state alluded to above. The result is that electric current in the superconductor flows forever, completely without resistance.

The frictionless flow of electrons within the superconductor gives rise to a remarkable example of invincibility known as the Meissner Effect. When a magnetic field is brought near an ordinary conductor of electricity, it penetrates into the interior of the conductor and disturbs the flow of electrons. By contrast, when a magnetic field is brought near a material in a superconducting state, the surface electrons, by virtue of their infinitely frictionless fluidity, move immediately in such a way as to create a second magnetic field that precisely cancels the intruding field within the interior of the superconductor. The result is that no external magnetic field can penetrate into the superconducting region.

The Meissner Effect illustrates how coherence, harmony, and integrity tend in a natural way to maintain themselves against disordering influences from the environment, and also how creativity, seen as the capacity for immediate and appropriate adaptation, is vital to the ability of a system to meet challenges to its integrity and preserve its internal stability.¹²

The Meissner Effect is not an isolated phenomenon but rather illustrates a general principle found in many examples of coherent systems in physics and throughout nature: the very essence of order is that it entails resistance to spatial or temporal disruption. Moreover such properties as coherence, orderliness, stability in the face of external disrupting factors (invincibility), long-range correlation, self-organization, and self-propagation are not merely adventitious features of certain types of system configuration. Rather, they represent the unmasking, by removal of overlying random activity, of the universal properties of the fundamental fields which generate and order all matter, energy, and information in the universe. Such properties can be identified directly in their pure form in the state of least excitation of consciousness, and are readily apparent in the formal features of the fundamental quantum fields described in physics. Indeed, the more unified, complete, and elegant the formulation of the fields, the more boldly these features stand out.

Thus, we find that all the features conferring strength and stability at different levels of physical organization including regularity, purity, symmetry, smoothness, unboundedness, time-

12. It is the remarkable property of living systems that they are able to unfold higher and higher levels of order, adaptability, and invincibility even without the very delicate external conditions needed to display, for example, the Meissner Effect or superfluidity in the laboratory.

lessness, internal coherence, and creativity are present to the maximum possible degree in the fundamental fields of nature. Two further characteristics of the quantum fields identify this level of reality as the ultimate ground of invincibility. The first is the unmanifest nature of the fields which renders them completely beyond the reach of any destructive influences from the manifest physical sphere. Secondly, as the source of all the laws of nature governing creation, the fundamental fields simultaneously nourish all the diverse aspects of existence. Only from this level can harmony be maintained among all the myriad tendencies in nature.

Invincibility for Every Nation

In keeping with these principles, Maharishi explains that invincibility is expressed in a nation when the individual citizens of the nation are functioning in a harmonious and integrated manner; that is, when collective consciousness is coherent. Incoherence in national consciousness inevitably leaves the nation weak and attracts destructive elements from outside as an expression of this weakness. An integrated national consciousness provides unshakeable stability against disturbing influences from within or without and, most importantly, disallows the birth of aggressive intentions towards the nation. The ability to prevent the birth of an enemy is an absolute prerequisite for invincible defence, especially today, in the age of nuclear weapons, when no nation can feel any genuine confidence in its ability to defend itself. The only reliable basis upon which a nation can feel secure is the capacity to prevent conflict at its root by enlivening the source of orderliness common to all nations.

Maharishi views invincibility not as a distant ideal but rather as an eminently attainable goal which is the only status worthy of the dignity of a sovereign nation. The reason for Maharishi's confidence that this status is within the grasp of any nation is that the property of invincibility is structured in the very foundation of all existence—the fundamental field which is located in the Veda as pure consciousness, the home of all the laws of nature. The achievement of invincibility requires only that national consciousness is attuned to this basic field of existence, which provides the common ground upon which all the diverse tendencies of the individual citizens of a nation, and the differing needs in the family of nations, can be fulfilled in perfect harmony.

The introduction of a scientific means to strengthen national consciousness has revived the ancient Vedic principle of *Rashtriya Kavach*, a national armour of invincibility which would render the nation impenetrable to outside forces at all times. The appearance of the principles of invincibility in physics and in the science of consciousness are but two reflections or applications of the same general laws, and indicate that these are abstract universal truths characteristic of the deepest layers of the intelligence of nature.

The availability of the technology to realize this goal and the evidence of its effects in nations throughout the world inspired Maharishi to celebrate the rise of 'Invincibility for Every Nation' in October 1977. At the celebrations, held at the International Capital of the Age of

Enlightenment, Seelisberg, Switzerland, Maharishi emphasized that the rise of invincibility represented an awakening of the consciousness of mankind to the essential nature of life:

This is the development of consciousness of the whole human race in the world today. This celebration is just symbolic of the awakening of the responsibility of every individual and every nation towards the immortality of life. Life is immortal, invincible; it is bliss. It took almost eighteen years to ring the bells of bliss in the world, teaching Transcendental Meditation and awakening the consciousness of the individual to rise, to move and be active, and to appreciate that level of invincibility at the deepest core of everyone's existence. . . . Invincibility had always been the right of every nation, but that right was dormant and now it is blossoming at the surface of life.

In the Assembly Hall of the World Government of the Age of Enlightenment, this celebration of invincibility to every nation is an expression of the blossoming of world consciousness to that great degree of coherence and harmony in which the national consciousness of every nation will enjoy freedom from fear.

Invincibility will be in the power of good, in the power of love, the power of harmony. The country's ability to create only friends and to disallow the birth of an enemy will arise when the country does not offend anyone. When national consciousness creates only evolutionary effects, then the country will enjoy evolutionary relationships with everyone.

Courses for Every Area of Society

Following a thorough investigation of the foundations of invincibility, and an analysis of the growing reality of this phenomenon in nations around the world at the end of 1977, MERU designed courses providing the knowledge and experience necessary for each area of society to contribute their share in making the nation invincible. These courses present the fruit of theoretical and experimental research on the development of higher states of consciousness, and draw upon the extensive experience which has now been gained in the application of the Transcendental Meditation and TM-Sidhi programme in different spheres of human concern, including education, health, government, business and industry, law and justice, rehabilitation, and defence. Many findings reported in the first two volumes of this series are the result of applied research in these fields, and the unique contribution of the Transcendental Meditation programme to the fulfilment of specific areas of application is considered in detail in the review papers which appear at the end of the present volume.

The Invincibility courses present a formula for the realization of the goals of different sectors of society through the Transcendental Meditation and TM-Sidhi programme and show that, through the implementation of this formula, each area of society will simultaneously be making a vital contribution to the self-sufficiency and invincibility of the nation as a whole. The development, under Maharishi's guidance, of these comprehensive packages of knowledge summarizes the achievements which have been made over the past twenty years in all aspects of research on higher states of consciousness, and establishes the fundamental core of knowledge which will provide the guiding principles for life in the Age of Enlightenment.

Accordingly, in the first quarter of 1978, which had been named by Maharishi the Year of Invincibility for Every Nation, the World Government of the Age of Enlightenment sponsored a series of World Assemblies presenting to governments and to the leaders of society in every country a plan of action through which to structure invincibility for their nation.

Conclusion

In concluding our discussion, it is appropriate to consider the future direction of research on higher states of consciousness. Already, experimental work is expanding into new fields and also probing more deeply into the mechanisms underlying existing findings on the effects of Transcendental Meditation. In addition, the TM-Sidhi programme has now become a major focus of research interest. We can confidently expect increasingly precise and thorough definition of the physiological correlates of higher states of consciousness, and of the benefits for mind, body, and behaviour of the development of these states, as experimental design and techniques are refined, and as new parameters are brought under scrutiny. In turn, these developments should identify new fields for application of the Transcendental Meditation programme and act as a stimulus for the growth of applied research.

Perhaps of greatest interest will be the inevitable growth of research on the Maharishi Effect as the number of individuals practising the Transcendental Meditation and TM-Sidhi programme reaches the level required to generate this phenomenon in more and more cities, states, and ultimately nations throughout the world.

Research conducted under Maharishi's direction is constantly bringing to light new insights from the extraordinarily rich descriptions of natural law found in the Vedic literature. We anticipate that these contributions will continue to be of immeasurable value in understanding the full significance of the progress now being made in the different avenues of modern science towards a unified understanding of nature, and of the growing experiences of higher states of consciousness reported by subjects practising the Transcendental Meditation and TM-Sidhi programme. Investigation of the connections between the parallel views of nature's functioning provided by the Veda and by modern science has laid the foundation for a complete and integrated picture of the entire range of natural law, in which all subjective and objective phenomena are united within a single framework.

Maharishi has shown that in the most ancient tradition of human knowledge, modern science has found the perfect model for the pursuit of complete knowledge of natural law. The Vedic technology of consciousness is not only in complete accord with the most fundamental principles of science, but also brings fulfilment to those principles in the sense that the real fruit of any scientific knowledge is the benefit of its application in society. We would venture to suggest that it is in the best interests of every scientist to grasp the opportunity that is at hand and utilize this technology to fully explore the field of consciousness—the foundation of all scientific inquiry. Maharishi has made it clear that by so doing it is within the capacity of any individual to

cognize directly the most fundamental laws governing the universe, just as the Vedic rishis of antiquity were able to do.

A great man's vision is by nature always ahead of the time. Throughout the history of science we find that, to all but a few, the greatest advances have at first seemed incomprehensible. So it was for many when Maharishi inaugurated the dawn of the Age of Enlightenment in 1975, and again when he celebrated Invincibility for Every Nation in the autumn of 1977. In retrospect, however, no less astonishing was Maharishi's assertion, over twenty years ago, that there exists a fourth major state of consciousness which could be experienced by anyone through a simple, effortless, and natural technique, and that this experience would enrich every aspect of the life of the individual and society. Yet today the evidence in support of Maharishi's prediction is overwhelming.

While the future will certainly yield a great deal of further research documenting new and fascinating aspects of the development of both individual and collective consciousness, the studies contained in the first two volumes of this series are more than sufficient to demonstrate that, in the Transcendental Meditation and TM-Sidhi programme, mankind has available a technology of unprecedented importance for the realization of his highest goals in the creation of an ideal society, an invincible nation, and harmony in the family of nations.

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