

Achieving World Peace Through a New Science and Technology

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Abstract

We consider the implications of the latest advances in scientific knowledge for the areas of conflict resolution and world peace. We examine scientific evidence for a new technology of world peace based on the unified field of natural law and its practical utilization through extended, field effects of consciousness. We assess the practicality of this new technology using direct, experimental intervention studies in critical test regions, including the Middle East. We conclude that this technology of world peace offers a cost-effective, scientifically validated means of achieving and sustaining a stable state of peace in the international arena.

Introduction

In recent years, research into the probable causes of war has led to a shift from the understanding that conflict originates in the inadequacies of various forms of government and/or the lack of preparedness for war¹ to seeing lack of fulfillment of individuals and resulting stress levels in society as the basic cause.² From this modern perspective, one can understand why the traditional political and military approaches, which ignore the underlying cause of war, have failed throughout history to achieve world peace. Fortunately, in the past few years, an entirely new approach based on the discovery³ of the unified field has given rise to a practical and cost-effective technology^{4,5} for alleviating collective stress, and for achieving and sustaining a stable state of world peace.

In this article, we explain how the discovery of the unified field provides the theoretical basis for a new technology of world peace known as the Maharishi Technology of the Unified Field.^{4,5} We show how, through this new technology, an individual can access the unified field and apply this most fundamental and powerful level of nature's dynamics to benefit individual life⁶⁻¹¹ and the life of society.¹²⁻¹⁶ The application to world peace occurs through group practice of the Maharishi Technology of the Unified

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Field by a small proportion of a population, which alleviates stress in the collective consciousness and promotes harmony and coherence throughout society as a whole.¹²⁻¹⁶ We examine recent published empirical studies documenting the effectiveness of this group practice in reducing violence and negativity, including war deaths and war injuries in areas of intense international conflict.¹³⁻¹⁶ This combined research establishes that a permanent group of 7,000 experts practicing the Maharishi Technology of the Unified Field provides a practical means to create a permanent state of world peace.

Discovery of the Unified Field

The progress of society is based upon scientific knowledge. The scientific understanding of the laws of nature governing behavior at every level of the physical universe provides the theoretical foundation for the practical utilization of these laws through the various branches of applied science and technology. For example, scientific knowledge of the laws of nature governing biochemical and physiological processes provides the theoretical basis for all the applied methods, approaches, and technologies in the field of medicine. Similarly, knowledge of electromagnetism and the principles of information theory provide the theoretical foundation for modern telecommunications and computer technology.

Until recently, scientific understanding of the laws of nature has been incomplete. In particular, the underlying basis of natural law in the unified field has been unavailable, giving rise to a fragmented and partial view of the laws of nature governing the universe. Partial and fragmented understanding of the laws of nature has given rise to technologies that, on the one hand, have brought a degree of progress and comfort to society but, not being holistic, have resulted in numerous physiological, psychological, sociological, and ecological side effects. Nuclear technologies, for example, based on the scientific understanding of the laws of nature governing nuclear structure and transformations, have given rise to an alternative energy source that can be economically cost effective,¹⁷ but have also given rise to highly toxic, ecologically dangerous radioactive wastes¹⁸ and a generation of weapons that has threatened mankind with extinction.

Now, the continued progress of society demands the practical utilization of a level of nature's functioning that is at once more powerful and more holistic—a technology based on the total potential of natural law available in the unified field.

During the past two decades, progress in theoretical physics has led to a progressively more unified understanding of the laws of nature, culminating in the recent discovery of completely unified field theories.³ This discovery began in 1967 with the introduction by Professors Weinberg and Salam of the unified theory of the weak and electromagnetic forces,¹⁹ uniting two of the four fundamental forces governing all physical processes (please refer to Figure 1). The profound success of this unified “electro-weak” theory confirmed that at deeper levels of nature’s dynamics—at more fundamental (i.e., smaller) spacetime scales—the laws of nature present a simpler, more unified structure in which superficially diverse laws of nature become unified.

In the early 1970s, it was shown that this same unifying principle could be extended to include the strong nuclear force, leading to “grand unified theories” of the strong,

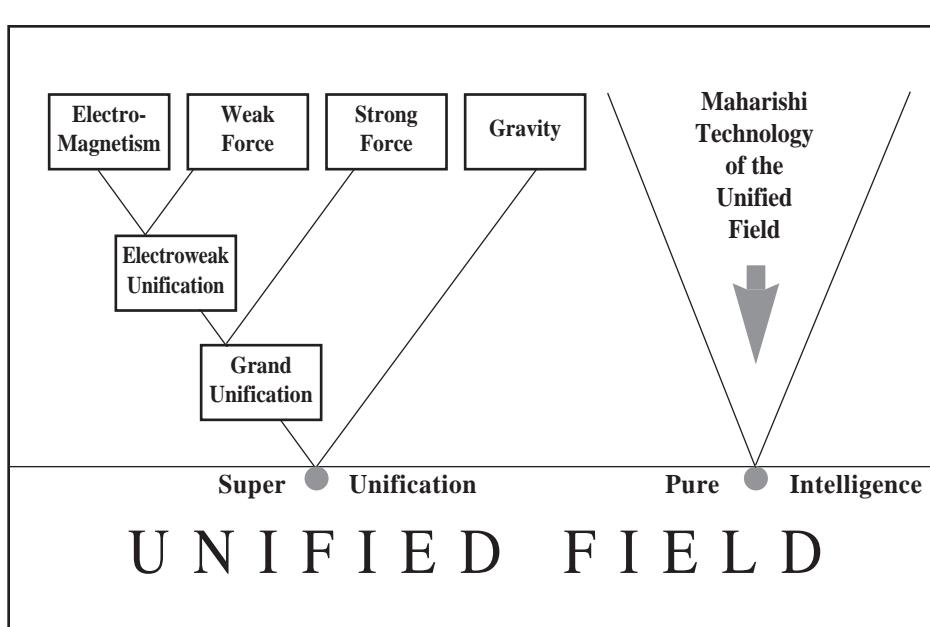


Figure 1. The progressive unification of the four fundamental forces of nature (left-hand side) along with the systematic technology to access and apply the unified field for the benefit of human life (right-hand side).

weak, and electromagnetic forces.²⁰ In 1974, the concept of supersymmetry²¹ was introduced—a profound mathematical symmetry principle capable of unifying particles of different “spin”—providing the mathematical basis for completely unified field theories. During the past several years, the application of this principle has led to the development of completely unified theories of all the fundamental forces and particles of nature based on the heterotic string.³

The heterotic string or “superstring” describes all the fundamental forces and particles as the various modes of vibration of a single, underlying unified field. The superstring thereby provides a completely unified understanding of the fundamental forces and particles of nature, in addition to the first quantum-mechanically consistent theory of the gravitational force.

Now, with the discovery of the unified field, the total range of natural law is open to scientific knowledge and exploration. Since the progress of society is based on scientific knowledge, the discovery of the unified field—the most fundamental and powerful level of nature’s dynamics—can be expected to have the most far-reaching implications for human life and civilization. Moreover, because the discovery of the unified field constitutes scientific knowledge of the total potential of natural law, in contrast to the more superficial, partial, and fragmented levels of scientific knowledge, its application can be expected to produce holistic benefits—i.e., to create balance and to neutralize the

destructive side effects of previous levels of scientific knowledge. For this to be practically realized, however, a *technology* of the unified field is clearly necessary.

Fortunately, such a technology exists,⁴ and has been the subject of intensive scientific research. During the past 20 years, its effectiveness has been verified by hundreds of published studies appearing in leading scientific journals throughout the world.⁶⁻¹⁶ The applications of this technology in the fields of health,⁸ education,⁹ rehabilitation,¹⁰ economics,¹¹ and world peace¹²⁻¹⁶ have already demonstrated its capacity to create a quality of life and civilization which is far beyond that which was possible based on previous levels of scientific knowledge.

The Unified Field and Consciousness

It was clear even from the pioneering work in the area of unified field theories by Einstein and contemporaries that the application of this most fundamental and powerful level of natural law would necessarily be through a technology of consciousness.²² This is partly because the domain of superunification—the Planck scale of 10^{-33} cm—is beyond the range of any particle accelerator or conceivable objective technology. Indeed, the objective approach of modern science, which is founded upon the separation between the observer and the observed, is essentially unsuited to investigate the fundamentally indivisible structure of natural law at its unified foundation.²³ However, although the unified field is beyond the range of any objective technology, it is not beyond the range of human intelligence, as today's highly successful unified field theories have demonstrated. In fact, it is now well known²²⁻²⁵ that through proper training, human awareness can gain direct access to the unified field in the most fundamental state of human consciousness—the state of “pure consciousness,” which lies at the foundation of conscious experience.^{4-5,24-25}

During the past 20 years, extensive scientific research,⁶⁻¹⁶ along with the direct personal experience of millions of individuals practicing a simple, subjective technology called the Maharishi Technology of the Unified Field,⁵ has shown that human intelligence, like nature's intelligence, has at its basis a unified field of intelligence²³ (please refer to Figure 1). In this most fundamental state of awareness, known as transcendental consciousness or pure consciousness, the knower, the known, and the process of knowing are united in a single, self-interacting structure of experience.^{4,23} The defining characteristics of this unified field of consciousness—e.g., self-referral or self-interaction, pure intelligence, and infinite dynamism—are identical to the essential characteristics of the unified field of modern physics derived from the Lagrangian of the superstring. (Please refer to the Appendix, entitled “Qualities of the Unified Field” on p. 68) The most natural conclusion is that the most fundamental level of human intelligence (pure consciousness) and the most fundamental level of nature's intelligence (the unified field) are not independent, but one and the same, providing a profound unification of objective and subjective realms of existence at the level of the unified field.^{22,23}

This fundamental identity between the unified field of physics and the unified field of pure consciousness at the basis of the mind is confirmed through detailed analysis of their quantitative structure and dynamics. The vibrational spectrum of the excitations of

the unified field, i.e., its resonant modes or “energy eigenstates” which comprise all the various particles and forces in the universe, are identical in structure to the fundamental modes of consciousness open to direct experience through the Maharishi Technology of the Unified Field (for details, please refer to ref. 23). In other words, not only do these two fields possess identical qualities and characteristics, but they share the same quantitative spectrum of excitations. This quantitative correspondence strongly supports the proposed identity between pure consciousness and the unified field. This fundamental identity is open to direct experiential confirmation through the Maharishi Technology of the Unified Field, in which all the subjective and objective aspects of existence are experienced to emerge from the field of pure consciousness, establishing pure consciousness as the unified fountainhead of natural law.²³

The Maharishi Technology of the Unified Field

The Maharishi Technology of the Unified Field is a systematic technology which opens human awareness to the direct experience of consciousness in its pure, self-referral state, in which the conscious mind is identified with the unified field of all the laws of nature (please refer to Figure 1).^{4,5} It systematically expands human comprehension to experience and explore more abstract and fundamental levels of intelligence of the mind, corresponding to more fundamental and universal levels of nature’s intelligence,²² culminating in the experience of a level of intelligence that is completely universal and unified in its nature—the experience of the unified field itself. Research has shown that this experience of pure consciousness constitutes a fourth major state of consciousness,^{24,25} physiologically distinct from waking, dreaming, and deep sleep. It is characterized by high EEG coherence,²⁶ indicating profound integration and orderliness of brain functioning, together with other unique physiological and biochemical changes.²⁷ Over 500 scientific studies^{6–16} conducted at more than 200 universities and research institutes in 30 countries* throughout the world have extensively documented the profound physiological,⁸ psychological,⁶ and sociological^{11–16} benefits resulting from this fundamental experience, including increased intelligence⁶ and creativity,⁷ improved physical and mental health,⁸ and increased self-actualization.²⁸ The completely holistic nature of these benefits further supports the hypothesis that this subjective technology operates at the most fundamental and holistic level of nature—the level of the unified field.²³

Life in Accord with Natural Law

The unified field is the total potential of natural law. In its self-interacting dynamics are contained the mechanics of “symmetry breaking” through which it becomes expressed as the apparently diverse values of natural law displayed throughout the universe.²³ During the practice of the Maharishi Technology of the Unified Field, an individual experiences

*Editors Note: This is an updated figure as of October 1992.

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directly the mechanics by which thought arises from the unified field, the field of pure intelligence or pure consciousness at the basis of the mind.²⁵ Repeated experience results in an innate familiarity with the laws of nature that govern the transformation of the unified field into its superficially diverse values.^{5,23}

Innumerable laws of nature uphold human life in its natural pursuit of health, happiness and progress. These laws determine the consequences of our thoughts and actions and thereby either support the fulfillment of our desires or lead us to corrective action. When, through repeated experience of pure consciousness, an individual's awareness becomes consciously identified with the unified field, the total potential of natural law, then he enjoys life spontaneously in accord with all the laws of nature.⁵ This is to say that the person's thought and action spontaneously are suitable to the environmental context. They meet with no problems, conflict, or resistance, and create no suffering for the individual or for society. Taking maximal advantage of the laws of nature, such thoughts and actions are naturally supported by all the laws of nature governing physiological, psychological, and sociological processes.^{5,6-16} They do not set in motion any processes that, even in part, conflict with the intent of the thought and action. This state of human life supported by natural law is possible only when the total potential of natural law, the unified field, is fully enlivened in human awareness. No other level of natural law, and no other level of human awareness, is sufficiently holistic that it could comprehend all the laws of nature that affect human life.

To live a life in accordance with natural law has been the goal of moral philosophers²⁹ and thoughtful medical scientists³⁰ throughout history. These scholars have attempted to develop codes of behavior based on intellectual knowledge of the laws of nature. An intellectual approach, however, can at best be incomplete because the totality of all the laws of nature is too vast and complex to be understood intellectually. It is nevertheless possible for human awareness to comprehend *by direct experience* the unified field, the completely holistic level of natural law from which nature spontaneously conducts all activity in the universe.^{4-5,22-25} By repeated experience,²⁵ the mind becomes identified with this field, and thereby develops an innate familiarity with the total potential of natural law upholding life and evolution on all levels of the physical universe. Thought and action become automatically aligned with the evolutionary power of natural law,⁵ and thereby enjoy the same natural effectiveness and efficiency with which nature governs the universe—with absolute efficiency and economy in accordance with the universal principle of least action.²³

Freedom from Stress

In his seminal book, *Life Supported by Natural Law*,⁵ Maharishi Mahesh Yogi explains that the violation of natural law through improper thought and action causes stress in the individual nervous system. That is, action which is unsuitable or goes against the natural functioning of the mind and physiology produces strain and stress in that particular area of the physiology or nervous system. Stress is defined as a structural or chemical abnormality in the physiology which obstructs the proper functioning of the nervous system in that specific area. This description is corroborated by medical evidence concerning the nature

of stress and its effect upon the nervous system.³⁰

The continued violation of natural law results in accumulated stress, which causes problems for the individual mind, body and behavior. Stress that is not alleviated by the body's resting cycle or by the body's natural homeostatic and self-repair mechanisms builds up in the nervous system, and ultimately manifests as disease or some other form of physiological or psychological disturbance. (Over 80% of diseases are now known to be stress-related.³¹) Accumulated stress causes tension, frustration, ill health and unhappiness and, according to Maharishi,²⁵ is the underlying cause of destructive, violent and other anti-social behavior. Unhappiness, imbalance and frustration in turn promote further violations of natural law, creating more stress, and a dangerous cycle is created. A technology to alleviate stress and to bring life spontaneously into accord with natural law is therefore essential to safeguard against the consequences of stress for the individual's health and happiness.

Society is essentially a collection of individuals. On a societal level, the accumulation of stress through the violation of natural law by all the individual citizens of society leads to the same type of collective ill health and anti-social behavior that results from stress on the individual level. In *Life Supported by Natural Law*,⁵ Maharishi identifies violation of natural law and the resulting accumulated stress levels in society as the basic cause of collective ill health (and associated spiralling health-care costs) and collective frustration, leading to crime, drug abuse, violence and other anti-social behavior. According to Maharishi, the continued buildup of stress in collective consciousness ultimately manifests as war and other collective calamities. This is very much in accord with current thinking in the field of political science, where lack of fulfillment and collective stress levels in society are increasingly seen as the principal cause of war.^{1,2}

From our previous discussion it follows that practice of the Maharishi Technology of the Unified Field by individual citizens of a nation, by bringing life into accord with natural law and preventing the buildup of collective stress, would remove the underlying cause of war. Unfortunately, as an immediate practical program, it may be somewhat unrealistic to expect that an entire population could be trained in the Maharishi Technology of the Unified Field and would practice the technology regularly. Fortunately, however, research has found that the practice of the Maharishi Technology of the Unified Field by the whole population is not necessary in order to achieve significant results. Repeated studies have shown that as few as the square root of one percent of a population practicing the Maharishi Technology of the Unified Field as a group is sufficient to produce a significant and demonstrable drop in crime rate, accidents, and other indicators of collective stress,^{12,32} and even to reduce violence and war in areas of intense international conflict.¹²⁻¹⁶ These far-reaching effects produced by a small proportion of the population are the result of "field effects of consciousness" generated by group practice of the Maharishi Technology of the Unified Field.

Field Effects of Consciousness

If consciousness in its deepest aspect is fundamentally a field, as our previous analysis along with the experience of millions of individuals practicing the Maharishi

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Technology of the Unified Field has shown, then phenomena of consciousness must necessarily include processes that are inherently field-like, or unlocalized, in nature. At present, the most striking and important application of this new scientific framework for the understanding of consciousness is the *Maharishi Effect*, which refers to extended field effects of consciousness produced by the collective practice of the Maharishi Technology of the Unified Field. Over thirty consecutive studies provide conclusive evidence that group practice of an advanced aspect of the Maharishi Technology of the Unified Field called the *TM-Sidhi program* by as few as the square root of one percent of a population reduces violence, crime, and other manifestations of societal stress.^{12-16,32-37} These studies use statistical analysis of standard sociological measures to assess the influence of groups of experts collectively practicing the TM-Sidhi program on a surrounding population. Because of the importance of these empirical results for our practical assessment of this new approach and technology for world peace, a brief summary and interpretation of the research is included here.

Historical Development

In 1960, Maharishi predicted that one percent of a population practicing the Transcendental Meditation technique would produce measurable improvements in the quality of life for the whole population. The first study designed to test this prediction¹² analyzed crime rate change in 22 U.S. cities (population > 25,000) from 1972 to 1973. Crime rates decreased in the 11 cities with one percent of the population practicing the Transcendental Meditation technique, while crime rates in the matched control cities continued to rise. A more extensive study³⁸ analyzed crime rate trends in 48 U.S. cities (population > 10,000) over the 11-year period from 1967 to 1977. This included all independent cities in this population range with one percent of the population instructed in the Transcendental Meditation program. Crime rates decreased significantly in the 24 “one percent” cities compared with their own previous trends and compared with 24 matched control cities over the same period. Subsequent replications have analyzed crime rate trends in 160 cities and 80 metropolitan areas in the U.S. using increasingly powerful design and analysis techniques,³² and have further demonstrated Maharishi’s prediction that participation in the Transcendental Meditation program would lead to a reduction in crime rate trends.

With the introduction of the more advanced TM-Sidhi program in 1976, Maharishi anticipated a more powerful influence of coherence in the collective consciousness of society. He predicted that group practice of the TM-Sidhi program by as few as the square root of one percent of a population* would have a demonstrable effect on standard sociological measures.

The relatively small number of participants practicing the TM-Sidhi program predicted to generate this effect of societal coherence has made it possible for many direct experimental studies to be performed in which the necessary number of participants come together on courses in various locations for periods of time ranging from one

*This prediction is based on a field-theoretic model which assumes a coherent superposition of amplitudes, such that the intensity of the effect generated is proportional to the square of the number of participants.

week to several months. Most of these studies, including research at the metropolitan, state, national and international scales, have used time series analysis to reliably estimate experimental effects independent of cycles and trends in the data. This type of research design, called an experimental intervention study, constitutes a unique and rigorous approach for the social sciences.

Time Series Analysis

The effects of the Transcendental Meditation and TM-Sidhi program on quality-of-life indices are usually assessed with time series analysis using the autoregressive integrated moving average (ARIMA) approach of Box and Jenkins.³⁹ (A time series is a sequence of equally-spaced measures on some variable, e.g., monthly crime rate.) This methodology has become the standard for rigorously estimating the effects of an outside intervention on a time series or for empirically determining the form of causal relationship between two continuous time series.⁴⁰ Time series “intervention analysis” is used to assess effects of hypothesized influences during specific time periods (e.g., when the number of TM-Sidhi participants exceeds a certain critical threshold). Time series “transfer function analysis” is used to model the input-output relationship between a continuous independent exogenous variable (e.g., the daily number of TM-Sidhi participants) and the dependent or endogenous variable (a social indicator such as crime rate).

With both methods, the time series approach controls for any serial dependence of observations, trends, or seasonal cycles in the data over time by including these influences in a “noise model” of the series.⁴⁰ That is, as part of the time series analysis a mathematical model of the time-dependent regularities in the endogenous series is constructed, and this model will account for, and therefore control for, patterns in the endogenous time series that can be predicted from its own past history. The noise model thus serves essentially as a “null hypothesis” for effects of the exogenous variable.* Any intervention effects or transfer function effects on the endogenous variable indicate effects of the independent variable that cannot be predicted either from the previous history of the series or from any unmeasured continuous variables that may be partially determining the endogenous variable. These time series methods have proven to be ideal for assessing the effects of the group practice of the TM-Sidhi program upon sociological indicators.

*The noise model $N_t = [\theta(B)/\phi(B)]a_t$, where $\phi(B)$ and $\theta(B)$ specify autoregressive and moving average parameters, respectively, at various time lags, and where a_t is a series of independent and normally distributed random disturbances. The term (B) indicates a backshift operator that is used to model lagged influences in a time series. The noise model effectively removes the serial dependence of the data by modeling it, and the residuals to the noise model (a_t) form independent data points.

Transfer function analysis models the endogenous time series Y_t as $Y_t = C + V(B)X_t + N_t$, where X_t is the continuous exogenous series, $V(B)$ is the transfer function connecting the two series, C is a possible constant, and N_t is the stochastic noise model that specifies the combined nonrandom (time-dependent) influences other than the exogenous series.³⁹ Intervention analysis employs an identical model, except that the exogenous variable is a binary intervention series I_t , specifying the time periods during which an intervention occurred.

The transfer function or intervention effect $V(B)$ is approximated by $\Omega(B)/\delta(B)$, where $\Omega(B)$ contains parameters indicating the time delay of influence of the exogenous variable and the magnitude of its effect at various time lags, and where $\delta(B)$ contains parameters specifying the rate at which this influence decays (for an abrupt temporary effect) or grows (for a gradual permanent effect).³⁹ The time series methodology can thus be used to model both linear and nonlinear influences of one series on another.

Recent Intervention Studies

Within the past few years, there have been an increasing number of experimental studies using time series intervention and transfer function analysis to assess the effects of the group practice of the TM-Sidhi program at the metropolitan, state, national, and international scales.

At the metropolitan and state levels, time series intervention studies found reduced crime in Metro Manila, Philippines, in New Delhi, India, and in Puerto Rico during periods in which large groups had assembled for conferences involving twice daily practice of the TM-Sidhi program.⁴¹ Time series transfer function analysis similarly found a reduction in violent crime in Washington, D.C., in weeks following an increase in the size of a permanent group of TM-Sidhi participants.³⁸ Other intervention studies in Metro Manila and in Rhode Island found improvements in holistic indices of the quality of life composed of available monthly social indicators during periods of assemblies of large groups of TM-Sidhi participants.⁴¹

The most well-documented analyses at the national level have been in the U.S., where a permanent large group of participants in the TM-Sidhi program has been established at Maharishi International University (MIU). Since 1982, the size of this group has periodically exceeded the square root of one percent of the U.S. population. An analysis of annual changes in a quality-of-life index comprising 11 major variables showed a significant improvement correlated with the size of the group of TM-Sidhi participants.³³ More detailed analyses of the U.S. quality of life using time series intervention and transfer function analysis during 1979–1985 found reduced weekly fatalities due to violence (homicides, suicides, and motor vehicle accidents) on weeks immediately after the size of the MIU TM-Sidhi group exceeded the square root of one percent of the U.S. population.³⁴ This analysis showed that two-thirds of the observed decrease in U.S. violent fatalities from 1979 to 1985 could be directly attributed to the group practice of the TM-Sidhi program. Reduced violent deaths were also found in Canada when the size of the MIU group exceeded the square root of one percent of the combined populations of the U.S. and Canada.³⁵ In addition, time series intervention analysis of monthly U.S. and Canadian economic trends (a “misery” index combining inflation and unemployment) showed improved economic conditions in months immediately after the number of participants exceeded the required number (1,600) for the population of the U.S. and Canada.³⁶ (Please refer to Cavanaugh’s article in this issue.)

There have been three assemblies in which the number of TM-Sidhi participants approached or exceeded the square root of one percent of the world’s population—about 7,000 individuals. During each of these assemblies, there was a significant reduction of international conflict, as indicated by time series intervention analysis of news events.³⁷ The time series of news events was created from content analysis (rating of news items) of major newspapers by raters who were unaware of the dates of the news items being rated. Time series analysis also indicated a significant reduction in fatalities and injuries due to terrorism during and immediately after the period of these assemblies; data on terrorism was collected by an independent agency.³⁷

Reduction of Violence in the Middle East Through the Maharishi Effect

One especially critical experimental test of the hypothesis that the group practice of

Maharishi Effect: Reduced Conflict in Lebanon and Improved Quality of Life in Israel

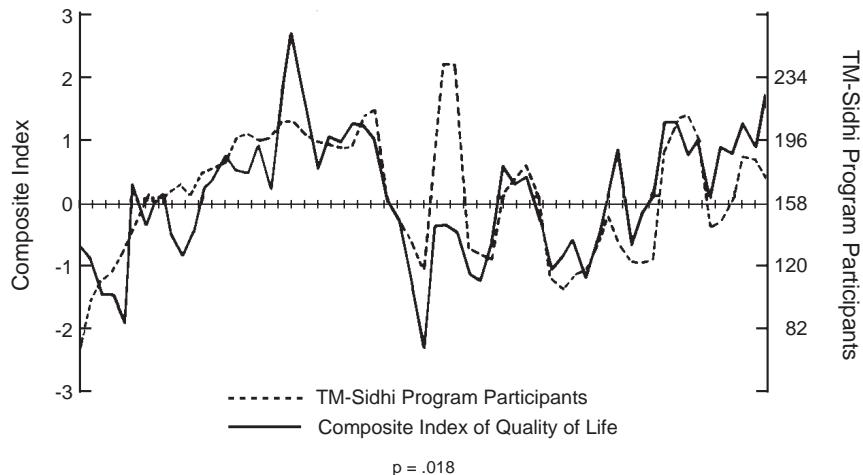


Figure 2. This figure illustrates the covariation between the number of TM-Sidhi participants (dashes) and a composite index of quality of life in a study conducted in Israel during August and September of 1983. The composite index was the arithmetic average of standardized scores for crime rate, traffic accidents, fires, stock market, national mood, and the number of war deaths as a measure of war intensity in Lebanon. The sociological parameters employed in this study were lodged in advance of the experiment with an independent review board of scientists in the United States and Israel. (Figure courtesy of D. W. Orme-Johnson.)

the TM-Sidhi program by the square root of one percent of a population would positively affect sociological measures was conducted in Israel in August and September of 1983.¹³ Based on the results of previous experiments, the research hypotheses and the specific measures to be used in the study were lodged in advance of the experiment with an independent review board of scientists in the U.S. and Israel.

It was predicted that group practice of the TM-Sidhi program in Jerusalem would reduce stress in the collective consciousness of Israel and Lebanon. Box-Jenkins ARIMA intervention, cross correlation, and transfer function analyses were used to study the effects of changes in the size of the group on several variables and composite indices reflecting the quality of life in Jerusalem and Israel, and also the war in Lebanon.

Figure 2 shows a striking covariation between the size of the group of TM-Sidhi participants (dotted line) and a composite index of quality of life that was the arithmetic average of standardized scores for crime rate, traffic accidents, fires, stock market, national mood, and the number of war deaths as a measure of war intensity in Lebanon.

Increases in the size of the group had a statistically significant effect on the individual variables and on the composite quality-of-life index. Cross correlations and transfer functions indicated that the group had a leading relationship to change on the quality-of-

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Figure 3. During the six-month period from November 13, 1983 to May 18, 1984 a measure of war intensity in Lebanon was most positive during three assemblies in which the number of TM-Sidhi participants exceeded the predicted thresholds required for an influence on the war. Time series analysis indicates significantly greater progress toward peaceful resolution of the conflict during these assemblies than would have been predicted from the prior history of the Lebanon war ($p < .00005$). The particularly large effect coincident with the Lebanon assembly held in the immediate vicinity of the conflict suggests the importance of proximity in the generation of societal coherence. (Figure courtesy of C. N. Alexander.)

life indicators, supporting a causal interpretation. There was a 45% reduction in war intensity and a 76% reduction in war deaths during periods of high numbers of TM-Sidhi participants. Time series analysis demonstrated that the effect could not be attributed to seasonality (such as weekend effects or holidays) or to changes in temperature.

The hypothesis that the influence occurs on a fundamental and holistic level of nature is supported by the fact that the arithmetic average of the different measures produced the clearest results and by the observation that the different sociological measures tended to change independently of each other when the group size was small, but all changed coherently in a positive direction as the group size was increased.

A subsequent study (Figure 3) assessed the impact on the Lebanon war of three successive assemblies in which large groups practiced the TM-Sidhi program during a six-month period from November 13, 1983 to May 18, 1984.¹⁴ The assemblies were held in the United States, Lebanon and Yugoslavia, and were approximately two weeks long.

The authors used a time series intervention analysis of the Lebanon war to compare levels of conflict during the days on which the assemblies occurred compared to the baseline period which consisted of all other days during the six-month period of the study. The level of the conflict was measured by three indices: daily levels of a

Peace/War Index¹⁵ of events reported in major Lebanon newspapers, daily reported war deaths, and daily injuries due to the war. The scoring was performed by representatives of the different factions involved in the conflict, and inter-rater reliability was high.

As predicted in advance, the Peace/War Index showed that prevailing negative conditions were abruptly reversed, and greater progress toward peaceful resolution of the Lebanon conflict was observed than would have been expected based on the prior six-month history of the war ($p < .00005$). War deaths fell by 55%, from a mean of 6.5 per day during the baseline period to a mean of 2.9 per day during the three assemblies ($p < .0005$). War injuries fell by 38%, from a mean of 20.6 per day during the baseline period to a mean of 12.7 per day during the assemblies.

The study of the Lebanon conflict was subsequently expanded to include a daily time series intervention analysis of a 27-month period during which there were seven assemblies of TM-Sidhi participants of sufficient size to influence the Lebanon conflict according to the square root of one percent formula.¹⁶ These assemblies, which ranged from a small group in the central area of fighting within Lebanon, to larger groups in Israel, Yugoslavia and the Netherlands, to three groups of up to 7,800 in the U.S., are the only ones in the last decade of sufficient size in relation to their proximity to Lebanon to exceed the threshold for a predicted impact there. For each assembly lasting between one and eight weeks, improvements in quality of life (including reduction of political violence and progress toward peace) were predicted publicly and in advance for the surrounding population equal to $\sim 100 n^2$, where n is the number collectively practicing the TM-Sidhi program. For a total of 93 days, or 11.33% of the period of the study, this population included all or most of Lebanon, or at least the primary region of conflict within Lebanon.

The 821-day data base, which included daily levels of cooperation and conflict and the number of reported war fatalities and injuries, was generated using independently developed 16-point scales of cooperation and conflict.⁴² Events were coded by an experienced Lebanese coder, blind to the experimental hypotheses and unaware of the assemblies and the technology employed, from eight international news sources, including *The New York Times*, and news broadcasts from radio stations in and near Lebanon representing all major parties to the conflict, as reported by the *Foreign Broadcast Information Service*.

Box-Jenkins intervention analyses indicated (Figure 4) that in contrast to nonexperimental days, during the 93 days when assemblies were sufficiently large for a predicted impact in Lebanon there was an estimated:

1. 66% mean increase in level of cooperation among antagonists ($t = 4.96$, * $p = 4 \times 10^{-7}$);
2. 48% reduction in level of conflict ($t = -5.81$, $p = 3 \times 10^{-9}$);
3. 71% reduction in war fatalities ($t = -6.45$, $p = 1 \times 10^{-10}$); and
4. 68% reduction in war injuries ($t = -4.91$, $p = 5 \times 10^{-7}$).

*The value of $/t$ coincides approximately with the number of standard deviations when the number of degrees of freedom is ≥ 30 as in the case of the present study.

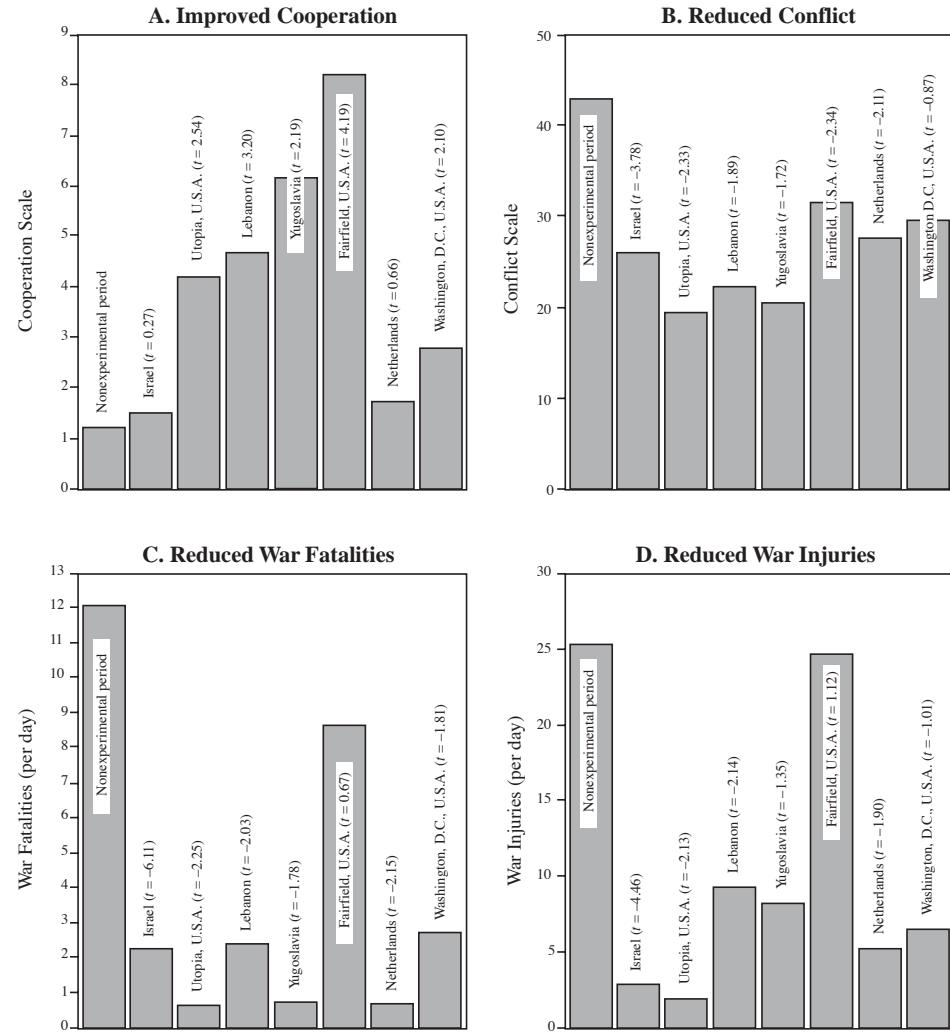


Figure 4. Mean daily level of cooperation (A), levels of conflict (B), number of war fatalities (C), and number of war injuries (D) in the Lebanon War during the nonexperimental and each of seven experimental periods from June 1983 to August 1985. Time series intervention analysis indicates: (A) significant improvements in the level of cooperation during five of the experimental periods, and during all seven combined ($p = 4 \times 10^{-7}$); (B) significant reductions in the level of conflict during six of the experimental periods, and during all seven combined ($p = 3 \times 10^{-9}$); (C) significant reductions in the number of war fatalities during six of the experimental periods, and during all seven combined ($p = 1 \times 10^{-10}$); (D) significant reductions in the number of war injuries during four of the experimental periods, and during all seven combined ($p = 5 \times 10^{-7}$). (Figures courtesy of J. Davies.)

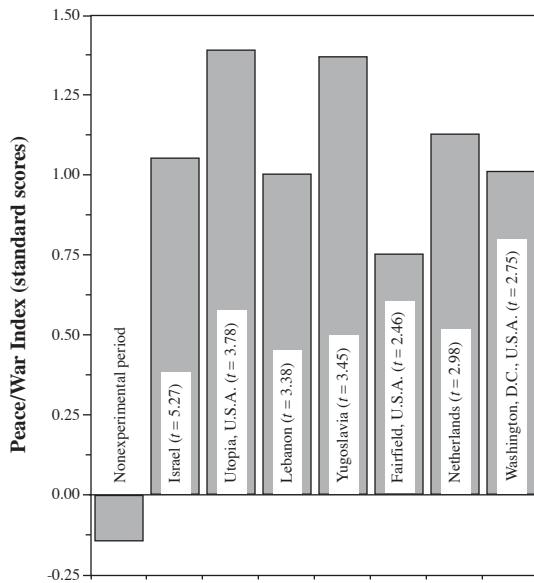


Figure 5. Estimated mean daily level of a composite Peace/War Index for the Lebanon War for each of seven experimental periods between June 1983 and August 1985. Time series intervention analysis indicates significant progress toward peace during each experimental period, and for all seven combined ($p = 9 \times 10^{-20}$). (Figure courtesy of J. Davies.)

A composite Peace/War Index combining these variables indicated (Figure 5) that the seven assemblies each had independently significant positive effects on the war ($t = 9.03$, $p = 9 \times 10^{-20}$). The study employs an interrupted time series design with multiple replications, which offers a “very powerful” basis for addressing the issue of causality.⁴³ Changes in temperature or holidays did not account for any of the improvements during each assembly. The mean temperature on experimental days (which were spread across all four seasons) was slightly higher than on other days, yet despite an overall tendency for higher levels of violence to occur on hotter days, violence still diminished sharply on experimental days. The possible impact of religious and national holidays was separately assessed, and in the one case where these had a significant impact on the war (cooperation was higher on Muslim holidays) this was also included as part of the null model when assessing the impact of the assemblies.

The possibility that improvements were due to the assemblies being initiated in response to worsening conditions in the war, and thus being held when the conflict was improving anyway (through regression toward the mean), may be discounted for several reasons. First, all assemblies except that in Lebanon were announced several weeks or months in advance, and dates set without reference to the situation in Lebanon, which was no more a concern than other trouble spots within the range of impact of each assembly. Second, the statistical independence of the occurrence of the assemblies from patterns of

behavior in the war (dependent series) in the weeks and days immediately preceding and following the assemblies was explicitly tested and confirmed. Finally, it is clear from the results that the observed impact on each variable represents improvement substantially away from the mean, not regression toward it. For the same reasons, the improvements could not be due to convening assemblies at the first sign of improvement in the war. Also, positive changes were found to occur with zero time-delay, from the first day of each experimental period: that is, the periods began before the improved events could be reported in the press, and ended before renewed violence could be reported.

The design of the experiment also precluded explanation in terms of coincidence, *post hoc* selection of data, or measurement artifact. Coincidence may be ruled out on the basis of extremely low probability values (9×10^{-20} on the Peace/War Index), and the high level of consistency across all indices and replications (assemblies). *Post hoc* selection of assemblies, variables or data sources was precluded through announcement to the media (and in some cases to independent review boards) of dates and predicted effects prior to each assembly (again excepting that held in Lebanon). Any possibility of measurement artifact or bias was severely limited through use of independently developed scales, multiple news sources representing all parties, and a highly experienced coder, familiar with the political and cultural context of the war, but blind as to the nature of the hypotheses, the independent variable, and the theory and technology on which the hypotheses were based.

Explanation of observed improvements as a consequence of publicity or other behavioral interactions between assembly organizers or participants and the people fighting in Lebanon can also be excluded. Only in the Lebanon assembly was there any possibility of direct personal interaction, and that was minimized in that participants and organizers remained isolated in their facility in a small village except for such activities as purchase of food and travel when first joining or leaving the assembly. In no case did the media in Lebanon carry any prior or concurrent news items concerning any of the assemblies, nor was there any attempt during any assembly to create any expectation of change, or otherwise influence the behavior of parties to the conflict other than through practice of the Transcendental Meditation and TM-Sidhi program (which involves an inward focus of attention, to maximize coherence and normalize stress principally for the purpose of personal development).

These findings strongly support the hypothesis that societal coherence can be enhanced, and even protracted violence alleviated, across any population size as a spontaneous and nonintrusive field effect generated by the group practice of the TM-Sidhi program.

Physical Interpretation

In addition to their obvious practical importance for eliminating war and raising the quality of life in society, these research findings clearly have profound implications concerning our understanding of consciousness and its relation to the physical world. Indeed, they appear to invalidate completely the prevailing psychological and sociological paradigm, in which consciousness is viewed as a purely superficial and localized phenomenon—i.e., the macroscopic outcome of complex biochemical and electro-

physiological processes in the brain. Instead, the Maharishi Effect research suggests that consciousness, in addition to its obvious localized content, has a deeper, unlocalized, field-theoretic basis, in agreement with our previous discussion and analysis.

In such circumstances, it is vital that leading physicists, psychologists and other scholars carefully assess the impact of these findings on our understanding of the natural universe. One such analysis is presented in ref. 22, where it is shown that these results are consistent with the current framework of unified quantum field theories, but require an expanded physical framework for our understanding of consciousness. We will summarize the main elements of that analysis here.

Although it would be more accurate to say that the Maharishi Effect data constitutes evidence for an “action at a distance” with respect to consciousness rather than a “field effect” per se, physics has historically come to associate action at a distance with field phenomena. The observed attenuation of the effect with distance (i.e., the fact that a relatively small group in Lebanon produced an effect comparable to a group of over 7,000 halfway around the globe) would support such a field-theoretic interpretation. The quadratic dependence of the intensity of the effect upon the size of the coherence-creating group is also characteristic of a field phenomenon in which the radiators are operating coherently. More specifically, the coherent superposition of amplitudes required to produce such an intense constructive interference suggests the behavior of a *bose field*.

However, there are certain features of the Maharishi Effect that are not easily understood on the basis of a conventional field. The main difficulty with a simple field-theoretic model is in understanding the observed data on the basis of any of the *known* fields. The only known candidates for such long-range interactions are electromagnetism and gravity. Any conventional gravitational interaction between individuals is presumably orders of magnitude too weak.* Moreover, it is generally agreed that the electromagnetic interaction between individuals would also be too weak to give rise to any significant effects. This conclusion is probably reasonable despite new evidence that the physiology may be sensitive to environmental AC electric fields six to seven orders of magnitude weaker than had been previously considered possible.⁴⁴ In fact, the brain appears to be particularly sensitive to EEG-modulated microwave radiation in the 0.5–10 gigahertz range, offering a potential mechanism for EEG communication and entrainment. It has been shown by Tourenne⁴⁵ that certain cellular structures within the cortex that support the propagation of electromagnetic solitons could provide highly efficient radiators of microwave radiation, which would presumably be modulated in the EEG band.

While we therefore feel it is essential to pursue possible electromagnetic mechanisms for the Maharishi Effect, these mechanisms at present appear unable to account for the observed phenomenology. (Moreover, there was no evidence of attenuation in an instance where the coherence-creating group was electromagnetically shielded by a metallic enclosure.⁴⁶)

*This also holds true for possible spin-1 forces that interact with gravitational strength, such as a proposed “fifth force” or the gauge bosons associated with a hidden sector. (The latter would probably operate only at short distances anyway due to confinement effects.) The same is presumably true of other weakly-interacting bosons that have escaped detection in particle physics experiments.

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If conventional mechanisms are unable to account for the observed data, then some unconventional mechanism involving new physics is clearly needed. Since there are no other long-range forces of electromagnetic or comparable strength, one is led to consider alternative theoretical frameworks that could serve to bridge the substantial distance barriers involved. One such framework is provided by the structure of spacetime geometry at the scale of super-unification—the proposed domain of pure consciousness.

Although we do not currently possess the calculational tools needed to unfold the full dynamics of quantum gravity, there are strong indications that the local $3 + 1$ dimensional structure of classical spacetime geometry observed at distances larger than the Planck scale may provide a totally inappropriate framework for physics at the scale of superunification. Indeed, today's unified quantum field theories based on the superstring point to an entirely different spacetime structure which transcends $3 + 1$ dimensions completely. In these theories, an abstract $1 + 1$ dimensional spacetime structure of the string itself dynamically generates the emergent $3 + 1$ dimensional classical spacetime, possibly through a sequence of intermediate stages (e.g., through a ten dimensional low-energy effective field theory). In this dynamics, the very existence of an emergent, local, causal spacetime structure depends intimately upon the assumption of a perturbative string vacuum.⁴⁷ More generally, one expects nonperturbative string dynamics to produce nonlocal effects—effects that defy interpretation within the assumed $3 + 1$ dimensional, local structure of classical spacetime geometry. One would therefore expect that if the domain of consciousness is fundamentally the superunified scale, then phenomena of consciousness could include influences that are inherently nonlocal. Indeed, the Maharishi Effect data can be viewed as powerful evidence that individual consciousness can access the scale of superunification, consistent with the proposed identity between pure consciousness and the unified field.*

A question often raised by physicists is how human consciousness could possibly interact with physics at such fundamental scales. This question stems from the recent but relatively widespread misunderstanding of what consciousness is, i.e., a purely superficial product of complex biochemical and electrophysiological processes in the brain. Such a viewpoint may seem compatible with the restricted range of experience available in waking consciousness (in which consciousness itself is not directly perceived), but it is clearly incompatible with experience in higher states of consciousness. For example, in the state of pure consciousness, consciousness experiences itself as an unbounded field and as the unified source of all the laws of nature: all forms and phenomena in the universe are experienced to emerge from there, and can be generated at will through the application of the TM-Sidhi program. According to Maharishi and our analysis above, the natural range of consciousness is from point to infinity: from the localized boundaries of sensory experience, through increasingly more expanded and universal levels of thought and feeling, to the unbounded field of pure, abstract, self-interacting consciousness. Maharishi explains that the range of one's experience and

*There exists an entirely different class of nonlocal effects in physics that does not explicitly involve the dynamics of the super-unified scale and which might be proposed as an alternative mechanism for the Maharishi Effect. This is the reduction of the wave function in quantum mechanics. It is argued in ref. 22 that this alternative framework leads to similar conclusions regarding consciousness and its relations to the physical world.

conscious influence is limited only by one's range of comprehension—i.e., localized or unbounded—and that the Maharishi Effect is simply a result of collective functioning at more fundamental and universal levels of consciousness. The empirical research presented above affords a striking confirmation of this profound new perspective—and of its immense practical importance for the individual and society.

One additional useful approach to understanding the widespread effects of collective practice of the Maharishi Technology of the Unified Field is through the enlivenment of the evolutionary qualities of the unified field in the collective consciousness of society. When, through the practice of the Maharishi Technology of the Unified Field, the conscious mind identifies with the unified field, the essential characteristics of the unified field become enlivened in the awareness. In other words, as individual consciousness awakens more and more fully to the reality of what it fundamentally is—the unified field of natural law—the essential qualities of the unified field are reflected more and more fully in the nature of the mind. This accounts for the scientifically documented⁶⁻¹⁰ upsurge of qualities like “harmonizing,” “nourishing,” “integrating,” “pure intelligence,” “infinite creativity,” “infinite dynamism,” “infinite silence” and “invincibility” in the mind and physiology of individuals practicing the Maharishi Technology of the Unified Field. (Please refer to the Appendix, entitled “Qualities of the Unified Field.”)

Through group practice of the Maharishi Technology of the Unified Field by even a small proportion of the population, these same evolutionary qualities become enlivened in the collective consciousness of society. In other words, because the unified field is a field which underlies everything and is present everywhere, the enlivenment of its qualities is necessarily a field phenomenon, whose effects will be felt everywhere. The upsurge of all the evolutionary qualities of the unified field in collective consciousness during periods of group practice of the Maharishi Technology of the Unified Field has been scientifically confirmed by numerous studies,^{12-16,33-39} and provides a relatively simple means of understanding how collective practice generates positivity and coherence throughout society as a whole.

Conclusion

Despite the age-old desire for peace among nations, conflict and war have been a constant reality throughout human history. Even in the last 40 years since the United Nations was founded to “put an end to all wars,” over 150 wars have ravaged nations and claimed the lives of millions of victims across the globe. The repeated failure of the United Nations and of man’s best efforts to ensure peace has simply been due to the lack of a suitable technology for peace. Political negotiations, pacts and treaties do not address the root cause of war—lack of fulfillment of individuals and resulting stress levels in society—and thus cannot provide a reliable basis for permanent peace on earth.

In this article we have presented a new science and technology of world peace based on the unified field of natural law. This new technology acts at the most fundamental and powerful level of nature’s dynamics to eliminate collective stress, and to create an actual *physical* influence of peace in collective consciousness. This orderliness and coherence spreads throughout society through extended field effects of consciousness

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(the Maharishi Effect), resulting from the fact that consciousness, at its absolute basis, is identical to the unified field of natural law recently discovered by modern science. The physical influence of harmony and coherence produced by collective practice of the Maharishi Technology of the Unified Field removes negative, chaotic, and violent trends in society, and thereby strikes at the root cause of war. It thereby creates a stable, fertile ground on which the conventional political approaches for creating peace can begin to bear real and lasting fruits. The effectiveness of Maharishi's technology for world peace has been more thoroughly and rigorously tested than any other technology or approach in the history of political and social science—and under the most severe conditions of intense international conflict. More than 30 separate studies appearing in refereed scientific journals conducted by independent researchers at leading institutes throughout the world have confirmed the efficacy and practicality of this new methodology. In light of this overwhelming body of evidence and of the simplicity and cost effectiveness of the approach, it should be the clear responsibility of every government to create a group of experts practicing the Maharishi Technology of the Unified Field as a powerful means to prevent further war. Indeed, in consideration of the continued suffering and immense cost to humanity caused by war, it should soon become a punishable offense for any government to neglect this key responsibility, just as it is a punishable offense in any civilized country for a doctor to deny a patient the medicine that he needs. With a practical and proven technology of peace, war and conflict should disappear from the face of the earth along with smallpox, polio and other maladies for which modern cures exist.

Every responsible citizen, together with every political and academic leader, should use his or her influence and authority in society to create a coherence-creating group of 7,000 experts practicing the Maharishi Technology of the Unified Field in their nation as soon as possible to put an end, once and for all, to the age-old tradition of violence and conflict and to create a permanent foundation for peace on earth.

The spontaneous and direct practical application of the unified field to enrich all aspects of life contrasts with the previous application, through technology, of specific, isolated laws of nature based on the intellectual understanding of those laws. It was this scientific understanding of specific laws of nature and their technological application that laid the foundation for the industrial revolution, in which more and more rapid progress became possible through the use of increasingly sophisticated machines and technologies. Now, the continued progress of society demands the *spontaneous* utilization of the *total potential of natural law* to enrich all aspects of life in a completely balanced and holistic way. This spontaneous application of the total potential of natural law will lay the foundation for a post-industrial revolution to a unified field based civilization—a civilization based on the complete knowledge and practical utilization of the unified field of natural law.

The application of this science and technology of the unified field to health, education, rehabilitation, economics, and world peace has already demonstrated its capacity to produce a quality of life and civilization which is far beyond that which was possible based on previous levels of scientific knowledge. By providing a practical and proven formula for raising life to be lived spontaneously in accord with natural law, the

Maharishi Technology of the Unified Field will raise the quality of life in society to a level of dignity, harmony and supreme fulfillment unparalleled in the annals of recorded history—a unified field based ideal civilization in which everyone enjoys fulfilling progress, and life everywhere is supported by the invincible, evolutionary power of natural law.

Appendix: Qualities of the Unified Field

The essential characteristics of the unified field are derived below from a detailed analysis of the Lagrangian of the superstring. The Lagrangian represents the most compact mathematical expression of the detailed structure of the unified field—its symmetries, components, and self-interaction. In order to facilitate the derivation of the essential characteristics of the unified field, the Lagrangian is presented in several stages of its sequential unfoldment (please refer to Figure 6). This sequential unfoldment begins with the abstract Lagrangian of the superstring itself which, although valid at all time and distance scales, is especially relevant to physics at the superunified scale. This is followed by the Lagrangian of an $N = 1$ locally supersymmetric point particle theory, which is the low-energy effective field theory obtained from the massless modes of the string. This Lagrangian is presented in both its manifestly supersymmetric, superfield formulation as an integral over superspace variables and in its more elaborated component form. Finally, we present the Lagrangian of the standard $SU(3) \times SU(2) \times U(1)$ theory of the strong, weak, and electromagnetic forces relevant to physics at ordinary scales. Every stage in the sequential unfoldment of the laws of nature from the unified field has its corresponding Lagrangian, bringing to light new qualities of the unified field which were present but unexpressed at the level of the superstring.

Derivation

¹ **All Possibilities:** All possible worldsheet topologies and all possible field histories contribute to the superstring partition function Z , which embodies the complete dynamics of the quantized theory.

¹ **Omniscience:** The partition function simultaneously computes all possible world histories P and their associated actions $\int L(P)$ in determining the quantum-mechanical evolution of the system.

¹ **Freedom:** In the free-fermionic formulation, the unified field is comprised of free, noninteracting bosonic and fermionic degrees of freedom defined on the superstring.

¹ **Unmanifest:** The fundamental bosonic and fermionic string degrees of freedom remain unmanifest—they do not appear as particles in the physical spectrum.

¹ **Simplicity:** The entire, diversified structure of natural law emerges sequentially from the simple, unified dynamics of a relativistic quantum string.

Figure 6. The qualities of the unified field derived from the Lagrangian of the superstring.

- ¹ **Omnipotence:** The laws governing the dynamics of the unified field are absolute and invincible. The low-energy effective field theories governing physics at larger scales are merely partial reflections of, and approximations to, the total potential of natural law available at the level of the superstring.
-
- ¹ **Total Potential of Natural Law:** All the massive and massless string modes are fully enlivened as dynamical degrees of freedom at the Planck scale.
-
- ¹ **Discriminating:** The boundary conditions of the 4-D string construction discriminate among thousands of possible string vacua.
-
- ¹ **Fully Awake Within Itself:** The zero-point motion (quantum fluctuations) of the unified field reaches its ultimate level of dynamism at the Planck scale.
-
- ¹ **Bountiful:** The energy eigenspectrum of the quantized string field contains an infinite tower of massive string modes in addition to all the massless modes responsible for the observable universe.
-
- ¹ **Infinite Silence:** Expressed by the noninteracting nature of the fundamental string degrees of freedom.
-
- ¹ **Infinite Dynamism:** Expressed by the dynamical interaction of all the various fields appearing in the effective low-energy theories derived from the superstring.
-
- ¹ **Pure Knowledge:** The Lagrangian represents the most compact mathematical expression of the complete structure of the laws of nature at every level.
-
- ¹ **Infinite Organizing Power:** The Hamiltonian operator, derived from the Lagrangian by a Legendre transformation, dynamically generates all activity in the universe.
-
- ¹ **Evolutionary:** The Hamiltonian operator generates the time evolution of the universe.
-
- ¹ **Perfect Orderliness:** Reflected in the superconformal invariance, local supersymmetry, and gauge symmetries of the Lagrangian.
-
- ¹ **Self-Sufficiency:** The structure and dynamics of the unified field is sufficient within itself to initiate spontaneous gauge and supersymmetry breaking radiatively, leading to the sequential unfoldment of the diversified structure of natural law illustrated in the chart.
-
- ¹ **Purifying:** Broken symmetries are successively restored at more fundamental space-time scales, ensuring the consistency and renormalizability of the theory.
-
- ¹ **Infinite Creativity:** The fountainhead of natural law—from this unified source, all the particles and forces of nature emerge through a sequential process of spontaneous symmetry breaking.
-

1 Integrating: The gravitino dynamically upholds local supersymmetry, which integrates the different spin components of the various supermultiplets, maintaining the unbroken wholeness of the superfields.

1 Harmonizing: Supersymmetry unifies completely opposite values—bose and fermi fields—within the context of a single superfield.

1 Perfect Balance: Supersymmetry—the perfect balance of bosonic and fermionic degrees of freedom.

1 Bliss: Expressed by the continuous effervescence of topological fluctuations at the Planck scale (“spacetime foam”) spontaneously arising from the nonperturbative dynamics of quantum gravity.

1 Self-Referral: The non-Abelian property of self-interaction of the vector fields responsible for local gauge symmetry. This property of self-interaction is also found in all the other spin components, including the graviton, gravitino, chiral fermions, and scalar fields.

1 Unboundedness: The Poincaré invariance of the Lagrangian density.

1 Nourishing: A non-Abelian gauge field dynamically upholds the unified structure of all its individual components.

1 Immortality: The time-translational invariance of the Lagrangian density.

1 Omnipresence: The translational invariance of the Lagrangian density reveals that the total structure of the unified field is present everywhere, and is not restricted by any finite boundaries.

1 Infinite Correlation: The seemingly fragmented structure of the Standard Model arises from and reflects the infinite correlation and balance of its unified origin in the superstring, giving rise to relations between couplings (e.g., m_b/m_τ and $\sin^2\theta_W$), electric charge quantization, and freedom from gauge and gravitational anomalies.

1 Invincibility: A non-Abelian gauge field dynamically upholds its own invariance under local symmetry transformations.

ALL THESE BEAUTIFUL, EVOLUTIONARY QUALITIES OF the unified field blossom in individual and collective life through the Maharishi Technology of the Unified Field, which opens human awareness to the direct experience of consciousness in its self-referral state, pure consciousness, where consciousness is found identified with the unified field of all the laws of nature.

The enlivenment of all these qualities in world consciousness was profoundly demonstrated by the improved quality of world events when 7,000 experts in the Maharishi

Technology of the Unified Field (approximately the square root of one percent of the world's population) gathered at Maharishi International University from December 17, 1983 to January 6, 1984. Over 35 scientific studies^{15,16} analyzing this and other, subsequent assemblies have rigorously verified the practical formula to create a unified field based ideal civilization, a civilization based on complete knowledge and practical utilization of the unified field of natural law.

References

1. K. N. Waltz, *Man, the State and War*, Columbia University Press, New York (1965);
H. J. Morgenthau, *Politics Among Nations: The Struggle for Power and Peace*, Alfred A. Knopf, New York (1948);
M. Banks, *Conflict in World Society*, St. Martin's Press, New York (1984);
A. Wolfers, *Discord and Collaboration: Essays on International Relations*, Free Press, New York (1962);
J. D. Singer and M. Small, *The Wages of War 1816–1965: A Statistical Handbook*, John Wiley & Sons, New York (1972).
2. D. Fischer, *Preventing War in the Nuclear Age*, Rowman and Allanheld, Totowa, NJ (1984);
R. Jervis, R. N. Lebow, and J. G. Stein, *Psychology and Deterrence*, Johns Hopkins University Press, Baltimore, MD (1985);
E. Weede, Conflict Management and Peace Sci. 6 (1982) 1 and Journal of Conflict Resolution 27 (1984) 231;
J. D. Singer, Journal of Peace Research 19 (1982) 37;
S. A. Bremer in *Correlates of War II: Testing Some Realpolitik Models*, J. D. Singer (ed.), Free Press, New York (1980);
A. G. Newcombe and F. Klaassen, Korean Institute of International Studies 10 (1978) 1;
K. E. Boulding, Journal of Peace Research 14 (1977) 75 and Journal of Conflict Resolution 22 (1978) 342;
J. W. Burton, *Global Conflict: The Domestic Sources of International Crisis*, Wheatsheaf, Brighton (1984) and in *International Conflict Resolution: Theory and Practice*, E. E. Azar and J. W. Burton (eds.), Lynne Rienner, Boulder (1986);
R. J. Rummel, International Journal of World Peace 1 (1984) 4;
R. K. White, *Fearful Warriors: A Psychological Profile of U.S.-Soviet Relations*, Free Press, New York (1984);
I. Janis, *Groupthink*, Houghton Mifflin, Boston (1982);
P. E. Tetlock, Journal of Social Issues 39 (1983) 67;
I. K. Feierabend and R. L. Feierabend in Macro-Quantitative Analysis, J. V. Gillespie and B. A. Nesvold (eds.), Sage Publications, Beverly Hills, CA (1971);
K. J. Kaplan and M. Markus-Kaplan, Journal of Conflict Resolution 27 (1983) 457;
Maharishi Mahesh Yogi, *Maharishi's Program to Create World Peace: Removing the Basis of Terrorism and War*, Age of Enlightenment Press, Washington, DC (1986).
3. J. H. Schwarz, Physics Reports 89 (1982) 223;
M. B. Greene, Surv. in High Energy Physics 3 (1983) 127.
4. K. Chandler, Modern Science and Vedic Science 1 (1987) 5–26.
5. Maharishi Mahesh Yogi, *Life Supported by Natural Law*, Age of Enlightenment Press, Washington, DC (1986); *Maharishi Vedic University Inauguration*, Age of Enlightenment Press, Washington, DC (1985).

MODERN SCIENCE AND VEDIC SCIENCE
SPECIAL ISSUE

6. M. C. Dillbeck, D. W. Orme-Johnson, and R. K. Wallace, International Journal of Neuroscience 15 (1981) 151;
A. Jedrczak, M. Toomey, and G. Clements, Journal of Clinical Psychology 42 (1986) 151;
L. A. Hjelle, Perceptual and Motor Skills 39 (1974) 623–628;
M. J. Turnbull and H. Norris, British Journal of Psychology 73 (1982) 57–68;
S. I. Nidich, P. Moulin, F. Travis, and R. J. Nidich, Length of Time Practicing the Transcendental Meditation and TM-Sidhi Program as Predictors of Academic Achievement, Department of Education, Maharishi International University (1987);
D. W. Orme-Johnson and B. Granieri, in *Scientific Research on the Transcendental Meditation Program: Collected Papers Vol. 1*, Maharishi European Research University Rheinweiler, W. Germany (1977) 713.
7. F. T. Travis, Journal of Creative Behavior 13 (1979) 169–180;
D. W. Orme-Johnson and C. T. Haynes, International Journal of Neuroscience 13 (1981) 211;
H. E. Shecter, Dissertation Abstracts International 38, 7B (1978) 3372–3373;
D. W. Orme-Johnson, G. Clements, C. T. Haynes, and K. Badawi, in *Scientific Research on the Transcendental Meditation Program: Collected Papers Vol. 1*, Maharishi European Research University Press, Rheinweiler, W. Germany (1977) 705.
8. D. W. Orme-Johnson, Psychosomatic Medicine 49 (1987) 493;
R. H. Schneider et al., *Proceedings of the International College of Psychosomatic Medicine* (in press);
R. K. Wallace, J. Silver, P. J. Mills, M. C. Dillbeck, and D. E. Wagoner, Psychosomatic Medicine 45 (1983) 41;
M. J. Cooper and M. M. Aygen, Journal of Human Stress 5 (1979) 24;
R. K. Wallace, M. Dillbeck, E. Jacobe, and B. Harrington, International Journal of Neuroscience 16 (1982) 53;
B. Blackwell, I. B. Hanenson, S. S. Bloomfield, H. G. Magenheim, S. I. Nidich, and P. Gartside, Psychosomatic Medicine 37 (1975) 86;
R. W. Honsberger and A. F. Wilson, Clinical Research 21 (1973) 278; Respiration Therapy: The Journal of Inhalation Technology 3 (1973) 79.
9. S. Appelle, and L. E. Oswald, Perceptual and Motor Skills 38 (1974) 1263–1268;
M. J. Turnbull and H. Norris, British Journal of Psychology 73 (1982) 57–68;
M. C. Dillbeck, Memory and Cognition 10 (1982) 207–215;
M. C. Dillbeck, P. D. Assimakis, D. Raimondi, D. W. Orme-Johnson, and R. Rowe, Perceptual and Motor Skills 62 (1986) 731–738;
P. Kember, British Journal of Educational Psychology 55 (1985) 164–166.
10. M. C. Dillbeck and A. I. Abrams, International Journal of Comparative and Applied Criminal Justice 11 (1987) 111;
C. R. Bleick and A. I. Abrams, Journal of Criminal Justice 15 (1987) 211;
A. I. Abrams and L. M. Siegel, Criminal Justice and Behavior 5 (1978) 3 and 6 (1979) 13;
R. J. Monahan, International Journal of the Addictions 12 (6) (1977) 729–754;
R. K. Wallace et al., *Drug Abuse: Proceedings of the International Conference*, Lea and Febiger, Philadelphia (1972) 369;
M. C. Dillbeck, G. S. Landrith III, and D. W. Orme-Johnson, Journal of Crime and Justice 4 (1981) 25.
11. K. L. Cavanaugh, *Proceedings of the American Statistical Association, Business and Economics Statistics Section*, Alexandria, VA: American Statistical Association (1987) 799–804;

MIU WORLD PEACE CONFERENCE PROCEEDINGS
ACHIEVING WORLD PEACE

- K. L. Cavanaugh and K. D. King, *Proceedings of the American Statistical Association, Business and Economics Statistics Section*, Alexandria, VA: American Statistical Association (1988);
K. L. Cavanaugh, K. D. King, and B. D. Titus, *Proceedings of the Midwest Management Society*, R. G. Greenwood (ed.) , Chicago (1989) 183–190.
12. C. Borland and G. S. Landrith III, in *Scientific Research on the Transcendental Meditation Program: Collected Papers Vol. 1*, Maharishi European Research University Press, Rheinweiler, W. Germany (1977) 639.
 13. D. W. Orme-Johnson, C. N. Alexander, J. L. Davies, H. M. Chandler, and W. E. Larimore, *Journal of Conflict Resolution* 32 (1988) 776.
 14. C. N. Alexander, T. M. Abou Nader, K. L. Cavanaugh, J. L. Davies, M. C. Dillbeck, R. J. Kfoury, and D. W. Orme-Johnson, presented at the Annual Conference of the Midwest Psychological Association, Chicago (1987).
 15. E. E. Azar, *Journal of Conflict Resolution* 24 (1980) 143.
 16. J. L. Davies and C. N. Alexander, presented at the Annual Conference of the American Political Science Association, Atlanta, GA (1989).
 17. Power Engineering 92 (1988) 7.
 18. B. R. Nair, Mechanical Engineering 111 (1989) 52–56.
 19. S. Weinberg, *Physical Review Letters* 19 (1967) 1264;
A. Salam, in *Elementary Particle Theory: Relativistic Groups and Analyticity (Nobel Symposium No. 8)*, N. Svartholm (ed.) Almqvist and Wiksell, Stockholm (1968).
 20. H. Georgi and S. L. Glashow, *Physical Review Letters* 32 (1974) 438.
 21. P. Fayet, in *Unification of the Fundamental Particle Interactions*, S. Ferrara (ed.);
J. Ellis, and P. van Nieuwenhuizen, Plenum, New York (1981) p. 587, and references therein.
 22. J. S. Hagelin, *Modern Science and Vedic Science* 1 (1987), 29–87.
 23. J. S. Hagelin, *Modern Science and Vedic Science* 3 (1989), 3–72.
 24. C. N. Alexander and E. J. Langer (eds.), *Higher Stages of Human Development: Perspectives on Adult Growth*, Oxford University Press, New York (1990).
 25. Maharishi Mahesh Yogi, *Science of Being and Art of Living: Transcendental Meditation*, Signet, New York (1963) 125–127;
R. K. Wallace, *Science* 167 (1970) 1251; *American Journal of Physiology* 221 (1971) 795;
D. W. Orme-Johnson, *Psychosomatic Medicine* 35 (1973) 341;
C. N. Alexander, R. W. Cranson, R. W. Boyer, and D. W. Orme-Johnson, *Sleep and Dreams: A Sourcebook*, Garland Publishing, New York (1987) 282.
 26. M. C. Dillbeck and E. C. Bronson, *International Journal of Neuroscience* 14 (1981) 147–151;
D. W. Orme-Johnson and C. T. Haynes, *International Journal of Neuroscience* 13 (1981) 211;
P. Levine, in *Proceedings of the San Diego Biomedical Symposium* (1976) 15;
K. Badawi et al., *Psychosomatic Medicine* 46 (1984) 267–276.
 27. R. K. Wallace et al., *Scientific American* 226 (1972) 84;
J. Allison, *Lancet* 7651 (1970) 833;
J. T. Farrow and J. R. Hebert, *Psychosomatic Medicine* 44 (1982) 133;
K. Badawi, R. K. Wallace, D. W. Orme-Johnson, and A. M. Rouzere, *Psychosomatic Medicine* 46 (1984) 267;
C. Gaylord, D. W. Orme-Johnson, and F. Travis, *International Journal of Neuroscience* 46 (1989) 77–86;
R. Jevning, A. F. Wilson, and E. F. VanderLaan, *Psychosomatic Medicine* 40 (1978) 329;

MODERN SCIENCE AND VEDIC SCIENCE
SPECIAL ISSUE

- R. Jevning, H. C. Pirkle, and A. F. Wilson, *Physiology and Behavior* 19 (1977) 611; M. Bujatti and P. Riederer, *Journal of Neural Transmission* 39 (1976) 257.
28. C. N. Alexander, M. Rainforth, and P. Gelderloos, *Journal of Social Behavior and Personality* 5 (1991) 189.
29. L. Kohlberg and R. A. Ryncarz in *Higher Stages of Human Development*, C. N. Alexander and E. Langer (eds.) Oxford University Press, New York (1990).
30. H. Selye, *Information Please Almanac* (1979); *The Stress of Life*, McGraw-Hill, New York (1978); *Stress without Distress*, Dutton, New York (1975).
31. A. E. Elite, *Stress Management Program: RFP Background Paper*, California Department of Mental Health, cited in K. R. Pelletier, and R. Lutz, *Advances* 6 (1) (1989) 28–34; N. Cummings and G. VandenBos, *Health Policy Quarterly* 1 (2) (1981).
32. M. C. Dillbeck, G. S. Landrith, and D. W. Orme-Johnson, *Journal of Crime and Justice* 4 (1981) 25.
33. D. W. Orme-Johnson, P. Gelderloos, and M. C. Dillbeck, *Social Science Perspectives Journal* 2 (1988) 127.
34. M. C. Dillbeck, *Social Indicators Research* 2 (1990) 399–410.
35. P. D. Assimakis, *Dissertation Abstracts International* 50 (1989) 2203B.
36. K. L. Cavanaugh, *Proceedings of the American Statistical Association, Business and Economics Statistics Section* (1987) 799.
37. D. W. Orme-Johnson, M. C. Dillbeck, C. N. Alexander, H. M. Chandler, and R. W. Cranson, presented at the 85th Annual Meeting of the American Political Science Association, Atlanta (1989).
38. M. C. Dillbeck, C. B. Banus, C. Polanzi, and G. S. Landrith, *Journal of Mind and Behavior* 9 (1988) 457.
39. G. E. P. Box and G. M. Jenkins, *Time Series Analysis: Forecasting and Control*, Holden-Day, San Francisco (1976) 337–349.
40. R. McLeary and R. A. Hay Jr., *Applied Time Series Analysis for the Social Sciences*, Sage Publications, Beverly Hills, CA (1980).
41. M. C. Dillbeck, K. L. Cavanaugh, T. Glenn, D. W. Orme-Johnson, and V. Mittlefehldt, *Journal of Mind and Behavior* 8 (1987) 67.
42. K. Rasler, doctoral dissertation, Florida State University (1981).
43. T. D. Cook and D. T. Campbell, *Quasi-Experimentation: Design and Analysis Issues for Field Settings*, Houghton Mifflin, Boston (1979).
44. W. R. Adey, *Physiological Review* 61 (1981) 435.
45. C. Tourenne, *Journal of Theoretical Biology* 116 (1985) 495.
46. D. W. Orme-Johnson, K. L. Cavanaugh, C. N. Alexander, P. Gelderloos, M. C. Dillbeck, A. G. Lanford, and T. M. Abou Nader in *Scientific Research on the Transcendental Meditation and TM-Sidhi Programme: Collected Papers Vol. 4*, Maharishi Vedic University Press, Vlodrop, the Netherlands (1991) 2730.
47. D. A. Eliezer and R. P. Woodward, *Nuclear Physics* B325 (1989) 389.