Consciousness-Based Education:
A Foundation for Teaching and
Learning in the Academic Disciplines

A Series of 12 Volumes

Managing Editor, Dara Llewellyn
Executive Editor, Craig Pearson

2011

Consciousness-Based Books
Maharishi University of Management
Fairfield, Iowa 52557
## Table of Contents

Series Introduction ........................................................................... 1

Volume Introduction ........................................................................ 13

### Part I:
Consciousness-Based Paradigm for Management and Economics

Beyond the Current Paradigm in Management Thought: Alignment with Natural Law through Maharishi Vedic Management ................................................. 27
Kurleigh D. King, Scott R. Herriott

Exploring the Frontiers of Environmental Management: A Natural Law-Based Perspective .................. 49
David S. Steingard, Dale E. Fitzgibbons, Dennis P. Heaton

Unified Field-Based Economics ......................................................... 83
John S. Hagelin, Scott R. Herriott

Harmonizing Stability and Change by Enlivening Creative Intelligence ............................................. 117
Dennis P. Heaton
Part II: Research on Consciousness-Based Management and Organizational Behavior

Developing Consciousness in Organizations:
The *Transcendental Meditation* Program in Business ............... 143
Jane Schmidt-Wilk

Leadership Development and Self-Development: An Empirical Study.......................... 165
Bruce McCollum

*Consciousness-Based* Management Development: Case Studies of International Top Management Teams.................................................. 181
Jane Schmidt-Wilk

Peak Performance and Higher States of Consciousness: A Study of World-Class Performers ................................................................. 211
Harald S. Harung, Dennis P. Heaton, William W. Graff, Charles N. Alexander

Part III: Consciousness-Based Management Education and Development

Higher Education for Higher Consciousness:
Maharishi University of Management as a Model for Spirituality in Management Education.................................................. 247
Jane Schmidt-Wilk, Dennis P. Heaton, David Steingard
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Quantum Metaphor of Organizations:</td>
<td>297</td>
</tr>
<tr>
<td>Implications for Business Education</td>
<td></td>
</tr>
<tr>
<td>Jane Schmidt-Wilk, Dennis P. Heaton</td>
<td></td>
</tr>
<tr>
<td><strong>Part IV:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Employee Health and Health Care Costs</strong></td>
<td></td>
</tr>
<tr>
<td>An Innovative Approach to Reducing</td>
<td>311</td>
</tr>
<tr>
<td>Medical Care Utilization and Costs</td>
<td></td>
</tr>
<tr>
<td>David W. Orme-Johnson, Robert E. Herron</td>
<td></td>
</tr>
<tr>
<td>Can the <em>Transcendental Meditation</em> Program</td>
<td>335</td>
</tr>
<tr>
<td>Reduce the Medical Expenditures of Older People? A Longitudinal</td>
<td></td>
</tr>
<tr>
<td>Cost-Reduction Study in Canada</td>
<td></td>
</tr>
<tr>
<td>R. E. Herron, K. L. Cavanaugh</td>
<td></td>
</tr>
<tr>
<td>Holistic Health for Holistic Management</td>
<td>373</td>
</tr>
<tr>
<td>Dennis P. Heaton</td>
<td></td>
</tr>
<tr>
<td><strong>Part V:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Appendices</strong></td>
<td></td>
</tr>
<tr>
<td>Modern Science and <em>Vedic Science</em>:</td>
<td>391</td>
</tr>
<tr>
<td>An Introduction</td>
<td></td>
</tr>
<tr>
<td>Kenneth Chandler</td>
<td></td>
</tr>
<tr>
<td>Resources</td>
<td>427</td>
</tr>
</tbody>
</table>
Higher education faces a complex set of challenges today. We are seeing resources diminish at the same time we are hearing calls for greater access and affordability. Demands for greater transparency and accountability are being sounded by both the general public and the government. Government is exerting increasing controls in this long-independent area.

These challenges, however, are merely financial and political, and they are hardly limited to colleges and universities. The fundamental challenges are educational and center around the students themselves. Challenges include high levels of stress, pervasive substance abuse (particularly binge drinking), lack of preparedness for college-level work, and mental and emotional disabilities. In most of these areas, the problem is serious and worsening. Though colleges and universities are striving to address these challenges, few would claim we are turning the tide.

An encouraging trend is the increasing focus in higher education nationwide on promoting student learning. Yet these laudable efforts do not take into account the powerful forces working in opposition. It is well known that learning is inhibited by stress, sleep deprivation, alcohol, and poor diet—and these are among the most conspicuous features of the college student experience.

Something new is required. Education needs a reliable means of developing students directly from within. We need a systematic method for cultivating their creative intelligence, their capacity to learn, and their natural humanity. All education aims at these goals, of course—but the approach thus far has been from the outside in, and the results have been haphazard at best.

Consciousness-Based education was established to address this need. It integrates the best practices of education and places beneath them a proper foundation—direct development of the student from inside out.

The outcomes of Consciousness-Based education have been unprecedented and scientifically verified. These outcomes include significant
growth of intelligence, creativity, learning ability, field independence, ego development, and moral maturity, among others. These results are remarkable because many of these values typically plateau in adolescence—but Consciousness-Based education promotes this growth in students of all ages, developing potentials that otherwise would have remained unexpressed.

Beyond this rich cognitive growth, Consciousness-Based education significantly reduces student stress, boosts self-esteem, improves health, reduces substance use, and enhances interpersonal relationships. All of this comes together to create exceptional learning environments. This approach even measurably improves the quality of life in the surrounding society.

Consciousness-Based education was founded by Maharishi Mahesh Yogi, the world authority on the science of consciousness. First pioneered at Maharishi University of Management (previously Maharishi International University, 1971–1995) in Fairfield, Iowa, Consciousness-Based education is being adopted by schools, colleges, and universities around the world. It is easily integrated into any school, without any change in mission or curriculum.

Consciousness-Based education recognizes that student learning depends fundamentally on students’ levels of consciousness or alertness. The more alert and awake the student, the more successful and satisfying the learning.

Consciousness-Based education consists of three components:

- a practical technology for directly developing students’ potential from within,
- a theoretical understanding of consciousness that gives rise to a unifying framework for knowledge, enabling students to easily grasp the fundamental principles of any discipline and to connect these principles to their own personal growth, and
- a set of classroom practices, arising from this understanding, that also helps promote effective teaching and learning.
The *Transcendental Meditation* program

At the heart of Consciousness-Based education is the practice of the Transcendental Meditation technique. The technique was brought to light by Maharishi Mahesh Yogi from the Vedic tradition of India, the world’s most ancient continuous tradition of knowledge. It is practiced for 20 minutes twice daily, once in the morning and once in the afternoon, while sitting comfortably with eyes closed. It is simple, natural, and effortless—so simple, in fact, that ten-year-old children can learn and practice it. It has been learned by more than six million people worldwide, of all ages, religions, and cultures.

The Transcendental Meditation technique differs from other procedures of meditation and relaxation in its effortlessness. It involves no concentration or control of the mind. Neither is it a religion, philosophy, or lifestyle. It involves no new codes of behavior, attitudes, or beliefs, not even the belief it will work.

The Transcendental Meditation program is the most extensively validated program of personal development in the world. It has been the subject of more than 600 scientific research studies, conducted at more than 250 universities and research institutions in more than 30 countries worldwide. These studies have been published in more than 150 scientific and scholarly journals in a broad range of fields, including *Science, Scientific American, American Journal of Physiology, International Journal of Neuroscience, Memory and Cognition, Social Indicators Research, Intelligence, Journal of Mind and Behavior, Education, Journal of Moral Education, Journal of Personality and Social Psychology, Business and Health, British Journal of Educational Psychology, Journal of Human Stress, Lancet, Physiology and Behavior*, and numerous others. No approach to education has as much empirical support as Consciousness-Based education.

This approach, moreover, has been successfully field-tested over the past 35 years in primary, secondary, and post-secondary schools all over the world, in developed and developing nations, in a wide variety of cultural settings—the United States, Latin America, Europe, Africa, India, and China.

The Transcendental Meditation technique enables one to “dive within.” During the practice, the mind settles inward, naturally and spontaneously, to a state of deep inner quiet, beyond thoughts and per-
conceptions. One experiences consciousness in its pure, silent state, uncolored by mental activity. In this state, consciousness is aware of itself alone, awake to its own unbounded nature.

The technique also gives profound rest, which dissolves accumulated stress and restores balanced functioning to mind and body.

This state of inner wakefulness coupled with deep rest represents a fourth major state of consciousness, distinct from the familiar states of waking, dreaming, and sleeping, known as Transcendental Consciousness.

In this restfully alert state, brain functioning becomes highly integrated and coherent. EEG studies show long-range spatial communication among all brain regions. This coherence is in sharp contrast to the more or less uncoordinated patterns typical of brain activity.

With regular practice, this integrated style of functioning carries over into daily activity. Research studies consistently show a high statistical correlation between brainwave coherence and intelligence, creativity, field independence, emotional stability, and other positive values. The greater one’s EEG coherence, in other words, the greater one’s development in these fundamental areas. At Maharishi University of Management, students even have the option of a Brain Integration Progress Report—an empirical measure of growth of EEG coherence between their first and last years at the University.

The brain is the governor of all human activity—and therefore personal growth and success in any field depend on the degree to which brain functioning is integrated. The increasingly integrated brain functioning that spontaneously results from Transcendental Meditation practice accounts for its multiplicity of benefits to mind, body, and behavior.

Every human being has the natural ability to transcend, to experience the boundless inner reality of life. Every human brain has the natural ability to function coherently. It requires only a simple technique.

Theoretical component—
a unified framework for teaching and learning

Scholars have long called for a way to unify the diverse branches of knowledge. Current global trends are making this need ever more
apparent. The pace of progress is accelerating, the knowledge explosion continues unabated, and knowledge is becoming ever more specialized.

Academic disciplines offer a useful way of compartmentalizing knowledge for purposes of teaching, learning, research, and publication. But each academic discipline explores only one facet of our increasingly complex and interrelated world. The real world, however, is not compartmentalized—an elephant is not a trunk, a tusk, and a tail. Academic disciplines, consequently, are criticized as inadequate, in themselves, for understanding and addressing today’s challenging social problems.

Today, more than ever, we need a means of looking at issues comprehensively, holistically. We need a way of discovering and understanding the natural relationships among all the complex elements that compose the world, even among the complex elements that compose our own disciplines.

Various attempts to address this need have been made under the rubric of interdisciplinary studies—programs or processes that aim to synthesize the perspectives and promote connections among multiple disciplines. Some of these efforts have been criticized as superficial joinings of disciplinary knowledge. But the chief criticism of interdisciplinary studies—leveled even by its proponents—is that looking at an issue from multiple perspectives does not, in itself, enable one to find the common ground among contrasting viewpoints, to resolve conflicts, and to arrive at a coherent understanding.

The diverse academic disciplines can be properly unified at only one level—at their source. All academic disciplines are expressions of human consciousness—and if the fundamental principles of consciousness can be identified and understood, then one would gain a grasp of all human knowledge in a single stroke.

This brings us to the theoretical component of Consciousness-Based education. Consciousness-Based education does precisely this—and not as an abstract, theoretical construct but as the result of students’ direct experience of their own silent, pure consciousness. In this sense, practice of the Transcendental Meditation technique forms the laboratory component of Consciousness-Based education, where the theoretical predictions of Consciousness-Based education can be verified through direct personal experience.
This theoretical component offers a rich and deep yet easy-to-grasp intellectual understanding of consciousness—its nature and range, how it may be cultivated, its potentials when fully developed. This theoretical component also identifies how the fundamental dynamics of consciousness are found at work in every physical system and in every academic discipline at every level.

With this knowledge as a foundation, teachers and students in all disciplines enjoy a shared and comprehensive understanding of human development and a set of deep principles common to all academic disciplines—a unified framework for knowledge. With this unified framework as a foundation, students can move from subject to subject, discipline to discipline, and readily understand the fundamental principles of the discipline and recognize the principles the discipline shares with the other disciplines they have studied. This approach makes knowledge easy to grasp and personally relevant to the student.

**Pure consciousness and the unified field**

Consciousness has traditionally been understood as the continuous flux of thoughts and perceptions that engages the mind. Thoughts and perceptions, in turn, are widely understood to be merely the by-product of the brain’s electrochemical functioning.

Maharishi has put forward a radically new understanding of human consciousness. In Consciousness-Based education, pure consciousness is understood as the foundation and source of all mental activity, the most silent, creative, and blissful level of the mind—the field of one’s total inner intelligence, one’s innermost Self. (This unbounded value of the Self is written with an uppercase “S” to distinguish it from the ordinary, localized self we typically experience.) Direct experience of this inner field of consciousness awakens it, enlivens its intrinsic properties of creativity and intelligence. Regular experience of pure consciousness through the Transcendental Meditation technique leads to rapid growth of one’s potential, to the development of higher states of human consciousness—to enlightenment.

But consciousness is more, even, than this.

Throughout the twentieth century, leading physicists conjectured upon the relation between mind and matter, between consciousness and the physical world; many expressed the conviction that mind is,
somehow, the essential ingredient of the universe. But Maharishi goes further. He has asserted that mind and matter have a common source, and that this source is pure consciousness. Consciousness in its pure, silent state is identical with the most fundamental level of nature’s functioning, the unified field of natural law that has been identified and described by quantum theoretical physicists over the past several decades. Everyone has the potential to experience this field in the simplest form of his or her own awareness. Considerable theoretical evidence, and even empirical evidence, has been put forward in support of this position.

Maharishi has developed these ideas in two bodies of knowledge, the first known as the Science of Creative Intelligence, the second as Maharishi Vedic Science and Technology. The Science of Creative Intelligence examines the nature and range of consciousness and presents a model of human development that includes seven states of consciousness altogether, including four higher states beyond the familiar states of waking, dreaming, and sleeping. These higher states, which develop naturally and spontaneously with Transcendental Meditation practice, bring expanded values of experience of one’s self and the surrounding world. Each represents a progressive stage of enlightenment. Maharishi Vedic Science and Technology examines the dynamics of pure consciousness in fine detail. It reveals the fundamental principles of consciousness that may then be identified in every field of knowledge and every natural system.

Most important for teaching and learning, these sciences reveal how every branch of knowledge emerges from the field of pure consciousness and how this field is actually the Self of every student.

**Strategies for promoting teaching and learning**

Consciousness-Based education also includes a battery of educational strategies that promotes effective teaching and learning. Foremost among these is the precept that parts are always connected to wholes and that learning is most effective when learners are able to connect parts to wholes. In Consciousness-Based education, the parts of knowledge are always connected to the wholeness of knowledge, and the wholeness of knowledge is connected to the Self of the student.
One means of doing this is through *Unified Field Charts*. These wall charts, developed by the faculty at Maharishi University of Management and used in every class, do three things: (1) They show all the branches of the discipline at a glance; (2) They show how the discipline emerges from the field of pure consciousness, the unified field of natural law at the basis of the universe; (3) They show that this field is the Self of the student, which the student experiences during practice of the Transcendental Meditation technique.

In this way students can always see the relation between what they are studying and the discipline as a whole, and they can see the discipline as an expression of their own pure consciousness. Again, this is more than an intellectual formulation—it is the growing reality of students’ experience as they develop higher states of consciousness.

Another strategy is *Main Point Charts*. Developed by the faculty for each lesson and posted on the classroom walls, these charts summarize in a few sentences the main points of the lesson and their relationship to the underlying principles of consciousness. In this way students always have the lesson as a whole in front of them, available at a glance.

**The next paradigm shift**

If higher education is fundamentally about student learning and growth, then Consciousness-Based education represents a major paradigm shift in the history of education. To understand this change, it is useful to reflect on the encouraging paradigm shift that has already been taking place in education over the past several decades.

This shift involves a move from what many call an *instruction paradigm* to a *learning paradigm*. In the instruction paradigm, the mission of colleges and universities is to provide instruction; this is accomplished through a transfer of knowledge from teacher to student. In the learning paradigm, the mission is to produce student learning; this mission is achieved by guiding students in the discovery and construction of knowledge.

This shift is a vitally important advance in education, leading to more successful outcomes and more rewarding experiences for students and teachers alike. But a further paradigm shift remains, and we can understand it by examining a fundamental feature of human experience.
Maharishi observes that every human experience consists of three fundamental components: a knower, a known, and a process of knowing linking knower and known. We may also use the terms experiencer, object of experience, and process of experiencing, or observer, observed, and process of observation.

This threefold structure of experience is nowhere more evident than in schools: The knowers are the students, the known is the knowledge to be learned, and the process of knowing is what the full range of teaching and learning strategies seek to promote.

Understanding this threefold structure helps us understand the paradigm shifts that are taking place.

The instruction paradigm places emphasis on the known. It focuses on the information students are to absorb and the skills they are to learn. In this paradigm, the instructor’s role is to identify what students need to know and deliver it to them.

The learning paradigm emphasizes the process of knowing. It recognizes that students must be actively involved in the learning process, that knowledge is something individuals create and construct for themselves, that students have differing learning styles and differing interests that must be taken into account. In this paradigm, the instructor’s role is to create learning environments and experiences that promote the process of learning.

The Consciousness-Based paradigm embraces the known and the process of knowing but places primary emphasis on the knower—on
developing the knower’s potential for learning from within. The following diagram shows the respective emphases of each approach:

![Diagram showing the relationship between knower, process of knowing, development of consciousness paradigm, learning paradigm, and instruction paradigm.](image)

But the learning paradigm does not so much abandon the instruction paradigm as enlarge it, so that it includes the process of knowing as well as the known. And the Consciousness-Based approach completes the enlargement to include the knower:

![Diagram showing the hierarchical relationship between development of consciousness paradigm, learning paradigm, and instruction paradigm.](image)

Consiousness-Based education, in summary, is a theory and practice grounded in a systematic science and technology of consciousness, making available the complete experience, systematic development, and comprehensive understanding of the full range of human consciousness. More than 30 years’ experience and extensive scientific research
confirm the success of this approach and its applicability to any educational institution.

**About this book series**

This series of twelve volumes is the result of a unique faculty-wide project that began with the founding of Maharishi University of Management in 1971 and continues to this day. Each volume in the series examines a particular academic discipline in the light of our Consciousness-Based approach to education.

Volumes include:

- an introductory paper introducing the Consciousness-Based understanding of the discipline,
- a Unified Field Chart, if available for publication, for the discipline—a chart that conceptually maps all the branches of the discipline and illustrates how the discipline emerges from the field of pure consciousness and how that field is the Self of every individual. Thus, these charts connect the “parts” of knowledge to the “wholeness” of knowledge and the wholeness of knowledge to the Self of the student;
- subsequent papers that show how this understanding may be applied in various branches of the discipline,
- occasional examples of student work exploring how the Consciousness-Based approach enhances learning in the discipline, and
- an appendix describing Maharishi Vedic Science and Technologies of Consciousness in detail.
<table>
<thead>
<tr>
<th>VOLUME</th>
<th>DISCIPLINE</th>
<th>VOLUME EDITOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Maharishi Vedic Science</td>
<td>Frederick Travis</td>
</tr>
<tr>
<td>2</td>
<td>Education</td>
<td>Christopher Jones</td>
</tr>
<tr>
<td>3</td>
<td>Physiology &amp; Health</td>
<td>Kenneth Walton, Janet Kernis, Robert Schneider, Paul Morehead</td>
</tr>
<tr>
<td>4</td>
<td>Physics</td>
<td>Gerald Geer</td>
</tr>
<tr>
<td>5</td>
<td>Mathematics, Pt. 1 &amp; Pt. 2</td>
<td>Paul Corazza, Anne Dow</td>
</tr>
<tr>
<td>6</td>
<td>Literature</td>
<td>Terrence Fairchild</td>
</tr>
<tr>
<td>7</td>
<td>Art</td>
<td>Matthew Beaufort</td>
</tr>
<tr>
<td>8</td>
<td>Management</td>
<td>Dennis Heaton, Jane Schmidt-Wilk, Bruce McCollum</td>
</tr>
<tr>
<td>9</td>
<td>Government</td>
<td>Rachel Goodman, William Sands</td>
</tr>
<tr>
<td>10</td>
<td>Computer Science</td>
<td>Keith Levi, Paul Corazza</td>
</tr>
<tr>
<td>11</td>
<td>Sustainable Living</td>
<td>Mabel Scaroni-Fisher, David Fisher</td>
</tr>
<tr>
<td>12</td>
<td>World Peace</td>
<td>Rachel Goodman</td>
</tr>
</tbody>
</table>

We welcome inquiries and further contributions to this series.

CONTACT INFORMATION
Dara Llewellyn, Managing Editor
Consciousness-Based Books
Maharishi University of Management
Fairfield, Iowa 52557
Phone: 641-472-7000
INTRODUCTION TO THE VOLUME

Dennis P. Heaton, Ed.D.
Volume Editor

The papers collected in this volume all contribute to exploring how Consciousness-Based Education makes a difference in teaching, studying, and researching the discipline of management. Section I presents a distinctly new theory of management that maintains that by opening consciousness to the unified field of natural law within us, it is possible to achieve balanced success without stress, for the individual, the organization and the society. Section II presents evidence of the effects of the Transcendental Meditation program in organizational settings. This section contains two papers based on dissertations at Maharishi University of Management: Bruce McCollum’s research on leadership and Jane Schmidt-Wilk’s research on top management teams. Section III illustrates how Consciousness-Based education has been presented in publications about management education. Finally, Section IV looks at the application of the Consciousness-Based management to employee health and on health care costs.

The Consciousness-Based theory of management presented in this volume is captured in the motto of Maharishi University of Management—“Engaging the Managing Intelligence of Natural Law.” The book Maharishi University of Management: Wholeness on the Move (Maharishi Mahesh Yogi, 1995) brings out the explanation that success in management rests primarily on harmonizing the individual manager with the intelligence of natural law which manages the cosmos. In that book, Maharishi speaks of natural law as “that infinite organizing power which sustains existence and promotes the evolution of everything in the universe, automatically maintaining the well-coordinated relationship of everything with everything else” (1995, p. 8). Maharishi explains that Consciousness-Based management “maintains the managing intelligence of the manager in alliance with this supreme managing intelligence of the universe” (p. 8), so that it is ultimately possible to attain “administration as automatic, problem-free, ever-progressive, and ever-evolutionary as the administration of the universe through Natural Law” (p. 8).
In Consciousness-Based education, the unified field of natural law is held to be the common basis of both the physical world and the human mind. Modern science holds the unified field to be the source of the ever-evolving order of the physical universe (please refer to “Unified Field-Based Economics,” this volume). Vedic Science is a tradition of knowledge based on direct experience of this same unified field, “experienced as an eternal continuum underlying all existence” in “a completely unified, unbounded and simple state of awareness” (see Appendix, this volume). The practical application of this theory is through the practice of the Transcendental Meditation and TM-Sidhi programs. The Transcendental Meditation technique is defined as:

... an effortless procedure for allowing the excitations of the mind to gradually settle down until the least excited state of mind is reached. This is a state of inner wakefulness, with no object of thought or perception, just pure consciousness, aware of its own unbounded nature. It is wholeness, aware of itself, devoid of differences, beyond the division of subject and object—transcendental consciousness. It is a field of all possibilities, where all creative potentialities exist together... but as yet unexpressed. It is a state of perfect order, the matrix from which all the Laws of Nature emerge, the source of creative intelligence (Maharishi Mahesh Yogi, 1976, p. 123).

The TM-Sidhi program is an advanced meditation practice which enlivens the unified field in the conscious mind and makes the total potential of natural law and its infinite organizing power available in practical life.

Among meditation practices which have been adopted by business people, the Transcendental Meditation technique is the most thoroughly researched (Murphy & Donovan, 1996). During the practice of the Transcendental Meditation technique there are reductions in heart rate and oxygen consumption, and increased electroencephalographic (EEG) coherence indicative of a state of profound restful alertness, distinct from eyes-closed relaxation or sleep (Alexander, Cranson, Boyer, & Orme-Johnson, 1986). The profound relaxation gained during the practice is said to dissolve the stress in the mind and the body. The Transcendental Meditation technique has been associated with improvements such as decreased anxiety (Eppley, Abrams & Shear, 1989), improvements in ego development and moral reasoning (Chan-
dler, Alexander, & Heaton, 2005), creativity (Travis, 1979), fluid intelligence, constructive thinking, self-actualization, and reaction time (So & Orme-Johnson, 2001; Alexander, Rainforth & Gelderloos, 1991; Cranson, Orme-Johnson, Gackenbach, Dillbeck, Jones, & Alexander, 1991; Dillbeck, Assimakis, Raimondi, Orme-Johnson & Rowe, 1986). Selected research studies particularly related to business management are covered in Section II of this book.

The papers in this volume are just some of the works in which students and faculty of Maharishi University of Management have been creating new insights in the discipline of management through Consciousness-Based education. A bibliography including additional articles can be found at http://www.mum.edu/cmr. Further discussion of theory and research can be found in Invincible Leadership (Harung, 1999, from Maharishi University of Management Press, www.mum.edu/press.

A New Paradigm in Management Theory

Part I of this volume contains theoretical papers about A Consciousness-Based Paradigm for Management and Economics. The first paper in Part I is “Beyond the Current Paradigm in Management Thought: Alignment with Natural Law through Maharishi Vedic Management” by Kurleigh King and Scott Herriott. These professors of Maharishi University of Management describe the historical development of ideas regarding leadership and strategy as a progressive shift from superficial levels toward more profound levels of life. In the early twentieth century management thought was primarily concerned with concrete or material aspects of business, such as the efficient organization of production. This evolved to a more subtle focus on managing knowledge and learning in organizations. King and Herriott explain that since knowledge has its foundation in consciousness, this direction of evolution will find its fulfillment in a Consciousness-Based paradigm of management. In this new paradigm, the role of the leader will be to foster the development of consciousness in order to harness the infinite creative potential of organizational members.

In “Exploring the Frontiers of Environmental Management: A Natural Law-Based Perspective” David Steingard, Dale Fitzgibbons and Dennis Heaton present a vision of restoring natural balance in
eco-human relations by realizing the organizing intelligence of nature within our own consciousness. They present Maharishi’s explanation that the manager who is in alignment with natural law can spontaneously achieve progress without pollution; whereas the creation of imbalance and degradation of the environment is the inevitable side-effect of technology that is based on intellectual knowledge that is not grounded in experience of the unified field of natural law.

Next, the article by physicist John Hagelin and economist Scott Herriott on “Unified Field-Based Economics” presents a new scientific understanding of how consciousness unfolds possibilities for affluence not only for the individual but for the collective society. Through the technologies of Consciousness-Based education, it is possible to train individuals to experience the unified field of natural law within their own awareness and thus to develop life in accord with natural law to achieve economic success. Evidence confirming this economic theory is presented in the article, “Improving the National Economy through Alliance with Natural Law, Nature’s Government: Effects of the Group Practice of Maharishi’s Transcendental Meditation and TM-Sidhi Programs,” in the Peace volume of this book series.

The final theoretical paper in this section is “Harmonizing Stability and Change by Enlivening Creative Intelligence.” While organizational theorists have commonly asserted that it is natural to resist change, Dennis Heaton’s article presents a contrasting Consciousness-Based paradigm—that evolution and growth are the natural tendency of life (Maharishi Mahesh Yogi, 1972). As the pace of organizational change is accelerating, it is necessary to find deeper sources of inner stability. The Transcendental Meditation technique develops profound stability as a basis for utmost adaptability.

**Empirical Findings about Consciousness and Management**

Part II, *Research on Consciousness-Based Management and Organizational Behavior*, begins with the article “Developing Consciousness in Organizations: The Transcendental Meditation Program in Business,” which reviews research studies on workplace applications of the Transcendental Meditation program for developing consciousness and human potential. Individual results from these studies include reduction of stress, improvement of employee health, job satisfaction and
productivity. At the team and organizational level, findings included more positive organizational climate and financial performance.

Bruce McCollum’s paper “Leadership Development and Self-Development: An Empirical Study” reports an eight-month pretest-posttest control group study in one company. Subjects who learned the Transcendental Meditation technique grew significantly more than controls in their expression of leadership behaviors, as measured by the Leadership Practices Inventory (Kouzes & Posner, 2007).

In “Consciousness-Based Management Development: Case Studies of International Top Management Teams,” Jane Schmidt-Wilk reports that managers who learned the Transcendental Meditation technique as a management development program reported increased alertness, wakefulness and clarity of thinking; increased energy, greater resiliency in stressful situations, improvements in physical and mental health, as well as greater task and role effectiveness. Participants also reported how their new abilities to build trust and acceptance, improve communication, and resolve conflicts in positive ways led to corresponding improvements in interpersonal and team relations.

“Peak Performance and Higher States of Consciousness: A Study of World-Class Performers” by Harald Harung, Dennis Heaton, William Graff, and Charles Alexander studied a sample of leaders who were recognized as outstanding performers in their professions. This research provided support for the theory that success is correlated with experiencing higher states of consciousness. These researchers found that 36% of world-class leaders in the study reported having the experience at least once a day of an even state of silence coexisting with but untouched by activity. These same world-class leaders reported more frequent experience of fortunate coincidences (also called “support of nature”) which are predicted to be associated with the growth of consciousness. Recent replication research by Harung, Travis, Blank, and Heaton (2009) has found that a sample of top-rated managers reported more frequent experiences of higher states of consciousness compared to controls, and these experiences were correlated with physiological measures of greater orderliness of brain functioning and higher levels of moral reasoning.
Training Consciousness-Based Managers

Part III, *Consciousness-Based Management Education and Development*, begins with an article by Jane Schmidt-Wilk, Dennis Heaton, and David Steingard presenting Consciousness-Based management education as practiced at Maharishi University of Management. The authors explain that the experience of Transcendental Consciousness develops management students who spontaneously enact “applied spirituality”—acting for the positive transformation of the quality of life for all. This article includes a review of research on the effects of the Transcendental Meditation technique on higher education students at Maharishi University of Management and other universities, including unique findings on higher stages of psychological development in Maharishi University of Management graduates (please see “Transcendental Meditation and Postconventional Development: A 10-Year Longitudinal Study” in Volume 2: Education in this series). This advanced psychological development has been associated with capacities for effective leadership, such as understanding and integrating the perspectives of multiple stakeholders, maintaining inner-directed ethical principles, and visioning systemic solutions. Without such developmental transformations, behavioral training has little impact on sustaining collaborative and proactive leadership (Heaton & Schmidt-Wilk, 2008).

In “A Quantum Metaphor of Organizations: Implications for Business Education,” Jane Schmidt-Wilk and Dennis Heaton introduce the quantum metaphor in management and contrast it to metaphors of management derived from classical physics. Looking at organizations as quantum phenomena shifts our attention from fixed roles to emergent possibilities, from discrete lines of authority to evolving networks of communication, and from mechanistic control to self-organization. The authors explain how the educational technologies of Consciousness-Based education enliven in students the characteristics described by the quantum metaphor.

Healthy Employees, Healthy Business

Part IV, *Employee Health and Health Care Costs*, starts with “An Innovative Approach to Reducing Medical Care Utilization and Costs” by David Orme-Johnson and Robert Herron. This study compared 693 subjects in a Maharishi Vedic Approach to Health (MVAH) group
with statewide norms (600,000) and with a matched control group. The MVAH group practiced the Transcendental Meditation program and other aspects of preventive health care from Vedic knowledge. MVAH medical costs were 59% lower than norms. The greatest savings were for MVAH subjects over 45 years; they had 88% fewer total patient days than controls.

More recent research on health care costs is reported in Robert Herron and Ken Cavanaugh’s (2005) study “Can the Transcendental Meditation Program Reduce the Medical Expenditures of Older People? A Longitudinal Cost Reduction Study in Canada” (reprinted in Physiology and Health volume of this series, No. 3). That study focused on 163 Transcendental Meditation practitioners over 65 years old and 163 matched control subjects in a government insurance program in Canada, which was the subject of Robert Herron’s doctoral dissertation in management at Maharishi University of Management. The Transcendental Meditation group’s 5-year cumulative reduction of health care costs relative to controls was 70%. Robert Herron has recently published a book on disease prevention, health promotion, public health, primary care, and scientifically verified complementary and alternative medicine (including the Transcendental Meditation program) to enhance health and reduce medical expenses (Herron, 2008).

Our volume ends with an essay by Dennis Heaton titled “Holistic Health for Holistic Management.” Holistic health has its basis in the inner intelligence of nature, which is latent in the consciousness of every individual. This same inner intelligence is also the wellspring of holistic management. Thus this essay links health back to the theme of harmonizing the manager with natural law, which is introduced in Part I of this volume.

Einstein observed that “We cannot solve the problems that come with the world we have made thus far from the same level of consciousness at which we created them” (quoted in Cooperrider and Khalsa, 1997, p. 335). The papers in this volume illustrate how the development of consciousness brings a new paradigm of understanding as well as new practical solutions in organizational behavior, economics, management education and employee health—solutions characterized by balance, wholeness, and fulfillment.
Appendices
This section includes Dr. Kenneth Chandler’s “Modern Science and Vedic Science: An Introduction,” which served as the introduction to the inaugural issue of the journal *Modern Science and Vedic Science* and which presents an overview of Maharishi Vedic Science and the new technology of consciousness developed by Maharishi Mahesh Yogi. The second appendix in this section provides a list of relevant links and resources for this volume.

References


Part I

Consciousness-Based Paradigm for Management and Economics
Beyond the Current Paradigm in Management Thought:

Alignment with Natural Law

through *Maharishi Vedic Management*

Kurleigh D. King, Ph.D.

Scott R. Herriott, Ph.D.
ABOUT THE AUTHORS

Kurleigh D. King, Ph.D., was Governor of the Central Bank of Barbados from 1987–1992 and Trustee and Professor of Management and Public Affairs at Maharishi University of Management (previously Maharishi International University, 1971–1995) from 1978–1998. He was Secretary-General of the Caribbean Community and Common Market (CARICOM) from 1978 to 1983. Dr. King received his B.A. in Mathematics and English from London University, England in 1960 and his Ph.D. in Business Administration from Columbia University in 1973, where he served as Assistant Dean from 1967 to 1968. Dr. King was honored in 1983 by Her Majesty Queen Elizabeth II and the Government of Barbados with the award of the Gold Crown of Merit of Barbados for his contribution to Caribbean integration. Dr. King’s publications include reports prepared for the Caribbean Common Market Council of Ministers, the British Commonwealth Governments, and the United Nations Industrial Development Organization.

Scott Herriott, Ph.D., is Professor of Business Administration and Chair of the Expansion Council at Maharishi University of Management. He received his B.A. degree in mathematics from Dartmouth College and his Ph.D. in Management Science and Engineering at Stanford University. He taught at the University of Texas at Austin and the University of Iowa before joining Maharishi University of Management in 1990. His expertise is the application of quantitative methods to business strategy and planning. He teaches economics, statistics, finance, operations management, and strategic management. He is the author of a dozen scientific papers on economics, organization, and business strategy, and he recently published a 700-page textbook College Algebra through Functions and Models that is used in freshman mathematics classes at many colleges and universities around the U.S.
Abstract
Throughout the twentieth century, the dominant paradigm of management has been changing. As a consequence, there has been an evolution in the concept of leadership and in the way that executives think about business strategy. The trend in both leadership and strategy began with an emphasis on the concrete or material aspects of business and was focused on production. This was followed by progressively subtler interpretations of the business enterprise that emphasized the importance of the human element. Contemporary thinking about both leadership and strategy focuses attention on the knowledge base of the firm and emphasizes the value of creativity and learning in organizations. This evolution of management thinking will find its fulfillment in a paradigm based on the Maharishi Vedic Science principle that knowledge is structured in consciousness. In this view, the role of the leader will be to create coherence in the collective consciousness of the organization, and the strategy of the firm will be to harness the infinite creative potential of natural law through the development of the consciousness of the employees.

The Evolution of Leadership and Strategy in Management Thought
Management thought has followed many fads in the last half of the twentieth century. We have witnessed several cycles in which a wave of mergers and acquisitions rose in tune with a managerial logic of synergy and control, only to be followed by a period of spin-offs and downsizing as the song of efficiency, focus, and core competence had its play in the managerial culture. Though cycles of centralization and decentralization have alternated throughout the twentieth century, a discernible trend in management rhetoric has remained. The present dominant paradigm of management emphasizes creativity and organizational learning as the only core competencies that can enable a firm to sustain a competitive advantage in the hyper-competitive environment of rapidly changing technologies and emerging global markets. This dominant mode of management thinking differs from the logic of high-scale production and efficiency that guided the management of the large corporations of the early 1900s.

This article will identify a systematic trend in management thought, and we project that trend in order to discern the outlines of the emerging paradigm of management for the twenty-first century. We do so by
considering the common elements in the trends of the two principal functions of management. One is executive leadership and the other is business strategy, expressed in the common understanding about the sources of competitive advantage in an industry.

Analysis will show that in the coming era the competitive advantage will belong to companies whose managements have aligned themselves with natural law through Maharishi Vedic Management, a discipline of Maharishi Vedic Science, and that companies not in tune with natural law will lose their competitive edge and have difficulty meeting their goals. By developing their own consciousness with the technologies available through Maharishi Vedic Science, company leaders will be creative and farsighted and will spontaneously act in accordance with the laws of nature, thus winning the favor of natural law and guaranteeing their company’s success.

**Changing Paradigms of Management in this Century**

*Scientific Management.* In the early twentieth century, the role of the business leader was to organize capital, people, and technology into an efficient system for production. This search for efficiency was paramount among the functions of leadership. Within the business setting, the leader was a designer. Following the logic of the school of scientific management, a business leader’s job was to design efficient production processes to support a strategy of low-cost, high-volume production (Taylor, 1911). The large successful enterprises of Ford, General Motors, DuPont, Bell Telephone, and the railroads emerged from this concept of management.

*The Human Relations School.* During their efforts to identify more efficient designs for the organization of work at the Hawthorne Works of Western Electric Company, efficiency engineers accidentally discovered that workers were more productive when they felt that their personal feelings were being cared for and when they had opportunities to satisfy their individual, emotional, and interpersonal needs in the workplace.

This discovery led to the evolution of the Human Relations School of management in the late 1930s pioneered by Elton Mayo (1933) with contributions from Chester Barnard (1938) and F. J. Roethlisberger
and W. J. Dickson (1939). Managerial theories of employee motivation became much richer under the influence of this perspective. Managers learned to think of employees not only as work units interested solely in the economic rewards their jobs would generate, but as individuals who have needs for recognition, status, control, and a sense that they are contributing to the entire production system. The role of the leader, in the Human Relations School of thinking, included much more than technological design. The leader became a psychological diagnostician, a coach to employees, a benefactor to the community, and an arbiter of disputes.

The fundamental concept regarding the source of competitive advantage did not vary much during this period. Though the concept of leadership was changing by mid century, business strategy through the 1960s was still based on large-scale production. The Human Relations School merely alerted the executive to the potential sources of inefficiency in the production system. Nevertheless, as the late-century model began to emerge, the Human Relations School inspired the development of a wave of interest in corporate culture as a source of competitive advantage.

**The Knowledge-Based Organization.** During the 1980s and 1990s, a new and distinct paradigm of management thought began to emerge. It began with the publication in 1980 of Michael Porter’s book, *Competitive Strategy*, which showed that the strategy of high-volume, low-cost production was suited only to certain industries and could be vulnerable to a more focused strategy in which a firm’s product is specifically differentiated from its generic counterparts.

Porter’s focus and differentiation strategies are based on the development of core competencies by which the competitor can serve market niches better than the generic producer. This theme was echoed in the 1982 best-selling book by Peters and Waterman, *In Search of Excellence*, which advised executives to “stick to their knitting.” By this the authors meant that a company’s strategy should concentrate on its core skills as a means to differentiate it from other firms.

Porter’s 1985 publication of *Competitive Advantage* drew increased attention to the specific characteristics that support a firm’s sustainable competitive advantage over others. This view was further devel-
oped in the late 1980s as the resource-based view of business strategy (Barney, 1991; Prahalad and Hamel, 1990), which sought to identify a firm’s characteristics that are unique, such as organizational culture, or that are difficult to imitate, such as the research-and-development skills of scientists, the product development skills of engineers, or the information systems used for inventory control throughout a channel of distribution.

**Current Emphasis on Creativity and Continuous Learning.** As the twentieth century comes to a close, the core competence of an organization is understood more in terms of the skills of individuals or small groups than in terms of global organizational design. Teams are seen to be the unit of creativity. Peters and Waterman located organizational creativity and vitality in a firm’s small “skunk works.” The icons of industry are entrepreneurial organizations that started from small units, such as Apple Computer, Intel, Lotus, Microsoft, and the new telecommunications companies that emerged from the breakup of the Bell System.

As technologies converged (e.g., telecommunications and computing, information systems and distribution, video programming and computing) and markets became more global, managers realized that no physical resources, such as raw material contracts, patents, distribution systems, or even physical information systems, such as databases, can be the sources of sustainable competitive advantage. Only the continuous evolution of knowledge can keep a firm ahead of its competition. This insight reveals the strategic importance of a firm’s ability to create and its ability to learn, known in the management literature as its absorptive capacity (Cohen and Levinthal, 1990).

This reorientation of understanding about the essence of business strategy has led to a renewed concept of leadership and has extended the function of leadership beyond the ranks of top management. The role of the manager has come to be understood more as a coach, teacher, and facilitator. The new executive has had to become a leader among leaders in the creation and organization of knowledge.
Retrospective Interpretation
of 20th Century Management Thought:
Rishi, Devatā, and Chhandas

Several articles have reviewed the fundamental principles and mechanics of creation studied in Maharishi Vedic Science (see Dillbeck & Dillbeck in *Modern Science and Vedic Science*). The transformation of management thought during this century can be understood in terms of these principles, particularly Maharishi’s tripartite model of consciousness: Rishi, Devatā, and Chhandas. In his Vedic Science, Maharishi describes how the wholeness of pure consciousness (in Sanskrit *Saṁhitā*) has within its structure three values. In its elemental state of wholeness, pure consciousness experiences or knows only itself. In this self-referral interaction arises the fundamental structure of knowledge. In the first of the tripartite structure consciousness is the knower, or the Rishi aspect of consciousness. Secondly, the process or knowing value of consciousness is the Devatā. Thirdly, that which is known is the Chhandas aspect of consciousness. As Maharishi (1994) describes it: “In the Vedic language this three-in-one structure of consciousness is called Saṁhitā of Rishi, Devatā, Chhandas—Saṁhitā (unity) of Rishi (knower), Devatā (dynamism of the process of knowing), and Chhandas (the known)” (p. 59). Maharishi also expresses this tripartite structure of wholeness as the subject, the object, and the relationship between them. These three fundamentals, which Maharishi locates as the self-referral mechanics at the basis of life, express themselves in every step of evolution. They can therefore be used fruitfully to analyze the progression of management styles as they have evolved over time and to project the direction towards which they will be moving in the future.

In the early part of the century, competitive advantage had its source in physical objects; that is the known or Chhandas value of consciousness. Competition was driven by improvements in efficiency through economies of scale, technology, and the monopolization of production ingredients. This focus on the Chhandas elements, the concrete, objective, or structural aspects of the business phenomenon, represents the most superficial, but also most natural starting point for progress in management science.
The rise of the Human Relations School of management emphasized the impact of the motivations and desires of individuals on a firm’s effectiveness and accentuated the interpersonal processes and leadership styles that distinguish one firm from another. This new perspective called attention to a more subtle aspect of the business firm, a level we can classify as process rather than structure. Managers learned from the Human Relations School how to identify human forces and the dynamics at work in their organizations. This level of process and dynamics, the active expression of the impulses of human desire and intelligence in the organization, represents in Maharishi Vedic Science the Devatā element of the organization. In comparison with the Chhandas values of equipment and raw materials, this level of psycho-social processes more subtly expresses the wholeness of the business firm.

The transition of management thought toward the emphasis on continuous learning and leadership at all levels in a “learning organization” is a progression beyond organizational processes. In the latter part of the century, management scholars attempted to identify the true depository of knowledge in organizations. Recognizing that organizations are indeed knowledge-based, they wanted to know how and where in an organization knowledge actually resides.

Historically, the answer has been that it can be found in the databases, files, and accounting systems of the firm, because the knowledge contained there is owned and fully controlled by the corporation. But a deeper analysis revealed that a company’s knowledge lies in its human resources. These include not only the firm’s research and development scientists, but individuals at all levels and all functions of the organization, individuals who have learned how to do their jobs better or how to organize systems and processes more efficiently, or who display the qualities of leadership needed to build and perpetuate a learning organization. The true depository of knowledge in the corporation is therefore the knower him- or herself; in Vedic Science terms, the Rishi aspect of consciousness.

The knower, or Rishi, in Maharishi Vedic Science does not refer to the superficial aspects of body, senses, mind, or intellect, or even to intuition which has gradually come to be recognized as playing a significant role in making business decisions. Rather, Rishi refers to the
more fundamental knowing aspect of consciousness, an aspect of the three-in-one structure of pure consciousness.

In Maharishi Vedic Science, the sound of the continuous transformations of the three-in-one structure of pure consciousness is known as Veda and the Vedic literature. Maharishi (1994, pp. 78–80) has described how this literature unfolds as a sequence of interactions between the Saṁhitā of Rishi, Devatā, and Chhandas. The first aspect of the Veda in the sequence is named Rk Veda. Maharishi often cites one verse from Rk Veda—the Richo Akshare verse—as expressing the essence of the self-referral mechanics of creation and their implications for success in life. In explaining the connection between knowledge and consciousness, Maharishi summarizes the Richo Akshare verse in the simple statement, “Knowledge is structured in consciousness” (Maharishi International University, 1974, p. xi).

Based on Maharishi’s description of the mechanics of evolution, we can now project how management thinking will evolve during the remainder of this decade and into the twenty-first century: Management’s future development will be based not only on knowledge but on knowingness, on the transcendental level of consciousness. Management will consider not only the consciousness of individuals within a corporation, but their interacting wholeness, which Maharishi terms the collective consciousness of the corporation (1995, p. 292). In the systematic development and progress of individual and collective consciousness will be the elements that provide a lasting competitive advantage and that guarantee success by enlisting the support of the invincible power of natural law that has its basis in the most settled, unified state of human consciousness—pure consciousness.

**Twenty-First Century Management:**

**Knowledge Is Structured in Consciousness**

Maharishi Vedic Science reveals that the full development of human potential, which is required for full business success, depends upon knowledge of natural law that goes beyond the accumulation of information, however relevant, and beyond the attainment of technical skills, however sophisticated. In his description of the structure and development of consciousness, Maharishi (1969, p. 341) explains that
the human nervous system has the remarkable ability to know both the boundaries of perception and the unbounded awareness of pure consciousness. This pure consciousness, which transcends waking experience, is experienced during the practice of the Maharishi Transcendental Meditation technique, in which the mind settles to subtler states of thought, ultimately transcending even the most refined impulse of awareness.

Pure consciousness, Maharishi explains, is not only the source of individual thought and creativity; it is the source of natural law, the unified field, from which emerge all the forms and phenomena in nature. As Maharishi (1986) explains,

Consciousness coming back onto itself gains an integrated state, because consciousness in itself is completely integrated. This is pure consciousness, or Transcendental Consciousness. From this basic level of life emerge all fields of existence, all kinds of intelligence. (p. 25)

By experiencing that level of natural law within their own awareness, executives who practice the Maharishi Transcendental Meditation technique align their individual intelligence with what Maharishi terms the managing intelligence of nature. This is the fundamental principle of Maharishi Vedic Management, or what he sometimes refers to as “Master Management.”

Maharishi’s Master Management maintains the managing intelligence of the manager in alliance with this supreme managing intelligence of the universe and thereby renders his administration as automatic, problem-free, ever progressive, and ever evolutionary as the administration of the universe through Natural Law. (Maharishi Mahesh Yogi, 1995, p. 8)

Through this alignment with natural law, executives develop within themselves the same managing intelligence by which nature manages the infinite diversity of the universe. As pure consciousness is experienced more fully and integrated with waking activity, managers gain the support of natural law, not only for themselves, but for all the activities of the firm. This form of management fundamentally assures success for both the manager and for the company. As Maharishi (1995) explains, “Support of Natural Law will render all thought, speech, and action free from stress and strain—life will naturally progress to greater
levels of achievement and fulfillment; life will naturally be easy, without problems or failures” (p. 182).

When more individuals throughout the business firm practice the Transcendental Meditation and TM-Sidhi programs, the overall quality of life increases exponentially. Employees become less burdened by stress, fatigue, ill health, and all other negative factors. They are physically and psychologically healthier due to the enlivenment of the evolutionary quality of natural law in their collective consciousness, and their collective activity spontaneously becomes more coherent and integrated. As a result, the firm’s productivity increases, and corporate strategy progresses in an evolutionary, mistake-free direction. See the next section for a review of research relevant to these claims.

This ideal form of corporate leadership is the goal of Maharishi Vedic Management. It arises when managers become established in what Maharishi refers to as higher states of consciousness. The highest state of consciousness, Maharishi (1994, p. 351) calls Unity Consciousness, because it is a state in which the perfect integration and harmony of mind, body, and the environment is enjoyed as a living reality. He describes a person’s experience of Unity Consciousness as a state of freedom and notes, “In that perfect liberation he leads the life of fullness and abundance” (Maharishi Mahesh Yogi, 1969, p. 448). As individuals practice Maharishi’s technologies of consciousness day by day, pure consciousness stabilizes in their awareness over time and they begin to live their full potential, experiencing higher and higher states of consciousness, until life in Unity Consciousness brings a permanent state of satisfaction and bliss.

Maharishi (1977, p. 91) predicts that when a sufficient number of individuals are living higher states of consciousness, mankind’s goals of satisfying human wants in a climate of peace and happiness will be fulfilled. Reduction of stress in individuals and in society will result in increased creativity, organizing power, and harmony. As these qualities spread in businesses and governments, solutions will be found for the economic and social problems that have plagued our world despite the advances that modern science and technology have brought.

Maharishi’s Master Management trains the manager to take a stand in the science and art of management through Natural Law, and thereby brings the support of Natural Law to every aspect of management,
nourishing and supporting the evolution of every area in the whole range of the manager’s concern, so that he enjoys the constant growth of the company, fulfilling the supreme goal of management—prosperity, progress, fulfillment, success and peace—for himself and for all concerned. (Maharishi Mahesh Yogi, 1995, 9–10)

Maharishi Vedic Management emphasizes the practical procedures and technologies we have been discussing, the Transcendental Meditation and TM-Sidhi programs, to develop human consciousness to the highest degree. Maharishi Vedic Management also provides a theoretical explanation of natural law that corroborates and validates a person’s experiences of the growth of consciousness. These two aspects of knowledge, subjective and objective, make Maharishi Vedic Management a complete science of management. It is complete in the knowledge of the objective details of day-to-day management, and it is complete in the holistic, subjective element of managing from the level of pure consciousness, the elemental field of wholeness from which all diversity emerges:

Management worth the name should be considered in terms of wholeness. The word management must be concerned with the move of wholeness, and this move of wholeness, throughout the range of any performance, is what renders management complete at every stage of progress free from problems, and full of happiness and success at every step of progress. (Maharishi Mahesh Yogi, 1995, p. 52)

Research on the Maharishi Transcendental Meditation Program in the Workplace

Over 500 studies on the effectiveness of the Transcendental Meditation technique have been conducted over the past 40 years at 200 universities and research institutes in 30 countries. A number of studies on the Transcendental Meditation technique in the workplace speak to its potential for reducing stress, improving efficiency and enhancing the knowledge base and absorptive capacity of a firm by developing the company’s Rishi quality. Maharishi (1994) describes the Transcendental Meditation technique in this way:
The Maharishi Transcendental Meditation technique is a simple, natural, effortless procedure practiced for 15 to 20 minutes in the morning and evening while sitting comfortably with the eyes closed. During this technique the individual’s awareness settles down and experiences a unique state of restful alertness: as the body becomes deeply relaxed, the mind transcends all mental activity to experience the simplest form of human awareness, Transcendental Consciousness, where consciousness is open to itself. This is the self-referral state of consciousness. (p. 260)

Here, Maharishi uses the term *Transcendental Consciousness* to indicate that the experience of pure consciousness gained during the Transcendental Meditation technique is beyond the subtlest experience of individual thoughts. The unique experience of restful alertness during the Transcendental Meditation technique has been distinguished from the aroused states of consciousness of ordinary wakefulness and the restful but inert state of sleep on over 20 psycho-physiological indicators, including measures of EEG power and coherence which signify orderly brain functioning (Alexander et al., 1987, and Orme-Johnson & Haynes, 1981).

The following is a brief sampling of some of the studies on the Transcendental Meditation technique that deal with management and with the workplace. These studies show, in a practical way, that the results of the new Consciousness-Based approach to management are already being realized:

- Gustavsson (1990, 1992) studied the effects of the Transcendental Meditation technique on the managers and employees of a Swedish public utility. At the top management level, he found a more creative climate and better group spirit; among employees, there was a significant improvement in psychological health, insomnia, and risk for cardiovascular disease.

- In a three-month prospective study specifically aimed at managerial personnel, DeArmond, Alexander, & Stevens (1996) found that managers practicing the Transcendental Meditation technique at the U.S. Midwestern headquarters and nearby facilities of a well-established medical equipment developer and manufacturer, improved significantly relative to controls in the same organization on 15 measures of vitality, physical complaints, healthful behav-
iors, serum cholesterol, observer rated and self-reported psychological well-being, and observer-rated organizational contribution.

- A study of the top management team at a successful Norwegian firm in the oil and gas industry (Schmidt-Wilk, Alexander, & Swanson, 1995) found evidence that individual managers benefit from the regular practice of the Transcendental Meditation technique. Benefits included growth of consciousness, improved physical health, interpersonal relations, and greater ability to manage work-related stress. The study also found indications that regular practice of the Transcendental Meditation technique enriched the group of managers as a whole, for example in the growth of team coherence and harmony. In this study, the constant comparative method of grounded theory (Glaser & Strauss, 1967) was employed. It was chosen to generate concepts regarding the managers’ involvement in the program and to suggest ways for managers to implement future programs.

- Alexander et al. (1993) undertook a three-month prospective study in the U.S.A. designed to test the effects of the Transcendental Meditation program on a wide range of variables relevant to the workplace. They evaluated the effects of the Transcendental Meditation technique on stress reduction and health and employee development in two settings in the automotive industry: a cluster of manufacturing plants owned by a Fortune 100 company, and a small distribution sales company. They found:

  Regular meditators [i.e., practitioners of the Transcendental Meditation technique] improved significantly more than controls, with irregular meditators scoring in between, on multiple measures of stress and employee development, including reduced physiological arousal, measured by skin conductance levels, during and outside the Transcendental Meditation practice; decreased trait anxiety, job tension, insomnia and fatigue, cigarette and hard liquor use; improved general health and fewer health complaints; enhanced employee effectiveness, job satisfaction, and work/personal relationships. (p. 245)

These last three qualities—effectiveness, job satisfaction, and work/personal relationships—are all particularly relevant to individual and company success.
• In Australia, a mutual fund company offered the Maharishi Transcendental Meditation program to its entire sales staff of 350 people (Swanson & Oates, 1989). After a year, 55% of the employees had taken part, and before the year was out, sales had increased by 250% over the previous year. The practitioners of the Transcendental Meditation technique accounted for most of the increase. Responses to a questionnaire indicated that the improvements were attributed to reduced tension and anxiety, decreased insomnia, increased energy and motivation, and improved interpersonal relationships, especially with clients and family.

• Schmidt-Wilk, Alexander, & Swanson (1996) reported that the directors of a German finance company offered the Maharishi Transcendental Meditation program to employees as part of their in-service training. After 20 of the 100 employees had been instructed, the directors noted an increased volume of lending, a general improvement in the work climate, and marked reductions in the number of insolvency cases, employee absences due to illness, and customer complaints. Four years of radical growth followed, in which balance sheet totals grew by 230%, and profits increased over 300%, with only a 28% growth in personnel (Gottwald & Howald, 1989, 1992).

• Researchers had studied the effects of the Transcendental Meditation technique on workers much earlier, beginning with studies by Frew (1974) and Jonsson (1975) in the U.S.A. and Sweden respectively. Frew’s groundbreaking study, “Transcendental Meditation and Productivity” found that practitioners of the Transcendental Meditation technique improved significantly on measures of job performance, job satisfaction and relations with peers and supervisors in comparison to controls, as indicated by self-report questionnaires and evaluations by peers and supervisors. A replication three years later by Friend (1977) found that practitioners of the Transcendental Meditation technique scored higher than controls on self-report measures of performance, job satisfaction and relations with co-workers and supervisors.
• In an early European study by Jonsson (1975), support was found for the hypotheses that workers practicing the Transcendental Meditation technique were more alert and active, achieved more with less effort, became angry less often, were more tolerant, possessed more self-confidence, were more extroverted, and had a greater ability to assign correct priorities to different tasks than non-meditating control subjects. Although these early studies were not longitudinal and lacked comparable control groups, they paved the way for later research that used stronger methods, and supported the early conclusions.

• More recently, in Japan, two five-month prospective studies with a more rigorous design, by the respected National Institute of Industrial Health of the Japanese Ministry of Labor (Haratani & Henmi, 1990a, 1990b) found significant improvements, relative to controls, in practitioners of the Transcendental Meditation technique in a large manufacturing firm. Improvements were observed in ten of the twelve subscales of the Tokyo University Health Index and in the Social Desirability Scale, and in the incidence of insomnia and smoking.

Research on Self-Development: Toward the Development of Full Human Potential

Research on the individual psychological traits and skills associated with effective management and leadership (Stodgill, 1974; Bray, Campbell, & Grant, 1974; McClelland, 1985; Boyatzis, 1982; Leavitt, 1986) has generally pointed to the following characteristics: social power motivation, communication skills, critical and creative thinking, self-efficacy and inner locus of control, decisiveness, vision, and interpersonal competencies to resolve conflicts in a constructive manner and to build team spirit and collaboration. What many of these characteristics have in common is that they are functions of a single, comprehensive dimension of self development as has been observed by developmental psychologists such as Loevinger (1976), Maslow (1968), and Kegan (1994). Simply put, such leaders are more mature.
As individuals progress to higher stages of psychological development, they exhibit greater autonomy and ability to handle stress, more integration of intellect and emotions, strengthened values and purposefulness, and less self-centered perception and interaction. Research indicates that the systematic experience of transcending through the Transcendental Meditation technique is associated with transformation toward the post-conventional, self-actualized stages of development described by Maslow (Alexander, Rainforth & Gelderloos, 1991). Two studies in particular speak to the question of whether the practice of the Transcendental Meditation technique promotes this kind of development.

• A longitudinal study by Alexander et al. (1990) compared changes in ego development over an eleven-year period in graduates from a university with a special curriculum including the practice of the Maharishi Transcendental Meditation program with those from three well-known universities offering standard curricula. At pretest, the experimental group already scored at the conscientious level, a mature level of abstract reasoning about oneself and the world as assessed by Loevinger's (1976) ego or self-development scale, but over the intervening period increased by almost one step to a more self-differentiated, individualistic level. This is in contrast to the controls who remained relatively unchanged or regressed slightly in score. Such changes, if experienced widely among managers and workers, would have a profound impact on workplace effectiveness.

• Alexander, Rainforth & Gelderloos (1991) presented an exhaustive statistical meta-analysis of all studies then existing (42 treatment outcomes) on the effects of the Transcendental Meditation technique and other forms of meditation and relaxation on self-actualization. “The effect size, in standard deviation units, of the Transcendental Meditation technique on overall self-actualization . . . was approximately three times as large as that of other forms of meditation . . . and relaxation . . . , controlling for duration of treatment and strength of experimental design” (189–190). The effect size was also three times as large for three independent
factors revealed by the Personal Orientation Inventory, the most widely used self-actualization measure: affective maturity, integrative perspective on self and world, and resilient sense of self. The magnitude of the effects indicated that the changes were not due to stylized relaxation, expectation or other motivational effects and the authors concluded that systematic transcending was the key factor contributing to the results.

These results showing advances in ego development and in self actualization have powerful implications for leadership and for organizational success, suggesting a developmental transformation in the individual’s style of functioning.

<table>
<thead>
<tr>
<th>from part</th>
<th>to whole</th>
</tr>
</thead>
<tbody>
<tr>
<td>from reactive</td>
<td>to proactive and preventive</td>
</tr>
<tr>
<td>from short-term</td>
<td>to long-term</td>
</tr>
<tr>
<td>from win-lose</td>
<td>to win-win</td>
</tr>
<tr>
<td>from control</td>
<td>to collaboration</td>
</tr>
<tr>
<td>from efficiency</td>
<td>to effectiveness</td>
</tr>
<tr>
<td>from administration</td>
<td>to leadership</td>
</tr>
<tr>
<td>from development of knowledge</td>
<td>to development of full human</td>
</tr>
<tr>
<td>and skills</td>
<td>potential</td>
</tr>
</tbody>
</table>

Conclusion

This impressive sample of research results lends support to the conclusions drawn earlier about the way in which current management thought will find fulfillment. In this century the pendulum has been swinging from the material aspects of business, focused on the structure of production (the Chhandas element) towards progressively subtler interpretations of the business enterprise. Under the influence of this change, business strategy began to emphasize the importance of the human element, first for the interpersonal processes that affect the success of the firm (the Devatā element), then later, toward regarding the firm as a learning organization. This perception is now progressing
from a focus on knowledge to a focus on the knower (the Rishi element), from knowledge-based to knower-based.

We have merely scratched the surface both in the research and in the application of these powerful technologies of consciousness of how the full human potential can be developed and what this could mean to leadership and strategy in the twenty-first century, but we have no doubt that this is the course that the practice of management will take. The only direction in which the current knowledge-based approach can find its fulfillment is at a deeper, more fundamental level, and the most fundamental level of the knower is his or her own transcendental consciousness. The achievement of that profound practice of management will produce an era of business and society that will accomplish what so far has only been glimpsed, the full satisfaction of all human material wants as a by-product of the growth of human consciousness, individually and collectively, to its full dignity in the state of Unity Consciousness, the most fully developed state of human potential.

References


This article, “Beyond the Current Paradigm in Management Thought: Alignment with Natural Law through Maharishi Vedic Management,” by Kurleigh D. King, Ph.D. & Scott R. Herriott, Ph.D., here revised/updated, and reprinted with permission, was originally published in *Modern Science Vedic Science*, 7(1), (1997) 225–237.
Exploring the Frontiers of Environmental Management:
A Natural Law-Based Perspective

David S. Steingard, Ph.D.
Dale E. Fitzgibbons, Ph.D.
Dennis P. Heaton, Ed.D.
ABOUT THE AUTHORS

David S. Steingard, Ph.D., is the Associate Director of the Pedro Arrupe Center for Business Ethics and Associate Professor of Management at Saint Joseph’s University. Dr. Steingard includes leadership, ethics, socially responsible business, diversity, and spirituality in business among his teaching and research interests. He received his Ph.D. in Management from Case Western Reserve University.

Dale E. Fitzgibbons, Ph.D., is Associate Professor of Management in the College of Business at Illinois State University. He teaches in the areas of Strategic Management, Leadership, Teams, and Organizational Behavior. His research interests include corporate socially responsible business, corporate governance, management spirituality, and ethics. He has authored and co-authored articles in the Organizational Behavior and Human Decision Processes, Journal of Organizational Change Management, Journal of Human Values, the Organizational Development Journal, Business Horizons, Research in Personnel and Human Resources Management, Journal of Occupational Psychology, and the Journal of Management Education, among others.

Dennis P. Heaton, Ed.D. is Professor of Management, Co-Director of the Ph.D. Program in Management, and Dean of Distance Education and International Programs at Maharishi University of Management in Fairfield, Iowa. His previous publications include articles and invited chapters on management education, leadership, ethics, higher stages of development, and peak performance. He has been directing Ph.D. students’ research in areas of socially and environmentally responsible business, including the effects of green buildings on human resources, consumer attitudes toward genetically modified food, moral development and ethical decision-making in accountants, the financial impact of environmental management systems, and Maharishi Mahesh Yogi’s program to eliminate poverty.
ABSTRACT

Environmental management (EM) is at a turning point in its evolution as a discipline. Daunting social, ecological and spiritual problems of global magnitude implore EM to be inspiring and efficacious in theory and practice. Ironically, the present EM movement, in its ontologically dualistic configuration—measuring and manipulating the environment as an abstract, objectified economic resource for human gain—is unknowingly contributing to the very ecological degradation it wishes to ameliorate. In order for EM to become a truly “transformative epistemology,” its praxis must ontologically transcend the narrow foundations of staunch empiricism, logical positivism and rationalism that now firmly gird it. As a possible alternative to EM’s “monological flatland,” we introduce a holistic praxiological system grounded in the ancient Indian vedanta wisdom tradition. Natural law-based environmental management (NLBEM) portends a radical metamorphosis of EM into a discipline that makes a meaningful impact on today’s precarious global condition.

Introduction

Within the organization and management disciplines, there is growing recognition of the imperative to address ecological concerns. But leaders within the environmental management movement are also recognizing that management—measuring and manipulating the environment as an abstract, objectified economic resource—has been the very cause of ecological degradation.

The term environmental management (EM), then, seems to be an oxymoron. Is it possible to manage the environment in a way that moves from disrupting to restoring the natural balance in eco-human relations? Natural law-based environmental management (NLBEM) is offered as a rebalancing complement to the incomplete paradigm of EM.

We present the viewpoint that natural law, the intelligence that maintains order and progress in the physical world, is inherent in our own consciousness. The complementary paradigm of NLBEM, when enlivened in the consciousness of the EM manager or researcher, enables him or her to spontaneously promote balance and sustainability in eco-human relations.
The objective approach of modern science has been successful in gaining knowledge about various parts of the multifarious yet integrated workings of nature. Objective science has given us technologies that achieve specific ends, but necessarily—because they are based on partial knowledge—produce unfortunate side effects. Because of the far-reaching and potentially irreversible impacts of technology, at this time in the world it is essential that objective science be complemented by subjective science, which provides knowledge of the holistic value of natural law.

In this article we first analyze how environmental management inherits from the management disciplines a dualistic separation of organization and environment. We then review recent thinking at the frontiers of environmental management that reaches beyond this division toward a new paradigm of unity of humankind and nature. Integral to this new thinking is the notion of a change in consciousness—more than a change in what we know; rather, a change in how we know. This sets the stage for explaining how the integrated wholeness of natural law is available in consciousness. We present a vision of how the holistic knowledge of natural law, gained subjectively from within, can complement the specific objective knowledge of managers and technologists, enabling them to grow in the creative intelligence of nature, which creates progress without pollution.

**The Fundamental Flaw of Modern Management:**

**Dualism of Mind and Nature**

The inadequacy of current modern management theory and practice to generate and maintain sustainable human organizations has been a growing topic of concern for over 35 years. These various polemics and deconstructions of modern management expose hidden agendas, silenced voices and epistemological instabilities. Apparently, modern management theory and practice cannot halt or even slow the continued social and ecological degradation rampant across the planet. Touted as a saviour, modern management actually generates and exacerbates social and environmental problems, resulting in exorbitant costs to humanity and the planet. For example, Estes recently documented that the costs imposed on society and its stakeholders from a variety of
social and ecological sources is over $2.6 trillion, despite the pervasiveness of modern management practices. This incomplete and unbalanced approach to managing the eco-human relationship creates devastating consequences for present global conditions as well as imperils the sustainability of all life on the planet. The shortcomings of modern management to address and remedy our social and ecological morass has given rise to a burgeoning academic discipline—environmental management. EM shows considerable promise as an ecological and sustainable alternative to the shortcomings of modern management theory and practice. Exciting developments in ecocentric thinking, transpersonal, spiritual and feminist epistemologies, eco-feminism, and whole systems thinking and transformation point us to a path towards rebalancing human and environmental relationships for a sustainable future. The commonality across these new approaches is that humanity is a “whole part” of nature, wholly entwined in its fine gossamer web. It is not something “out there” to be used or managed. It is as much a part of us as we are of it. The boundaries are indecipherable. Separating the two would be akin to asking, where does the mother stop and her in utero baby begin? Similarly, where does one’s arm begin and one’s body stop? The answers are equally ludicrous in these examples.

However, even in light of these promising advancements, there appears to be a fundamental epistemological flaw—the separation of environmental management thinking and practice from the environment itself—of modern management not addressed or rectified by the recent proliferation of EM theory or praxis. It is first necessary to locate the source of this error in modern management thinking, and then demonstrate how, like an undiscovered hereditary disease, EM, even with the best intentions, contracted this error from its forerunner.

To move beyond this innocently contracted disease, a more complementary and unitive solution is offered in this article. Clearly, any viable solution to the struggling EM paradigm will not invalidate previous knowledge accumulation, but only complement and recontextualize and ultimately revitalize it. In this article we explore such a unifying and complementary frontier for a holistic and truly sustainable EM paradigm—natural law-based environmental management.
The Fundamental Flaw Manifested in EM

Relying on science, technology, rationality, objectivity, and control, modern management views the environment as just one more equation in the production function rather than viewing humankind as engaged in a delicate eco-human relationship with the natural environment. This view can be succinctly seen in the preface to Sayre’s Inside ISO 14000:

With an effective management system, you have the competitive advantage and can see your enemies before they attack. Once your system is in place, you'll know for sure what you can do to and for the environment. Then you'll have the power to make decisions and act.10

Obviously, to Sayre and many others, the environment is something “out there” waiting for us to apply our well-formulated and thought-out managerial calculus. So, here, dressed under the thin veil of EM, Sayre ironically utilizes the same modern organizing principles in the name of environmental management.

Clearly, with its goal of sustainability, the EM paradigm is a pronounced advancement over modern management praxis. Yet this new paradigm contains a fundamental flaw—it is incapable of healing modern management’s ontological dualism and accompanying epistemological fragmentation. These critical and foundational shortcomings render even EM ineffective at generating sustainable eco-human relationships on planet Earth: “Even within developed countries, most important environmental indicators remain negative, and trends are not improving.”11

The time is right to eradicate this fundamental epistemological error, while EM is still in its adolescence. The consequence of this error is the inability of our eco-human condition to rebalance itself, to reintegrate from its current state of “Koyaanisqatsi”—“life out of balance, life out of control,” as the Hopi Indians understand the precarious situation of the techno-modern world.12 This fundamental error manifests in EM’s polarized dialectic of humankind versus nature. This is a world-view that “drastically separates mind and body, subject and object, culture and nature, thoughts and things, values and facts, spirit and matter, human and nonhuman.”13 Through its ideological inheritance from logical-positivist management and organization theory, EM also has
suffered “castration” from the natural environment by reinforcing the organization versus environment assumption.\textsuperscript{14} Ironically, EM claims to heal, or make whole, this injurious fragmentation. Yet this thrust toward reintegrating disparate ontological polarities and the destructiveness it realizes has not travelled far enough toward a new synthesis: one that can actually make advances in planetary transformation much beyond the predecessor it is trying to supersede.

**The Frontiers of Environmental Management:**

**Looking Beyond Dualism for Eco-Human Sustainability**

In order to advance this argument as well as set the stage for NLBEM, we need to examine the current efforts to reconcile the EM “debate . . . framed in terms of techno-centrism versus ecocentrism.”\textsuperscript{15} In order for EM to be an effective theoretical base for a truly transformative praxis, it must incorporate the functional, performative mandates of the technocentric paradigm as well as the lofty ideals of the more organic and sacred ecocentric paradigm—essentially, this is the crux of the challenge.

One beautifully representative example of EM’s aspirations for a “higher union” can be found in Gladwin et al.\textsuperscript{16} We devote some thorough analysis to this article as the authors make a seminal statement concerning the Hegelian synthesizing of “techno-centric” (thesis) and “eco-centric” (antithesis) world-views into a higher order, more powerful environmental paradigm—“sustain-centric.” True paradigm development requires a deep commitment to thinking beyond a paradigm’s presuppositions. To make a simple analogy, new paradigms do not merely “rearrange deck chairs on the Titanic.” They courageously acknowledge their catastrophic failure by sobering up, dispelling their illusions, and searching for the next evolutionary vessel before it is too late. Thus, even with the sincere synthesis offered by such noble integrationist attempts as Gladwin et al., EM may be falling short of the mark and actually reinforcing the fantasy that the Titanic will soon arrive in New York, even as swirls of icy sea-water dampen our feet. We now point out the faltering assumptions underlying framework for “a new integrative paradigm of sustain-centrism.”\textsuperscript{17} This analysis will be followed by an explication of NLBEM, an alternative epistemology capable of revolutionizing EM.
Gladwin et al. quite rightly claim the dissociation of organization and environment endemic to management theory “intellectually disconnects organizations from the ultimate sources of life—the sun, photosynthesis, biodiversity, food chains, and biogeochemical and nutrient cycles.” Yet their very solution of sustain-centrism commits the same ontological error. It proposes a synthesis of two duelling intellectual perspectives, which can only produce an intellectual offspring within the same epistemological domain. Extracting the best intellectual precepts from techno-centrism and eco-centrism is still operating at a purely rational, intellectual and disembodied level. This subtle allegiance to reproducing an intellectual solution for EM originates in the “taken-for-granted assumptions of dualism, inherited from the Enlightenment.” Thus, sustain-centrism’s “transcendence of techno-centrism and eco-centrism” is tainted by the insidious influence of Euro-centric seventeenth-century thinking. Ironically, as they attempt this “transcendence”, they unwittingly get caught in a self-sealing tautology that leaves them helplessly “arguing from the lens of [their] paradigmatic frame.”

So the genuine leap EM needs to make is from an intellectually-based techno-rationalism to a Consciousness-Based approach where human knowing is expanded beyond objectivity, logo-centrism, rationality and mechanism. Such an approach complements an intellectually-based system with a holistic, transpersonal, interconnected and relational one. The common denominator of EM as well as all academic, logical-positivist disciplines, must be the human consciousness or subjectivity on which that discipline is based—moving from asking object-detached questions about nature (EM) to realizing our true “belonging to the universe.” Consciousness is the common denominator for this quantum transformation. Einstein portends: “We cannot solve the problems that come with the world we have made thus far from the same level of consciousness at which we created them.”

Cooperrider and Khalsa elaborate:

Many have argued such ignorance stems from the very worldview that gave rise to the accomplishments of the modern scientific or industrial era; an epistemology that treats the observer as separate from the observed while seeking objective knowledge of its functioning. As the negative side-effects of this modernist objectivist knowing become
increasingly figural, staying within the same paradigm of relationship will not, Einstein teaches, enable us to *transcend its inherent limitations.* For humans to effect positive environmental change requires, first, a new paradigm in our way of relating to our environment. (emphasis added)

Sustain-centrism, as a representative example of this new effort to “transcend”, falls short because it resides within the same “paradigm of relationship” as its component parts, techno-centrism and eco-centrism. Only by basing EM in an integrated field of consciousness can authentic advancements in sustainable eco-human relations be achieved. Otherwise, without a Consciousness-Based perspective, we will merely be rearranging the deck chairs as, at least from this perspective, sustain-centricism does.

Problematizing the issue further, Gladwin et al. demonstrate the detached observer’s lack of confidence in true knowledge of the object of study. They confess the equivocality and the illusiveness of EM: “Our argument is reduced, in the absence of inherent truth, rightness, or beauty, to one of coherent persuasiveness.” In a world with such vexing and daunting problems, we need more than “coherent persuasiveness”—the world trauma is not merely a rhetorically solvable puzzle. There is no time to waste. We must enter the arena of EM at the multidimensional and ontologically non-dual levels—biological, spiritual, and quantum. Unfortunately, no intellectual perspective born of the reductionist logical-positivist world of “organizational science”—no matter how comprehensive, logical, well researched, elegant, or predictive—can generate a truly “integral consciousness” capable of whole system transformation.

As Gladwin et al. sagaciously point out: “Paradigmatic struggles cannot be settled by logic or experiment alone.” Hence, our suggestion is to stimulate for a complementary metamorphosis of EM with trans-rational, trans-personal, trans-logical and holistic Consciousness-Based epistemology of EM—NLBEM.

Part of the problem with attempts to create an integrative paradigm arises from the underlying assumption of human beings as separate from nature. The implication here is that nature can only be managed from the outside by the detached and “external” human: “Nature is composed of infinitely divisible objects, moved by external rather than internal
forces, existing within a field of discrete events.”31 These techno-centric assumptions, as we see imported into the hybrid sustain-centrism, still maintain a dissociating view of the natural environment and diminish the transformative power of the present EM paradigm.

By focusing on a mechanical cosmology that acknowledges “discrete events” typical of male-dominated constructions of management, duality and degradation ensue.32 Dividing and conquering the natural universe presuppose a non-systemic ground for EM. The environment becomes an isolated variable to manage, along with a variety of other organizational variables such as capital, logistics, personnel, and material resources. Basically, these narrow approaches to managing the environment as a variable in isolation from the wholeness cause problems. Without knowledge of the entire eco-human interface, the incomplete EM system tends to isolate a single aspect of the system and apply treatments to it, oblivious to the larger ramifications of unintended impacts: “In summary, research suggests that humans’ attempts to manage ecosystems to optimize a single attribute or control natural spatial and temporal variation can cause ecosystems to reach a critically unstable state.”33 For example, “hatcheries built to save and restore the salmon population in the Columbia River in Oregon have further damaged the species by allowing fish with less suitable instincts and characteristics to survive and weaken the gene pool.”34 Such examples (attempts to save and restore fish populations) suggest that “managing planet Earth” and global EM are possible.35 This fallacious reasoning is exposed by Purser in a brilliant critique:

The focus of change is on manipulating symbols, abstractions and things that exist out there on the surface . . . primacy is given toward changing that which can be manipulated in the external environment. An order is created that reinforces and amplifies the dualism between subjective human experience and the objective external world . . . an unfettered objectivism is pathological and has outlived its social usefulness.36

This amplified dualism translates into much of the “disembodied and disincarnate” management of the natural environment.37 In fact, the environmental manager’s detached process of managing has backfired. The emergence of environmental and ecological disciplines testifies that managing from within the modern management paradigm is not working. The natural environment has been transmogrified into an
unnatural antagonist to the human condition; fundamental separation brings enmity. Our battle to save the world, therefore, is not a battle of the world out there, but the world in here—to reunite ourselves with our falsely segregated natural environment.

Moreover, these problematic attempts to manage the natural environment presuppose a complete knowledge of how nature functions. As we saw in the salmon preservation example, our isolated attempts to manage nature as a large machine backfire. In light of the limitations of this paradigm, we are not able to cognize all dynamic and organic interconnections, and be aware of the impact of our actions. Where the human mind and intellect excel is the detailed cataloguing and description of problems. *The Encyclopedia of World Problems and Human Potential* “catalogues 15,000 global-level, transboundary problems, almost all diagnosed within the last three decades.”38 As humans, we have a “poor record of managing [our] own socioeconomic affairs, even on a local scale, let alone on large-scale, complex, and interconnected ecosystems whose functioning are barely understood.”39 Ironically, these myriad problems result from modern management’s iatrogenic techniques at managing the natural environment. Danger looms when EM’s human arrogance presumptuously claims mastery of “ecologically sustainable development (ESD).”40 “It [ESD] seeks management of global ecological resources and systems, even though researchers and managers do not understand completely how they function.”41

In 1968 a Conference on the Effect of Conscious Purposes on Human Adaptation (including scientists such as Gregory Bateson, Mary Catherine Bateson, Barry Commoner, Anatol Holt and Gordon Park) foreshadowed that eco-human relations are far more complex than conventional conceptual tools can take into account. Two basic conclusions emerged: (a) the interdependence of the parts of the ecosystem, which decision makers tend to treat as independent; and (b) the polar nature of those parts of the ecosystem, which decision makers consider to be opposites. Thus, 30 years ago we were encouraged to move to the next level or higher state of consciousness. The ailing state of our world42 is evidence that 30 years and 15,000 problems later, remaining at the same level of dualistic, rational consciousness about eco-human relations has only resulted in desperate efforts to recapture wholeness. NLBEM, as we shall see in the next section, holds tremen-
dous promise as a vehicle to authentically transcend EM’s unfortunate cycle of stagnation and degradation.

**Beyond the Frontiers of EM:**
**“Transcending” Ontological Dualism with NLBEM**

In short, the study of sustainability must shift from objective to subjective, from exterior nuts and bolts to interior hearts and minds.\(^43\)

In the preceding section, EM is deconstructed as an ontologically dualistic system of theory and practice with serious limitations for advancing the ecologically sustainable paradigm so desperately needed at the epochal cusp of the twenty-first century. As Gladwin et al.’s seminal article illuminates, there is clearly a need for transcending dualities inherent in the raging debates of EM. Although they make some important progress introducing the hybrid construction, sustain-centrism, our analysis suggests no revolutionary reintegration of EM’s “fractured epistemology”—dualism of mind and nature.\(^44\)

The concluding section of the article offers, in the form of an NLBEM perspective, an alternative and compelling construction, which actually transcends the limitations of the eco-human segregation and degradation. Several questions precede our unveiling of this higher consciousness for EM:

- What are the requirements for such a revolutionary jump in the epistemological foundations of EM?
- How can we even outline the necessary aspects of a shift in the environmental mind from within our present paradigm?
- Even with a new “integrative consciousness” rising, how does such a holistic epistemology manifest in behavior and systems—how does it manifest in creating a just and sustainable world?\(^45\)
- Is the academic and managerial modern mind prepared to undergo such a radical transformation of its intellectual foundations and timeless shibboleths?
- Is the leap to a higher environmental mind, or state of consciousness, within the province of academics and techno-modern managers?
- If there is indeed resistance to this inevitable transfiguration of intellectuality, what are its sources? What are its politics?
Why would a promising solution to global exigencies be disregarded or suppressed? What impedes the paradigm shift?

What are the old paradigm proponents clinging to? What psychological, social, and economic factors must be considered?

These questions are daunting. But before answering them and explicating NLBEM, we anchor our discussion with some further insights from the cutting edge of EM. Ironically, leading edge thinkers in the field clamor about the incompleteness of present EM knowledge to affect any real eco-human sustainability. It is curious how in just a few years, such a fresh and radical line of inquiry seems to have exhausted its capacity to generate viable frameworks and results. It is now diminished to asking rudimentary questions, which reflect an absence of any positive or conclusive knowledge about the topic. We are passionately committed to providing some insights for EM’s pending evolution to a higher order discipline. Our purpose, to offer a complementary perspective to fulfil this incompleteness with robust and powerful knowledge. The following quotes from Purser act as a springboard for our perspective:

Indeed, the far-reaching changes to create a sustainable society require a transformative epistemology that is based on a fuller appreciation of space and time, and a deeper and more inclusive way of knowing. This transformative epistemology must act as a corrective of the wrong views, distorted images, and narrow perspectives that have led to the global ecological crisis. The way a person knows space and time has a direct effect on how he or she will look at and treat the environment. Therefore, perception of space and time as an infinite dimension of being offers an aperspectival vision that can heal and transcend the dualism between person and environment. (emphasis added)⁴⁶

Ultimately, what is needed is a new vision of reality that can experientially open up time, space, and knowledge, foster vision that transcends inner and outer dichotomies and that perceives the environment and the landscape as being inseparable from being. (emphasis added)⁴⁷

To ensure a sustainable future for all living things requires a change in human consciousness.⁴⁸
Following on Purser’s insights, we offer NLBEM as an EM alternative that incorporates key elements as emphasized above. NLBEM cultivates a “new mind” supplementing separation and exteriorization with unity and interiorization:

Future researchers may need to focus on whether sustainability requires shifts in human thinking (from linear to cyclical, analytical to synthetic, reductive to integrative) and whether it is possible to increase the rate of people’s evolutionary consciousness toward a “new mind” appropriate for a sustainable world.49

A recurring insight at the frontiers of EM is the need for this “new mind,” “integrative consciousness,” or “transformative epistemology” to transcend the dualism between nature and humanity.50

Why don’t unifying efforts like “sustain-centrism” go far enough in creating a truly non-dual integral consciousness for EM?51 Sustain-centrism is like the proliferation of systems theories, paradigm shifts, deep ecology, new/quantum physics, complexity and chaos theory, eco-feminism, and other integrating perspectives; “sustain-centrism”, that offers more inclusivity of ideas, theories and instrumentalities. However, these perspectives, because they are merely synthesizing knowledge at the level of the intellect, are incapable of epistemologically transcending their own way of knowing: “They are just more mental ideas hooked to sensory perceptions; they are not transmental contemplation disclosing the Divine.”52 We must move beyond EM perspectives like sustain-centrism and “mental ideas hooked to sensory perceptions” and toward “transmental contemplation” into the lived experience and embodied knowing—wisdom—of the EM manager. Analogously, Wilber instructs how the real problem with both EM and its underlying modernist knowledge base is the discounting of “higher modes of knowing”:

No, the real problem of our modern fragmentation is not that empirical science is atomistic rather than systems-oriented; the real problem is that all higher modes of knowing have been brutally collapsed into monological and empirical science. Both atomism and system theory are monological/empirical, and it is the reduction of all knowledge to monological modes that constitutes the disaster of modernity. (emphasis original)53

So, given the clear challenge of the “real problem of modern fragmentation” in EM, we turn now to the specific Consciousness-Based
approach of NLBEM to rectify the “disaster” of EM. As we shall see, NLBEM answers the clarion call for more holistically derived environmental management wisdom—access to “higher modes of knowing.” Of course, this version of a “transformative epistemology” is intended to map out one complete system that truly transcends and integrates.\textsuperscript{54} We emphasize an open invitation to other scholars and managers to do the same from other epistemologies and wisdom traditions. Dialogue amongst NLBEM and other systems of thought and action, which ascertain and utilize non-dual consciousness, will only intensify the EM field’s aspiration toward holistic and effective praxis.

**Unifying the Environmental Manager, EM and the Natural Environment:**
**The Contribution of Maharishi Mahesh Yogi and NLBEM**

The notion that human consciousness has significant untapped potential has been considered in Western psychology since William James:

> Our normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, while all about it, parted from it by the flimsiest of screens, there lie potential forms of consciousness entirely different. We may go though life without suspecting their existence; but apply the requisite stimulus, and at a touch they are there in all their completeness. . . . No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded.\textsuperscript{55}

Great artists and thinkers have extolled experiences of consciousness beyond thought, experiences that awakened a sense of connection to the wholeness of nature. For example, William Wordsworth described:

> That serene and blessed mood,  
In which the affections gently lead us on—  
Until, the breath of this corporeal frame  
And even the motion of our human blood  
Almost suspended, we are laid asleep  
In body, and become a living soul;  
While with an eye made quiet by the power  
Of harmony, and the deep power of joy,  
We see into the life of things.\textsuperscript{56}
The British philosopher Edward Carpenter wrote: “The Man at last lets Thought go, he glides below it into that quiet feeling, the quiet sense of his own identity with the self of other things—of the universe.” Spontaneously occurring experiences of silent wakefulness, such as recounted by Wordsworth and Carpenter, are rare. In recent years, however, theoretical, experiential and experimental knowledge about consciousness has advanced with the availability of systematic and reliable practices for replicating distinctive states of consciousness. The most widely researched such practice is the Transcendental Meditation technique as taught by Maharishi Mahesh Yogi. Wilber describes the “incalculable” contribution of the Transcendental Meditation program to empirically significant psychological research:

Moreover, unlike most of the meditation teachers in the country, Alexander and his colleagues have been taking standard tests of the various developmental lines (including Loevinger’s ego development, Kohlberg’s moral development, tests of capacity for intimacy, altruism, and so on) and applying them to populations of meditators, with extremely significant and telling results. The importance of this line of research is simply incalculable. (emphasis added)

Over the last 40 years, Maharishi has discussed Consciousness-Based solutions in management, government, education, health, and the environment. A central thesis of Maharishi’s work is that the same total intelligence of natural law, which is managing the natural environment, is accessible deep within each individual and can be unfolded through the development of consciousness. According to him:

The Transcendental Meditation technique is an effortless procedure for allowing the excitations of the mind to gradually settle down until the least excited state of mind is reached. This is a state of inner wakefulness, with no object of thought or perception, just pure consciousness, aware of its own unbounded nature. It is wholeness, aware of itself, devoid of differences, beyond the division of subject and object.

Extensive research on this technique has objectively noted characteristic physiological effects including marked declines in respiration during practice of the Transcendental Meditation technique and collected alertness, as measured by H-reflex motor neuron activity and alpha EEG coherence. Researchers have reported results from the
Because Transcendental Consciousness may be unfamiliar to the discourse and experience of many readers, let us approach it by contrasting it to our familiar waking state of consciousness, represented in Level 1 of Figure 1. The structure of experience in the waking state of consciousness is represented in terms of three elements: the known or object of experience, the knower or subject of experience, and the process of knowing that conditions the knower’s experience of the known. For example, let us say that the environmental manager or researcher (knower) has knowledge about the natural environment (known) through certain mental activities of environmental management (process of knowing). In this fractured epistemology, the known (for example the natural environment) is experienced as external to and separate
from the knower. Consciousness is object referral—dominated by the objects of its attention—and the knower remains ignorant of him- or herself, like an eye that cannot see itself. This is the epistemological structure of knowledge as commonly taught in education and applied in EM today.

In contrast to the division of manager and environment inherent in the object-referral structure of the waking state of consciousness, Level 2 represents the undivided structure of experience in Transcendental Consciousness. The experience of this state is that the knower is fully awake in a settled, silent state. In that silent wakefulness, there is nothing for consciousness to be conscious of other than its own existence; consciousness is then self-referral, meaning, it is its own knower, known and process of knowing. In Maharishi’s theoretical explanation, repeated practice of the Transcendental Meditation technique (generally 20 minutes twice a day) integrates Transcendental Consciousness and the active mind, resulting in “enlightenment . . . the natural ability to think and act in accordance with Natural Law.”

The view that humanity and natural law are connected in Transcendental Consciousness is the cornerstone of NLBEM, and merits elaboration. More than a philosophical notion, it is a scientific theory, since Transcendental Consciousness is open to direct experience through repeatable procedures, and its influence on physiology and behavior is subject to empirical study. In his 1986 book, *Life Supported by Natural Law*, Maharishi identifies self-referral consciousness with the intelligence inherent in the orderly and ever-evolving universe. According to him, the self-referral state of consciousness is “that one element in Nature on the ground of which the infinite variety of creation is continuously emerging, growing, and dissolving.” Self-referral consciousness is, then, not merely a subjective state; it is the basis of nature’s dynamism, equivalent to the unified field in quantum physics. In Maharishi’s words, “The Unified Field is a self-referral state of awareness that knows itself.”

Certainly, this view recalls what Huxley named the “Perennial Philosophy”—the recognition of “the universal immanence of the spiritual Ground of all existence.” Indeed, Maharishi points out that ancient seers identified this connection of consciousness and natural law, and expressed it in the Rīcho Akshare verse of Ṛk Veda (1.164.39):
In the transcendental field (Transcendental Consciousness) . . . reside all the Devas, the impulses of Creative Intelligence, the Laws of Nature responsible for the whole manifest universe.70

Experience of Transcendental Consciousness is significant to EM because this experience awakens us to the holistic intelligence of natural law within ourselves. The effect of regular practice of the Transcendental Meditation technique, according to Maharishi, is that:

Spontaneously the conscious mind identifies itself with the self-referral Unified Field, the fountainhead of all the streams of activity in Nature. As we gain more and more familiarity with that self-referral performance, our thoughts and actions spontaneously begin to be as orderly and evolutionary as all the activity of Nature.71

In his *Science of Creative Intelligence*, Maharishi outlines the interdisciplinary principles of natural law that can be observed in the environment and found to be growing in individuals through the practice of the Transcendental Meditation technique. These principles—which include least action, integration of opposite values and holistic comprehension together with sharp focus—present a theoretical framework for deriving researchable propositions about the observable behaviors of natural law-based environmental managers. Self-referral awareness, as depicted in Figure 1, is an unbroken circle, unifying the environmental manager or researcher (knower), the environment (known) and EM (process of knowing), and closing the gap between humankind and nature. Unlike attempts to synthesize organizations and environment on the intellectual level, Level 2 in Figure 1, truly represents a new paradigm that transcends not only the duality of opposing intellectual perspectives but intellectual thought in its entirety.

Unified or comprehensive knowing here in Transcendental Consciousness (Level 2) dramatically differs in depth from knowledge available solely in waking consciousness (Level 1). Table 1 elucidates this vital distinction—the evolution of knowledge about the natural environment, to communion and enlivenment of natural law within self-referral consciousness. Based on an ancient Vedic wisdom tradition, Maharishi’s *Science of Creative Intelligence* and Transcendental Meditation technique are well suited to help EM scholars and managers catalyze the shift from EM knowledge to NLBEM wisdom. Oper-
ating within the disconnected structure of object referral knowledge, science and technology have extended the impact that human actors have on the natural environment of the planet, but not without “unintended ecological degradation.” Indeed, it is the limitation of education based solely on object referral knowledge that is responsible for the environmental problems of the world today:

Incomplete knowledge, based on isolated areas of experimental investigation, has created a society full of problems and suffering, in which it is difficult to live a healthy and happy life. For example, the harmful side effects of modern medicine; the pollution of air, water and food produced by industrial and chemical technology promoted by modern science; and the destructive power of electronic and nuclear technologies have all affirmed the truth: A little knowledge is a dangerous thing.

Maharishi contrasts the partial values of waking state knowledge to the holistic knowledge available in the transcendental level of our consciousness:

Intellectual understanding of the Laws of Nature of the waking state of consciousness does not enliven in the intellect that most basic level of Natural Law, that level of intelligence in Nature which is the common basis of all activities of all other states of consciousness; it does not enliven in the intellect that level of Natural Law which is the lively foundation that upholds all the infinite activities of the ever expanding universe.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Evolving from EM Knowledge to EM Wisdom through NLBEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM knower</td>
<td>EM process of knowing</td>
</tr>
<tr>
<td>EM Knowledge</td>
<td>Intellectualism</td>
</tr>
<tr>
<td>NLBEM wisdom</td>
<td>Holistic intelligence</td>
</tr>
</tbody>
</table>
Thus, intellectual knowledge without a foundation in Transcendental Consciousness is incomplete and imbalanced:

If the individual intellect is not lively on this transcendental level of Nature’s Intelligence, which is the one ultimate, unifying, evolutionary power upholding all activity in Nature, the individual existence and performance remains intellectually, emotionally, and practically segregated from its own holistic basis. This segregation of the individual from the cosmos is very unnatural, and anything that is unnatural is non-evolutionary, non-progressive, and damaging to life, because the very nature of life is to evolve.  

Modern science has partial knowledge of natural laws—knowledge of specific laws in isolation from the whole—but Maharishi points out:

The whole field of Natural Law is so complex that it is not possible to select any specific law without taking into consideration the total involvement of all the Laws of Nature. All the Laws of Nature are so intimately connected that the isolation of any one law will create imbalance in any field of life.  

Thus, unintended damage to the environment is a consequence of the partial nature of knowledge when scientists, technologists and environmental managers are not connected to the total potential of natural law—self-referral consciousness: “If the part is not connected with the whole, then pollution is inevitable.” But, Maharishi explains, pollution-free progress is possible if research is grounded in the knowledge of natural law in the self-referral consciousness of the researcher; such natural law-based research will “comprehend how each area of infinite variety in creation always expands but does not produce pollution because . . . the part is always connected with the whole, so that the total organizing power of Natural Law is persistently available to every stage of evolution of everything.”

Holistic knowledge is the key to ecological understanding and ecological action. The object referral methods of modern science, however, have not been sufficient in themselves to awaken our intellects to the holistic intelligence of natural law that underlies the environment and our own thinking minds. The critical issue for ecological studies and for EM then is to take full advantage of the connectedness of “part with the whole” by enlivening the total potential of natural law in one’s
awareness so that one will spontaneously think and act from that level. Maharishi identifies a reliable procedure, a scientific means of gaining knowledge of that holistic element in nature:

Life is always holistic. It is not only objective, not only subjective, not only intelligence, not only the body, not only the environment—it is a totality. A totality can only be handled from the source of the emergence of all this diversity. That source can be completely identified by the simplest human awareness. The simplest human awareness is Transcendental Consciousness, gained through Transcendental Meditation. (emphasis added) 80

What is called for is an integrated, Consciousness-Based approach to EM that complements training in specific areas of science, technology, management, and economics with the holistic knowledge and experience of NLBEM—the knowledge and experience of self-referral consciousness.81 Solutions to problems will require specific information, attitudes, and intellectual and practical tools. Supporting this, the development of wholeness within the environmental manager will enable those specific aspects of knowledge to be applied in a way that is increasingly in harmony with the holistic intelligence of nature and free from harmful influences to the environment. Moreover, development of consciousness will enable the environmental manager to discover and utilize new technologies, which promote progress without pollution. Melding inner and outer horizons in eco-human relations begins with supplementing object referral knowledge with self-referral knowledge of natural law—moving towards the complementary and comprehensive Consciousness-Based approach of NLBEM. The following summary (Table 2) shows how the integrated approach of NLBEM (the right-hand column) raises EM beyond its current limitations (the left-hand column).

Conclusion
An Evolutionary Possibility for EM
EM is emerging as an essential field of study and practice in business disciplines. Yet, unless environmental managers and researchers adopt complementary means of gaining holistic knowledge, the field of EM will not fulfill its promise of global sustainability. Rather, in the name of solving problems, new unintended problems will continue to be cre-
ated. The fundamental inadequacy of modern management theory and practice, including EM, has been the disconnection of partial knowledge from the holistic intelligence of nature—the disconnection of the individual from the cosmos. This article has deconstructed EM as a replicating discourse and practice of modern management. As a revolutionary complement to fulfill the mission of sustainable EM, NLBEM matches the needs of human development with ecological systems.

Though Consciousness-Based approaches have demonstrated effectiveness in other fields such as health care, rehabilitation, business, and social conflict, little empirical study of the direct application of NLBEM is yet available. We, therefore, pose in Table 3 the scenario to be explored through continued research on NLBEM.

### Table 2

**Complementary Perspectives of Contemporary Environmental Management and Natural Law-Based Environmental Management**

<table>
<thead>
<tr>
<th>Contemporary Environmental Management</th>
<th>Natural Law-Based Environmental Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragmentation of environmental manager or researcher from natural environment</td>
<td>Harmonious interrelationship, “unbroken circle” of environmental manager or researcher and natural environment</td>
</tr>
<tr>
<td>Dualistic epistemology—intellectual understanding in waking consciousness</td>
<td>Holistic epistemology—wisdom in Transcendental Consciousness</td>
</tr>
<tr>
<td>Rational decision-making with humanly constructed laws</td>
<td>Intuitive decision-making in accord with natural law</td>
</tr>
<tr>
<td>Object-referral knowledge, modern science</td>
<td>Self-referral knowledge, subjective science</td>
</tr>
<tr>
<td>Partial, problem-inducing knowledge about the natural environment</td>
<td>Total, evolutionary knowledge of the managing intelligence of nature</td>
</tr>
</tbody>
</table>
Table 3
Operationalizing and Testing the Effects of a NLBEM Program:
Simple Pre/Post Test Research Design*

<table>
<thead>
<tr>
<th>EM: Time 1</th>
<th>Introduction of NLBEM: Treatment**</th>
<th>NLBEM: Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method</td>
<td>Conventional EM human and technological systems</td>
<td>Method</td>
</tr>
<tr>
<td>Measured Outcomes</td>
<td>Established performance, auditing, benchmarking, goals, etc. of EM effectiveness</td>
<td>Measured Outcomes</td>
</tr>
</tbody>
</table>

Specific Research Questions for NLBEM

1. What observable and testable contributions does NLBEM make to create a sustainable future in organizations? Are organizations employing NLBEM more effective at creating sustainability than those using conventional EM?

2. What direct effect on EM can be seen from the daily practice of the Transcendental Meditation program, as well as from alternative practices and approaches for developing consciousness?

3. How do EM systems, processes, and technologies change with the complementary knowledge derived from natural law?

4. What are the long-term sustainable effects of a NBLEM EM paradigm? On individuals, groups, organizations, global society, the biosphere, and the universe?

Notes:
* Logical-positivist approaches to research have reported on the manifest, measurable results of Transcendental Meditation in arenas such as health, education and government. This research approach does not reduce the subjective experience of the environmental manager or scholar to abstract, objectified variables. We find that the subjective means of gaining knowledge, from Vedic science and the objective means of gaining knowledge from modern science are not mutually exclusive. Our research embraces the same non-dual complementar-
ity of subjective and objective approaches, which we advocate for the practice of NLBEM (see Wilber, ‘The Marriage of Sense and Soul’ [n. 2]).

** Interventions using Maharishi’s consciousness-based approach have been successfully conducted and produced significant results in organizations (Schmidt-Wilk et al., ‘Developing Consciousness in Organizations’ [see n. 82]; Frew, ‘Transcendental Meditation and Productivity’ [see n. 82]; Alexander et al., ‘Effects of the Transcendental Meditation Program’ [see n. 82]).

We leave you with the verse from Ṛk Veda, which portends EM’s possible evolution toward higher states of consciousness and efficacy in actualizing sustainability.83

The verses of the Veda exist in the collapse of fullness in the transcendental field, in which reside all the Devas, the impulses of Creative Intelligence, the Laws of Nature responsible for the whole manifest universe.

He whose awareness is not open to this field, what can the verses accomplish for him? Those who know this level of reality are established in evenness, wholeness of life.

Can we, as environmental managers and researchers, open our “interior hearts and minds” to the “transcendental field” and become “established in evenness, wholeness of life”?84 The choice is ours.

**Notes and References**


17. Ibid., 876.

18. Ibid., 875.


22. Ibid., 896.

23. Ibid., 882.


26. D.L. Cooperrider and G.S. Khalsa, “The Organization Dimensions of Global Environmental Change,” *Organization and Environment*, 1997, 10(4), 335. Jung echoes Einstein’s admonition for a new level of consciousness in solving problems: All the greatest and most important problems in life are fundamentally insolvable—they can never be solved, but only outgrown. The “out-growing” proved on further investigation to require a new level of consciousness. Some higher or wider interests appeared on the person’s horizon, and through this broadening of his or her outlook, the insolvable problem lost its urgency. It was not solved logically in its own terms but faded when confronted with a new and stronger life urge.

27. Gladwin et al., “Shifting Paradigms for Sustainable Development” (n. 11 above), 882.


41. Shrivastava, “The Role of Corporations in Achieving Ecological Sustainability” (n. 15 above), 941.
43. Gladwin et al., “Shifting Paradigms for Sustainable Development” (n. 11 above), 899.
44. Ibid., 874.
46. Purser, “From Global Management to Global Appreciation” (n. 1 above), 373.
47. Ibid.
48. Ibid., 381.
50. Cooperrider and Pasmore, “Global Social Change” (n. 45 above); Purser, “From Global Management to Global Appreciation” (n. 1 above); Gladwin et al., “Shifting Paradigms for Sustainable Development” (n. 11 above).
51. Ibid.
52. Wilber, *The Marriage of Sense and Soul* (n. 2 above), 36.
53. Ibid., 38.
54. Purser, “From Global Management to Global Appreciation” (n. 1 above).
and Psychological Effects of Meditation (Sausalito, CA: Institute of Noetic Sciences, 1997).

59. Transcendental Meditation and TM are registered service marks licensed to Maharishi Vedic Education Development Corporation and used under sub-licence.

60. Wilber, The Eye of Spirit (n. 29 above).


68. Maharishi, *Life Supported by Natural Law* (n. 61 above), 96.


70. Maharishi, *Perfection in Education* (n. 61 above), 51–53.


73. Maharishi, *Vedic Knowledge for Everyone* (n. 61 above), 188.

74. Ibid., 198–99.

75. Ibid., 200.

76. Ibid., 297.

77. Ibid., 299.

78. Ibid., 299.


80. Maharishi, *Life Supported by Natural Law* (n. 61 above), 42.


83. Maharishi, *Perfection in Education* (n. 61 above), 52–53.
84. Gladwin et al., “Shifting Paradigms for Sustainable Development” (n. 11 above), 899.

This article, “Exploring the Frontiers of Environmental Management: A Natural Law-based Perspective” by David S. Steingard, Ph.D., Dale E. Fitzgibbons, Ph.D., and Dennis P. Heaton, Ph.D., here revised/updated, and reprinted with permission, was originally published in *Journal of Human Values* (2004) 10(2).
Unified Field-Based Economics

John S. Hagelin, Ph.D.
Scott R. Herriott, Ph.D.
ABOUT THE AUTHORS

John Hagelin, Ph.D., is Professor of Physics, Chairman of the Department of Physics and Director of the Doctoral Program in Physics at Maharishi University of Management. Dr. Hagelin received his A.B. Summa Cum Laude from Dartmouth College in 1975. After completing his Ph.D. at Harvard University in 1981, Dr. Hagelin joined the theoretical physics groups at the European Laboratory for Particle Physics (CERN) and the Stanford Linear Accelerator Center (SLAC), where he became actively engaged in fundamental research at the forefront of supersymmetric unified field theories. Following his positions at CERN and SLAC, Dr. Hagelin joined the faculty of Maharishi University of Management, where he established a doctoral program in elementary particle physics and unified quantum field theories. Dr. Hagelin has published extensively in the area of supersymmetric unified quantum field theories in such journals as *Physics Letters*, *Nuclear Physics*, and *The Physical Review*.

Scott Herriott, Ph.D., is Professor of Business Administration and Chair of the Expansion Council at Maharishi University of Management. He received his B.A. degree in mathematics from Dartmouth College and his Ph.D. in management science and engineering at Stanford University. He taught at the University of Texas at Austin and the University of Iowa before joining M.U.M. in 1990. His expertise is the application of quantitative methods to business strategy and planning. He teaches economics, statistics, finance, operations management, and strategic management. He is the author of a dozen scientific papers on economics, organization, and business strategy, and he recently published a 700-page textbook *College Algebra through Functions and Models* that is used in freshman mathematics classes at many colleges and universities around the U.S.
ABSTRACT

In this article we examine the implications for economics in the latest advances in our scientific understanding of natural law provided by modern physics. In particular, we discuss the implications of the recent discovery of the unified field of all the laws of nature by modern theoretical physics for the areas of economics and business administration. We show that the discovery of the unified field, together with the availability of a fully developed technology of the Unified field, provides a practical and proven means to create unprecedented economic progress and success within an organization, a nation, and the world as a whole.

Introduction

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

The progress of society is based upon scientific knowledge. The scientific understanding of the laws of nature governing behavior at all levels 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 of the applied methods, approaches, and technologies in the field of medicine. Similarly, knowledge of the basic laws governing socio-economics and social dynamics forms the basis for all contemporary social and economic policies.

Until recently, scientific understanding of the laws of nature in every field has been incomplete. Partial and fragmented understanding of the laws of nature resulting from incomplete knowledge has led to technologies that have, on the one hand, brought a degree of progress and comfort to society but, not being holistic, have also resulted in physiological, psychological, sociological, and ecological imbalances. 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, but they have also given rise to the growing problem of long-lived radioactive waste disposal and to a form of weapons that has...
threatened mankind with total annihilation. The continued progress of society now demands the practical utilization of a level of nature’s functioning which is at once more powerful and more holistic—a technology based on the total potential of natural law available in the unified field.

**Discovery of the Unified Field**

During the past two decades, progress in theoretical and experimental physics has led to a progressively more unified understanding of the laws of nature, culminating in the recent discovery of completely unified field theories. This discovery began in 1967 with the introduction by Professors Weinberg and Salam of the unified theory of the weak and electromagnetic forces, uniting two of the four fundamental forces governing all physical phenomena in nature (see Figure 1). The profound success of this unified “electroweak” 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, weak, and electromagnetic forces. In 1974, the concept of supersymmetry was introduced—a profound mathematical symmetry principle capable of unifying particles of different “spin,” i.e., force fields and matter fields—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.

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 field.

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, creating balance, and neutralizing 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, 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. The applications of this technology in the fields of health, education, rehabilitation, economics, and world peace 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.

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).
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. This is partly because the domain of superunification—the Planck scale of $10^{-33}$ cm—is beyond the range of any microscope or conceivable particle accelerator. In addition, 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. 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. Indeed, it is now well known 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.

The most fundamental level of human intelligence and the most fundamental level of nature’s intelligence 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.

During the past 20 years, extensive scientific research, along with the direct personal experience of millions of individuals practicing a simple, subjective technology called the Transcendental Meditation and TM-Sidhi programs or the Maharishi Technology of the Unified Field, has shown that human intelligence, like nature’s intelligence, has at its basis a unified field of intelligence (see 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. The defining characteristics of this field of pure consciousness—e.g., self-referral or self-interaction, pure intelligence, and infinite dynamism—are identical to the essential characteristics of the unified field derived from the Lagrangian of the superstring (see Appendix, entitled “Qualities of the Unified Field”). 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.\textsuperscript{17,18}

This unification is easily verified through the Transcendental Meditation and TM-Sidhi programs, which opens human awareness to the direct experience of pure consciousness, in which the conscious mind is found identified with the unified field of all the laws of nature—the infinite, unbounded field of intelligence at the basis of all forms and phenomena in the universe. From this pure, self-referral field of consciousness, all the subjective and objective aspects of existence are directly experienced to emerge as modes of one’s own intelligence, establishing pure consciousness as the unified fountainhead of natural law.\textsuperscript{18}

A further, dramatic confirmation of the fundamental identity of pure consciousness and the unified field is the experimental observation\textsuperscript{16} of extended field effects of consciousness resulting from the collective practice of the Transcendental Meditation and TM-Sidhi programs. Extensive scientific research has shown that even a small proportion of a population (the square root of one percent) collectively practicing these programs generates a powerful influence of positivity and coherence that extends to society as a whole\textsuperscript{16} (see section entitled Unified Field-Based Economics). Group practice of the Transcendental Meditation and TM-Sidhi programs enlivens the evolutionary qualities of the unified field in the collective consciousness of the whole population, transforming the trends of life in society from crime, negativity, war, and suffering to positivity, coherence, progress, and prosperity.\textsuperscript{3,16} These consistent demonstrations of field effects of consciousness, known in the literature as the Maharishi Effect,\textsuperscript{16} preclude any superficial understanding of consciousness, and place pure consciousness unambiguously at the level of the unified field.\textsuperscript{17,18}

**The Maharishi Technology of the Unified Field**

The Transcendental Meditation and TM-Sidhi programs 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\textsuperscript{2,3} (see
Figure 1). It systematically expands human comprehension to experience and explore more abstract and fundamental levels of intelligence, corresponding to more fundamental and universal levels of nature’s intelligence, 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, physiologically distinct from waking, dreaming, and deep sleep. It is characterized by high EEG coherence, indicating profound integration and orderliness of brain functioning, together with other unique physiological and biochemical changes. Over 430 scientific studies conducted at 160 universities and research institutes in 27 countries throughout the world have extensively documented the profound physiological, psychological, and sociological benefits resulting from this fundamental experience, including increased intelligence and creativity, improved physical and mental health, improved productivity and job performance, improved job satisfaction, and increased longevity. 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.

The unified field is the total potential of natural law. In its self-interacting dynamics are contained the mechanics of “symmetry breaking,” by which it becomes expressed as the apparently diverse values of the observed elementary particles and forces of nature. During the practice of the Transcendental Meditation and TM-Sidhi programs, an individual experiences directly the mechanics by which thought arises from the unified field, the field of pure intelligence or pure consciousness of the mind. 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.

Innumerable laws of nature apply to 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 identified with the unified field, the total potential of natu-
rall law, then he enjoys life spontaneously in accord with all the laws of nature. 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 nor for the 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. 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 philosophers and thoughtful medical scientists 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 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 itself spontaneously conducts all activity in the universe. By repeated experience, 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, 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.

In this state of alliance with natural law, an individual can be said to enjoy the “fruit of all knowledge”: a life free from mistakes and problems—spontaneously in accord with natural law—in which one enjoys the full support of the evolutionary power of natural law in every phase of one’s life and living.
The spontaneous application of the unified field to individual life through the Transcendental Meditation and TM-Sidhi programs can also be understood simply as the result of the upsurge of all the evolutionary qualities of the unified field in the individual mind as the conscious awareness identifies more and more fully with the unified field (see Appendix). The increased intelligence, creativity, dynamism, self-sufficiency, balance, integration, happiness, and organizing power which result from the practice of the Transcendental Meditation and TM-Sidhi programs are precisely what one would expect when the conscious mind opens to its unified source in the unified field and awakens more and more to the qualities of its own essential nature. These two scientifically validated principles—life in accord with natural law and the blossoming of the fundamental qualities of the unified field (see Appendix)—provide the basic mechanisms which underlie the practical application of the unified field to individual life, as well as to the field of economics.

**Unified Field-Based Economics**

In the field of economics, the application of the unified field is equally spontaneous. Its profound benefits have been established by extensive scientific research conducted at the individual, organizational, national, and international scales. The application of the unified field within a business or organization occurs on at least three levels: at the level of the management, of the employees, and of the whole society that constitutes the overall economic environment in which the individual business exists and operates.

**Management**

At the managerial level, the application of the unified field is the spontaneous result of the increased intelligence, broad comprehension, and spontaneous right action of the individual managers practicing the Transcendental Meditation and TM-Sidhi programs. If the total potential of natural law—the unified field—is fully lively in the manager’s awareness, the manager’s thought and action will be automatically aligned with the invincible, evolutionary power of natural law. Decisions from this unified level of nature’s intelligence are naturally
progressive and spontaneously evolutionary, and guide the whole organization in a progressive and evolutionary direction. When comprehension is maximally expanded through direct experience of the unified field—the most universal field of intelligence in nature—all the innumerable elements and factors that can affect a business initiative or venture, or which contribute to the success or failure of a business, are naturally comprehended, and the mind spontaneously selects the most progressive and effective course of action. Only in the coexistence of broad comprehension and the ability to focus sharply, which is a direct result of regular practice of the Transcendental Meditation and TM-Sidhi programs, is it possible to spontaneously choose the course of action which is fully evolutionary—of maximum benefit to oneself, one’s organization, and the world as a whole.

Again, the spontaneity of thought and action in accordance with natural law is important and deserves further comment. It is not possible to comprehend intellectually the full range of influence of all present and future market trends and other environmental influences on a business, or to know the full range of effects of one’s own business decisions on the organization, on the general economic environment, and on the nation as a whole. Such detailed knowledge is beyond the computational ability of the mind, and indeed of any existing electronic computer. Hence it is not always possible to determine intellectually the most effective and evolutionary course of action. It is therefore essential to gain the ability to act spontaneously from a level of consciousness that is more fundamental than the intellect—the field of pure consciousness, the unified field of natural law. Such action is automatically aligned with the invincible, evolutionary power of natural law, and thereby represents the most effective and progressive course of action. It is the lack of knowledge of how to act spontaneously in accord with natural law that has made economic success a matter of hit-or-miss, subject to the uncertainties of market fluctuations and environmental influences of which one has little awareness and over which one has limited control.

A business idea which is fully evolutionary—i.e., fully in accord with natural law—is an idea which fulfills a genuine and timely need of society. Being fully evolutionary, it is naturally free of short-term or long-term negative sociological and environmental side effects; hence
there are no obstacles to obstruct its immediate progress or to interfere with its long-term success and fulfillment. If, in the course of time, the needs of society change, the unified field-based business executive, whose comprehension is broad and whose awareness is established in the unified field, will naturally perceive and respond to that change. The executive is ideally positioned to respond to, and profit from, the evolutionary trends that function within society, accomplishing maximum for him- or herself, his organization, and the whole society.

The key to long-term economic success is to always fulfill a genuine, evolutionary need of society, i.e., to remain fully aligned with the invincible, evolutionary power of natural law. This is easily achieved by bringing thought and action spontaneously in accord with natural law through the Transcendental Meditation and TM-Sidhi programs, so that one always enjoys the full support of all the laws of nature. Only natural law is invincible, governing behavior at all levels of the physical universe. To align oneself with natural law is thus the only means to permanently guarantee economic success in a constantly changing and evolving society. This has been the direct experience of managers and executives practicing the Transcendental Meditation and TM-Sidhi programs in major businesses and corporations throughout the world, and is documented by scientific research based on objective measures of business success.

Once again, the benefits of the Transcendental Meditation and TM-Sidhi programs in the area of business management can be understood quite simply as the result of the growth of fundamental qualities of the unified field that are essential to business administration (see Appendix). Growth of creativity, intelligence, discrimination, dynamism, integration, balance, self-sufficiency, and organizing power, which have been scientifically shown to develop as a result of regular practice of the Transcendental Meditation and TM-Sidhi programs, constitute the essential characteristics of the successful business executive. It is worth emphasizing that prior to the introduction of the Transcendental Meditation and TM-Sidhi programs, there had been no educational approach or developmental technology that was capable of improving basic measures of intelligence and creativity, such as intelligence quotient (IQ), field independence, fluency, flexibility, and originality. Intelligence, for example, has been generally considered to be fixed at
adolescence, and to undergo a gradual decline beginning around the age of 25 or 30. In contrast, IQ has been shown\textsuperscript{10} to increase significantly in longitudinal studies involving university students practicing the Transcendental Meditation and TM-Sidhi programs, at an age where intelligence is not supposed to change. This simply shows that the science and technology of the unified field provides a more profound and complete understanding and technology of consciousness than has been previously possible based on prior levels of scientific knowledge.

\textit{Employees}

In addition to management, which is responsible for setting the directives and guiding the activities of a business or organization, the Transcendental Meditation and TM-Sidhi programs has important applications to the employees as well. In the past 25 years, economists have come to recognize the central importance of the quality of a business’ or a nation’s human resources in contributing to economic growth and development.\textsuperscript{30} Improvement in the quality of human resources has been shown to play a principal role in promoting economic growth and increasing the standard of living.

Economic theory identifies two fundamental ways to promote economic growth. First, growth can occur by increasing the quantity of resources used in the production of goods and services. For example, national output can be increased by expanding the labor force, building more factories, adding more computers and other machinery and equipment, or by putting more land into cultivation. Second, growth can be generated by increasing the productivity of these same resources. Increased productivity means that, due to greater production efficiency, more goods and services can be produced with the same quantity of resources (or even less) than before: more output is produced per unit of input.

The importance of productivity improvements in economic growth is highlighted by research on the sources of growth in per-capita national output or GNP, the most widely used measure of the material standard of living. For example, research by John W. Kendrick\textsuperscript{31} indicates that the increase in U.S. per capita GNP over the period from 1948 to 1973 was entirely attributable to productivity improvements; increases in the quantity of inputs to production were only sufficient to prevent
the standard of living from declining. Kendrick and Edward Denison also established that the major source of productivity growth in the U.S. and many other industrialized countries over long historical periods has been improvements in the quality of human resources due primarily to education and training. In the words of Frederick Harbison, “Human resources—not capital, nor income, nor material resources—constitute the ultimate basis for the wealth of nations.”

One obvious and important contribution of the Transcendental Meditation and TM-Sidhi programs to human resource development is in the area of health. According to the Harvard Business Review (July-August, 1985), health benefits are now the third-largest cost element after raw materials and straight-time pay for most manufacturers, and the second-largest expense for most service businesses. It is becoming increasingly common that otherwise profitable businesses are driven into bankruptcy by the spiraling costs of health care. The Transcendental Meditation and TM-Sidhi programs has been scientifically shown to be a highly effective means of reducing health care costs. Through the regular practice of the Maharishi Technology of the Unified Field, every aspect of the mind, body, and behavior becomes profoundly connected to its unified source in the unified field. As a result, physiological and neurophysiological functioning becomes integrated and balanced. The immune system and other homeostatic mechanisms become spontaneously capable of resisting any physiological imbalance or disorder, creating a natural state of health and well-being.

A recent study of health insurance statistics on over 2,000 individuals practicing the Transcendental Meditation and TM-Sidhi programs found that their doctor’s visits and hospitalizations were less than half that of other groups of comparable age, sex, and profession. Improvements were observed in every major disease category, including an 87% drop in cardiovascular illness and 87% less incidence of nervous disorders and diseases of the nervous system. These and numerous other studies on the physiological, neurophysiological, and psychological benefits of the Transcendental Meditation and TM-Sidhi programs make this technology the most thoroughly validated and effective means of health-care prevention. The annual health care expenditure in the U.S. alone at the federal, state and private sector levels was $600 billion in 1989, and is projected by the U.S. Department of Health and
Human Services to exceed one trillion dollars by 1995. The estimated savings in health care costs for the U.S. which would result from the widespread use of the Transcendental Meditation and TM-Sidhi programs amounts to hundreds of billions of dollars annually.

Other scientifically established benefits of the Transcendental Meditation and TM-Sidhi programs in the areas of human resource development include increased creativity, intelligence, and learning ability, improved optimization of brain functioning as measured by EEG coherence and topographical brain mapping, broader comprehension along with ability to focus, improved academic performance, development of personality, reduced negative traits, decreased anxiety and improved recovery from stress, and reduced use of alcohol, tobacco and both non-prescribed and prescribed drugs. Further applications in business settings include increased productivity, improved job performance and job satisfaction, reduced absenteeism, and improved relations with co-workers and supervisors. The Transcendental Meditation and TM-Sidhi programs has also been shown to be highly effective against stress associated with high-level management responsibilities, as well as stress and frustration born of routine work.

By increasing creativity, intelligence, job performance and job satisfaction, and by improving health and reducing susceptibility to stress, the Transcendental Meditation and TM-Sidhi programs provides the single, most effective and thoroughly documented means of developing full physical and mental potential, and of thereby developing human resources, which are the principal factor in the success of any organization or of the nation as a whole.

**Socio-Economic Environment**

Finally, and perhaps most remarkably, the Transcendental Meditation and TM-Sidhi programs has direct application at the societal level. Specifically, it has been scientifically shown to be fully capable of affecting and improving the whole social, political, and economic climate in which all businesses exist and operate. Any business exists within the broader context of a national and global socioeconomic environment. Business analysts are well aware of how their organizations are influenced by trends in this environment, such as inflation rates, unemployment rates, economic cycles, social unrest, and international
conflict. (*Please refer to the note at the end of the article). Few analysts, however, are aware of how their organizations, rather than being a victim of these environmental circumstances, can powerfully change these trends in a positive direction for the benefit of the organization and the whole society.

Research on the Transcendental Meditation and TM-Sidhi programs,\textsuperscript{15,16} together with the direct personal experience of millions of individuals throughout the world, has shown that consciousness, in its most basic and universal aspect, is a field phenomenon.\textsuperscript{17} This finding is fully consistent with other major developments in scientific knowledge which have shown that everything in nature, including all the elementary particles and forces, are simply manifestations of fundamental fields.\textsuperscript{6-8} All of these fields, in turn, have been shown\textsuperscript{1,9} to arise from a single field—the unified field of all the laws of nature—which is the unified source of all subjective and objective phenomena in nature (see Figure 1). The specific content of human experience—sensations, thoughts, feelings, etc.—is, of course, intimately tied to localized electrochemical and electrophysiological processes in the brain. However, the phenomenon of consciousness itself—the essential subjectivity or liveliness of experience—is not a product of the nervous system: it is a much deeper phenomenon, which has its ultimate origin at the most fundamental level of nature’s dynamics—the level of the unified field itself.\textsuperscript{3,17,18}

If, as the latest research shows, consciousness ultimately has a field-theoretic origin, then one would expect phenomena of consciousness to include effects that are inherently nonlocal or field like in nature. This prediction was made as early as 1960 by Maharishi Mahesh Yogi,\textsuperscript{38} based on his own understanding and experience of the nature and dynamics of consciousness and on the Vedic tradition of knowledge which he represents. This prediction has since been verified by more than 35 consecutive experiments which have appeared in leading scientific journals.\textsuperscript{15,16} These studies have shown that the subjective experience of the unified field by an individual or by a group of individuals practicing the Transcendental Meditation and TM-Sidhi programs produces a measurable influence of positivity and coherence in the collective consciousness of the surrounding population. That is, the state of high EEG coherence which is characteristic of individual experience...
of the unified field is not entirely confined within the central nervous system, but also has a nonlocal or field-theoretic component. Moreover, the intensity of this long-range component grows approximately as the square of the number of subjects practicing as a group, as one would expect on the basis of field-theoretic arguments.¹⁸ As a consequence of this powerful $N^2$ behavior, the group practice of the Transcendental Meditation and TM-Sidhi programs by as few as the square root of one percent of a population produces a powerful influence of positivity and coherence in the collective consciousness of the whole society, leading to measurable and often dramatic reductions in crime rate, accident rate, sickness, and other measures of societal incoherence, and to an upsurge in positive trends throughout the whole society.³,¹⁶

One especially critical experimental test of the hypothesis that the group practice of the Transcendental Meditation and TM-Sidhi programs by the square root of one percent of a population would positively affect sociological measures was conducted in Israel in August and September of 1983.³⁹ 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 the group practice of the Transcendental Meditation and TM-Sidhi programs 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.

The study found a striking correlation between the size of the group of experts practicing the Transcendental Meditation and TM-Sidhi programs 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 in the quality-of-life indicators, supporting a causal interpretation. There
was a 34% reduction in war intensity and a 76% reduction in war deaths during periods of high numbers of participants. Time series analysis also showed that the effect could not be attributed to seasonality (such as weekend effects or holidays) or to changes in temperature.\textsuperscript{39, 40}

The hypothesis that this influence occurred at a fundamental and holistic level of nature—the level of the unified field—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. The completely holistic nature of the effect, together with the fact that electromagnetic and other proposed mechanisms within the 3 + 1 dimensional structure of classical space-time appear unable to account for the large distances and effect size, establishes the Maharishi Effect as an inherently unified field-theoretic phenomenon, resulting from the enlivenment of the unified field in the collective consciousness of society.\textsuperscript{18} Indeed, the collective effects of the Transcendental Meditation and TM-Sidhi programs are most easily understood\textsuperscript{3} as a natural consequence of the upsurge of the evolutionary qualities of the unified field, such as infinite creativity, infinite correlation, harmony, and abundance, in the collective consciousness of the whole society (see Appendix, entitled “Qualities of the Unified Field”).

This study, combined with numerous subsequent published studies,\textsuperscript{16} has confirmed the efficacy of the Maharishi Effect to a degree of statistical confidence that is unprecedented in the social sciences, and rare even in the physical sciences, placing this effect as the most well-established phenomena in the 400-year history of scientific investigation. Practically, it means that there is now a scientifically established means of eliminating violence, negativity, war, and terrorism, even in recalcitrant areas where political and negotiated settlements have repeatedly demonstrated their inability to do so. This effect can be easily produced by as few as the square root of one percent of the affected population, or as few as 7000 individuals for a permanent state of peace, international harmony, and cooperation on a global scale.

One would expect that increased coherence in the collective consciousness of society, reduction of the threat of war and violence, reductions in accident and illness rate, and the upsurge of fundamental
qualities such as intelligence and creativity would create a more positive and stable environment for economic growth and prosperity. This natural hypothesis has been the subject of extensive investigation. Early studies seeking signs of increased affluence and economic productivity due to collective practice of the Transcendental Meditation and TM-Sidhi programs, including the Israel study cited earlier, noted rising stock market prices, increased strength of the national currency on the international market, and increased patent applications as a sign of increased creativity. The most recent and sophisticated studies have used time series analysis to study the effects of group practice on Okun’s “misery index” of inflation and unemployment. In a ten-year study of the U.S. and Canadian economies between 1979 and 1988, time series impact assessment analysis found a sizable and statistically significant reduction of the misery index caused by a group of 1600 experts practicing the Transcendental Meditation and TM-Sidhi programs—approximately the square root of one percent of the combined U.S. and Canadian population. After controlling for supply-side shocks, aggregate demand, and the business cycle, the reduction in the misery index that was directly attributed to the coherence-creating group was 4.23 points, increasing to 5.62 points during periods when the size of the group increased to 1700 or more. The statistical likelihood that this result was due to chance was less than 5 in 100,000 ($p < .00005$). Numerous other improvements in quality-of-life indicators in the United States and Canada during this same time period were also strongly correlated with the daily number of participants in the coherence-creating group.

These empirical studies show that creating coherence in national consciousness through group practice of the Transcendental Meditation and TM-Sidhi programs by as few as the square root of one percent of the population provides a simple and practical means of improving national productivity and economic performance. This means that any organization or business of sufficient size can, through group practice of the Transcendental Meditation and TM-Sidhi programs, not only maximize its own internal efficiency and its use of human resources, but can actually improve in a demonstrable way the entire national economic environment in which the organization functions. By training or hiring experts in the Transcendental Meditation and TM-Sidhi...
programs, any organization can become a source of coherence and creativity for the social and economic environment of the nation, or, if the group exceeds the square root of one percent of the world’s population (about 7000 individuals), for the world as a whole. This offers to any organization or to any government a proven, practical means of achieving its economic aspirations, and of creating and sustaining an economic climate that will ensure stability, self-sufficiency, and unrestricted progress for as long as the group is maintained.

These results provide a striking example of how the application of more advanced and complete scientific knowledge of natural law—i.e., the knowledge of the unified field—produces more fundamental and powerful effects, including effects which were inconceivable based on previous levels of scientific knowledge. The completely positive and holistic nature of these benefits on the physiological, psychological, and sociological levels is a direct result of the more complete and holistic nature of scientific knowledge available at the level of the unified field.

**Section Summary**

The previous paragraphs describe three levels of application of the Transcendental Meditation and TM-Sidhi programs within an individual business or organization: the level of the management, of the employees, and of the national economic environment. The application to management is primarily through the increased intelligence and expanded comprehension of the managers practicing the Transcendental Meditation and TM-Sidhi programs. By raising human intelligence to the level of nature’s intelligence—the level of the unified field—thought and action are brought spontaneously into accord with natural law, so that all decisions automatically gain the support of all the laws of nature. Such a unified field-based manager, who is fully aligned with the invincible, evolutionary power of natural law, will automatically guide the organization in the most progressive and evolutionary direction, achieving maximum for the organization and for society as a whole. At the level of the employees, extensive scientific research has shown that application of the Transcendental Meditation and TM-Sidhi programs provides the most effective means of developing the full mental and physical potential of the individual, thereby allowing maximum use of an organization’s human resources. This in turn
leads to substantial savings in the areas of health care, substance abuse, turnover, replacement costs, disability payments, absenteeism, errors, antagonistic behavior, and other human problems that cost organizations billions of dollars annually. On the level of the national economic environment, the group practice of the Transcendental Meditation and TM-Sidhi programs by the square root of one percent of a nation’s population has been scientifically shown to eliminate stress in the collective consciousness of society, to reduce negative trends, and to enliven the evolutionary qualities of the unified field, resulting in the growth of positive trends throughout the society.

The national economic benefits resulting from even one such unified field-based organization have been established by numerous scientific studies of inflation, unemployment, and other major economic indicators. When more organizations adopt the Transcendental Meditation and TM-Sidhi programs as part of their management approach and/or employee health benefits, nations everywhere will begin to enjoy unprecedented progress—freed from the uncertainties of collective stress, international conflict, (Please refer to note at the end of the article.) and market instabilities—leading to economic security, abundance, and national self-sufficiency, with greater affluence and prosperity for every citizen.

**Fulfillment of Economics**

The purpose of economics is to secure the material safety and comfort of individuals everywhere, providing the material basis for unrestricted personal growth and fulfillment. The fulfillment of every individual can therefore be seen as the ultimate goal of economics. Fulfillment in life is ensured by the Transcendental Meditation and TM-Sidhi programs on two separate levels: on the level of outer material affluence, as discussed in the previous sections of this paper, and also directly on the level of one’s inner experience of life. Inner fulfillment is achieved by establishing one’s awareness in the unified field, which is scientifically and experientially known to be a field of infinite satisfaction, inner expansion, and bliss (see Appendix). Being the field of unbounded intelligence, infinite creativity, and infinite organizing power of nature, it represents the most expanded state of the mind and the ultimate goal of evolution of consciousness. The craving for material wealth that
has gripped the world in search of fulfillment will therefore be satisfied on two levels: 1) by the growing ability to fulfill one’s material desires through development of human intelligence and creativity, and 2) through the growth of inner fulfillment which spontaneously results when the conscious mind identifies with the unified field, the field of infinite bliss. The ultimate goal of economics to provide fulfillment is thereby achieved through the Transcendental Meditation and TM-Sidhi programs by developing a state of inner and outer fulfillment.41

The spontaneous application of the unified field to enrich all aspects of life contrasts with the previous, technological application 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 which 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. The industrial revolution has, however, led to a highly machine-dependent civilization, to a degree that has robbed life of some of its natural self-sufficiency and dignity. In contrast, the discovery of the unified field and its practical application through the Transcendental Meditation and TM-Sidhi programs allows the spontaneous utilization of the total potential of natural law to enrich all aspects of life in a completely balanced and holistic way.18

This spontaneous utilization of the total potential of natural law, as compared to the technological application of specific, isolated laws of nature, lays 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 complete science and technology of the unified field to health, education, rehabilitation, economics, and world peace have already demonstrated their capacity to produce a quality of life and civilization which is far beyond that which was possible based on previous levels of scientific knowledge.10-16 Providing a practical and proven formula for ensuring fulfilling economic progress, the science and technology of the unified field will raise the quality of life in society to a level of dignity, economic self-sufficiency, and supreme fulfillment which is unparalleled in the annals of recorded history—a unified field-based ideal civilization in which life everywhere is supported by the
invincible, evolutionary power of natural law, and all citizens enjoy a state of inner and outer affluence—Heaven on Earth.

Acknowledgements
We are grateful to Maharishi Mahesh Yogi for providing the systematic, applied technologies which have allowed the practical application of this most advanced scientific knowledge of natural law for the benefit of mankind. We also wish to thank Ken Cavanaugh, Kurleigh King, and Robert Wynne for valuable comments and discussions.

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 (see Figure 2). 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 super-unified 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) x SU(2) x 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.
CONSCIOUSNESS-BASED EDUCATION AND MANAGEMENT

Figure 2
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.

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.

FREEDOM: In the free-fermionic formulation, the unified field is comprised of free, non-interacting bosonic and fermionic degrees of freedom defined on the superstring.

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

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

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.
TOTAL POTENTIAL OF NATURAL LAW: All the massive and massless string modes are fully enlivened as dynamical degrees of freedom at the Planck scale.

DISCRIMINATING: The boundary conditions of the 4-D string construction discriminate among thousands of possible string vacua.

FULLY AWAKE WITHIN ITSELF: The zero-point motion (quantum fluctuations) of the unified field reaches its ultimate level of dynamism at the Planck scale.

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.

INFINITE SILENCE: Expressed by the non-interacting nature of the fundamental string degrees of freedom.

INFINITE DYNAMISM: Expressed by the dynamical interaction of all the various fields appearing in the effective low-energy theories derived from the superstring.

PURE KNOWLEDGE: The Lagrangian represents the most compact mathematical expression of the complete structure of the laws of nature at every level.
INFINITE ORGANIZING POWER: The Hamiltonian operator, derived from the Lagrangian by a Legendre transformation, dynamically generates all activity in the universe.

EVOLUTIONARY: The Hamiltonian operator generates the time evolution of the universe.

PERFECT ORDERLINESS: Reflected in the super conformal invariance, local supersymmetry, and gauge symmetries of the Lagrangian.

SELF-SUFFICIENCY: The structure and dynamics of the unified field is sufficient within itself to initiate spontaneous gauge and supersymmetry breaking radioactively, leading to the sequential unfoldment of the diversified structure of natural law illustrated in the chart.

PURIFYING: Broken symmetries are successively restored at more fundamental space-time scales, ensuring the consistency and renormalizability of the theory.

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.

INTEGRATING: The graviton dynamically upholds local supersymmetry, which integrates the different spin components of the various supermultiplets, maintaining the unbroken wholeness of the super fields.
HARMONIZING: Supersymmetry unifies completely opposite values—bose and fermi fields—within the context of a single super field.

PERFECT BALANCE: Supersymmetry—the perfect balance of bosonic and fermionic degrees of freedom.

BLISS: Expressed by the continuous effervescence of topological fluctuations at the Planck scale (“spacetime foam”) spontaneously arising from the non-perturbative dynamics of quantum gravity.

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.

UNBOUNDEDNESS: Poincare invariance of Lagrangian density.

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

IMMORTALITY: The time-translational invariance of the Lagrangian density.

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.
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., $m_b/m_c$ and $\sin^2\theta_w$), electric charge quantization, and freedom from gauge and gravitational anomalies.

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

All of 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 7000 experts in the Transcendental Meditation and TM-Sidhi programs (approximately the square root of one percent of the world’s population) gathered at Maharishi University of Management (previously Maharishi International University, 1971–1995) from December 17, 1983 to January 6, 1984. Over 35 scientific studies 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
3. Maharishi Mahesh Yogi, Life Supported by Natural Law, Age of Enlightenment Press, Washington, DC (1986); Maharishi Vedic


38. See C. Borland and G. S. Landrith, in reference 16.

This article, “Unified Field-Based Economics,” by John S. Hagelin, Ph.D. and Scott R. Herriott, Ph.D., here revised/updated, and reprinted here with permission, was originally published in *Modern Science and Vedic Science, Vol. 4(2)*, 1–29.

*The Gulf crisis highlights the extreme sensitivity of world economics to events in the political sphere, as well as the vulnerability caused by economic dependence and lack of self-sufficiency faced by every nation today. It clearly demonstrates the failure of existing economic methods and approaches, which do not ensure the overall stability and progressive nature of the global, socio-economic environment. The latter can be ensured only by creating coherence in collective consciousness through a global, coherence-creating group.*
Harmonizing Stability and Change
by Enlivening Creative Intelligence

Dennis P. Heaton, Ed.D.
ABOUT THE AUTHOR

Dennis P. Heaton, Ed.D. is Professor of Management, Co-Director of the Ph.D. Program in Management, and Dean of Distance Education and International Programs at Maharishi University of Management in Fairfield, Iowa. His previous publications include articles and invited chapters on management education, leadership, ethics, higher stages of development, and peak performance. He has been directing Ph.D. students’ research in areas of socially and environmentally responsible business, including the effects of green buildings on human resources, consumer attitudes toward genetically modified food, moral development and ethical decision-making in accountants, the financial impact of environmental management systems, and Maharishi Mahesh Yogi’s program to eliminate poverty.
ABSTRACT

As managers attempt to introduce organizational change at an accelerating pace, it becomes increasingly difficult to locate the stability that individuals and organizations need in order to be adaptive. Finding deeper sources of stability permits a greater range of adaptability to be available. Experience of the unchanging transcendental core of one's being can provide unshakable stability, open the mind to expanded possibilities, develop alertness to dynamically move toward creative progress, and attune individual action to the holistic patterns of orderly progress in nature. Research on the Transcendental Meditation technique suggests that systematic experience of Transcendental Consciousness simultaneously develops five qualities of creative intelligence which are fundamental to progress: adaptability, stability, purification, integration, and growth. Enlivenment of creative intelligence shifts the paradigm of change from the notion that resistance to change is natural to the realization that evolution and growth are the nature of life.

The Stressful Impact of Constant Change

Globalization of markets, technological innovations, and changing worker demographics are among the forces pressuring organizations to make changes in their structure, processes, and culture (Weisbord, 1987). Competition often does require faster product development cycles and compresses the time of product life cycles. Many perceive that the pace of change is accelerating (Zorn, Christensen & Cheney, 1999; Russell, 1998). Vaill (1989, p. 1), for example, has characterized the business environment as “permanent white water.” Peters (1976, 1984) writes about conditions of continual chaos and a “nanosecond” pace of change.

In response to this perceived need for change, organizational managers may repeatedly introduce programmatic attempts to bring about organizational transformation. TQM, BPR, mergers, outsourcing, e-commerce, and other “flavor of the month” change initiatives (Zorn et al., 1999, p. 31) are often thrust upon organizational members in an unending succession, resulting in cynicism and confusion. Too often these change initiatives fizzle without achieving the improvements they had aimed for. Indeed, some report that the rate of failure of major corporate change initiatives is as high as 80% (McMaster, 1996). Moreover, each change program may push the organization in fragmented
and uncoordinated directions. As more and more things change, in the words of the poet Yeats, “Things fall apart. The center does not hold” (1986, p. 1948).

The acceleration of change around the world is having the effect of eroding the traditions and values that give meaning to individual life and continuity to culture. The hectic pace of change can be a source of psychological and physiological stress for managers and organizational members. Russell (1998, p. 4) argues that “the pace of life is getting faster and faster, taking us ever deeper into what Alvin Toffler called ‘Future Shock . . . the shattering stress and disorientation that we induce in individuals by subjecting them to too much change in too short a time.’” A vicious cycle ensues: stress reduces the capacity to adapt to change, which leads to increasing stress, which further reduces the capacity to make the very changes that may be needed for survival.

Searching for Stability to Balance Change

Zorn et al. (1999) observe that organizations are changing so much that it is difficult for “members to feel a sense of stability, especially when the changes in question do not follow logically or organically from established missions and strategic plans” (p. 13–14). While recognizing that change is essential, these authors call for an increased balance of change with stability. Change and stability, they note, are interdependent: “Stability is what allows organizations and people to be flexible” (Zorn, et al., p. 14). As an example of stability in organizations they point to the core values/mission that help maintain a “sense of coherence and identity” (Zorn, et al., p. 14).

Stability provides the basis for adaptability, and the deeper one’s source of stability is, the greater is the range of one’s adaptability. In organizations, stability can be set on the superficial level of established tasks and procedures, in which case the organization may behave as a rigid bureaucracy. Or stability can be located on the somewhat deeper level of the objectives of the tasks, in which case a wider range of means of accomplishing those objectives may be available. Still deeper, stability may reside in a set of abiding superordinate values which enable the organization to maintain coherence and integrity over a long span of time (Collins & Porras, 1997).
Still deeper than organizational values can be experience of the transcendental aspect of life, which Russell (1998, p. 114) describes as “the unchanging, permanent core of my being.” Realization of this transcendental Self, according to Dyer (1996), can be the key to gaining inner freedom and breaking old habits.

Without experience of this transcendental dimension, one is continuously overshadowed by objects of experience; one has only a conceptual identity about oneself in terms of objects of experience (Chandler, 1991), such as “I am the manager of the XYZ division.” As Russell observes:

Most of us derive a sense of self from our experience and interaction with the world . . . such an identity is forever vulnerable. It has no permanent foundation and is continually at the mercy of events. (1998, p. 61)

When one is identified with something that the organization can change, such as one’s role or position, then one’s identity can be threatened by change (Tannenbaum & Hanna, 1985). But, if one becomes established in the realization of an inherent transcendental Self that is not dependent on outer circumstances, change is no longer a source of threat or anxiety.

**The Stable Self in Transcendental Consciousness**

Meditation, Russell explains, is a means to turn attention inward, toward “the source of my experience” (1998, p. 114), that is otherwise difficult to locate. The Transcendental Meditation technique is a systematic procedure that allows the individual to quietly know the transcendental foundation of experience in:

A state of inner wakefulness with no object of thought or perception, just pure consciousness aware of its own unbounded nature. It is wholeness, aware of itself, devoid of differences, beyond the division of subject and object—Transcendental Consciousness. It is a field of all possibilities, where all creative potentialities exist together . . . but as yet unexpressed. It is a state of perfect order, the matrix from which all the laws of nature emerge, the source of creative intelligence. (Maharishi Mahesh Yogi, 1976, p. 123)
The Transcendental Meditation program was introduced by Maharishi Mahesh Yogi in 1957, and has since been learned by more than five million people (Roth, 1987). The Transcendental Meditation technique is the most thoroughly researched meditation practice in the world today (Murphy & Donovan, 1996). This technique is described as a natural, effortless, and enjoyable procedure that is practiced for 20 minutes twice a day, sitting comfortably in a chair with eyes closed. This practice allows active awareness to gradually settle down so that the silent, unbounded, and unified state of Transcendental Consciousness can be directly experienced. Transcendental Consciousness is a state of restful alertness that can be distinguished physiologically and phenomenologically from the aroused alertness characteristic of the waking state and from the more inert states of dreaming and sleeping (Travis & Wallace, 1999). The settling down of the mind during the transcending process allows the body to gain profound relaxation, which dissolves the stresses blocking the expression of inherent potential. The deep rest and expanded alertness experienced during this procedure establish a basis for dynamic and effective action.

**Experience of Transcendence**

**Cultivates Openness to Change**

Transcendental Consciousness, being beyond conceptual boundaries, is the ultimate foundation of stability and at the same time is a field of all possibilities from where awareness can take any direction. Marcus has noted that the Transcendental Meditation technique is a means of cultivating greater openness to change: experience of Transcendental Consciousness through the Transcendental Meditation technique provides “a perfectly stable state, a non-changing reference point that allows for better appreciation of the changing nature of all other things” (Marcus, 1977, p. 76). The repeated experience of shifting awareness from the boundaries of specific thoughts to unbounded Transcendental Consciousness in meditation cultures the ability to maintain a broadened and relaxed frame of mind.

Transcendental Consciousness is a state of self-sufficiency and unshakability in the awareness of simple Being. Growing familiarity with this state of consciousness shifts one’s source of identity and security from external, relative, changing aspects of one’s life—such as one’s role or
one’s possessions, to the self-validating experience of one’s Transcendental Consciousness. One becomes, in the words of the Bhagavad-Gita (II.45): “independent of possessions, ever firm in purity, possessed of the Self.”

Evidence of how practice of the Transcendental Meditation technique cultivates openness to change can be seen in Schmidt-Wilk’s report of how a Swedish executive reacted to a major reorganization:

This is a little bit bothersome for many, but I don’t experience it as such. When you change jobs it can be a little bit nerve-wracking. But I think it worked very well. I am surprised myself. I have been able to take it easy and relax. (1996, p. 248)

This executive also noted: “I am not so stuck in old [previously learned] patterns. I have a fresher perspective on things.” (p. 248)

On a similar theme, Heaton and Harung (2001) have pointed out that post-conventional ego development, found in long-term practitioners of the Transcendental Meditation technique, implies an ability to orient themselves from a lively inner awareness, rather than from familiar patterns of thought and behavior. This awareness makes them better able to adapt and learn in the complex, fast-changing, and ambiguous situations that characterize today’s international business scene. Evidence of such development may be seen in the following quotation from Gustavsson’s study of executives practicing the Transcendental Meditation program:

My conception of the world has changed, something I did not expect. Things which were solid reference points before don’t seem so solid anymore. . . . In the beginning it meant a certain chaos, but now I have got used to questioning things which others take for granted. (1992, p. 320)

Qualities of Creative Intelligence
Enlivened through the Transcendental Meditation Program—The Five Fundamentals of Progress
According to the theory of the Science of Creative Intelligence (Maharishi Mahesh Yogi, 1972), experience of Transcendental Consciousness promotes the development of qualities of creative intel-
ligence—such as integrative and progressive—which operate in all natural systems. The progressive quality of creative intelligence is seen in the natural tendency of life to grow and systems to continuously evolve toward higher development. The integrative quality puts parts together to form a greater whole. It holds together the unity of diversity that makes the "uni-verse." It integrates opposite values, such as ever-changing dynamism and ever-steady silence, in cosmic life and in the life of the individual. Repeated experience of transcendence through the Transcendental Meditation technique enlivens the progressive nature of life and simultaneously strengthens the integrating quality necessary to support continuous progress and expansion. This enlivenment of creative intelligence enables individuals to become more creative day by day in order to meet the demands of the rapid pace of progress.

The Science of Creative Intelligence, through its practical aspect—the Transcendental Meditation technique—is said to develop five fundamentals of progress that coexist in natural systems: stability, adaptability, integration, purification, and growth (Maharishi Mahesh Yogi, 1978). Maharishi explains that by virtue of the quality of stability, change influences from outside are not able to overthrow the integrity of the system. An influence from outside will be spontaneously purified, so that the system will naturally adapt to and integrate what will be useful to its growth. Development of these five fundamentals in the psychology and physiology of individuals, and through them into the organizations and societies they form, can harmonize “the ever-changing nature of progress with the non-changing nature of culture” (Maharishi Mahesh Yogi, 1978, p. 319).

The Science of Creative Intelligence is called a science because its concepts are open to verification through intellectual analysis, experimental investigation, and subjective experience. The Science of Creative Intelligence’s five fundamentals of progress—stability, adaptability, purification, integration, and growth—provide a theoretical framework for organizing research on the effects of the Transcendental Meditation technique on the mind, body, behavior, and environment (World Plan Executive Council, 1974). Selected findings on each of these five qualities are reviewed below. These research findings not only provide evidence of the efficacy of the Transcendental Meditation technique for
human resource development, they also provide empirical support for the Science of Creative Intelligence’s conceptual perspective.

**Stability:** One indicator of growing stability is reduction of trait anxiety resulting from practice of the Transcendental Meditation technique. A statistical meta-analysis of 146 independent outcomes (Eppley, Abrams, & Shear, 1989) found that the Transcendental Meditation program produced three times the effect size of other meditation and relaxation techniques, controlling for frequency of practice. Physiological indicators of growing stability of the nervous system, even outside of meditation, include lower levels of spontaneous skin resistance responses, lower respiration and breath rates, and lower blood lactate (Dillbeck & Orme-Johnson, 1987). High levels of blood lactate have been associated with high anxiety and with high blood pressure. Another indicator of growing stability is field independence, the ability to perceive specific objects without being distracted by the environment of the objects. (Pelletier, 1974).

Herriott (1999) has reported qualitative evidence of profound psychological stability in 16 entrepreneurs who were long-term practitioners of the Transcendental Meditation program. Using a grounded theory approach, her interview data yielded a set of qualities that included “Unshakability.” The following excerpt from Herriott’s dissertation summarizes responses to questions about the subject’s own experience of personal development through the Transcendental Meditation program:

> Inner Stability, keeping a broad Perspective, and a capacity for mental and emotional Renewal appeared to be the resources interviewees most often drew upon in dealing with pressure. These qualities were summed up by the word Unshakability, implying an ability to stay calm and unaffected in the face of even chaotic circumstances. (p. 114)

Based on subject responses, Herriott concluded:

> The qualities in the Unshakability cluster all appeared to be linked to the experience of a deeper inner reality, which was variously described as a sense of inner fullness, as an inner sense of security, as a feeling of being anchored to something deeper, an inner silence, or as happiness. (p. 138)
Adaptability: Other research indicates that the Transcendental Meditation technique also enlivens adaptability. Orme-Johnson (1987) found physiological evidence that Transcendental Meditation practitioners recover from stressful stimuli more quickly, as indicated by faster habituation of galvanic skin responses. Other findings include improvements in creative thinking (Travis, 1979), fluid intelligence, constructive thinking, and reaction time (Cranson, Orme-Johnson, Gackenbach, Dillbeck, Jones, & Alexander, 1991; Dillbeck, Assimakis, Raimondi, Orme-Johnson, & Rowe, 1986).

Purification: The qualities of stability and adaptability provide resilience to resist stress, and enable the physiology of the individual to purify itself of imbalances. In randomized clinical trials, the practice of the Transcendental Meditation program has produced improvements in specific stress-related health problems such as hypertension (Schneider, Staggers, et al., 1995) and atherosclerosis (Castillo-Richmond, Schneider, et al., 2000). Practice of the Transcendental Meditation program has also been associated with reduced health insurance utilization (Orme-Johnson, 1987; Herron, Hillis, Mandalino, Orme-Johnson, & Walton, 1996; Orme-Johnson & Herron, 1997; Herron & Hillis, 2000). In business settings, the practice has produced improved mental and physical health, productivity and interpersonal relations, and reduced alcohol consumption (Alexander, Swanson, Rainforth, Carlisle, Todd, & Oates, 1993; Haratani & Henmi, 1990; DeArmond, 1996).

Integration: The quality of integration manifests in increased synchronization of electrical activity between different parts of the brain, which correlates with improved H-reflex recovery, concept learning, and moral development (Nidich, Ryncarz, Abrams, Orme-Johnson, & Wallace, 1983; Dillbeck, Orme-Johnson, & Wallace, 1981). Practice of the Transcendental Meditation technique has also been seen to improve mind-body coordination, as measured by a choice reaction time test (Cranson, et al, 1991).

Integration is evident in Herriott’s (1999) finding of “Attunement to a Greater Wholeness,” which she describes as “an awareness of a more holistic, all encompassing level of truth and reality, as a sense of inte-
HARMONIZING STABILITY AND CHANGE

gration of the inner and outer dimensions of life” (p. 168). As a consequence of feeling a deep sense of connectedness, entrepreneurs adopted “more universal values,” going beyond individual interests to the wider interests of employees, community, or environment as a whole” (p. 172). One way in which this attunement manifested in Herriott’s interview data was in subjects’ descriptions of “being in the right place at the right time . . . [in] alignment with the evolutionary flow of the universe” (p. 164–5). Herriott reported, “Many interviewees noted that synchronicity, in the form of lucky breaks or happy coincidences, played a role in the unfoldment of their career or business” (p. 165). Her subjects reported an association between instances of things “organizing themselves” and feelings of settledness (inner silence, lack of rush or strain).

**Growth:** A variety of studies on development of personality, intelligence, and performance can be interpreted as evidence that the Transcendental Meditation technique enlivens the quality of growth. A statistical meta-analysis by Alexander, Rainforth, and Gelderloos (1991) found the Transcendental Meditation program produced twice the effect size of other meditation and relaxation techniques in growth of self-actualization (Alexander, Rainforth, & Gelderloos, 1991). According to Maslow (1971), self-actualized individuals have increased acceptance of self, of others, and of nature; more confidence and positive philosophy about life; spontaneity and creativity in thought and behavior; and concern with higher-order human values such as truth, beauty, and justice.

Another major study of personality development through the Transcendental Meditation technique was conducted by Chandler (1991). This study used three convergent measures to look at the long-term effects of meditation practice in a 10-year longitudinal study. The findings were that Transcendental Meditation practitioners grew in intimacy motivation (a measure of positive, caring emotions), principled moral reasoning, and ego development. The measure of ego development is itself considered an indicator of holistic psychological maturity, encompassing self-concept, intellectual analysis and synthesis, and interpersonal relations (Loevinger, 1976).

A milestone in ego development is when the individual becomes post-conventional—able to think and act independent of the collective mentality of his surrounding social system. Chandler found that
at post-test 53% of the Transcendental Meditation subjects achieved post-conventional levels of development at post-test, compared to less than 10% seen in the control group and in most other samples of adult subjects. In fact, the meditating group achieved the highest proportion of post-conventional ego development yet recorded among adolescent and adult samples—including Harvard University alumni and senior management samples.

So Kam-Tim (1995) investigated the development of holistic intelligence through the Transcendental Meditation program in three randomized, blind, controlled studies (6–12 months) conducted with 353 Chinese students. He found practice of the Transcendental Meditation technique developed significantly greater creativity, practical intelligence, reduced anxiety, neural efficiency, and field independence—all of which are indicators of intelligence in the body, mind, and behavior.

The quality of growth has also been seen in performance in company settings: Transcendental Meditation practice has been associated with increased efficiency and productivity, increased job satisfaction, and increased sales and income (Frew, 1974; see review in Schmidt-Wilk, Alexander, & Swanson, 1996).

Creative Intelligence Gives an Evolutionary Direction to Change

Because the need for progressive change is increasing, so is the need to draw deeply from the wellspring of creative intelligence, which is both progressive and integrative. Evidence suggests that managers practicing the Transcendental Meditation technique experience intuitive insights that are entrepreneurially creative. These same managers also report that their creativity entails a sense of integration of thoughts and events as part of a greater whole (Herriott, 1999).

Gustavsson (1992) observed growth of integrative, big picture thinking in a management team in which most of the members practiced the Transcendental Meditation technique. The theory of the Science of Creative Intelligence would explain this integrative thinking as an expression of the intelligence of natural law which automatically maintains “the well-coordinated relationship of everything in the cosmos with everything else” (Maharishi Mahesh Yogi, 1995a, p. 8). Nature exhibits holistic patterns of progressive change, so that change in one
element does not create life-damaging influences—pollution—in other parts of the whole. Maharishi explains that:

Each area of infinite variety in creation always expands but does not create pollution, because in this theme of evolution in Nature, the part is always well connected with the whole, so that the total organizing power of Natural Law is persistently available to every stage of evolution of everything. (1994, p. 299)

Wheatley too has observed the holistic connectedness in natural systems, which she explains in terms of self-reference:

Instead of whirling off in different directions, each part of the system must remain consistent with itself and with all other parts of the system as it changes. There is, even among simple cells, an unerring recognition of the intent of the system, a deep relationship between individual activity and the whole. (p. 146)

In her discussion of change in a self-evolving system Wheatley notes, “As it changes, it does so by referring to itself; whatever future form it takes will be consistent with . . . what has gone on before . . . The system, in Jantsch’s (1980, p. 1) terms, ‘keeps the memory of its own evolutionary path’” (Wheatley, 1992, p. 94). Wheatley speculates that the principle of self-reference may be the one unifying principle on which to base management practice: “It conjures up a different view of management and promises solutions to so many of the dilemmas that plague us: control, motivation, ethics, values, change” (1992, p. 46; see also p. 147).

Interestingly, the principle of self-reference as discussed in Wheatley (1992) resembles Maharishi’s (1994) explanation that Transcendental Consciousness is *self-referral*; this state, in which pure creative intelligence has nothing to refer to but itself, is the *unified field of natural law* underlying and interconnecting all the phenomena of the natural world. In Maharishi’s analysis, the Transcendental Meditation program attunes individual intelligence with this universal field of cosmic intelligence so that management can become “as automatic, problem-free and ever progressive, and ever evolutionary as the administration of the universe through Natural Law” (Maharishi Mahesh Yogi, 1995, p. 8). When the waking mind is able to operate from that level which is the common basis of the individual mind and the external environ-
ment, individual decisions are expected to be more holistic, more useful for all parties involved. Thinking and action become more coordinated, simple, economical, and evolutionary, like the action of nature. This theory fits with Maslow’s (1971, pp. 280–281) observation that subjects who have had experiences of transcendence naturally create greater order, simplicity, and quality.

Theorists and practitioners seek to take a whole-systems approach to organizational change management (Senge, 1994; Chin, 1976). But though in theory we may try to comprehend and intervene in whole systems, the complexity of interrelated elements cannot be mastered through intellectual analysis alone. The National Research Council has observed that change interventions fail because of the systemic character of organizations:

Changing a single aspect of an organization almost never results in a substantial change in organizational performance. Organizations are too complex, their performance too multi-determined, and their inertia too great for a single innovation at the individual level to have a substantial impact on organizational performance. (National Research Council, 1994, p. 6)

The Science of Creative Intelligence offers the unique and simplifying approach of finding wholeness, not in the complex details of all the parts and their relationships, but very simply in the experience of the holistic creative intelligence available in one’s own Transcendental Consciousness. By developing an intuitive attunement with a greater whole, the approach of enlivening creative intelligence through the Transcendental Meditation technique can help fulfill the requirement that “to achieve organization-wide improvements, many factors must change simultaneously” (National Research Council, 1994, p. 147).

**New Paradigm Possibilities for Organizational Change Management by Enlivening Creative Intelligence**

Table 1 contrasts challenges faced by contemporary organizational change practitioners to new possibilities for organizational change management suggested by the theory and practice of the Science of Creative Intelligence.
Table 1. Applications of the Science of Creative Intelligence to Organizational Change Management

<table>
<thead>
<tr>
<th>Contemporary Challenges</th>
<th>New Paradigm Possibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change is difficult to achieve (Kotter &amp; Schlesinger, 1979).</td>
<td>Evolutionary change is natural and spontaneous (Maharishi Mahesh Yogi, 1972, 1995).</td>
</tr>
<tr>
<td>Organizational members resist change because they fear loss of security and identity (Matejka &amp; Julian, 1993; Hanna &amp; Tannenbaum, 1985; Lussier, 2000)</td>
<td>Organizational members who know their transcendental Self are secure in themselves and open to evolutionary change (Marcus, 1977; Schmidt-Wilk, 1996).</td>
</tr>
<tr>
<td>Too much change, too quickly, is overwhelming the stability that can enable organizations and individuals to be flexible (Zorn, Christensen &amp; Cheney, 1999; Russell, 1998).</td>
<td>Stability is the basis of adaptability. The qualities of stability, adaptability, purification, and growth are all enlivened by the Transcendental Meditation program. (Maharishi Mahesh Yogi, 1972, 1978).</td>
</tr>
<tr>
<td>Organizations attempt to adopt and implement multitudinous change programs but may achieve fragmentation and limited results (McMaster, 1996; National Research Council, 1994).</td>
<td>Gaining experience of one single element—the self-referral state of Transcendental Consciousness—effectively promotes holistic, evolutionary change (Maharishi Mahesh Yogi, 1994, 1995).</td>
</tr>
<tr>
<td>Planned change lacks unified theories of organizations and organizational change (Porras and Silvers 1991, p. 51); management can learn from the patterns of nature found by ‘new sciences’ (Wheatley, 1992).</td>
<td>The Science of Creative provides a general science of transformation—unifying principles for understanding the processes of change studied in various disciplines (Maharishi Mahesh Yogi, 1994, 1972).</td>
</tr>
</tbody>
</table>

The conventional wisdom in the management literature has it that “resistance to change is natural” (Matejka & Julian, 1993, p. 10). Similarly, Lussier (2000, p. 223) notes, “Most change programs fail because
of employee resistance.” A *Harvard Business Review* article uses the following quote from Machiavelli to emphasize the difficulty of finding acceptance for change:

> It must be considered that there is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle than to initiate a new order of things. (quoted in Kotter & Schleshinger, 1979, p. 106)

On the other hand, an entirely opposite paradigm about change can be seen in the observation by Maharishi Mahesh Yogi that “Progress, evolution, growth, are the nature of life” (1972, p. 1.3). Is change difficult and dangerous, as portrayed by Machiavelli? Or is change the natural and spontaneous flow of life towards greater happiness, as posited in the Science of Creative Intelligence? Both views depict reality as it is experienced, according to the consciousness of the viewer. Change can be experienced with anxiety and managed with struggle; or change can be experienced with equanimity and managed with ease, depending on the degree to which the conscious capacity of the mind has expanded to utilize its inherent potential of creative intelligence.

The Science of Creative Intelligence provides a theoretical perspective about the nature of change, which can expand current behavioral science thinking. Porras and Silvers pointed out, “Planned change that makes organizations more responsive to environmental shifts should be guided by generally accepted and unified theories of organizations and organizational change, neither of which currently exists” (1991, p. 51). The Science of Creative Intelligence presents deep principles about change and stability that have applicability across multiple disciplines. The Science of Creative Intelligence’s concept of five fundamentals of progress, for example, can be applied to physiology, ecology, psychology, management, sociology, cultural studies, and engineering disciplines.

Like the work of Wheatley (1992), the Science of Creative Intelligence connects the discipline of management to deep laws of nature that are seen in physical and life sciences. As Wheatley reports, scientists such as Prigogine and Stengers (1984) understand that systems in nature reliably and spontaneously organize and evolve themselves. New paradigm thinkers in management, such as Willis Harman and Michael Ray, have recognized the value of opening human awareness
to the organizing intelligence of nature. Harman (1988, p. 119) articulated the outlook of deep ecology, which “goes beyond the contemporary scientific framework to a subtle awareness of the oneness of all life, the interdependence of its multiple manifestations”. Ray has presented a new vision of “doing business from our most profound inner awareness and in connection with the consciousness of others and the earth” (1993, pp. 4–5).

The Science of Creative Intelligence offers a subjective, experiential approach to gaining the benefit of the holistic and evolutionary qualities of creative intelligence in the ways one thinks and acts. This enlivenment of creative intelligence enables change managers to find unshakable stability in the transcendental field of pure creative intelligence which opens their minds to expanded possibilities, develops their alertness to dynamically move toward creative progress, and spontaneously guides their change efforts in a positive and holistic direction.

References


---

This article "Harmonizing Stability and Change by Enlivening Creative Intelligence," by Dennis P. Heaton, Ed.D., here revised/updated, and reprinted here with permission, was originally published in *Management and Change* (India), 2005.
Part II

Research on

*Consciousness-Based* Management
and Organizational Behavior
Developing Consciousness in Organizations:

The Transcendental Meditation Program in Business

Jane Schmidt-Wilk, Ph.D.

Charles N. Alexander, Ph.D.

Gerald C. Swanson, Ph.D.
ABOUT THE AUTHORS

Jane Schmidt-Wilk, Ph.D., is an Associate Professor in the Department of Business Management, Director of the Center for Management Research, and Co-Director of the Ph.D. in Management program. Dr. Schmidt-Wilk has been Editor of the Journal of Management Education (JME), the leading journal in this field, since July 2005, and serves on the editorial boards of several other academic journals in the field of management.

Charles “Skip” Alexander, Ph.D. (1949–1998), showed theoretically that the four higher states of consciousness described by Maharishi Vedic Psychology logically extend the developmental sequence delineated by 20th century psychology. His empirical research found the Transcendental Meditation technique provides direct experience of Transcendental Consciousness (the first higher state, which is the silent basis of the mind) and that this practice accelerates development in children, “unfreezes” development in prison inmates, advances ego development in adults, increases productivity in businesses, decreases blood pressure, increases longevity, effectively treats substance abuse, and reduces prison recidivism. With colleagues, he showed that developmental advances in individuals impact society via a common field of collective consciousness, decreasing armed conflicts and improving the quality of life. Dr. Alexander was Founding Chairman of the Department of Psychology at Maharishi University of Management.

Gerald Swanson, Ph.D., received his degree from the University of Buffalo in 1973 where he specialized in strategic planning and decision-making. He taught at Texas A&M, the University of Albany, Rensselaer Polytechnic Institute, the Australian National University and Maharishi University of Management. He has published two books and over 25 articles and has been lead investigator on seven funded research projects as well as a Fulbright Senior Research Scholar. He is currently Vice President for Marketing at Marathon Foto, the world’s largest endurance event photography company, having become a partner in that business on retiring from active teaching in 1998.
ABSTRACT
This paper reviews retrospective, prospective, and case research on workplace applications of the Maharishi Transcendental Meditation technique for developing consciousness and human potential. The distinctive psychophysiological state of restful alertness produced by the Transcendental Meditation technique appears to improve employee health, well-being, job satisfaction, efficiency, and productivity, in turn influencing organizational climate, absenteeism, and financial performance.

Introduction
Observers of the contemporary business scene are reporting remarkable changes in business principles and practices, such as transformations from hierarchical structures with unempowered employees to team-based structures that empower employees, from analytic justification to creative problem solving, from competition to cooperation, and from an emphasis on physical assets to an emphasis on human resources as a company’s most valuable resource. In their search for ways to explain these phenomena and to trigger them in companies where they have not yet occurred, leading consultants and writers have begun to speak of growth of consciousness as a key element underlying these transformations (e.g., Blanchard, 1993; Koestenbaum, 1991; Maynard & Mehtrens, 1993; Weiss, 1994) and to regard these shifts in paradigms or mind-sets as indications of a “new management consciousness” (Joiner, 1994, p. 4). Ray, professor of creativity, innovation, and marketing at Stanford University, writes, “the new paradigm . . . has many aspects, but its foundation is that consciousness is causal . . . and that the power of the individual psyche is far more vast than we could have previously imagined” (1992, p. 27).

This is not the classical viewpoint of Western psychology. In fact, modern psychology lacks a single comprehensive theory of mind and consciousness that can account for the structure and full range of mental processes (Alexander & Langer, 1990). To understand the concept of consciousness, to determine how consciousness affects individual and organizational functioning, and to explain previously unknown phenomena, such as individual peak performance (Garfield, 1986) or metanoic alignment (Senge, 1990), leading thinkers are turning to other traditions of knowledge. Ray (1993, p. 292) suggests that the
emerging business paradigm will include a “synergistic combination” of ancient wisdom and modern science.

Two recent articles discuss a theory of consciousness and go one step further to say that empirical research has already been conducted on the development of consciousness in organizations (Gustavsson & Harung, 1994; Harung, 1993). They hypothesize that the simple technique of Transcendental Meditation, drawn from an ancient tradition, could positively affect the functioning of an entire organization. Although the Transcendental Meditation technique became popular as a tool for individual development in the 1970s, the current business climate reflects a new depth of corporate interest in programs offering to develop human capital, and new receptivity to offering meditation programs for employees. To understand why managers would be interested in using meditation in their firms and how transformations of human consciousness could affect corporate functioning, we will explore this concept of consciousness and its associated research.

Gustavsson and Harung’s concept of consciousness is drawn from the Vedic tradition, which has been systematically revived over the past forty years by Maharishi Mahesh Yogi, the founder of the Transcendental Meditation program. Although the Transcendental Meditation technique has often been perceived as a stress management technique, especially in the United States, Maharishi has consistently described it more importantly as a technique which is fundamental for the development of consciousness (Maharishi Mahesh Yogi, 1967, 1994).

Of the meditation and relaxation techniques currently available, the Maharishi Transcendental Meditation program has been most widely studied (Wallace, 1993), perhaps because it involves no life-style changes and has been learned by more than four million people throughout the world. This article briefly addresses this Vedic concept of consciousness and then reviews a small portion of the extensive body of research on the Transcendental Meditation technique, specifically those studies on its effects in the workplace. Although the methodologies used in these studies parallel the developments in organizational research in general, the findings challenge much of our currently accepted understanding of organizational behavior.

This article reviews this body of literature on applications of the Transcendental Meditation program to work in terms of units of analy-
sis, research methods, and findings. The article is organized by units of analysis: two groups of studies address work-related effects of the practice at the individual level, and one group explores organizational level variables. The designs discussed include retrospective studies, within-company prospective analyses, and case studies.

**Developing Consciousness in the Individual and the Corporation**

We are all familiar with three states of consciousness: waking, dreaming, and sleeping. Wallace (1993) explains that according to ancient records, modern science, and the experiences of practitioners of the Transcendental Meditation technique, a fourth state of consciousness also exists, known as pure consciousness. It is described as a state of restful alertness, in which the body is at rest but the mind is fully alert, poised for but not yet engaged in activity. The distinctive state produced during the practice of the Transcendental Meditation technique is characterized by deep physiological rest, indicated by a marked decrease in respiration (Dillbeck & Orme-Johnson, 1987; Wallace, 1970; Wallace & Benson, 1972; Wallace, Benson, & Wilson, 1971), along with enhanced mental alertness, indicated by increased EEG power and coherence (Alexander, Cranson, Boyer, & Orme-Johnson, 1987; Orme-Johnson & Haynes, 1981).

Experiencing this silent field of pure consciousness has been shown to enrich the other states of consciousness, making the waking state more alert and dynamic and sleep more profound and restful (Wallace, 1993). For example, increased EEG coherence during the practice of the Transcendental Meditation technique has been shown to be significantly correlated with enhanced concept learning, creativity, fluid intelligence, moral reasoning, and decreased neuroticism, and increased neurological efficiency measured by H-reflex recovery (e.g., Dillbeck & Araas-Vesely, 1986; Dillbeck, Orme-Johnson, & Wallace, 1981; Orme-Johnson & Haynes, 1981). In this article, developing consciousness refers to this process of experiencing pure consciousness and enriching the other three more familiar states of waking, dreaming, and sleeping.

The Transcendental Meditation technique is a simple, natural technique, practiced sitting with eyes closed for twenty minutes twice a
day. It is distinct from philosophy, prayer, or contemplation. It is not based on the content of thought but instead involves the effortless but systematic refinement of the thought processes.

Transcendental Meditation is an effortless procedure for allowing the excitation of the mind to gradually settle down until the least excited state of mind is reached. This is a state of inner wakefulness with no object of thought or perception, just pure consciousness, aware of its own unbounded nature. It is wholeness, devoid of difference, beyond the division of subject and object—Transcendental Consciousness. (Maharishi Mahesh Yogi, 1976, p. 123)

The subjects in these studies learned the Transcendental Meditation technique from qualified teachers in standard courses of instruction that included sessions for verification of correctness of the practice. Thus it may be concluded that subjects learned and practiced the technique as defined by both the researchers and the authors.

Due to the systematic and standardized approach to teaching and verification of correct practice, the effects of the Transcendental Meditation technique have been open to experimental validation (Dillbeck & Orme-Johnson, 1987). Statistical meta-analyses have compared the effects of various forms of meditation and relaxation and found that practice of the Transcendental Meditation technique is associated with significantly greater autonomic stability (Dillbeck & Orme-Johnson, 1987); significantly greater self-actualization (Alexander, Rainforth, & Gelderloos, 1991); significantly decreased trait anxiety (Eppley, Abrams, & Shear, 1989); and significantly reduced substance abuse, i.e., cigarettes, alcohol, and illicit drugs (Alexander, Robinson, & Rainforth, 1994). Although over 400 studies in physiology, psychology, and sociology have been conducted at over 200 research institutions around the world, the following discussion focuses on those studies that specifically deal with work and business.

**Individual and Social-Psychological Benefits of Developing Consciousness**

The earliest work-related studies asked whether the benefits being reported in the non-business literature were consistent with the goals of the business world. They asked, do people who practice the Transcendental Meditation technique become more or less productive? Are they
better or less able to work with others? Several retrospective studies were conducted to answer these questions, which were later followed by prospective studies.

**Retrospective Studies**

Four cross-sectional exploratory studies surveyed full-time working people by comparing retrospective self-reports of meditators to non-meditators using pre-experimental designs, specifically static group comparisons (Campbell & Stanley, 1963).

Frew (1974) used questionnaires to investigate the relationship between practice of the Transcendental Meditation technique and workplace productivity, defined in terms of job satisfaction, performance, turnover propensity, relationship with supervisor, relationships with peers, and motivation to climb the hierarchy. Responses were solicited from full-time employed practitioners of the Transcendental Meditation technique and from their supervisors and co-workers. The latter group was used to triangulate the self-reports and check the direction of subject group response. A comparison group of graduate student non-meditators was asked to report changes in their productivity occurring as a result of any significant experience or training undergone in their recent past.

The relationship between two of the variables selected, job satisfaction and job performance, has long been a popular subject of investigation “despite a profusion of empirical non-support” (Iaffaldano & Muchinsky, 1985, p. 269). Maharishi’s theory posits that development of consciousness is a moderating variable: if the underlying field of pure consciousness is utilized, there will be positive development in both job satisfaction and job performance.

Frew (1974) found that compared to non-meditating students, practitioners of the Transcendental Meditation technique reported improvements that were statistically significant: greater job satisfaction ($p < .01$), improved job performance in terms of output ($p < .01$), greater job stability ($p < .05$), better interpersonal relationships ($p < .05$), and decreased orientation to climb “the corporate ladder” ($p < .01$). The direction of these findings was confirmed by supervisor and co-worker reports. Furthermore, the findings were more pronounced for persons in higher organizational levels than for those in lower levels, and for
persons working in more democratic organizational structures than for those working in autocratic structures.

A replication (Frew, 1977) surveyed 250 non-meditators, including randomly selected subjects and graduate students, and 250 meditators. All non-student subjects worked full-time, and no subjects from the first study were resurveyed. Three additional dimensions of productivity were addressed: satisfaction with specific job content, perceived image among co-workers, and satisfaction with the organization as a whole. The findings were statistically significant and similar to those of the earlier (1974) study.

A replication by Friend (1977) extended Frew’s (1974) work by comparing reported work-related benefits from practice of the Transcendental Meditation technique to benefits from other self-improvement programs. Questionnaires sent to meditators, randomly selected subjects, and part-time MBA students asked about changes in productivity occurring as a result of any significant experience or training, while another group of meditators were asked to report changes in their productivity occurring specifically as a result of practicing the Transcendental Meditation program. Friend concluded that effects from the Transcendental Meditation technique were superior to MBA program effects and as good as or better than those reported by the random sample; the strength of the effect was directly related to the length of time practicing the Transcendental Meditation technique; and job characteristics did not moderate the strength of these effects.

In Sweden, a study compared working people who had learned the Transcendental Meditation technique to working people who had signed up to learn (but had not yet started) the practice (Jonsson, 1975). Compared to controls, the meditators reported significantly greater alertness and activity ($p = .033$ and $p < .001$); greater accomplishment with less effort ($p = .002$ and $p < .001$); greater self-confidence ($p < .001$); reduced irritability ($p = .007$); improved cooperation ($p = .034$); and improved discrimination in assigning priorities ($p = .035$). This study also found that the meditators, whether they practiced the technique regularly or not, considered it useful in their work and potentially valuable to their organizations.

Viewed collectively, these four studies indicate that developing consciousness was subjectively perceived as beneficial in work-related con-
texts, suggesting that the Transcendental Meditation technique could serve as a useful organizational tool. To ascertain the validity of such a conclusion, however, studies within organizations were needed.

**Within-Company Prospective Studies**

The first prospective studies on the Transcendental Meditation technique conducted within firms appeared in 1990 on studies conducted during the previous decade. These studies explored the development of consciousness in organizations and addressed the Transcendental Meditation program as a stress management or wellness enhancement tool.

Due to the constraints imposed on conducting research in corporate settings, these studies used quasi-experimental designs, which was an improvement over the earlier studies (Campbell & Stanley, 1963). They incorporated longitudinal assessments, demographically similar controls drawn from the same organization, standardized measures, and multidimensional questionnaires. One study used second-site replication (Alexander et al., 1993), one supplemented questionnaires with interviews (Gustavsson, 1992), and three made use of direct physiological measures (Alexander et al., 1993; Gustavsson, 1992; DeArmond, Alexander, & Stevens, 1994). This shift toward more sophisticated methodologies reflects earlier recommendations (Newman & Beehr, 1979; Porras & Berg, 1978), and parallels the general trend toward more rigor in stress management and organizational research (see Ivancevich, Matteson, Freedman, & Phillips, 1990; Nicholas & Katz, 1985; Porras & Berg, 1978).

The earlier findings were confirmed by longitudinal studies conducted independently in a division of a Fortune 100 company, a smaller sales distribution firm in the same industry, a health care equipment manufacturer, and 778 employees in one of the largest manufacturers in Japan. Employees’ regular practice of the Transcendental Meditation technique led to significant improvements in job satisfaction, efficiency and productivity, and personal and work relationships compared to controls (Alexander et al., 1993; DeArmond, Alexander, & Stevens, 1994), as well as the employees’ physical and mental health and well-being (Alexander et al., 1993; DeArmond, Alexander, & Stevens, 1994; Haratani & Henmi, 1990a, 1990b).
The two-site study (Alexander et al., 1993) not only provided unambiguous results about the value of the Transcendental Meditation technique in reducing job stress, it also related findings about job stress to other areas of concern, such as employee effectiveness, job satisfaction, and work and personal relationships. A principal components analysis identified three factors underlying this wide range of improvements and found that compared to controls, meditators improved significantly on all three: “occupational coherence” ($p = .00005$), indicated by a simultaneous decrease in maladaptive functioning (reduced anxiety and health complaints) integrated with an increase in adaptive behavior (increased employee effectiveness and improved relationships); “physiologic settledness” ($p = .04$), indicated by three highly correlated measures of basal skin conductance levels; and “job and life satisfaction” ($p = .004$), indicated by greater intrinsic and extrinsic job satisfaction and reduced cigarette and hard liquor consumption.

The generalizability of the findings is supported by Japanese research which found significant decreases ($p < .05$ to $p < .001$) compared to controls on measures of psychological distress, health complaints, insomnia, and smoking (Haratani & Henmi, 1990a, 1990b), and by a recent study of 76 managers who volunteered to participate in a corporate wellness program (DeArmond, Alexander, & Stevens, 1994). One half of the group learned the Transcendental Meditation technique and the others, matched for age, race, education level, hours worked per week, and job type, served as controls. Over a three-month period, the meditating managers improved significantly compared to controls on measures of mental health ($p = .047$); vitality and energy ($p = .006$); perceived stress ($p = .014$); somatic symptoms of stress ($p = .003$); and healthful and regular habits of exercise, diet, and sleep as well as levels of alcohol and cigarette consumption ($p = .027$). Significant reductions in total blood cholesterol compared to the control group ($p = .042$) equated with a 7 to 10% reduction in risk of heart attack. Analysis of covariance found that subjects’ pre-test level of expectation could not account for the results.

In addition, the managers’ organizational contribution was evaluated by their peers using items adapted from standardized measures that addressed productivity (including effective planning, alertness, time management, efficiency, and organization), leadership practices,
observed anger, job satisfaction, general happiness, energy level, and relationships with co-workers, supervisors, and subordinates. Compared to controls, the meditating managers improved significantly on this composite measure of organizational contribution ($p = .013$), with positive changes in each of the areas listed.

To investigate the development of consciousness in organizations, Gustavsson (1990, 1992) studied the effects of the Transcendental Meditation technique on the top management team and employees of a Swedish public utility. Comparison of meditating and non-meditating managers found that although outside pressures on the team were increasing, the meditating managers reported a more creative climate and better group spirit, while chief executives perceived increased holistic thinking (defined as the amount of information about the corporation available) among the managers. Satisfied with the results, the division head offered the Transcendental Meditation program to the white-collar employees. Shortly after the program began, he was promoted and a new division head appointed.

Gustavsson (1992) then compared meditating and non-meditating employees and found significant improvements in psychological health, reduced time for onset of sleep, and reduced risk for cardiovascular disease ($p < .001$ to $p < .03$). Compared to the previous year, there was a 14% decrease in absenteeism rate in the experimental group.

Gustavsson’s (1992) attempts to assess changes in climate and culture were less conclusive. Rosen (1989) observes that corporate reorganization can lead to unpredictability and uncertainty, even illness. Although in this case, the change in leadership did not cause illness among the employees, it did lead to feelings of insecurity. The employees wanted a more creative climate, greater clarity about the company’s goals, and greater stability in the workplace. His multi-dimensional data allowed Gustavsson to conclude that the meditators had developed better psychological and physical health, and when faced with a situation of conflict, were better able to recognize and articulate their needs.

These studies support the hypothesis that by developing pure consciousness, employees become more alert and dynamic thus enhancing their well-being and productivity. One could conclude that widespread application of the Transcendental Meditation program merits consid-
eration as a program for occupational stress reduction, health improvement, and performance enhancement in a corporate setting.

**Organizational Benefits of Developing Consciousness**

Although companies were offering their employees the Transcendental Meditation program in the 1970s as a tool for individual development (Frew, 1977; Ivancevich & Matteson, 1990; Kory, 1976; Marcus, 1977), reports indicating that practice of the Transcendental Meditation technique also contributes to bottom-line measures of business success began to appear in the mid-1980s. These cases used the organization as the unit of analysis, employed a social-psychological definition of organization as membership in a worksite culture (Herriott, 1989), and reported changes on quantitative indicators available to executives and managers. Areas of research interest included worker absenteeism, productivity levels, financial performance in terms of profits and sales, and customer satisfaction. Three cases suggest that large percentages of organization members practicing the Transcendental Meditation technique contribute to improvements in organizational performance.

For example, a chemical manufacturer and supplier to the U.S. automobile industry had survived four years of flat sales and declining profits in a tightening market when a new CEO offered the Transcendental Meditation program to the workforce as a turnaround strategy. Fifty-six of the 70 employees learned the technique. The following four years saw a resurgence in the automobile industry but not to the extent of the growth experienced by this firm. No new people or equipment were brought in, yet productivity increased 52%. Annual sales per employee increased 88% from $133,000 to $250,000, with 80–95% of the sales representing new customer accounts. Neither new strategies nor threats were used, yet labor costs as a percentage of sales decreased 39%, the number of work days lost to poor health or injuries declined from 70 days per employee to less than 35 days, and absenteeism declined 89%. As the number of meditating employees and their productivity rose, net income increased steadily (Swanson & Oates, 1989). The CEO attributed the growth to the employees’ new ideas, energy, and effectiveness arising from more positive work attitudes and a more harmonious
work climate (personal communication, R. Montgomery, former CEO, November 5, 1994).

In Australia, a mutual fund company offered instruction in the Transcendental Meditation technique to employees to reduce stress and anxiety and make their sales training more effective. In one year 55% of the 350-member sales force learned the technique. They reported reduced anxiety, tension, and fatigue; relief from insomnia; greater ability to be motivated; and a dramatic improvement in job-related and personal communication. Company records showed “before that year was out, sales in the company as a whole had increased 250% over the previous year with the meditators accounting for the bulk of the increase” (Swanson & Oates, 1989, p. 98). Since then, new sales personnel have routinely been offered instruction in the technique.

In Germany, the directors of a finance company offered the Transcendental Meditation program to employees as part of their in-service training. After 20 of the 100 employees had been instructed, the directors noted an increased volume of lending, a general improvement in the work climate, and marked reductions in the number of insolvency cases, employee absences due to illness, and customer complaints. Four years of radical growth followed, in which balance sheet totals grew by 230% and profits increased over 300% with only a 28% growth in personnel (Gottwald & Howald, 1989, 1992).

The dramatic improvements in financial performance reported at these three sites suggest that development of consciousness can not only improve climate and reduce absenteeism but can also literally make an organization more productive and profitable.

**Discussion**

This paper has reviewed the literature on the applications of the Transcendental Meditation program in business. Figure 1 classifies the existing studies in terms of units of analysis (individual vs. corporate) and research design (pre-experimental vs. quasi-experimental) and suggests areas for future work. The studies reviewed suggest that employees who develop consciousness through practice of the Transcendental Meditation technique make greater contributions to their workplace.

At the individual level, the retrospective pre-experimental studies relied on self-reports using invalidated questionnaires; they lack sys-
tematic sampling, pre-test measures, and random assignment to groups, although Jonsson (1975) at least matched for interest in the Transcendental Meditation program. Yet when the same research questions were addressed using longitudinal quasi-experimental designs, demographically similar controls, standardized questionnaires, direct physiological measures, and second-site replication, the findings were similar. This constancy of results gives greater confidence that use of the Transcendental Meditation technique can have beneficial effects on individual functioning and social relations in the workplace.

**Figure 1**
Research on the Applications of the *Transcendental Meditation* Program in Business

<table>
<thead>
<tr>
<th>Research Design</th>
<th>Unit of Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quasi-Experimen-</td>
<td>Individual &amp; Social-Psychological</td>
</tr>
<tr>
<td>tal</td>
<td>Corporate Level</td>
</tr>
<tr>
<td></td>
<td>Case Studies (Gottwald &amp; Howard, 1989, 1992; Swanson &amp; Oates, 1989)</td>
</tr>
</tbody>
</table>

156
Research conducted in non-workplace settings on the effects of the Transcendental Meditation technique on cognitive performance has found growth over the long term of general intelligence (Cranson et al., 1991), ego development (Alexander et al., 1990), and creativity (Travis, 1979), as well as enhanced flexibility of perception and verbal problem solving (Dillbeck, 1982), field independence (Pelletier, 1974), and orientation toward positive values (Gelderloos et al., 1987). Such findings have led researchers to propose that experience of pure consciousness is a mechanism to stimulate marked developmental advance even during adult years (Alexander et al., 1990), a development associated with greater effectiveness on the job (Harung & Heaton, 1993; Torbert, 1987).

Further work could address these cognitive variables and others related to business, such as motivation or problem-solving styles, to determine whether they improve in the work setting under conditions of developing consciousness. Ideally, future work would assess these variables using hard criteria, i.e., quantitative measures of job behavior and system performance, as opposed to attitudinal and perceptual questionnaires. The challenge is not only to the researcher but also to the sponsoring organization. Such studies require a commitment from organizations to support a program of sufficient scope to permit large sample sizes; random assignment of subjects to treatment, alternate treatment, and control groups; and long-term assessment.

At the corporate level, the case studies reporting increased productivity and profitability suggest that individual improvements in physical health, attitudes, satisfaction, behavior, and relationships may aggregate as improvements in the company as a whole. For example, the reported reductions in absenteeism may be due in part to improved employee health. This inference is consistent with findings from a five-year study of medical care utilization statistics which compared a group of 2000 participants in the Transcendental Meditation program with a normative data base of 600,000 members from the same major health insurance carrier. The experimental group’s medical utilization rates were markedly lower in all categories of hospitalization, doctors visits, and incidence of disease (Orme-Johnson, 1987). Similar findings in the workplace could represent substantial savings in corporate health care costs. Future organizational research could assess the health benefits accruing from practice of the Transcendental Meditation technique.
using hard measures of sickness, accidents, health insurance claims, and disability claims.

Although the preliminary case reports are intriguing, it would be useful to see them replicated under more rigorous conditions, using research protocols, multiple sources of evidence, respondent review, and cross-case replication (Larsson, 1993; Yin, 1989).

At the organizational level, the blank cell in the matrix (Figure 1) shows that neither true nor quasi-experimental studies have yet been conducted on the effects of the Transcendental Meditation program on hard criteria of corporate output or profits. By comparing highly similar subsystems within an organization—such as bank branches or chain stores, where one or more business unit(s) receive the intervention and control unit(s) do not—one can “wash out” variables such as size, technology, work force characteristics, physical environment, job design, and autonomy (Porras & Berg, 1978). Using control units would provide adequate sample size to permit quantitative analysis and thereby achieve a level of experimental rigor not available in case studies.

Both quasi-experimental and case research suggest that a sufficient number of people in an organization practicing the Transcendental Meditation technique bring about a change in the “corporate consciousness,” defined by Gustavsson and Harung (1994, p. 3) as “the collective consciousness of an organization, the wholeness that is formed by the members of an organization coming together.” The cases found that practice of the Transcendental Meditation technique by large numbers of employees improved the work climate, reflected in greater creativity and harmony, and indicated that work climate improvements may also have contributed to improvements in performance at the corporate level. It would be useful to investigate the effects of the Transcendental Meditation program on corporate climate in greater comprehensiveness and depth than has yet been done.

The findings are consistent with Maharishi’s original prediction that development of consciousness by a sufficient proportion of a social system can influence the quality of life of the whole system. Interestingly, research in larger social systems, such as communities or cities, suggests that even a very small subset of the population can enhance the quality of life of the larger system, as seen in indicators such as decreased crime rate (e.g., Dillbeck, 1990). Verification of such a multiplier effect
in an organizational setting would indicate a profound causal role for consciousness in organizational functioning and have important practical ramifications as well.

**Conclusion**

The research on the Transcendental Meditation program in business challenges the current emphasis on improving business functioning through exogenous efforts to change structure, strategies, or skills. This one simple mental technique is seen to influence both individual and social functioning and may also influence organizational variables. This suggests that development of the abstract, inner value of consciousness can have far-reaching practical implications for business and industry. If further research bears this out, then we may have found a way not only to understand but also to catalyze growth of consciousness in organizations.

**References**


This article “Developing Consciousness in Organizations: The Transcendental Meditation Program in Business,” by Jane Schmidt-Wilk, Ph.D., Charles N. Alexander, Ph.D., & Gerald C. Swanson, Ph.D., here revised/updated and reprinted here with permission, was originally published in Journal of Business and Psychology, Special Issue: Discovering Corporate Consciousness. 10(4) [1996] 429–444. ©Human Sciences Press, ISSN: 0889–3268.
Leadership Development
and Self-Development:
an Empirical Study

Bruce McCollum, Ph.D.
ABOUT THE AUTHOR

Dr. Bruce McCollum received his B.A., M.B.A., and Ph.D. degrees at Maharishi University of Management in 1981, 1987, 2000. Dr. McCollum has taught courses in management information systems, communications skills, operations management, statistics, and introduction to business courses. He served as director of administration for a branch campus of a university. His dissertation topic was leadership development through self-development. Dr. McCollum is currently Assistant Professor of Management in the Business Management Department at Maharishi University of Management.
ABSTRACT
This paper explores, theoretically and empirically, some relationships between self-development and leadership development. A theory about consciousness and leadership practices will be presented, drawing from both modern science and the oldest texts on consciousness, the Vedas. Empirically, in a small, preliminary eight-month pretest-posttest control group study in one company, fourteen subjects who learned a repeatable, standardized self-development technique, the Transcendental Meditation technique, grew more in their expression of leadership behaviors, measured by the Leadership Practices Inventory, and expressed in individual and group interviews (0.05 and 0.01 significance).

Introduction
Top executive leadership trainers have admitted that all their training does is to nudge middle and top executives a little in the direction of leadership (Lee, 1989). One approach to achieving larger gains in leadership development is to focus more attention on developing the leader from within, on developing the deepest level of the subjectivity of the leader, sometimes called the ego or the self. Using self-development programs to develop leadership is growing in popularity but little research has measured the effectiveness on leadership (Baldwin and Padgett, 1993).

This article describes an exploratory study which measured the growth of leadership behaviors with the use of the Maharishi Transcendental Meditation technique, the most researched self-development program, and then discusses some theoretical implications of an expanded view of the self on organizational and leadership theory.

Research on Leadership Development through Self-Development: Company Background
Fred’s Foods wholesales frozen produce in both the USA and Europe. The CEO’s vision, as repeated by the employees, is encapsulated in the slogan “Freezer to the World.” He balances that ambitious goal with strong employee relations, including significant personal friendships with many employees and attention to employee feelings and needs.

The company focuses on sales growth and customer service because the competition is strong. For both the company and the industry,
customer turnover is high, making new sales generation a key success factor. They know their competitors, often larger and older firms, as they bid for contracts against them regularly and have a jointly owned subsidiary with their nearest rival. Financial controls and other systems for maximizing efficiency have consequently gone undeveloped. In an interview, the CEO compared his company to many horses pulling in many directions. The carriage was moving forward but not efficiently. In mid-1995, at the beginning of the research, the company was 15 years old, had annual sales of 15 million dollars, and employed 36 full-time and a few part-time people.

The majority of the employees are customer representatives who negotiate and organize shipments of produce by truck to the customers. Negotiation and cross-functional coordination are thus both highly prized and desired skills. When problems arise, cross-functional coordination and creativity are necessary to arrange solutions and smooth customer relations. Creativity is also needed to improve the underdeveloped systems. Everyone in the company felt that they could make suggestions about anyone’s systems.

According to the CEO, he offered the Maharishi Transcendental Meditation technique to his employees because he felt it would improve collective decision making and help create a better quality of life for the employees both at work and at home. Many employees worked long, hard hours and had no energy for home life. When asked what they would say to a prospective employee the first thing everyone said was to be prepared to work hard. The CEO was concerned that this continued work pace would, in the long run, affect employee productivity and possibly lead to losing employees.

Subjects and Research Methods
The company offered to pay for up to 15 employees to learn the Transcendental Meditation technique. Fifteen people from all levels of the organization took the program and 14 agreed to participate in the research. Because nine other employees, including the CEO, had previously learned the technique, 12 employees were left as potential controls. Ten of these agreed to participate.

At the beginning of the eight-month experimental period, the experimental subjects learned the Transcendental Meditation tech-
nique, which they practiced approximately twice a day for 15–20 minutes for the eight months. In the program follow-up, meetings were held approximately once a month in which their experiences were discussed and some of the theory connected to the practice was explained. No other leadership training occurred during this period.

Both quantitative and qualitative research methods were used to measure the changes in the subjects and in the organization. The leadership instruments used were the Leadership Practices Inventory (LPI) (Kouzes and Posner, 1990) and the Social Desirability Response Set-5 (SDRS-5) (Hays et al., 1989), an instrument to control for people’s tendency to respond in a socially desirable direction. For the LPI, two observers as well as the subjects were asked to evaluate the subject’s leadership behaviors. All analyses used the mean of the subjects and observer ratings, giving equal weight to each evaluation.

The LPI was developed and refined by Barry Posner and James Kouzes from extensive interviewing. Their factor analyses repeatedly confirmed a clustering of five factors which the authors colorfully labeled:

1. challenging the process
2. inspiring a shared vision
3. enabling others to act
4. modeling the way
5. encouraging the heart

Contained in these factors are many of the common elements of leadership thinking today, i.e. vision, creativity, empowerment, and role modeling. In addition to the quantitative measurements, all the subjects were interviewed individually and in groups about their own experiences and about their observations of their coworkers and the organization as a whole. The interviews used behavior-based interviewing, asking the interviewees to describe their behaviors before asking for inferences or conclusions based on their experiences. This procedure follows the recommendations of qualitative researchers who describe at least two advantages to this structure. First, descriptions are generally easy for respondents to answer and thus they get the interviewee comfortable talking. Second, evaluations after description “are likely to
be more accurate and meaningful once the respondent has just verbally relived the experience” (Patton, 1990, p. 294).

**The Maharishi Transcendental Meditation Program as a Self-Development Program**

This study used the Transcendental Meditation program as the self-development program for many reasons. The technique itself is a simple, effortless technique practiced twice a day sitting comfortably. It requires no belief, no lifestyle change and is practiced widely throughout the world.

For researchers the benefits of this technique start with the standardized manner of teaching. This ensures that different subjects are practicing the same technique everywhere in the world and at different times. Thus there is greater confidence that the findings can be generalized and replicated.

Secondly, there now exists a large body of research, over 500 studies, on the physiological, psychological and sociological effects of the technique. Within this body of research are many studies applicable to traits and behaviors associated with leadership development including growth of creativity (So, 1995; Travis, 1979), field independence (Pelletier, 1974), intelligence (Cranson et al., 1991; Tjoa, 1975), perception and memory (Dillbeck, 1982; Miskiman, 1976), energy and dynamism (Alexander et al., 1993; Haratani and Henmi, 1990a, 1990b; Jonsson, 1975) and ego development (Alexander and Langer, 1990). Some of these studies were done within organizations indicating that these benefits accrue in the workplace as well. (For a review of the studies in business, please see Schmidt-Wilk et al., 1996.)

Finally, meta-analytic studies, which statistically summarize and compare other studies, have repeatedly concluded that the most effective of the programs for causing profound changes in individuals and groups is the Transcendental Meditation program. Meta-analyses on trait anxiety (Eppley et al., 1989), autonomic stability (Dillbeck and Orme-Johnson, 1987), substance abuse (Alexander et al., 1994) and self-actualization (Alexander et al., 1991) have shown the Transcendental Meditation program to be between two and four times more effective than any of the other programs or treatments.
From the practical side, the CEO of the company wanted to offer the Transcendental Meditation program based on his own experiences with it.

**Quantitative Results**

The change scores for the subjects were analyzed using analysis of covariance (ANCOVA). ANCOVA analyzes differences among means, using a regression-type model to statistically control for predictor variables, or covariates. Only after adjusting for the effects of the covariates are the differences between the groups deemed to be statistically significant. ANCOVA analyses were performed with different covariates individually and in combination. The covariates included pretest LPI scores, pretest and change SDRS-5 scores, age, job level, gender, and education. All of the analyses exhibited significance similar to the results presented in Table I which uses the pretest scores of the individual variables as the covariate.

As both the graphs and the ANCOVA (see Table I) results indicate, the meditators grew significantly more in leadership behaviors for all variables. Especially high in significance are the “encouraging the heart” and the “modeling the way” scores for the four month period. These results are especially remarkable given the difficulty of getting significance with small sample sizes (in this case, 14 experimental subjects and 10 controls) (see Figure 1).

**Figure 1. Chart of leadership behavior changes in eight months.**
Table 1
Statistical results of leadership behavior changes in four and eight months

<table>
<thead>
<tr>
<th></th>
<th>Four Months</th>
<th>Control</th>
<th>p&lt;</th>
<th>Eight Months</th>
<th>Control</th>
<th>p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPI Composite</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subjects</td>
<td>15.7</td>
<td>.01</td>
<td>Subjects</td>
<td>16.3</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>13.2</td>
<td></td>
<td>Controls</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>LPI Challenging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the Process</td>
<td>Subjects</td>
<td>16.5</td>
<td>.05</td>
<td>Subjects</td>
<td>16.6</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>14.1</td>
<td></td>
<td>Controls</td>
<td>14.3</td>
<td></td>
</tr>
<tr>
<td>LPE Enabling Others to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Act</td>
<td>Subjects</td>
<td>15.6</td>
<td>.05</td>
<td>Subjects</td>
<td>16.5</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>13.6</td>
<td></td>
<td>Controls</td>
<td>14.4</td>
<td></td>
</tr>
<tr>
<td>LPI Encouraging the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart</td>
<td>Subjects</td>
<td>15.9</td>
<td>.001</td>
<td>Subjects</td>
<td>16.3</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>12.7</td>
<td></td>
<td>Controls</td>
<td>13.6</td>
<td></td>
</tr>
<tr>
<td>LPI Inspiring a Shared</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vision</td>
<td>Subjects</td>
<td>14.8</td>
<td>.05</td>
<td>Subjects</td>
<td>15.6</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>12.6</td>
<td></td>
<td>Controls</td>
<td>12.8</td>
<td></td>
</tr>
<tr>
<td>LPI Modeling the Way</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subjects</td>
<td>15.8</td>
<td>.001</td>
<td>Subjects</td>
<td>16.2</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>12.9</td>
<td></td>
<td>Controls</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>Social Desirability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale</td>
<td>Subjects</td>
<td>1.7</td>
<td>ns</td>
<td>Subjects</td>
<td>1.0</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>2.1</td>
<td></td>
<td>Controls</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>Demographics at Pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subjects</td>
<td>32.6</td>
<td></td>
<td>Subjects</td>
<td>33.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>33.3</td>
<td></td>
<td>Controls</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>Education (number of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>years)</td>
<td>Subjects</td>
<td>15.2</td>
<td></td>
<td>Subjects</td>
<td>14.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>14.2</td>
<td></td>
<td>Controls</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>Job Level (1-6, 1 = CEO)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subjects</td>
<td>3.5</td>
<td>.05</td>
<td>Subjects</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>4.8</td>
<td></td>
<td>Controls</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>Social Desirability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td>Subjects</td>
<td>1.0</td>
<td>.01</td>
<td>Subjects</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>2.3</td>
<td></td>
<td>Controls</td>
<td>.01</td>
<td></td>
</tr>
</tbody>
</table>
Analyzing Alternate Explanations
There are always potential alternate explanations for any statistical research findings. For this study, the possible influences on growth of leadership behaviors include the desire to look good on the part of the program participants, the level of education of the different groups, the age of the participants, and the level of responsibility in the organization. To test these possibilities, further ANCOVA tests were done using these variables as covariates: SDRS-5 (the “look good” control instrument), the number of years of education, age, and a job level variable. Of these potential alternate explanations, only the job level and “look good” measure were different between groups at pretest. The addition of these variables individually and in combination had little to no effect on the results of the analysis and in some cases strengthened the main effect, the practice of the Transcendental Meditation technique.

Interviews
In addition to the paper and pencil tests, all subjects, including the controls, were interviewed at the first and second post-test. Both the meditators and the non-meditators noticed significant changes in the meditators. The most common responses were greater effectiveness in work (85 percent), increased energy for work and home activities (77 percent), greater comfort showing initiative (69 percent), and increased evenness in stressful situations (62 percent). Some quotes include the following.

On effectiveness: “I spend a lot less time getting frustrated with the situation, a lot more time finding answers.”

On initiative: “So umm, you know, perhaps whereas it was once a decision that I would take fearfully; now, I make the decision, right or wrong. It’s made, it needs to be made and accept the consequences, you know whether they’re positive or whether they’re negative. There’s a little bit more just sort of assurance or, you know, like faith in the process. Like thinking ‘well this is what we have to do,’ as far as I can tell.”

On happiness: “found my smile again.”
Group and Organizational Effects

Based on the interviews both during the program and in the subsequent year and a half, there were definitely some effects on the company as a whole. Almost everyone interviewed commented that the general feeling around the company was much more upbeat and the employees were more rested and enjoying work. This was true despite continued strong growth in sales and a continued feeling of a personnel shortage.

An outside observer who came into the company for a few hours a week commented that she noticed a definite difference with the employees practicing the Transcendental Meditation program. She said all of the employees seemed more on top of their work, much less in crisis mode. From the business angle, during this time the company continued their sales growth, again reaching a quarterly high in sales, while slightly decreasing the number of employees, thus growing well in sales per employee.

Discussion

The changes in leadership behavior noted by both the quantitative and qualitative instruments give initial support to the idea that practicing the Transcendental Meditation program leads to growth of leadership behaviors. This study is an early study in our connecting self-development and leadership development and could naturally be improved. Possible improvements include: larger sample size, adding skill development programs, measuring corporate culture, and randomized assignment to groups.

In addition to the behavioral effects of self-development on leadership focused on so far in this article, there are potentially much deeper and more significant effects.

To explore these effects we need to see what changes in world view have occurred in the most influential of modern sciences, modern physics, because these changes imply an additional means of to lead organizations.

Many authors have begun charting new principles about organizational systems and leadership from looking at the principles of the quantum physics of the first half of this century (Blank, 1995; Ray and Rinzler, 1993; Stumpf, 1995; Wheatley, 1992). One of the essential principles of this physics is that all the physical matter and energy we
experience with any of our senses is based on nonphysical, non-mater-
rial fields. These fields are essential for physics to explain many effects
they observe in the physical world, such as action-at-a-distance and the
structure of space/time itself.

The usual application of physics to organizational systems is to use
these concepts to reframe our thinking about organizations. For exam-
ple, thinking about vision as a field changes our perception of vision
from a passive goal, a future to be worked toward, to an active guide
to action:

In many ways, we already know what powerful organizers fields can be.
We have moved deeper into a field view of reality by our recent focus
on culture, vision, and values as the means for organizing organiza-
tions. We know that this works, even when we don’t know how to do it
well. Robert Haas, CEO of Levi Strauss & Co., calls this phenomenon
“conceptual controls . . . it’s the ideas of a business that are controlling,
not some manager with authority” (Wheatley in Howard, 1990, p. 134).
If we think of ideas as fields, I believe we have a better metaphor for
understanding why concepts control as well as they do. But it changes
the nature of our attention (Wheatley, 1992, p. 55).

However, just as physics has gone farther than describing many fields
underlying matter and energy, the application of physics to leadership
can go farther.

Physicists now describe one field at the source of matter and energy,
which they call the unified field. To get a glimpse of how they arrived
at this one field, Figure 2 shows the progression of unification of the
different energy fields to the unified field. There is a similar progression
of matter fields which also culminate in the same unified field.

The unified field shares with the more expressed fields the quality of
being a powerful organizer, both physically and conceptually. According
to some physicists and others, however, because the qualities of the uni-
fied field are identical to the qualities of subjectivity, of consciousness,
the unified field is the same as the subtiest level of individual subjectiv-
ity (e.g. Hagelin, 1987, 1989; Drühl, 1997).

For leadership, the logical consequence of this unifying of subjectiv-
ity and objectivity is that one’s ability to influence the fields of organi-
izations could be gained through one’s own consciousness, one’s own
subjectivity.
From the Vedic tradition, which focuses on subjectivity, Maharishi Mahesh Yogi, the founder of the Transcendental Meditation program and a well-known expert in Vedic Science, writes about how this insight of physics helps western science explore consciousness: “Everything about this field of consciousness, and everything about its applied values, is available to the scientist within himself—within his own body, within his own physiology, which is the home of his own consciousness” (Maharishi, 1997). From this perspective, people in an organization can gain knowledge of the fields underlying their organization from within themselves.

The practical implication of this concept, then, is that self-development is the best program for leadership development as it is a direct way to develop leaders who can know and operate from the field level of organizations, making them capable of bringing the powerful organizing capabilities of the unified field to work for the organization.

Conclusion

The need for effective leadership development programs was never greater than it is today. As companies continue to increase their demands for self-reliance, creativity and cooperation, individuals at all levels of the corporation need to grow in leadership. Maharishi Vedic Science and the world view implied by modern physics both suggest that we may be able to do a more effective job at developing leadership if we put more attention on developing the leader at the deepest level of the individual. The evidence that such growth of leadership occurs with personal growth at all levels of the organization suggests that we may be able to make everyone a leader.

Figure 2. Progress of field theories leading to the unified field.
References


**Further Reading**


This article, “Leadership Development and Self-Development: An Empirical Study” by Bruce McCollum, Ph.D., here revised/updated, and reprinted with permission, was originally published in Career Development International, 4/3 [1999] 149–154. © MCB, University Press, [ISSN 1362–0436].
Consciousness-Based Management Development:
Case Studies of International Top Management Teams

Jane Schmidt-Wilk, Ph.D.
ABOUT THE AUTHOR

Jane Schmidt-Wilk, Ph.D., is an Associate Professor in the Department of Business Management, Director of the Center for Management Research, and Co-Director of the Ph.D. in Management program. Dr. Schmidt-Wilk has been Editor of the Journal of Management Education (JME), the leading journal in this field, since July 2005, and serves on the editorial boards of several other academic journals in the field of management.
ABSTRACT

Training in meditation is being introduced into corporations worldwide, yet analyses of programs are rare. Case studies document the experiences of members of three top management teams who learned the Transcendental Meditation program in corporate-supported programs and suggest a new trend in management development: Consciousness-Based Management Development. This psychophysiological approach, which allows managers to access inner latent capacities, appears to meet criteria described in the literature for an effective management and team development program. The comprehensive changes reported are said to result from unfolding the organizing power of natural law in the awareness of the manager.

KEY WORDS: management development, meditation, top management teams, leadership, leadership development, consciousness

Introduction

Few new trends in management development programs in the U.S.A. were reported for the period of the 1960s to the early 1980s (Porter & McKibben, 1988). In the 1990s, however, non-traditional approaches, including meditation, have begun to find their way into corporate change and development interventions (Galen & West, 1995; Sherman, 1994). Despite the existence of popular reports, research on the use of meditation in companies is rare. The growing interest in meditation in business, coupled with the lack of systematic research indicates a fruitful area for research.

Popular reports (e.g., Dunkin, 1993; Kezman & Connors, 1993; Laabs, 1995; “Unternehmer,” 1994) often use the term ‘meditation’ as a generic title for a wide range of mental procedures. Lack of clear definition of the intervention methodology, especially in programs that involve participant selection of procedures, do not provide the necessary reliability for scientific study, since different subjects may in fact be practicing different mental procedures, which in turn may differ in their ability to produce results.

For example, it has become popular to advocate meditation for personal stress management. However, all approaches to preventing or reversing the effects of stress are not the same (Orme-Johnson & Walton, 1998), as shown by statistical meta-analysis, an objective
and reliable procedure for identifying significant quantitative relationships among large numbers of studies (Glass, McGaw, & Smith, 1981). Meta-analyses have found the Transcendental Meditation technique, with its basis in the ancient Vedic tradition, to be more effective than other forms of meditation and relaxation in reducing anxiety (Eppley, Abrams, & Shear, 1989), improving psychological health as measured by the growth of self-actualization (Alexander, Rainforth, & Gelderloos, 1991), and reducing tobacco, alcohol, and drug use (Alexander, Robinson, & Rainforth, 1994), while controlling for expectations, duration of practice, experimenter bias, strength of experimental design, and other factors.

The Transcendental Meditation technique is described as a simple and easily learned mental procedure that allows the mind to become settled while awake and simultaneously delivers deep rest to the body. Unlike concentration, which focuses attention on a perceptual object or thought, or contemplation, which involves thinking about the meaning or content of a thought, the Transcendental Meditation technique does not require effort on the part of the participant. The founder of the program, Maharishi Mahesh Yogi, has explained,

> During this technique the individual’s awareness settles down and experiences a unique state of restful alertness; as the body becomes deeply relaxed, the mind transcends all mental activity to experience the simplest form of awareness—Transcendental Consciousness—where consciousness is open to itself. This is the self-referral state of consciousness (Maharishi Mahesh Yogi, 1995, p. 174).

This state of awareness is described as simplest because consciousness is silent and fully awake to itself alone without reference to any thought or perception. It is described as transcendental because it is beyond thought and perception, and as self-referral because it refers only to itself, not to any content of thought or perception. The full potential of the mind is said to be available in this state. Experiencing it is said to have the following practical value for managers. The term “organizing power” used in this passage refers to organizing ability and to the ability to get things accomplished.

The experience of Transcendental Consciousness develops the individual’s latent creative potential while dissolving accumulated stress and fatigue through the deep rest gained during the practice. This experi-
ience enlivens within one’s awareness creativity, dynamism, orderliness, and organizing power, which results in increasing effectiveness and success in daily life (Maharishi Mahesh Yogi, 1995, pp. 174–175).

By the early 1990s, over 4 million individuals had learned the Transcendental Meditation technique (Wallace, 1993). Popular and press reports indicate that managers and employees have been trained in the Transcendental Meditation technique as a business tool in many countries, including the United States (Kory, 1976; Marcus, 1990; Matteson & Ivancevich, 1987; Oates, 1976; Roth, 1987), Australia (Swanson & Oates, 1989), Canada (Robbins, 1993; Wilson, 1991), Germany (Gottwald & Howald, 1992), Great Britain (Veltman, 1990), India (Kumar, 1997; “Meditation . . .” 1995), Japan (Marcus, 1990; Subramanian, 1989; Visser, 1986), and Sweden (Bentsson, 1990).

Scientific research on the physiological, psychological and sociological effects of the Transcendental Meditation technique represents “the most prolific research program on meditation in the United States as far as sheer numbers of published studies” is concerned (Murphy & Donovan, 1996, p. 10). The majority of these studies focus on individual benefits, with about 40 studies investigating the societal level of analysis. For research reviews of the physiological and psychological effects of the Transcendental Meditation technique, please refer to Jevning, Wallace, and Beidebach (1992), and Alexander (1993), respectively.

Prospective Research on Stress Reduction at the Workplace
An increasing number of studies document effects of the Transcendental Meditation technique on individuals in the workplace (Schmidt-Wilk, Alexander, & Swanson, 1996), including three prospective studies on two continents on reducing stress at the worksite.

In the U.S.A., a three-month study evaluated the effects of the Transcendental Meditation program in two work settings in the automotive industry during the mid-1980’s, a time when the industry was being threatened by the influx of foreign competition. Subjects at both sites, a manufacturer of automotive components and a small sales distribution company included, but were not limited to, managerial and supervisory personnel and were matched to controls similar in worksite, job position, demographic and pretest characteristics (Alexander et al., 1993). Interviews at the manufacturing site revealed that senior
management sponsored the program to improve the company’s competitive situation, but volunteers participated in the hope of personal gain, such as relief from stress and increased creativity and mental clarity (Schmidt-Wilk, 1992).

Analyses found that regular meditators at the two sites improved significantly more than controls (with irregular meditators scoring in between) on a wide range of physiological, psychosocial, health, and behavioral measures of stress and job performance. A principal components analysis identified three underlying factors. A simultaneous decrease in maladaptive functioning (reduced anxiety and health complaints) and increase in adaptive behavior (increased employee effectiveness and improved relationships) was termed “occupational coherence”; three highly correlated measures of basal skin conductance levels identified a state of “physiologic settledness”; and greater intrinsic and extrinsic job satisfaction and reduced cigarette and hard liquor consumption expressed greater “job and life satisfaction” (Alexander et al., 1993).

Another three-month study in the U.S.A. evaluated the effects of the Transcendental Meditation program on managers of a mid-sized medical equipment developer and manufacturer during a period of increased governmental regulation, layoffs, and severe financial problems. The subjects—executives, managers and other professionals of managerial rank—were matched with controls in the organization on age, education level, race, marital status, diet type, weight, hours worked per week, and job ranking. Analysis of stress-related self-report, physiological, and observer measures found that the 38 meditators improved significantly compared to controls on measures of mental health, perceived stress, vitality, healthful behaviors (including exercise, diet, sleep, and levels of alcohol consumption), physical complaints, serum cholesterol, and a composite measure of observer-rated contribution to the organization (DeArmond, 1996).

In South Africa, a carefully controlled study compared the effectiveness of stress reduction interventions in a market research firm. The volunteers, mostly female office workers, were randomly assigned to instruction in either the Transcendental Meditation technique or Progressive Muscle Relaxation (PMR) with non-volunteers and participants in a personal productivity workshop serving as on-site and
off-site controls, respectively. Analyses showed significant reductions in perceived stress for both intervention programs after six weeks, but PMR was discontinued after this post-test because of pressure from the group to learn the Transcendental Meditation technique. Significant reductions in blood pressure for the Transcendental Meditation groups were found at the 5.5 month follow-ups, compared to on and off-site controls (Broome, 1995).

With the stress-reducing effects of the Transcendental Meditation technique well documented, Schmidt-Wilk, Alexander, and Swanson (1996) undertook to develop a more comprehensive theory of the effects of the Transcendental Meditation program on personal and organizational development, with support from the Schweisfurth Foundation of Munich, Germany. The first step of their work, a review of the business literature, found that practice of the Transcendental Meditation program appears to improve employee health, well-being, job satisfaction, efficiency, and productivity; case research suggests these changes influence organizational climate, absenteeism, and financial performance.

Next, they undertook to develop several qualitative case studies of employees in organizations. The case studies would provide the basis for establishing hypotheses and reliable measures (Eisenhardt, 1989; Luthans & Davis, 1982) for subsequent research: assessment in a qualitative cross-sectional study and rigorous testing of the emergent theory in a series of prospective experiments.

At the behest of the Foundation, the cases would seek answers to questions not addressed by the quantitative research, such as: How do participants view corporate-sponsored meditation? Do they find that meditating yields some benefits that contribute either to a detailed understanding of the business or to an ability to bring progress amidst competitive realities? Do participants change when they meditate? If so, how? Do they note changes in their organizations attributable to changes in themselves? Do individual changes aggregate at the level of groups, teams, or even systems?

This paper summarizes the findings from the first three qualitative case studies undertaken in this research program. The structure of the paper invites the reader to emulate the process of discovery of a new management development approach, Consciousness-Based Management Development.
Background and Methods

To locate active programs and identify a subject pool, management consultants in North America and Europe who utilize the Transcendental Meditation program in their consulting practice were contacted and informed about the research project, and access to their client pool was requested. Responses came from the United States, Canada, Sweden, Norway, Germany, and Great Britain. Sites in Norway, Sweden, and Great Britain were selected to study because these cases of top management teams represented the introduction of meditation into the firm among the firm’s gatekeepers. They were (1) a major Norwegian developer of oil and gas technologies, (2) the British marketing and customer support subsidiary of a Fortune 500 supplier of computer systems, and (3) an international firm based in Sweden that develops computerized energy management and control systems for power networks. Staffed by host nationals of their country, these three cases represent different national cultures, industries and business areas, and different time frames in the intervention process (4 months, 6 months, and 14 months/3 years, respectively).

At the time of the study, Norway’s economy was experiencing a recession, yet the Norwegian firm’s overall financial position was strong. Its contracting business was growing, offsetting difficulties in its product division. The management team, consisting primarily of former engineers, had expanded through the acquisition of new firms. The Managing Director characterized the organization as entrepreneurial, flexible, and profit-oriented, and the management style as “a fairly open and relaxed way of working together.”

The British economy was also experiencing repercussions from the 1987 stock market crash and deregulation in the banking industry at the time of the study. The business world was described as becoming increasingly cautious and many firms were eliminating their training budgets. Just as the project began, the management team of the British firm was enlarged with several new members. The managers, many of whom had started their careers in sales, described their company as aggressive, competitive, and in a constant state of flux.

The third case studied a firm that had, for many years, been one division of Sweden’s largest electrical equipment company. In the late 1980s this Swedish parent merged with one of its rivals to create a
worldwide competitor in power generation, transmission, and distribution. A few years later, the division became one of 15 profit-centers in its business group. In 1989, the year the management team was first contacted regarding the training program described below, its profits ranked low within its family of companies. In 1991, it generated 3% of the total revenues of its business group. By 1994, it ranked as one of the most profitable of the 1500 companies within the new worldwide concern. Like the Norwegian managers, the Swedish team members had their original training in technical areas.

Of the 30 people interviewed, 22 were senior managers responsible for the direction of their profit-center (male, ages 35 to 51 years), two were assistants (female), three were consultants, and three were associates of the consultants.

Open-ended interviews focused on the team members’ experiences with and perceptions of the meditation program in their personal and professional lives. Interviews were conducted in English at corporate offices in June 1992 (Norway and Sweden) and in 1989 before and six months after the intervention (Great Britain). Written reports supplemented and triangulated interview data at two sites (Great Britain and Sweden). In all three cases, interviews were tape recorded with the consent of the respondents, and field notes were written up after the site visits.

The “constant comparative method” of grounded theory (Glaser & Strauss, 1967) was applied to the transcripts from each case site to identify recurring concepts and patterns within the case (Glaser, 1992; Gummesson, 1991) according to two criteria. First, the concepts were minimally abstracted from interview transcripts so that they remained closely based on actual experience. Second, only if the concept was repeated across subjects was it considered valid. Thus, concepts were not imposed on the data but instead allowed the data to give forth its own categories. This is a fundamental principle of the grounded theory method. Once the case studies had been drafted, the original respondents were asked to review the case for their site for factual and interpretative accuracy and completeness. The comments received were integrated into the cases. A second round of coding and analysis across the transcripts was conducted to identify common patterns among the three cases.
Case Studies of Three Top Management Teams

Although the program offered at these three companies involved instruction in the Transcendental Meditation technique and follow-up programs that varied in content, duration, and frequency, the initial presentation of the program differed at each site. In Norway the program was offered and accepted as an innovative team-building tool that would, in the words of the Managing Director, “unite the management group and . . . keep this management group concerned with the totality also.” The British consultants spoke of greater productivity, improved teamwork, and increased profits resulting when managers and employees would meditate regularly, and the program was adopted to test its potential benefits for the organization. In Sweden, the program was offered as a leadership development program to reduce stress, improve relationships, and develop individual consciousness. In retrospect, the Human Resource Manager recalled, “We really didn’t need any more promises than that this technique could be an instrument for stress reduction because stress is such a big problem. Stress blocks people from doing the right things. When you are stressed, you do everything wrong, and you are short with others.”

After initial presentations by the consultants to the management team members, the decision to adopt the program was made in a participative consensual mode by the Norwegian team, on a voluntary basis at the Swedish firm, and unilaterally by the Managing Director at the British site, who sponsored it “because of the strength of my feeling that it is worth doing.” In a decision unique among these three sites, the Norwegian leader invited the spouses of his team members to take part in the course.

Along with professional interest as a reason for adopting the program, managers reported a variety of personal reasons for starting, ranging from curiosity, and desire for personal growth, to willingness to acquiesce to the group’s decision. Initial attitudes about the program included low expectations and high levels of skepticism and/or cynicism.

The degree to which personal concerns were considered legitimate reasons for sponsoring the program as a corporate activity differed at the three sites. For example, the Norwegian company’s management philosophy espoused teamwork as the basis for results and their Managing Director valued personal development as congruent with corpo-
rate goals. In the British firm, the consultants noted the phenomenon of “masking” (Hambrick & Brandon, 1988), justifying personal benefits with corporate benefits, “partly because no one wanted to talk about the need for personal benefits in the meeting except in the most general terms. But when we met them privately, their health and other concerns emerged.”

In each of the cases, instruction in the Transcendental Meditation technique took place in a series of seven steps identical to the seven steps used in courses for the general public (see Marcus, 1977). After learning the technique, the managers were advised to practice it for 20 minutes twice a day, sitting comfortably with eyes closed. They quickly discovered this meant they needed to make time for it on their own, and this meant reconsidering the priorities in their busy lives. Individually, they decided either to adjust their personal routines to accommodate the meditation practice or to adjust the technology by reducing the frequency with which they practiced it. Their enjoyment of the meditation practice, evaluation of results, and feedback from others appeared to influence their establishment of a routine for practicing the technique in the early days of the program.

At the conclusion of the initial follow-up period, a formal evaluation of the program took place. Although the managers were privately and informally evaluating the outcomes of the program from the time they learned to meditate, the formal evaluation gave them an opportunity to reflect on what they had gained from the program and to articulate those thoughts and insights. The respondents emphasized (1) personal outcomes resulting from the program, which are similar to the findings reported in the non-business literature, and (2) systemic development of the management team.

### Benefiting Personally

Table 1 summarizes the personal outcomes reported by the managers at the three sites in terms of six categories: growth of consciousness, cognitive growth, improved health, emotional growth, improved interpersonal relations at work and in the family, and improved task-related behavior. The outcomes “more awake” and “more alert” have been categorized as growth of consciousness because, according to Maharishi, the hallmark of growing consciousness is increased wakefulness: The
"organizing power of anyone depends on the state of his consciousness: dull, drowsy, or clear. A fully alert state of consciousness is the basis of efficient management" (Maharishi Mahesh Yogi, 1993).

Expressions in quotations have been taken directly from interview transcripts. Most of the expressions in the Swedish case come from the evaluation reports prepared 14 months after the managers had begun the Transcendental Meditation program. Four of the original six Swedish managers meditated less frequently than recommended during the first six months after instruction, but even with sporadic practice, they came to the conclusion that the technique was effective. Their skepticism diminished, trust in their consultant grew, and they renegotiated his contract for another six months. During this period, their division was restructured as an autonomous business unit. Their frequency of meditation practice increased during this period, and they completed a second round of evaluation at 14 months.

The table suggests that the outcomes from the Transcendental Meditation technique are cumulative, a pattern which showed up quite clearly in the long-term Swedish case. There, managers perceived an immediate effect within themselves from meditating, but only later noticed how these changes affected other areas of their lives. After six months of occasional practice of the Transcendental Meditation technique, they reported a wide range of personal benefits but only minimal improvements in their activities and relationships. After 14 months of more regular practice, they reported a further increase in personal benefits and substantial improvement in task performance, interpersonal relationships, and team functioning (see Figure 1).

Figure 1. Percentage Affirmative Responses by Category
Reported by Swedish Managers at 6 and 14 Months

Percentage Affirmative Responses (6 categories)
<table>
<thead>
<tr>
<th>Category</th>
<th>Norwegian Engineering (4 months)</th>
<th>British Computer (6 months)</th>
<th>Swedish Energy (14 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth of Consciousness</td>
<td>“more awake” “more alert”</td>
<td>“more alert”</td>
<td>“more awake” more alert</td>
</tr>
<tr>
<td>Cognitive Growth</td>
<td>“more open-minded” “we have developed”</td>
<td>“more perspective” “being better able to concentrate” “thinking clearly” “more thoughtful” “less likely to jump to conclusions” “more philosophical about other people’s shortcomings and my own” “older or wiser” “interested in things more” “more aware of his own needs”</td>
<td>more open-minded easier to concentrate more self-insight and self-confidence more creative more intuitive increased ability to acquire knowledge experience new dimensions “not so stuck in old patterns” “more open and spontaneous” “one thinks over what one is doing”</td>
</tr>
<tr>
<td>Improved Health</td>
<td>“more energy” “less stressed” “more relaxed” “reduced need for sleep” fewer neck pains</td>
<td>“more energy” “less stressed” “more relaxed” “more refreshed” “less tired and fatigued” “looks better” “fewer headaches” “appears to smoke less” “drinking quite a bit less” “taking more exercise”</td>
<td>more energy less stressed more relaxed easier to unwind better recovery from stress less affected by stress “fall asleep more easily” sleep better fewer headaches more aware of health feel better “lessens my need for coffee and alcohol” “feel less pressure”</td>
</tr>
<tr>
<td>Category</td>
<td>Norwegian Engineering (4 months)</td>
<td>British Computer (6 months)</td>
<td>Swedish Energy (14 months)</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Emotional Growth</td>
<td>“more patient” “more positive” “in the family, I was a little more positive” “not feel so disturbed when my children are arguing”</td>
<td>less “latent aggression” “better frame of mind” “less worrying about how I’m perceived” fears “got less” “more assertive” “more laid back” “don’t get so upset” “just taking things more calmly” “more mature” “growing up” “better able to accept myself” “more trying to be what you are rather than trying to change yourself”</td>
<td>more content and harmonious “inner harmony and strength” more tolerance and understanding more honest and direct less irritated better listener “I am less of a threat to the surroundings”</td>
</tr>
<tr>
<td>Improved Interpersonal Relations at Work and in the Family</td>
<td>No data</td>
<td>“he’s more prepared to listen and consider other views” “more time for people” “wasn’t so pushy” “far less arrogant” “going less for the confrontation approach” “less demanding” “less controlling” “more likeable” “more tolerant” “people have been a bit more responsive” “easier to put themselves in his shoes”</td>
<td>improved relationships fewer conflicts with colleagues better relations with family better family life</td>
</tr>
</tbody>
</table>
The data indicate that the growth experienced by managers practicing the Transcendental Meditation program, even within a four to six-month period, is multivariate in nature. It reflects a balancing of seemingly contradictory behaviors, or “diametrical development” (Swanson & Oates, 1989). For example, the British respondents reported becoming “more thoughtful” but “less worried,” “more calm” yet more energetic, and “more decisive” and “critical” but simultaneously “more tolerant.” They found themselves becoming “less aggressive,” and less confrontational, yet also “more assertive.” They were “less controlling” but “more in control” and “less emotional” but more able to handle their feelings. Managers at all three sites reported becoming more objective about their tasks and simultaneously more considerate of others. The Swedish case suggests that over the long-term, the Transcendental Meditation program fosters essential leadership skills,
including self-awareness, comprehension of the viewpoints of others, systemic thinking, innovative problem-solving, and proactive behavior. The significance of these individual changes are discussed below in terms of team functioning.

The process of summing up the benefits they had gained from practicing the Transcendental Meditation technique served as a process of personal validation of the program. As one Swedish manager commented, “If you are satisfied with the results, you are satisfied with the whole thing.”

**Building the Management Team**

Managers at all three sites reported similar changes in their teams after beginning the Transcendental Meditation program. In each case, team processes developed, and the teams simultaneously became more effective in task accomplishment. Table 2 presents a representative quote from each site for each of the eight categories of team changes listed in the table: improved communication, increased awareness of company and team needs and values, fewer arguments, move to fact-based decision-making, increased mutual acceptance, greater trust and openness, greater happiness, and greater cohesiveness and alignment.

It is interesting to note that the changes in the team functioning were similar across sites despite marked contrasts in team styles at the start of the programs. For example, in the Norwegian and British teams, there were important differences in internal team structures, communication styles, and leader-member relations. The Norwegian leader fostered an atmosphere of open communication that emphasized dialogue; he encouraged the expression of diverse opinions and sought ways to make the team more cohesive. By contrast, the British leader preferred to make unilateral decisions, appeared to discourage in-depth discussion of issues, maintained a clique structure, and seemed unaware of how his personal style limited the development of the team.

The long-term perspective of the Swedish case suggests that the inner growth the managers experienced through their practice of the Transcendental Meditation technique enabled them to meet challenges in their work in ways not previously possible for them. At the 3-year interviews, the managers reported on their experience of developing a new quality management program. They describe how their attitudes
### Table 2. Summary of Team Outcomes Reported Across Three Cases

<table>
<thead>
<tr>
<th>Team Outcome Category</th>
<th>Norwegian Engineering (4 months)</th>
<th>British Computer (6 months)</th>
<th>Swedish Energy (3 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Communication</td>
<td>“it’s easier to talk about different things”</td>
<td>“talking together and producing a consensus”</td>
<td>“we found a way of not blaming each other”</td>
</tr>
<tr>
<td>Increased Awareness of Company and Team Needs and Values</td>
<td>No data</td>
<td>“frustrations of the format and structure are apparent to more of us”</td>
<td>“more conscious about what is happening”</td>
</tr>
<tr>
<td>Fewer Arguments</td>
<td>“we are listening more to the others without just arguing”</td>
<td>“less polarized, less likely to take defensive-aggressive positions”</td>
<td>“not fighting so much between departments”</td>
</tr>
<tr>
<td>Move to Fact-Based Decision-Making</td>
<td>“we are more in control of our emotions”</td>
<td>“little less illogical discussion”</td>
<td>“decisions are oriented to subject matter”</td>
</tr>
<tr>
<td>Increased Mutual Acceptance</td>
<td>“we know each other better”</td>
<td>“more support for each other”</td>
<td>“you get more acceptance about your ideas and you accept the other ideas more”</td>
</tr>
<tr>
<td>Greater Trust and Openness</td>
<td>“our discussions are open and free to experience”</td>
<td>“more receptive to the changes”</td>
<td>“we are rather open to other ideas, at least enough to listen”</td>
</tr>
<tr>
<td>Greater Happiness</td>
<td>“in general it’s a good mood”</td>
<td>“less tension in the air”</td>
<td>“friendlier tone in the group”</td>
</tr>
<tr>
<td>Greater Cohesiveness and Alignment</td>
<td>“we are more together as a team”</td>
<td>“more collective feeling in the group”</td>
<td>“working better as a team, not as 6 or 7 or 8 individuals”</td>
</tr>
</tbody>
</table>

had gradually shifted from the concerns associated with narrowly conceived functional specialties to attitudes of systemic thinking and openness to others and how their interactions previously characterized by blaming, had shifted to behaviors expressive of self-awareness, creativity, and initiative. When queried, they thought their practice of the Transcendental Meditation technique might have affected these team processes “indirectly.” Examples follow.

The quality manager explained, “One very important thing is that we are able to talk to each other, even if we have very different opin-
ions. That means that somehow we are rather open to other ideas, at least open enough to listen. Even if we fight against new ideas, then we listen, I think.” He laughed as he concluded, “You never think of yourself as being very rigid or having difficulty to change your mind.” He noted that meditating led to increased rationality. “If the others in the group are having the same experience as I have, if they suffer less from stress, I think that will make them more able to look at things logically. Because stress definitely blocks logical thinking.”

The president noted that attitude changes in the direction of increased open-mindedness and decreased defensiveness enabled the group to function more effectively; team members had ceased to focus on self-protection and had started thinking more comprehensively in terms of solutions for the company as a whole. “I think it was other members of the group who took part in the process in a different way because they had become more open-minded. They understood that they had also quality problems, and so on.” He chuckled as he described the dynamics in the team. “It was not only them pointing at Mr. R&D, but also discussing their own problems. And then I think it was much easier also for Mr. R&D to take part in this and start looking at his problems, because the others wanted to solve their problems. Then it became a different situation for the whole group.” He considered the role of the Transcendental Meditation program in fostering the new attitudes.

Maybe Transcendental Meditation played a role because most of the other managers at least are fairly regular. Practicing Transcendental Meditation helps increase your self-confidence, and when you are more confident then you don’t have the need to point at the other people to protect yourself. You can admit, ‘I have problems. I have to fix them.’ You can say, ‘You fix your problems, I fix mine.’ It seems that this attitude was new. And it seems this was the key.

These changes in team processes were reported in each of the teams, even by managers who ostensibly were not committed to the course and therefore had no reason to be biased in favor of its efficacy. The team processes also appear to have occurred irrespective of the team-facilitation skills of the leader or the consultants.

---

1 With one exception: the Norwegians did not talk about changes in their awareness of company and team needs or values.
Emergent Hypotheses

The following hypotheses regarding management and team development emerged from the cases.

1. Managers who regularly practice the Transcendental Meditation technique are more likely to develop in a holistic way that would be indicated by comprehensive change in a balanced way across the various levels of cognitive and personality functions as compared to managers who do not practice the Transcendental Meditation technique. Therefore measures could be made regarding changes in mental functioning, health and health-related habits, emotional development, relations at work, managerial task performance, enjoyment of family life, and cognitive, emotional, and social maturation (see Table 1).

2. Managers do not require strong initial motivation or expectations for these results to take place. However, at least a minimal level of initial interest may be necessary for managers to be willing to practice the technique (i.e., managers should not be coerced into participating).

3. In today’s corporate climate, reorganization is an almost constant phenomenon. It is predicted that managers who are regularly practicing the Transcendental Meditation technique will be less likely to be adversely affected by reorganization than managers who are not practicing the Transcendental Meditation technique, regardless of how their positions in the job hierarchy and their relationships are affected by the reorganization.

4. Top management teams where individual members regularly practice the Transcendental Meditation technique will be more likely to develop team qualities in the direction of greater trust, openness, mutual acceptance, coherence and alignment, team spirit resulting in fewer arguments, a move to fact-based decision-making, increased awareness of company and team needs and values, improved team communication, and greater team effectiveness (see Table 2). This progress will take place regardless of the leadership style of the team leader or the consultant’s facilitation skills.
Consciousness-Based Management Development

In today’s turbulent business world, management development, the continued enhancement of managerial skills and knowledge beyond that obtained in formal degree programs, needs to enable managers to transform their organizations. It needs to enable managers to deal with the daily challenges of new markets, new technologies, new sources of competition, new structures, and smaller, leaner sizes. Case studies of the top management teams of three Northern European companies indicate that a new approach to management development is emerging, one that develops the consciousness of the manager as the key to managerial effectiveness.

Management development has three basic elements. The first, and probably most familiar element, is the content or knowledge that a manager knows, or should know. Focusing on this ever-expanding knowledge base may be categorized as the objective approach to management development. The management skills that a well-developed manager has mastered, or should master represent the second element of management development; they are the manager’s essential processes of knowing and doing. The third element is the manager, the knower and actor who uses the knowledge and employs the skills to make decisions and take action for the progress of the business. We may call this the subjective aspect of management development. Together these three—knower, known, and processes of knowing—constitute the basic elements of management development.

In the past, the “smorgasbord” of management development approaches has focused either on the objective approach, the delivery of information to develop knowledge, or on developing behavioral skills, the processes of managing. The knower, the most fundamental aspect of management development, has been overlooked. This oversight has led to incompleteness and ineffectiveness in management development.

The management team cases reported in this article suggest that a reliable procedure is now available that allows managers to access the latent capacities of the knower within the deepest levels of mind. This approach is identified in this paper as Consciousness-Based Management Development. Consciousness, or the degree of wakefulness of the mind, is the basis of thinking, and the ability to think clearly, comprehensively, and profoundly is the basis for success in a manager’s activ-
CoNsciousNess-Based management Development

ity (Maharishi Mahesh Yogi, 1995). The cases suggest that the key to improved managerial performance is the experience of the restfully alert state of Transcendental Consciousness, the most settled state of awareness.

The managers in these companies reported how the experience of transcending their customary mental activities for 20 minutes twice a day led to increased alertness, wakefulness, and clarity of thinking during the rest of the day. They reported becoming more aware of what was going on around them, more alert to the needs of their companies, even more awake in their meetings. This cognitive growth appears to fulfill the need, identified by Porter & McKibben (1988, p. 225) in their comprehensive study, for management development to develop “greater breadth of perspective and outlook” in managers.

This increased awareness led the British managers to become aware of the needs for improvement in their own management team. This recognition of the gap between their desired state and their current performance represents the “unfreezing” that signifies the first step of any organizational change process (Lewin, 1947), and is often a major goal of any consulting effort. Since the British consultants refrained from applying their knowledge of consciousness to business in any normative way, the changes that the managers reported could not have been based on any theories, standards or goals set by the consultants. The lack of discussion of business-related significance of the Transcendental Meditation program at this site gives greater confidence that the work-related implications the managers expressed were their own observations and insights, and resulted as the natural by-product of their growing alertness and wakefulness from their meditation practice.

However, the effects of Consciousness-Based Management Development are not limited to the cognitive realm; they also affect the physical body. The British and Scandinavian managers reported increased energy, greater resiliency in stressful situations, and improvements in their physical and mental health from the deep rest provided by the Transcendental Meditation program. Their subjective experiences thus corroborate the findings reported in the U.S.A. and South Africa on the effects of the Transcendental Meditation program in reducing workplace stress. Thus, this approach to management development appears to meet one of the great needs of modern managers—the elimination of
the medical, psychological and behavioral health problems associated with stress (Quick, Horn, & Quick, 1986).

Consciousness-Based Management Development also appears to improve management skills. The integration of seemingly opposing characteristics described in the cases are signs of the balanced maturation characteristic of higher stages of human development identified by developmental psychologists (Alexander et al., 1990; Kegan, 1994; Loevinger, 1976). The practical significance to managerial performance of such skills has been identified by a number of writers on management and leadership, including Harung, Heaton, and Alexander (1996), Quinn (1988), Torbert (1986), and Weathersby (1993).

Furthermore, Consciousness-Based Management Development appears to have effects that extend beyond the individual level to the collective level of the management team. The combination of increased clarity and reduced stress seems to create a situation in which interpersonal relations, the second major area of need in management development identified by Porter and McKibben (1988, p. 225), spontaneously improve. Table 3 summarizes the changes reported in the cases according to a model of the human mind derived from Vedic psychology (Maharishi Mahesh Yogi, 1972; Alexander et al., 1990).

The use of this model not only shows the pervasive range of the effects of Consciousness-Based Management Development, it also highlights the parallels between the changes at the individual and team levels.

Given the physiological and psychological changes summarized above, it is not surprising that managers reported becoming spontaneously more effective in fulfilling their tasks and roles, including their roles within the team. The behavioral changes, such as building trust and acceptance, improving communication, and resolving conflicts in positive ways, and improved task accomplishment reported across the sites are goals of team-building efforts (Dyer, 1987; Phillips & Elledge, 1989; Porras & Hoffer, 1986). These findings suggest that Consciousness-Based Management Development may serve as a useful tool for developing teamwork among top managers.

A lingering question in the minds of business leaders is whether the results reported in the general literature will generalize to the business community. The personal results from the narrative reports of the man-
**Table 3. Parallels Between Individual and Team Level Outcomes**

<table>
<thead>
<tr>
<th>Aspect of Personality</th>
<th>Individual Level Outcome</th>
<th>Team Level Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship to Social Environment</td>
<td>Improved work and family relations</td>
<td>Improved team relations</td>
</tr>
<tr>
<td>Actions</td>
<td>Increased efficiency</td>
<td>Improved communication</td>
</tr>
<tr>
<td></td>
<td>Improved communication skills</td>
<td>Improved team accomplishment</td>
</tr>
<tr>
<td>Body</td>
<td>Increased energy</td>
<td>(Recognition of team composition and roles)</td>
</tr>
<tr>
<td></td>
<td>More restful sleep</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fewer health complaints</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reduced consumption of alcohol and cigarettes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased interest in healthful habits</td>
<td></td>
</tr>
<tr>
<td>Senses</td>
<td>New interests and tastes</td>
<td>Increased awareness of company needs and values</td>
</tr>
<tr>
<td></td>
<td>Greater alertness</td>
<td></td>
</tr>
<tr>
<td>Mind</td>
<td>Greater wakefulness</td>
<td>Fewer arguments</td>
</tr>
<tr>
<td></td>
<td>Increased mental clarity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improved concentration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Easier acknowledgment of diversity</td>
<td></td>
</tr>
<tr>
<td>Intellect</td>
<td>Improved decision-making</td>
<td>Move to fact-based decision making</td>
</tr>
<tr>
<td></td>
<td>Improved prioritizing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improved analytical skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased organizing ability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased ability to reflect</td>
<td></td>
</tr>
<tr>
<td>Feeling and Intuition</td>
<td>Reduced fear</td>
<td>Greater trust and openness</td>
</tr>
<tr>
<td></td>
<td>Reduced negative emotions</td>
<td>Greater supportiveness</td>
</tr>
<tr>
<td></td>
<td>Increased positivity</td>
<td>Greater happiness</td>
</tr>
<tr>
<td></td>
<td>Enhanced creativity and intuition</td>
<td>Increased desire for improvement</td>
</tr>
<tr>
<td>Ego</td>
<td>Enhanced sense of identity</td>
<td>Increased mutual acceptance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improved team identity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Greater cohesiveness and alignment</td>
</tr>
</tbody>
</table>

Managers are consistent with quantitative research findings on the effects of the Transcendental Meditation program in the general population and in business settings. Finding the same benefits expressed in the managers’ own words confirms their meaningfulness for the business community and lends support to the applicability of the Transcendental-
mental Meditation program in the workplace. The directors spontaneously expressed their experiences in these interviews. Their responses were made without specific elicitation, not in response to fixed choice questionnaires. The case thus indicates that the two rather different investigative approaches—quantitative hypothesis-testing and qualitative theory-generating—mutually support each other, yielding similar insights into the effects of the Transcendental Meditation program.

The broad effects are explained by a “grand theory” that holds that Transcendental Consciousness, the non-localized, unified field of consciousness available at the most settled state of the manager’s mind, is the most basic level of individual and collective existence (Maharishi Mahesh Yogi, 1995), deeper even than the aspects of personality outlined on Table 3. This abstract field of pure awareness has been equated with the unified field of natural law, the managing intelligence of nature (Maharishi Mahesh Yogi, 1995; see also Hagelin, 1998). This field is described as a level of nature even deeper than that which gives rise to cultural values (Maharishi Mahesh Yogi, 1995; see also Broekstra, 1998), hence its applicability in different cultural settings. Experiencing the holistic value of natural law in Transcendental Consciousness is said to bring the support of natural law into any manager’s responsibilities and actions:

The advantage of maintaining the liveliness of Natural Law in the awareness of the manager is that the holistic value of Natural Law and the specific values of different Laws of Nature spontaneously remain lively in the manager’s emotions, his thoughts, his logic, his decisions, and his behavior—Natural Law gets spontaneously woven into the fabrics of all the different areas of the manager’s concern (financing, marketing, etc.) and makes management really complete and effective. There is no shadow of weakness in the whole range of the manager’s responsibility (Maharishi Mahesh Yogi, 1995, pp. 19–20).

The work reported here suggests that Consciousness-Based Management Development merits adoption by other top management teams to enhance and complement other, more familiar management development efforts. The findings from these international cases can be extended through further qualitative research and empirical testing of the hypotheses presented in this article.
References


DeArmond, D.L. (1996). Effects of the Transcendental Meditation program on psychological, physiological, behavioral and organi-


This article “Consciousness-Based Management Development: Case Studies of International Top Management Teams” by Jane Schmidt-Wilk, Ph.D., here revised/updated, and reprinted with permission, was originally published in *Journal of Transnational Management Development, 2000, 5*(3), 61–85.
Peak Performance
and Higher States of Consciousness:
A Study of World-Class Performers

Harald S. Harung, Ph.D.
Dennis P. Heaton, Ed.D.
William W. Graff, M.A., M.B.A.
Charles N. Alexander, Ph.D.
ABOUT THE AUTHORS

Harald S. Harung, Ph.D. is Associate Professor at Oslo University College, Norway, teaching management and ethics. He is chairman and president of the Foundation for Maharishi Vedic Education, Norway (higher consciousness-based education); president of Harvest AS, Oslo, Norway (investment, consultancy, and real estate development); and business director of Brain Integration Systems, LLC, Fairfield, Iowa, USA (psychophysiological performance capacity appraisal). Previous publications focused on leadership and peak individual and organizational performance and include the book *Invincible Leadership* (MUM Press, USA, and Euromedia, The Czech Republic).

Dennis P. Heaton, Ed.D. is Professor of Management, Co-Director of the Ph.D. Program in Management, and Dean of Distance Education and International Programs at Maharishi University of Management in Fairfield, Iowa. His previous publications include articles and invited chapters on management education, leadership, ethics, higher stages of development, and peak performance. He has been directing Ph.D. students’ research in such areas as the effects of green buildings on human resources, consumer attitudes toward genetically modified food, moral development and ethical decision-making in accountants, the financial impact of environmental management systems, and Maharishi Mahesh Yogi’s program to eliminate poverty.

William W. Graff, M.A., M.B.A., is Assistant Professor of Accounting at Maharishi University of Management in Fairfield, Iowa, and is a Certified Public Accountant and Certified Management Accountant. He has been Program Director of M.U.M.’s international program site in Beijing, China. He is currently completing a Ph.D. dissertation on the impact of Consciousness Based Education on the holistic development of Chinese undergraduate students.

Dr. Charles “Skip” Alexander, Ph.D., (1950–1998), showed theoretically that the four higher states of consciousness described by Maharishi’s Vedic psychology logically extend the developmental sequence delineated by 20th century psychology. His empirical research found that the Transcendental Meditation technique provides the direct experience
of Transcendental Consciousness (the first higher state, which is the silent basis of the mind) and that this practice accelerates development in children, “unfreezes” development in prison inmates, advances ego development in adults, increases productivity in businesses, decreases blood pressure, increases longevity, effectively treats substance abuse, and reduces prison recidivism. Skip and colleagues were the first to discover the EEG signature of Cosmic Consciousness (the second higher state), and he showed that developmental advances in individuals impact the larger society via a common field of collective consciousness, including decreasing armed conflicts and improving the quality of life.

**ABSTRACT**

This paper investigates the effect of higher stages of human development on improving performance. We argue that the developmental stage of the individual determines, in a very fundamental way, the contribution his or her performance can make. Actualizing higher development has positive implications for the performance of the individual and the organization. Therefore, procedures which systematically cultivate human maturation can unfold performance potential.

Two ranges of human development will be examined. In the first section we consider stages of psychological development from western psychology and management. Harung and Heaton [1] have described how unfolding higher stages of psychological development can be the basis for improving the productivity of knowledge workers. The first section of this paper will review and extend this further. The remaining sections of this paper will describe higher states of consciousness from Maharishi Vedic Psychology [2, 3]. This advanced range is a natural continuation of the psychological development described in contemporary social science—dramatically extending this development into the domain of sustainable peak performance.

**Ordinary Developmental Range**

According to Drucker [4, p. 95], “the people who do make the difference” for productivity in the developed countries are the growing number of knowledge and service workers. In fact, Drucker [5] estimates that now such people account for three-quar-
ters (if not four-fifths) of the workforce in all developed countries (p. 75), and that by the year 2010 non-manual workers will constitute 90 percent or above of the workforce (p. 36). Yet, stagnant productivity among such workers remains a major challenge in these countries. For instance, despite hundreds of billions of dollars spent annually in the USA on computers and related technologies to improve the productivity of individuals and groups, the National Research Council [6] concludes that there has been no measurable impact on productivity. The council has termed this the “productivity paradox.”

Drucker [5, p. 75] is in agreement with the National Research Council when he writes that productivity of service workers and knowledge workers is “abysmally low.” In fact, he claims that in many areas the productivity of non-manual workers is actually going down, e.g. clerical work, salespeople, engineers, and teachers. Drucker (p. 76) goes on to write: “Unless we learn how to increase the productivity of knowledge workers and service workers, and increase it fast, the developed countries therefore face economic stagnation and severe social tension.” In this paper we will focus on improving the performance of knowledge workers and service workers, since this is what matters most in today’s economy. It should, however, be noted that human development will also be beneficial for the productivity and quality of manual work.

Harung and Heaton [1] present evidence of distinct stages of psychological development and behavioral differences associated with each stage. They argue that developmental shifts would fundamentally enhance a person’s capacity for productivity. There are several alternative, but similar developmental models (e.g. [7, 8]). For simplicity we will describe only Loevinger’s model as adopted for the business world by Torbert [9]. Table I shows Torbert’s name and description for each stage. The middle column summarizes his findings in six studies involving some 500 managers.

Developmental stages [7, 8] entail the whole personality, including character development, moral development, social development, impulse control, cognitive complexity, and self-concept. At different stages of development, Performance and higher states of consciousness, one cognitively relates to the world and socially relates to other people in distinct and recognizable ways, as is evident from Table I. Generally,
there is little change in one’s stage of psychological development after adolescence.

**Table 1: Torbert’s Descriptions of Developmental Stages**

<table>
<thead>
<tr>
<th>Stage name</th>
<th>% at stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunistic</td>
<td>2</td>
<td>Short-time horizon, concrete things; fragile self-control; hostile humor; externalizes blame; rejects feedback</td>
</tr>
<tr>
<td>Diplomatic</td>
<td>8</td>
<td>Conforms with rules and group norms; thinks in stereotypes; suppresses own desire; seeks membership and status</td>
</tr>
<tr>
<td>Technician</td>
<td>45</td>
<td>Interest in problem solving; efficiency over effectiveness; perfectionist; evaluates self, others, and world based on craft logic; ambivalent about receiving feedback; has longer time horizon</td>
</tr>
<tr>
<td>Achiever</td>
<td>36</td>
<td>Results-oriented; longer-term goals; initiative; inspiration; respects individual differences; seeks mutuality rather than hierarchy in relationships; open to feedback</td>
</tr>
<tr>
<td>Strategist</td>
<td>9</td>
<td>Ability to reframe situations and define new goals, i.e. path finding; views the situation independently; role flexibility; creative conflict resolution; concern with total organization in the environment; aware of paradox and contradiction; empowers others</td>
</tr>
</tbody>
</table>

A diplomat’s guiding frame is in the social context of the immediate group; this developmental position is characteristic of teenagers [9]. The diplomat is identified with others’ expectations. Most late teens or early adults transform to technicians. A technician’s frame has shifted from the expectations of others, which are found to be multiple and conflicting, to dedication to the “craft logic” of a single field of endeavor, e.g.
engineering, accounting, marketing. Table I shows that technician is the most common developmental position among adult professionals.

The next and second most common stage is the achiever, whose identity is tied to meeting goals. The limiting frame of this stage is the implementation of an existing strategy, rather than the identification of more value-adding goals and the creation of new, more productive systems. At the strategist stage a person ceases to take the frame of the existing social system for granted and becomes interested in what a best structure would be. The improvement of performance at this stage involves recognition that there may not only be a need to change actions, but that a change of goals, structures, and human values may also be needed.

Beyond the strategist stage, Torbert [9] conceived of the possibility of higher development, found in rare individuals. Loevinger [7] has a more mature stage which she denotes integrated, corresponding to Maslow’s [10] self-actualization. Cook-Greuter [11, p. 124], based on tests on over 3,000 subjects, concluded that less than one percent of the tested population has reached this advanced stage of self-development.

The significance for performance of development from the technician stage to the strategist stage and beyond can be summarized as follows [9]:

- from fragmented understanding to more unified comprehension and a “superior perception of reality” [10, p. 26]
- from short term to long term
- from reactive to proactive and preventive
- from the perspective of a functional specialty (craft logic) to the perspective of effectiveness of the overall system
- from win-lose to win-win interpersonal strategies
- from a fragile sense of satisfaction depending on outer objects to an inner, stable state of happiness and self-sufficiency
- from dependence to functional autonomy
- from path following to path finding
- from conventional to post-conventional
Because knowledge workers have control over the direction, content, methods, and quality of their work, they now have responsibility for managing their own effectiveness. To be effective today, knowledge workers must be ready to rethink continuously the processes, priorities, and goals of their own work and that of their organization as a whole. However, research has found that a vantage point from which one can rethink goals is not available until one reaches the strategist stage, which currently is reached by only around nine percent of adults (Table I).

The significance of developmental stages to behavior in organizations is receiving increasing appreciation. New forms of organization entail expectations that organizational members will function not only with greater personal autonomy, as seen above, but also at the same time with more genuine collaboration—both of which are characteristics of relatively advanced development. In his book, *In over Our Heads: The Mental Demands of Modern Life*, Kegan [8] has pointed out that these behaviors are beyond the capacity of many adults at their current levels of development. The expectations that workers will be self-initiating and self-correcting and able to “conceive of the whole organization,” Kegan explains, demands not merely skills which can be taught but also a qualitative reordering of mental complexity. In a similar vein, Torbert [9] has explained how organizational initiatives for continuous learning and quality improvement cannot be fully implemented without fundamental personal transformation.

Development stages have implications, as well, for peak performance. Characteristics of peak performers in business have been observed by psychologist Charles Garfield [12]. These include an internal source of direction and value, capacities of self-management and team building, ability to correct course, and cognition, which integrates opposites, including macro and micro perspectives. It is striking to note that these are just the same qualities which unfold in higher stages of psychological development [7, 10]. Although Garfield seems to suggest that these qualities can be adopted by individuals who assume a motivated attitude, in reality they are by their nature not merely “a new set of skills to be ‘put in’ but a new threshold of consciousness” [8, p. 165], (italics in original).
Maslow observed that personal transformations towards higher stages of psychological development could be triggered by what he called peak experiences. These moments were said to involve holistic cognition, resolution of polarities or conflicts and transcendence of ordinary time and space, accompanied by feelings of bliss and wonder [10, pp. 249–53]. He referred to these experiences as peaks because they are valued as moments of high elevation and deep inspiration clearly set apart from ordinary life. Such experiences can restructure the individual’s knowledge of oneself and the world, bringing about a higher stage of development, and enhance feelings of well-being. One effect of such experiences is to transform the individual from deficiency motives (feelings of lack in the individual) towards “being” motives (higher values such as truth, beauty and justice). Maslow observed, as well, that greater regularity of peak experiences was characteristic of exceptionally developed individuals whom he called “self-actualizers.”

Contemporary western psychology and management have lacked knowledge of how peak performance, even temporarily, could be produced at will. The next section will introduce the concept of higher states of consciousness—further stages of development in which sustained peak performance can become a reality. The research presented below indicates that these higher states of consciousness are essential to explain the inner dimension of world-class performance.

**Upper Developmental Range**

**Higher states of consciousness described by Maharishi Vedic Psychology**

In the East there are long traditions of techniques of meditation to cultivate advanced human development. In particular, the Vedic tradition of India represents the most ancient and extensive knowledge about consciousness and techniques for its development [13] although the practicality of this knowledge to enhance our quality of life and performance has largely been lost and/or misinterpreted.

Vedic knowledge has been recently brought to light and systematized by Maharishi Mahesh Yogi [2, 3] in a clearly delineated theory of higher states of consciousness, which extend the range of human development as commonly understood in western psychology. Figure 1 gives an overview of the range of modern psychology compared with
the range of Maharishi Vedic Psychology. Self-identity, in the range of modern psychology, is based on a mental conception of oneself. In conventional stages, one’s identity is socially derived from the expectations of others. At the more mature post-conventional stages of development, one’s identity is more individually constructed. Yet, in both cases, from the perspective of Maharishi Vedic Psychology, one has still not realized the full reality of who one is. The range of higher states of consciousness in Maharishi Vedic Psychology is based on direct experience of self which transcends mental conceptions.

**Figure 1. Overview of Modern Psychology Compared with Maharishi Vedic Psychology**

<table>
<thead>
<tr>
<th>Range of Vedic Psychology</th>
<th>Developmental stage</th>
<th>Implications of identity and performance</th>
</tr>
</thead>
</table>
|                           | Conventional, e.g. technician | Socially derived identity  
Follows initiative of others  
Limited capacity for performance |
|                           | Post-conventional, e.g. strategist | Identity based on individuated self  
Performs from own initiative  
Good capacity for performance  
Possible glimpses of peak performance within narrow domain of activity |
|                           | Higher states of consciousness | Identity based on Transcendental Consciousness or Self  
Sustainable and general peak performance in accordance with natural law |

The Vedic tradition contains standardized procedures to unfold higher states of consciousness practically. The principal procedure of Maharishi Vedic Psychology is the Transcendental Meditation technique, which is described as an effortless procedure for allowing active
awareness gradually to settle down so that a silent, unbounded and unified state of Transcendental Consciousness can be directly experienced.

Research findings suggest that the systematic cultivation of Transcendental Consciousness through practice of the Transcendental Meditation technique has catalyzed advanced stages of psychological development. A ten-year longitudinal study [14, 15] found shifts to the highest stages of self-development as defined in western psychology [7]. No advances were found in three matched control groups followed over the same ten-year period. Approximately 40 percent of the experimental group had achieved the endpoint of psychological development—corresponding to Maslow’s self-actualization—compared with one percent in the control groups. Systematic transcendence has also been associated in a number of studies with growth of self-actualization (for a statistical meta-analysis and comparison of meditation techniques see Alexander et al. [16]. The developmental effects of the Transcendental Meditation program are further indicated by the following findings: decreased anxiety, job tension and fatigue; and improvements in practical intelligence, moral development, positive affect, self-esteem, employee effectiveness, and job satisfaction (for further details, please refer to [17, 18]).

Western psychology has concerned itself with the three familiar states of consciousness: waking, dreaming and sleeping. In fact, the entire developmental range of modern psychology consists of sub stages within the waking state of consciousness. A few developmental psychologists in the West (e.g. [10, 11]) have glimpsed a growth potential beyond this common range. However, they appear to have lumped together, in less specific concepts, several elevated states of awareness. Maharishi Vedic Psychology [3, 19] clearly describes four sequential higher states of consciousness in this upper developmental range.

Descriptions of the first two of these higher states of consciousness provided the basis for a brief questionnaire in a field study to examine the possible relationship between world-class performance and higher states of consciousness [20].

The first higher state is Transcendental Consciousness, a state of restful alertness or silent wakefulness. Maharishi Vedic Psychology describes it as “a state of inner wakefulness with no object of thought or perception, just pure consciousness aware of its own unbounded nature.
It is wholeness, aware of itself, devoid of differences, beyond the divi-
sion of subject and object” [21, p. 123]. An illustrative experience of
Transcendental Consciousness during the practice of the Transcenden-
tal Meditation technique was recorded in Mason et al. [22]:

My mind is not moving, I don't feel like I am breathing . . . Everything
is standing still, but at the same time, I know then I am awake and alert.
I feel deeply relaxed and at peace with myself.

Transcendental Consciousness is described as a natural state of
awareness, intrinsically available to all human beings. Whereas the
Transcendental Meditation technique allows the mind to experience
it systematically, there is evidence and certainly recorded instances of
spontaneous experiences of this higher state of Performance through-
out history. An example of a spontaneously occurring Transcendental
Consciousness experience was given by the British poet Alfred Lord
Tennyson:

All at once, as if it were out of the intensity of the consciousness of
individuality, the Individuality itself seemed to dissolve and fade away
into boundless being, and this not a confused state, but the clearest of
the clearest, the surest of the surest . . . utterly beyond words. [23, p.268]

Not only poets but also leading scientists, such as Einstein, Kepler,
Maxwell [24] and Schrödinger [25] have written of such experiences
with equal eloquence [26]. Although all these individuals indicate that
these experiences transformed their understanding of reality, in the
absence of a systematic means for its induction, none was able to main-
tain it on a permanent basis.

The next higher state is called Cosmic Consciousness because it is
inclusive of a continuum of Transcendental Consciousness together
with the changing states of waking, sleeping, and dreaming. Alexander
et al. [15] have analyzed how this stable higher state of conscious-
ness meets the criteria of a stage that extends development beyond the
range of stages generally observed by western psychologists. In Cosmic
Consciousness the silent wakefulness of Transcendental Consciousness
is integrated with active living. Through repeated experience of Tran-
scendental Consciousness one’s sense of “who I am” becomes primar-
ily situated in pure consciousness, which Maharishi Vedic Psychology
calls the Self. Thus one's identity is no longer attached to one's thoughts, feelings, and behavior:

The activity assumed by an ignorant man to belong to himself—to the subjective personality that he calls himself—does not belong to his real Self, for this, in its essential nature, is beyond activity. The Self, in its real nature, is only the silent witness of everything. [27, p. 98]

Transcendental Consciousness is “the most balanced state of life . . . a field of all possibilities, which gives rise only to perfectly orderly and coherent thoughts” [27, p. 98]. The integration of that state with activity leads to “the minimum amount of energy expended and with the maximum amount of work achieved; . . . the least strain and the maximum amount of gain to the doer and to the surroundings” [19, p. 151]. In the analysis of physicist John Hagelin and Herriott [28] Transcendental Consciousness has properties identical with the unified field of natural law underlying physical creation; thus experience of this state aligns the mind of the individual with the holistic functioning of natural law. Action in Cosmic Consciousness thereby takes on the same high degree of efficiency that is seen in the functioning of nature, which always follows the principle of least action. Action is also said to become spontaneous right action, “which produces life-supporting effects for the doer and the entire creation, action which helps the evolution of the individual and simultaneously serves the cosmic purpose” [2, p. 276].

One of the greatest tennis players in the history of the sport, Billie Jean King, reports the following experience suggestive of a glimpse of the state of Cosmic Consciousness:

It almost seems as though I’m able to transport myself beyond the turmoil on the court to some place of total peace and calm. Perfect shots extend into perfect matches. . . . I appreciate what my opponent is doing in a detached abstract way. Like an observer in the next room. . . . It is a perfect combination of [intense] action taking place in an atmosphere of total tranquillity. When it happens I want to stop the match and grab the microphone and shout, “that’s what it’s all about,” because it is. It’s not the big prize I’m going to win at the end of the match or anything else. [29, p. 199]
Characteristics of Transcendental Consciousness coexisting with activity are indicated by words such as “beyond the turmoil on the court” in “some place of total peace and calm” and “total tranquility.” Even though she is performing with great dynamism, she feels “detached” from the field of action “like an observer in the next room.” Consistent with the predicted association of spontaneous right action with the growth of Cosmic Consciousness, her play is perfect: “perfect shots extend into perfect matches . . . perfect combination of action taking place in an atmosphere of total tranquility.”

Not only world-class athletes, but also leading composers such as Bach, Beethoven, Mozart, and Brahms, and renowned leaders of society such as Vaclav Havel (Czech Republic) and Anwar el Sadat (Egypt) talk about the great significance that glimpses of higher states of consciousness had for their performance [26].

The states of Transcendental Consciousness and Cosmic Consciousness have been studied scientifically, in terms of their physiological and psychological correlates. Since spontaneous occurrences of these states are rare, the research has been performed primarily on practitioners of the Transcendental Meditation technique. Transcendental Consciousness is a physiological state of “restful alertness” that can be distinguished from the aroused alertness characteristic of waking and the more inert states of dreaming and deep sleep. Indicators of deep rest during transcendence include decreases in respiration rate, skin conductance level, and blood lactate, which is greater than those found during simple rest with eyes closed [30]. Research on experiences of Transcendental Consciousness during the Transcendental Meditation program found that these experiences correlated highly with both virtual respiratory suspension (indicating deep rest) and elevated alpha EEG (electroencephalography) coherence in the brain (an indicator of neurophysiologic integration and enhanced wakefulness) [31].

Physiological indicators of growing Cosmic Consciousness include: significantly lower resting baselines of spontaneous galvanic skin response (a measure of nervousness), respiration rate, heart rate, and plasma lactate (a stress-related hormone) [30]; enhanced autonomic stability during mental tasks or in responses to stressors [17, 32]; and decreased health-care utilization [33]. Another indicator of Cosmic Consciousness is the ability to maintain silent inner wakefulness even
during the inertia of deep sleep. Both surveys and longitudinal studies indicate that increased frequency of such experiences of “witnessing sleep” are positively correlated with measures of self-actualization, creativity, intelligence, and reaction time (e.g. [34, 35]).

To explore further the utility of these higher states of consciousness, Harung et al. [20] looked at their relationship to world-class performance. As this study involved subjects who had not been exposed to the theory and practices of Maharishi Vedic Psychology, it provided an opportunity to examine the generalizability of that theory.

A Study on World-Class Performers

According to the theory of Maharishi Vedic Psychology, consciousness is the basis of knowledge, knowledge the basis of action, action the basis of achievement, and achievement the basis of fulfillment [2]. We proposed to apply a measure of “quality of consciousness” to a group of subjects selected for their reputation for outstanding achievement. We predicted that world-class performers would report more frequent experiences of silent wakefulness on its own (Transcendental Consciousness), and inner silence coexisting with activity and with sleep (Cosmic Consciousness) than have been found among less distinguished performers. Our research was carried out in association with the world-class performance study by The Performance Group [36, 37]. The Performance Group studied the experiences, attitudes, work habits, techniques, and insights of a number of “world-class” performers—“people selected because they are widely acknowledged to be among the best in their respective fields” [37, p. 7].

As an adjunct to the interview format and other instruments developed by The Performance Group, subjects were given a brief questionnaire, which we had prepared concerning states of consciousness.

Subjects

The Performance Group has described the subjects of the world-class performance study as “people known internationally for their ability to achieve and maintain a position among the top performers in their fields” [36, p. 3]. These subjects were selected from creative fields such as performing arts, as well as from education, government, and business. Those investigated showed a good mastery of English. For this
reason the whole study, including our questionnaire, was conducted in this language. The Performance Group [36] reported a qualitative analysis based on interview responses from 36 world-class subjects (for a list of their names, see Appendix).

Our analysis, reported below, is based on completed and anonymous questionnaires received back from 22 of these same subjects. Subjects were asked to fill in the questionnaire after the interview and then mail it in; some questionnaires were not returned. Also, on some of those which were returned, not all questions had been answered. This explains why we below refer to only 19 subjects in one instance. Only a few of the world-class leaders responded that they regularly practiced some form of meditation. To our knowledge none of them practiced the Transcendental Meditation technique. We therefore assume that the subjects were not biased by prior familiarity with the concepts of Maharishi Vedic Psychology.

**Instrument**

The brief questionnaire had these instructions:

The following questions ask you to recollect subjective experiences which you may have had. Take your time to try to recall examples of the types of experiences which are described. If an experience is not familiar to you, mark 1, “Never to my knowledge,” on the frequency scale.

For each experience, subjects were asked to mark the frequency and write an example from their experiences. The 11-point frequency scale was as follows: 1 = never to my knowledge; 2 = once in my lifetime; 3 = less than once a year; 4 = once a year; 5 = once in six months; 6 = once in three months; 7 = once a month; 8 = once a week; 9 = once a day; 10 = most of the time; 11 = all the time.

The 11-point scale was used to allow the data from this sample of world-class performers to be compared with other samples who had previously responded to some of the same questions using the same scale [34].

**Findings**

The first question was based on descriptions of Transcendental Consciousness:
Have you experienced a perfectly peaceful state in which the mind is very awake, but still, a state when awareness seems expanded beyond the boundaries of thought, beyond the limits of space and time?

The mean response from 19 subjects was 4.6 (more than once a year); eight of 19 subjects indicated a frequency of at least once a week. Some of the subjective experiences described included:

- When necessary during competition.

- When I write. I write poetry (published).

- Listening to classical music either at home or in a concert. During summer months in our summer place on the lakeside. During leisurely meals with my wife.

- When I was younger this happened to me frequently in my daily meditation. Today it is a gift I receive in certain liturgical celebrations where the faith, the piety, and the suffering of the participants touch me deeply.

- Occasionally when alone, meditating and relaxing in the mountains, the peace and calm is absorbed into me and I feel the strength of the mountains and the weakness of mankind.

A second question was formulated to test experiences suggesting growth of Cosmic Consciousness:

Have you experienced that while performing activity there was an even state of silence within you, underlying and coexisting with activity, yet untouched by activity? This could be experienced as detached witnessing even while acting with intense focus.

The mean response from 22 subjects was 5.4 (once every few months); ten subjects (45 percent) reported having the experience once a week or more frequently, and eight at least once a day (36 percent). Some examples given included:

- I am aware of this all the time and I use it sometimes to check myself and my performance.
There is a deliberate attempt to try to take an outsider’s view in the most hectic work period. Step aside—detached witnessing is a good description of the phenomenon.

All of my important decisions that I have had to make... especially in the defense of human rights. During 20 years this was a daily recurrence. Now it would be more or less monthly.

During my election I viewed it from both the perspective of a participant and also from a social perspective, almost at a distance.

A third question about witnessing sleep, also designed to test experiences of Cosmic Consciousness, did not receive as many high frequency responses—the mean response to this question was 3.2 (3 = less than once a year). This question read as follows:

During deep sleep, have you ever experienced a quiet, peaceful, inner wakefulness? You awake fresh and rested, but with the sense that you had maintained a continuity of silent self-awareness during sleep.

Comparison with other samples
This first phase of the world-class performance study has not involved any control groups; we can, however, compare the frequency of reported experiences to findings with previous samples who have responded to the same questions. Cranson et al.[34] used question 3 (transcendence or inner wakefulness during sleep) in an investigation of the relationship between measures of intelligence and experiences of higher states of consciousness. Fifty-five university students who served as a comparison group in Cranson’s study reported average post-test frequencies of 1.6, significantly lower than the mean of 3.2 for our subjects (t = 2.27, p = 0.026).

In addition, two of the questions were used with another sample of 68 control subjects in an ongoing program of study to compare personal development of students at Maharishi University of Management (MUM), USA, with students at other colleges. On question 3, the average for the students at colleges other than MUM was 2.7, compared with the 3.2 mean of the world-class sample. This difference was not significant.
On question 1 (Transcendental Consciousness) the average for the 68 students was 1.8 compared with 4.6 for our subjects. Differences in the overall pattern of response between the world-class sample and the larger student sample were analyzed using a $\chi^2$ test. This statistics instrument compared three categories of responses within each sample:

1. Those who marked 1 (never to my knowledge) on the frequency scale;
2. Those who marked 8 (once a week) or more on the frequency scale; and
3. Those who marked between 2 and 7 on the frequency scale.

This test was highly significant ($\chi^2 = 17.92, p < 0.001$). Frequencies of responses to question 1 are further compared in Table 2.

There is a difference in the two groups in terms of age because most of the world-class subjects were above 40. Since students are reported to have at least as frequent momentary transcendental experiences as older subjects [38], we have no reason to expect that the age factor alone would account for the differences reported above. This conclusion is further supported by Csikszentmihalyi [39] in talking about flow experiences, exceptional experiences which are said to involve total absorption—deep enjoyment, order in consciousness, and intrinsic reward (see also below). Csikszentmihalyi found that age is not a factor in experiences of flow.

### Table 2

**Frequencies of Responses to Question 1**

<table>
<thead>
<tr>
<th>Frequency of experience of Transcendental Consciousness</th>
<th>Percentage of world-class sample (n=19)</th>
<th>Percentage of student sample (n=68)</th>
<th>Ratio between groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyday or all the time</td>
<td>17</td>
<td>1.5</td>
<td>11:1</td>
</tr>
<tr>
<td>At least once a week</td>
<td>44</td>
<td>6</td>
<td>7:1</td>
</tr>
<tr>
<td>At least once in a life</td>
<td>56</td>
<td>18</td>
<td>3:1</td>
</tr>
</tbody>
</table>
Seventy-seven percent of the world-class performers responded at least “once a year” or more to at least one of the three questions about higher states of consciousness (questions 1–3). For question 1, 56 percent responded to “at least once in life” (see Table II). These findings can be contrasted to related research, which used different instruments to assess frequencies of peak experiences. Estimates of how many people have had peak experiences at least once in their lives vary, depending on how the questions have been asked (see review in Alexander et al. [16]). One stringent study found that only two percent of those tested had had transcendental experiences even once in their lives [40].

With respect to question 2, an exceptional 45 percent of the world-class subjects (10 of 22) reported experiences of silence in activity with a frequency of “at least once a week,” and 36 percent (8 of 22) responded that it was a daily occurrence. In comparison, a week-long investigation of more than 100 men and women working full-time at a variety of occupations, where over 4,800 responses were collected, found that less than one percent of the responses were flow experiences [39].

Studies of peak experiences and flow experiences are not strictly comparable with states of consciousness investigated here. Since peak and flow experiences probably are precursors to higher states of consciousness, the real difference between the two groups may be larger than indicated by comparison of frequencies. On the other hand, Csikszentmihalyi’s way of sampling here may tend to underestimate the frequency of flow experiences. Nonetheless we conclude that these findings reinforce the point that higher states of consciousness are far more common among world-class performers than in the general population.

**Directions for Further Research**

In the present study we observed that not all of the world-class performers reported experiences of higher states of consciousness—five subjects in the sample replied “never” to all the questions. It would be interesting to explore additional sets of data about these subjects to see if differences among world-class subjects on these questions correlate with other within-group differences on other measures. According to Maslow [10] there are people with exceptional specific talent who are not self-actualized. World-class performers who scored low on our questions may have been of this category. Maslow also found that
the more widespread creativeness, displayed in more than one area of life, co-varies with self-actualization. We would expect that those subjects with higher frequencies of higher states of consciousness were enjoying greater general creativity and more balanced fulfillment, in addition to their professional accomplishments in a specific area.

As the initial study of world-class performers did not involve a control group, these preliminary findings can be strengthened by collecting comparison data from average performers from the same professions and cultural groups. Qualitative explorations of experiences of spontaneous right action during performance could also be a rich direction for further research.

There are limitations to relying solely on a brief self-report questionnaire such as was employed in this preliminary exploration of the relationship between higher states of consciousness and excellence in performance. Subjects are not used to evaluating these subjective states, and it cannot be avoided that they apply different interpretations to the questions, as is evident from their quotations. We suggest that further studies of higher states of consciousness and excellence in action utilize multiple criteria of both the dependent variable (world-class performance) and the independent variable (state of consciousness). Additional measures of world-class performance could include peer evaluation, biographical data and evidence of performance, while development of consciousness could also be assessed by open-ended questions, psycho-physiological measures and cognitive-behavioral criteria. Our adjunctive role in the world-class performance study did not provide the opportunity to implement additional measures with these subjects. Despite limitations, this study makes a significant contribution to testing the theory of Maharishi Vedic Psychology, especially when these findings are considered together with related research on the psychological, physiological, and behavioral correlates of the development of higher states of consciousness.

**An Expanded Conception of Peak Performance**

According to Maharishi Vedic Psychology, performance beyond the ordinary has its basis in higher states of consciousness. Such states attune the individual mind with natural law which administers the whole universe according to the principle of least action:
When this whole stream of life is entirely natural, every activity is directed, controlled, and governed by one single law, namely the law of least action. This means Natural Law. Nature acts in a way such that it makes no noise—it only produces results. That is the government of Nature, the best organizer. [27, p. 95–6]

Economic functioning has been noted with reference to flow experiences and self-actualization. Csikszentmihalyi [39, pp. 63, 87] finds that flow—characterized by total involvement, spontaneous, almost automatic activity, and a feeling of unity with the environment—involves lower levels of activation and fewer cues needed to accomplish the same mental task. Maslow remarked that self-actualized people manifest great efficiency:

Greater efficiency, making an operation more neat, compact, simpler, faster, less expensive, turning out a better product, doing with less parts, a smaller number of operations, less clumsiness, less effort, more foolproof, safer, more “elegant,” less laborious. (Maslow, quoted in Garfield [12, p. 154])

Dahl’s [41] Presidential Address to the Seventh World Productivity Congress describes the same quality of simplicity in peak performance:

Peak performance is often beautifully simple: there is no waste of motion or energy. There is knowledge and focus. There is continuity—hence no waiting or downtime. There is an elegance that transcends and transforms. All of us seek it in all that we do, and when we succeed, there is a satisfaction so deep and abiding that our spirits are lifted and our minds are at peace.

Features distinguishing Vedic Psychology’s model from conceptions of peak performance in contemporary management are outlined below:

Concepts of peak performance in contemporary management include:

- temporary
- narrow domain
- consciousness refers to objects
- actualizes individual potential
Concepts of peak performance in Maharishi Vedic Psychology include:

- continuous
- generalized
- consciousness refers to itself
- actualizes natural law

First, the common understanding is that peak performance remains latent most of the time. Even for those who have had temporary moments when awareness is focused, energized, and harmonized, the moments do not last. A quotation from the former world record holder runner Robert de Castella illustrates this point: “Sometimes when running at night, I can feel the power, the rhythm to go farther without effort, to float. Often I’m too tired, but occasionally I experience this sensation” [36, p. 24].

Maharishi Vedic Psychology, on the other hand, offers theory and research suggesting that experience of a higher order can become a continuous feature in higher states of consciousness. In distinction to Csikszentmihalyi’s [39] concept that an experience of flow depends on the special conditions of the activity, Maharishi Vedic Psychology describes stable higher states of consciousness which are the product of gradual refinement and integration of the nervous system. In addition, Maharishi Vedic Psychology provides systematic procedures for culturing daily experiences of transcendence as a means of developing, over time, stable higher states of consciousness. The research on the Transcendental Meditation technique, reviewed above, points in this direction. In addition, Cranson et al. [34] investigated the relationship between measures of intelligence and experiences of higher states of consciousness. He tested students at Maharishi University of Management and another university and then retested them two years later. The 55 control students did not improve significantly over the years on any measure. The 45 Maharishi University of Management students practiced the Transcendental Meditation technique and the advanced Transcendental Meditation-Sidhi program. Their average response to the question on witnessing sleep (question 3) increased from 2.9 to 4.7. At the same time their scores on IQ and reaction time tests improved significantly, compared with controls. Scores on the IQ and reaction
time tests were correlated with the growth of higher states of consciousness, as measured by the question on witnessing sleep. Without such evidence that higher states of consciousness can be systematically developed in practice, this paper would have a limited significance.

The second point of comparison concerns the range of peak performance. Exceptional achievement in a specific behavioral domain, for example, putting a golf ball, does require focused skill training and practice. Under these conditions, a well-prepared athlete will occasionally rise to special peaks of performance which are marked by effortless, breakthrough achievement, and harmony of mind, body and surroundings [42]. Our notion of peak performance, however, is more than this. Higher states of consciousness described by Maharishi Vedic Psychology are stable structures, which are said to influence the quality of every thought and action. According to Maharishi Vedic Psychology, when the perfect orderliness of Transcendental Consciousness is permanently established, no area of life will be untouched by the evolutionary influence of natural law. With contemporary notions of peak performance we could conceive of breakthrough performance in a specific domain of activity but also, in the same person, severe flaws in other aspects of life. It is also possible that such a person could achieve fame himself or herself, but at the same time cause a detrimental effect on others or the environment. A performer in higher states of consciousness, by comparison, would have balanced and holistic development, and also a life-supportive influence on her or his surroundings.

For our third point of comparison, we refer to the conclusions which The Performance Group drew from its qualitative interviews in the world-class performance study:

In fact, it is this heightened sense of “awareness” that emerged from our analysis and evaluation of the data as the most significant similarity [among world-class performers] . . . Thus it is “Awareness” which evolved as the focal point of the Model for World-Class Performance, as a result of the study. As reflected in the model, a world-class performance is generated by an awareness of the desire and willingness to learn . . . All of the participants are very aware of intangible background factors which they feel influence their performance . . . They are aware of the stages or processes they go through when they perform. [36, pp. 17–18]
As our subjects generally reported exceptionally high frequencies of higher states of consciousness, as measured by our questionnaire, we are in substantial agreement with our colleagues in this conclusion. Yet it is important to point out that what we mean by awareness or consciousness is not the same as the common usage of those terms. In common usage, the idea of “raising consciousness” about something implies directing the person’s attention to a particular concept, value, or object of perception. The emphasis is on the object that is known, not on the knower per se. In contrast, in Maharishi Vedic Psychology the emphasis is on the knower—it is on raising the level of alertness, the range of comprehension, the capacity for knowing in the subject, independent of the consideration of any particular objects of attention. The procedure for accomplishing this, in fact, is a process which allows consciousness to shift from attention to objects, to a state in which consciousness is aware only of itself—a self-referral state in which consciousness is its own knower, known, and process of knowing [43]. This is what takes place during the practice of the Transcendental Meditation technique. Experience of this self-referral state of Transcendental Consciousness enlivens natural functioning in the whole mind and body, as evidenced by research on the psychological and physiological consequences of the state of Transcendental Consciousness, reviewed above.

The fourth distinct point is that the model of performance in higher states of consciousness conceives of peak performance as not merely the actualization of individual talents, but also as the actualization of natural law or the expression of cosmic intelligence. Maharishi Vedic Psychology explains that action in Cosmic Consciousness is initiated by “. . . the power of Nature, which is the cause of the vast and incessant activity of creation and evolution throughout the cosmos”[2, p. 284]. Maharishi’s [27,43] concept of administration through natural law would seem to explain Csikszentmihalyi’s [39, p. 63] observation: “Somehow the right thing is done without you ever thinking about it or doing anything at all . . . . It just happens.” A similar concept of a connection to the cosmos has been poetically expressed by one of the subjects in the world-class performance study, Valery Gergiev, Artistic Director and Principal Conductor, Kirov Ballet and Opera Theatre:

You come to the performance. At 8 o’clock it starts. And you are silent. You look at the orchestra or your opera performers. Even in the dark—
ness they watch your eyes. You move your hands and the music begins
and, once in a great while you deliver something they cannot explain ... a truly world-class performance . . . It is moments like these which connect us human beings with the gods. It is magic.[37, p. 60].

Patsy Neal [44, p. 169], with reference to her own experience of making a seemingly unexplainable 48 of 50 shots in winning a college basketball national championship in the USA, puts it this way:

One accomplishes things one never dreamed of doing. One walks beyond the usual physical powers and goes into the power of the universe, finding streams and sensations that seem to have no beginning or end within the self.

Conclusion

In this paper we have presented preliminary findings concerning an association between world-class performance and more frequent experiences of an expanded, alert, and settled state of consciousness, even while engaged in dynamic activity. An implication of this research may be that by systematically cultivating a deeply settled but dynamically alert state of consciousness, the individual can achieve peak performance not only on rare occasions, but also as a sustained and continuously evolving reality.

Notes and References


24. James Clerk Maxwell is a renowned English mathematician and physicist who formulated electromagnetic theory.
25. Erwin Schrödinger was a great Austrian physicist who was one of the pioneers of quantum physics.


Appendix

World-Class Performers
(participants in the world-class performers study [36])

Martti Ahtisaari

Finland’s Secretary of State, previous UN negotiator in Bosnia. Won the greatest victory in UN history by securing the treaty leading to a free Namibia. Now presidential candidate in Finland.

Akito Arima

Professor of Physics and President of the University of Tokyo, Japan. One of the most influential figures in Japanese science.

Paulo Evaristo Arns


Rafidah Aziz

Minister of Trade and Industry in Malaysia “who happens to be a woman” (Fortune). The only woman cabinet member in a predominantly Muslim nation. Economist and politically active for 25 years. Head of the women’s contingent—and largest faction—in Malaysia’s ruling party.

Hector Babenco

Argentinian, naturalized Brazilian. Film director of Academy Award winning film, The Kiss of the Spider Woman.

Susan Caroline Bambrick

Australian professor, University of Southern Queensland, exceptional academic achiever. Member of several international councils and commissions. Awarded the Order of the British Empire.

Eugenio Barba

Italian theatre director and author famous for his innovative productions.
Luciano Benetton
Entrepreneur and Chairman, Benetton Group S.P.A. with diversified business interests in Italian motorways and restaurants.

Oriol Bohigas
Spanish architect. Rebuilt Barcelona for the recent Olympic Games in what may have been the biggest urban-planning project of the century.

Jan Carlzon
President of Scandinavian Airlines. One of the most innovative leaders of a service enterprise of our times.

Dennis Conner
American yachtsman. Skipper of America’s Cup winning team.

Ivo Cramer
Swedish choreographer and founder of the Cramer Ballet. Famed for his restoration of “lost” ballets.

Robert de Castella

Lindsay Fox
Successful Australian entrepreneur who built one of the country’s largest transport companies. Started the project “Work for Australia” which created 25,000 jobs for young unemployed Australians in 1992.

Kjell Fredheim
Norwegian. Executive Vice-President, Chief Operating Officer, Scandinavian Airlines.

Paulo Freire
Brazilian educator famous for his method of alphabetization and self-discovery. Former Secretary of Education to the City of Sao Paulo.

Valery Gergiev
Russian. Artistic Director and Principal Conductor of the Kirov Theatre. Maestro of Russian opera.
Michel Guerard
French founder of “nouvelle cuisine.” Owner/chef of three-star Michelin restaurant at Eugenie-les-Bains.

William E. Heinecke
American born, naturalized Thai who started his own business while still at high school and made it into a 150 million dollar conglomerate.

Masanari Iketani
CEO of Tokyo Steel. Asian CEO of the year.

Mariss Jansons
Conductor of the Oslo Symphony Orchestra. Developed a mediocre orchestra to be considered among the five best in the world. A world-leading interpreter of Tchaikovsky.

Cheong Choong Kong
CEO of Singapore Airlines.

Tom Lasorda
Manager and coach for the Los Angeles Dodgers baseball team for the last 16 years. Known for several outstanding achievements during this period.

Lars Lofgren

Fumihiko Maki
Japan’s greatest living architect. Works include the Tokyo metropolitan gymnasium and Tepia, home of MITI.

Wilma Mankiller
Principal-in-Chief of the American Indian Cherokee Nation.
M.P. Narayanan

Indian. Formerly Chairman of Coal India with 700,000 employees. Currently Chairman of the Environmental Appraisal Committee of the Government of India, advisor to RPG Enterprises which turns over more than 2 billion US dollars a year in the energy sphere.

Curt R. Nicolin

A legendary Swedish industrialist, former chairman of Asea Brown Boveri and Scandinavian Airlines.

Arne Noess

Norwegian. Successful businessman and a legendary mountain climber/expedition leader (Mount Everest 1985 and many others).

Jorma Ollila

Finnish. Chairman of Nokia Corporation and Royal Dutch Shell Plc.

William G. Pagonis

Commanding General, 21st Theater Army Support Command of the U.S. NATO logistical forces in Europe. Directed logistics for Operation Desert Storm.

Anand Panyarachun


Leoh Ming Pei

American architect responsible for the creation of a series of world famous buildings, including the Pyramide at the Louvre.

Esa-Pekka Salonen

Brilliant young Finnish conductor. Recently named Director of the Los Angeles Philharmonic.
Ricardo Semler

Brazilian businessman and author famous for his unorthodox management practices. The youngest ever vice-president of the Sao Paulo Federation of Industries and elected Brazilian Leader of the Year in 1990.

Robert Shaw

American. CEO of Shaw Industries. Nominated as one of the five most admired leaders in the USA (*Fortune*, February 1993).

Dick Smith

Australian adventurer, entrepreneur, publisher, pilot and business leader. Founded an electronics company for $630 and sold it in the beginning of the 1980s when they had a yearly profit of $10 million. Founded the successful Australia’s *Geographical Magazine*, GEO. The first man to fly solo around the world in a helicopter.

Bert-Olof Svanholm

President and CEO of Asea Brown Boveri, Sweden.

Mike H. Walsh

CEO of Tenneco, a giant Houston conglomerate. Successfully turned around Tenneco and previously Union Pacific Railways.

Part III

Consciousness-Based Management Education and Development
Higher Education for Higher Consciousness:
Maharishi University of Management as
A Model for Spirituality in Management Education

Jane Schmidt-Wilk, Ph.D.
Dennis P. Heaton, Ed.D.
David S. Steingard, Ph.D.
ABOUT THE AUTHORS

Jane Schmidt-Wilk is an Associate Professor in the Department of Business Management, Director of the Center for Management Research, and Co-Director of the Ph.D. in the Management program at Maharishi University of Management in Fairfield, Iowa. Dr. Schmidt-Wilk has been Editor of the *Journal of Management Education (JME)*, the leading journal in this field, since July 2005, and serves on the editorial boards of several other academic journals in the field of management.

Dennis P. Heaton, Ed.D. is Professor of Management, Co-Director of the Ph.D. Program in Management, and Dean of Distance Education and International Programs at Maharishi University of Management in Fairfield, Iowa. His previous publications include articles and invited chapters on management education, leadership, ethics, higher stages of development, and peak performance. He has been directing Ph.D. students’ research in areas of socially and environmentally responsible business, including the effects of green buildings on human resources, consumer attitudes toward genetically modified food, moral development and ethical decision-making in accountants, the financial impact of environmental management systems, and Maharishi Mahesh Yogi’s program to eliminate poverty.

David S. Steingard, Ph.D., is the Associate Director of the Pedro Arrupe Center for Business Ethics and Associate Professor of Management at Saint Joseph’s University. Dr. Steingard includes leadership, ethics, socially responsible business, diversity, and spirituality in business among his teaching and research interests. He received his Ph.D. in Management from Case Western Reserve University.
ABSTRACT

The system of education at Maharishi University of Management provides a model for management educators seeking to understand and teach spirituality. It locates Transcendental Consciousness—“pure spirituality”—at the basis of the universe and the human mind, experienced through the Transcendental Meditation program. Disciplines are taught as expressions of one unified field of consciousness. This integrated approach develops students who express “applied spirituality”—acting for the positive transformation of the quality of life for all. Research on educational outcomes at Maharishi University of Management gives evidence of cognitive, affective, and moral development in students. The authors offer suggestions for educators at other institutions.

Introduction

Management guru Peter Drucker (1988) envisioned that universities would someday connect the teaching of management to a spiritual ground and a higher cause:

St. Bonaventure wrote, “All knowledge leads back to the Source of All Light and to The Knowledge of Ultimate Truth.” I must admit that I am not quite sure how cost accounting or the study of tax loopholes will lead back to the Source of All Light, let alone to the knowledge of Ultimate Truth. But I am quite sure that the spirit of St. Bonaventure must animate all we do if management is to have results. (p. 5)

Today we are witnessing a rising wave of interest in spirituality in management. Managers are displaying increased desire for spiritual values, beliefs, and practices (Conlin, 1999; McDonald, 1999; Mitroff & Denton, 1999). Management educators are seeking ways to infuse spirituality into their courses (Biberman, Whitty, King, & Neal, 1999; Cavanaugh, 1999; Neal, 1997) and their institutions (Cavanaugh, 1999; Konz & Ryan, 1999). Although the literature on teaching spirituality in management is growing, little empirical research on theory or practices has yet been published. When considering programs that aim to integrate spirituality into professional education, prudent educators will want to review the empirical basis for the programs they adopt.
As spirituality receives greater attention in the theory and practice of management, the field of management education is posing questions such as the following:

- What is spirituality?
- What are model programs for teaching spirituality?
- How can one assess the effectiveness of such programs?

The knowledge base, practices, and outcome measures of the integrated system of management education at Maharishi University of Management may provide one model for educators seeking to develop and assess programs to integrate spirituality in management education. Maharishi University of Management is a non-denominational educational institution established more than 35 years ago with the goal “to achieve the spiritual goals of mankind in this generation” (*Maharishi International University, 1974–1975*, p. xiv). It offers undergraduate, master’s, and doctoral degree programs in the arts, sciences, humanities, business, and computer science to students on-site at its Fairfield, Iowa, campus, and at a distance around the globe. Founded as Maharishi International University by Maharishi Mahesh Yogi in 1971, the institution changed its name in 1995 to emphasize the role of the university in preparing students to successfully manage all areas of life—both personal and professional.

In this article we first articulate our definition of spirituality, drawing on the philosophical approaches of ontology and epistemology and the procedures of modern science. We distinguish between pure spirituality and applied spirituality. We use the term *pure spirituality* to refer to a silent, unbounded, timeless inner domain that any individual may experience within his or her own conscious awareness; we use the term *applied spirituality* to refer to the outer domain, the practical applications, and measurable outcomes that automatically arise from an inner experience of pure spirituality.

Second, we present aspects of Maharishi University of Management’s pedagogy that have been designed to develop the students’ understanding and experience of pure spirituality and to foster applied spirituality.
in their decisions and activities. Third, we summarize empirical findings on student learning and development at Maharishi University of Management. Finally, we extrapolate some practical suggestions from the Maharishi University of Management approach that management educators interested in fostering spirituality can adopt in the context of their institutions.

What Is Spirituality?
Empirical research requires well-defined constructs, but a review of the existing literature on spirituality in management indicates that definitions of spirituality lack clarity or agreement (Butts, 1999; Cavanaugh, 1999; Konz & Ryan, 1999; Lindamood, 1991; McCormick, 1994; Milliman, Fergusson, Trickett & Condemi, 1999). Perhaps one thing writers in this preparadigmatic field agree on is that spirituality is difficult to define! Neal (1997) observes that defining spirituality is difficult because people “are trying to objectify and categorize an experience and way of being that is at the core very subjective and beyond categorizing” (p. 123).

Despite this difficulty, we identified three streams of definitions in the literature. First are those that define spirituality in terms of a personal inner experience, for example, “the basic feeling of being connected with one’s complete self, others, and the entire universe. If a single word captures the meaning . . . that word is interconnectedness” (Mitroff & Denton, 1999, p. 83).

A second stream of definitions of spirituality focuses on principles, virtues, ethics, values, emotions, wisdom, and intuition. The degree to which these qualities are expressed in the behaviors and policies of organizations expresses the degree to which there is spirituality in management (Dehler & Welsh, 1994; Kriger & Hanson 1999; Marcic, 1997; Wagner-Marsh & Conley, 1999). A third stream defines spirituality in terms of the relationship between a personal inner experience and its manifestations in outer behaviors, principles, and practices (McCormick, 1994; Forth, McCall & Bausch, 1999). For example, Neal, Lichtenstein, and Banner (1999) discuss spiritual integration, a process of learning to apply one’s core spiritual principles to key aspects of one’s life and work.
In the discussion that follows, we build on these three streams in presenting our definitions of pure and applied spirituality. We also consider the age-old questions of ontology and epistemology—What is the essence of being? and How can we have knowledge of it?—and show how they are addressed at Maharishi University of Management.

**Ontology and Epistemology**

Ontological and epistemological foundations of management, specifically realism versus constructivism, have been explored by Burrell and Morgan (1979) and Palmer and Dunford (1996). Although no consensus about foundations exists in modern management, there appears to be perennial concurrence among spiritual traditions and even modern science that human beings share the same “metaphysical ground” (Burtt, 1924; see also Harman & Clark, 1994; Lovejoy, 1936; Smith, 1982) that exists beyond the experience of the senses or intellect and transcends cultural and gender differences.

Ancient traditions around the globe have described the reality of an all-pervasive “immanent and transcendent Ground of all being” (Wilber, 1999, p. 57) Transcendental to material, objective creation. Perhaps the most well known and respected exposition of this ontological perspective is Huxley’s (1945) description of “the divine Ground of all existence” as “the spiritual Absolute, ineffable in terms of discursive thought, but (in certain circumstances) susceptible of being directly experienced and realized by the human being” (p. 21).

This perennial view has come up again in the most recent advances of modern science. New theories in biology (Marshall & Zohar, 1997; Wheatley, 1992) describe a conscious universe that is self-organizing (Jantsch, 1980) and self-evolving (Prigogine & Stengers, 1984). Quantum physics describes the foundations of the material world as relational and non-material (Capra, 1975, 1982), containing an implicate order interconnecting everything in nature (Bohm, 1980).

The current management pedagogy paradigm, rooted in the prevailing view of scientific materialism, has difficulty addressing questions about a more spiritual epistemology. Objectivity-seeking management education, suffering a strong case of what Bygrave termed “physics envy” (cited in Wheatley, 1992, p. 41), has traditionally excluded “data” gathered via subjective, inner, emotional, wisdom, or intuitive
pathways. This has effectively hindered the development of research on the spiritual domain in management. Another modality of knowing besides objectification and abstraction becomes necessary to plumb the inner, subjective depths of our spirituality.

**Ontological Foundations of the Maharishi University of Management Approach to Education**

At Maharishi University of Management, our conception of ontology holds that

- beyond and underlying the manifest world of forms and phenomenon is a nonlocalized, nonmaterial, nonchanging field of pure existence or Being,

- this field manifests as diverse creation, and

- this field can be directly experienced in human consciousness (Maharishi Mahesh Yogi, 1966, 1994).

The first two of these propositions are mirrored in the most recent advances of modern science. Modern science seeks to identify the laws of nature: the orderly principles that govern physical events and processes. A law of nature, as defined by science, is a precise description of how nature behaves under specific circumstances. The most recent advances in quantum physics have revealed a single, universal, nonmaterial, unified field underlying, giving rise to, and governing the classical or material universe (Hagelin, 1987). Hagelin (1998) describes the unified field as the “home of all the laws of nature” because it is the source of the more diversified laws of nature, such as gravity or electromagnetism. On the basis of logical analysis and mathematical calculation, he equates this nonphysical field at the basis of physics with the nonmaterial field of pure existence described in the ancient Vedic texts. This discovery removes the Transcendental, nonmaterial dimension of life from the field of metaphysics and places it squarely within the framework of modern science and secular education.
The third proposition equates the nonmaterial basis of the manifest world with consciousness—“the omnipresent Being and the spirit in man are not two different entities” (Maharishi Mahesh Yogi, 1969, p. 96). This field of Being can be experienced in its pure form when the mind transcends active thinking to gain a state of silent wakefulness. The idea that this abstract unified field can be experienced directly in human consciousness brings our discussion to the domain of epistemology.

Epistemological Foundations
of the Maharishi University of Management
Approach to Education

Throughout history, people have reported momentary experiences of states of awareness apparently above or beyond ordinary waking consciousness, involving extraordinary happiness, a sense of unboundedness and timelessness, and the conviction of having glimpsed the underlying reality of life. For example, English poet Alfred Lord Tennyson (1899) wrote, “All at once . . . the individuality itself seemed to dissolve and fade away into boundless being, and this not a confused state but the clearest, the surest of the surest” (p. 268). The novelist Arthur Koestler (1954) wrote:

[I felt] that this state is more real than any other one has experienced before—that for the first time the veil has fallen and one is in touch with “real reality,” the hidden order of things. . . . [Such] experiences filled me with a direct certainty that a higher order of reality existed, and that it alone invested existence with meaning. (pp. 352–353)

Similarly exalted experiences have been reported by hundreds of others, from Plato to Bill Russell, from St. Augustine to Billie Jean King, from Rousseau to Vaclav Havel, from Wordsworth to Carol Burnett (Pearson, in press).

Such experiences have been described as forms of “mystical experience” or “peak experience” (Maslow, 1971; Walsh & Vaughn, 1993), but the classical viewpoint of modern psychology has lacked not only a theory of mind that can account for this “postconceptual” way of knowing but also methods for systematically eliciting such experiences (Alexander & Langer, 1990). Yet ancient traditions in both East and
West have described subjective ways of apprehending reality, without intellectual abstraction. For example, Plato (1982) described ways of knowing beyond the senses and the intellect that allow one to apprehend “that supreme splendour which we have called the Good” (p. 232). Similarly, the Taoist tradition describes a means of gaining knowledge by quieting the mind (Waley, 1968).

Drawing on the Vedic tradition, developmental psychologists have recently articulated a comprehensive model that locates the spiritual dimension at the basis of the mind; they have further proposed that ancient Vedic procedures provide a means to know or apprehend this dimension as one’s own Self (Alexander et al., 1990). According to this model, the capability of having such experiences is inherent in every individual nervous system but may be hindered by stress in the physiology.

At Maharishi University of Management, these ontological and epistemological propositions have been systematized in the Science of Creative Intelligence—a foundational course that is based on the convergence of the ancient Vedic tradition and modern science (Maharishi Mahesh Yogi, 1972; see also K. Chandler, 1987). Maharishi explains that the foundational knowledge of this University has been expressed in different languages by seers in the past, according to the circumstances of the time. This scientific age, Maharishi notes, requires this knowledge to be “expressed in the language of science so that its claims and effects could be reliably verified in a repeatable way” (Maharishi Mahesh Yogi, 1994, p. 248).

The Science of Creative Intelligence holds that the student can directly apprehend the nonchanging field of pure existence in his or her own awareness. In accord with Kolb’s (1984) model of the complementarity of conceptual and experiential learning, Maharishi University of Management provides intellectual understanding and direct experience of this inner spiritual dimension of life through instruction in theory and practical techniques.

**Pure Spirituality**

The Vedic tradition compares the mind to an ocean. The ocean has localized or bounded waves of activity on the surface that arise from an underlying silent depth. Similarly, the mind is described as hav-
ing diverse, localized waves of mental activity at the surface and an underlying unbounded, or nonlocalized, unified basis in Transcendental Consciousness, or silent inner Being.

The conscious mind can systematically go beyond or transcend all thought, feelings, and perception and directly experience a state of restful alertness, the nonlocalized, nonmaterial, nonchanging field of pure existence at the source of the mind (Maharishi Mahesh Yogi, 1969; see also Alexander et al., 1990). This experience is described as a state of “pure consciousness” because it is wakefulness in its essential nature, unmixed with images, thoughts, feelings, or any other objects of perception; and as “Transcendental Consciousness” because it transcends time, space, and all relative, changing experience. Maharishi identifies this inner state of pure consciousness as the spiritual essence of life: “eternal silence, which is pure wakefulness, absolute alertness, pure subjectivity, pure spirituality [emphasis added]” (Maharishi Mahesh Yogi, 1995, p. 271, fn.).

In this context, the ancient epistemological dictum, “Know Thy Self!” may be understood as “Experience the nonlocalized unified field, the field of pure consciousness, present within your own self!”

A systematic refinement of both mind and body is said to be necessary for this experience to take place, and procedures for this process are described in the Vedic texts (Maharishi Mahesh Yogi, 1966, 1969). These procedures have become increasingly available around the world in the past 50 years and have made scientific research on the characteristics and effects of pure consciousness possible. Just as the waking, dreaming, and sleeping states of consciousness each have distinguishing physiological characteristics, Transcendental Consciousness has its own physiological correlates (Wallace, 1970). These physiological correlates, plus the universal accessibility of Transcendental Consciousness (as accessible as waking, dreaming, or sleeping states of consciousness), have allowed scientists to identify this state as a fourth major state of consciousness (Travis & Wallace, 1997). It is characterized by a state of profound restful alertness that is distinct from eyes-closed relaxation or sleep as evidenced by reductions in heart rate and oxygen consumption and increased brainwave electroencephalograph (EEG) coherence (Alexander, Cranson, Boyer & Orme-Johnson, 1987).
What we have described so far we have termed *pure spirituality* because it relates to the inner experience of spirit within the individual. Next, we consider the effects of experiencing this inner state on outer behavior, the domain of what we have termed *applied spirituality*.

**Applied Spirituality**

Many spiritual approaches to management education aim to guide good works and ethical business conduct. Management education at Maharishi University of Management also aims to develop students who will work for the transformation of society toward “all good everywhere and non-good nowhere” (Maharishi’s programs, 1992). Maharishi University of Management faculty seek to teach the best evolving ideas and practices that express greater values of creativity and sustainability—to advance the total (not just material) quality of life for all people. By giving our students tools for awakening the basic dimension of consciousness in themselves, we enable them to appreciate more deeply, implement, and refine those best practices so that they will create a better world as they continue to evolve personally.

We define applied spirituality as the results in daily life that arise from an inner experience of pure spirituality. Presently, most of the existing literature on spirituality in management education concerns programs to inspire attitudes, emotions, and actions. Less of the literature concerns the silent realm of pure consciousness, but knowledge

![Diagram: Pure Spirituality as the Basis of Applied Spirituality]

Figure 1: Pure Spirituality as the Basis of Applied Spirituality
and experience of the Transcendental domain of pure spirituality can illuminate our understanding and realization of applied spirituality.

Figure 1 shows pure spirituality as the basis of applied spirituality. The range of applied spirituality extends from its most outward expressions in overt behavior to the progressively subtler levels of intellectual frameworks of ethics and spirituality; emotional dimensions of spirituality such as respect, love, humility, and courage; and the most subtle subjective experiences of insight, intuition, and wisdom that may be inspired by glimpses of pure spirituality. In this model, enlivening pure spirituality at the level of pure consciousness enriches, supports, and integrates the expressions of applied spirituality on all the other levels of life.

Compared to attempts to actualize applied spirituality from a reference point at the level of behavior, intellect, or emotion, the approach of Maharishi University of Management puts primary emphasis on awakening to pure spirituality. It holds that virtuous action grows spontaneously from repeated experience of Transcendental Consciousness. Therefore, we emphasize the regular practice of techniques that systematically give the experience of Transcendental Consciousness.

This educational approach seeks to develop a natural state of awareness characterized by wholeness and balance. Without cultivating this quality of consciousness, one acts to fulfill one’s desires from limited and unbalanced awareness. Such action inevitably encounters difficulties and may create unwanted effects. Even well-intentioned actions that are done in the name of ethical or religious ends may create negative consequences (e.g., wars in the name of religion). But with regular experience of systematic transcendence, one grows in the holistic quality of awareness that can fulfill desires without creating problems. This basic emphasis on consciousness is expressed by the founder of Maharishi University of Management in his writing about university education:

> Since consciousness is the basic element of everyone’s life, knowledge [including direct experience] of consciousness is the most basic requirement for everyone to exist consciously and intelligently and enjoy full, unbounded creative potential of life, with maximum success in all fields of personal and professional life. (Maharishi Mahesh Yogi, 1994, p. 68)
If applied spirituality is approached at the more manifest levels of the mind without at the same time attending to its source in the direct experience of pure spirituality, the results will be limited. For example, a common approach to teaching business ethics is at the level of the intellect. Instructors provide conceptual frameworks that practitioners may apply in selecting an ethical course of action. Ethical issues and moral dilemmas are presented as intellectual problems for which solutions are to be found through analysis and moral reasoning (Ferrel & Fraedrich, 1991). But intellectual models may not suffice to assess the path of right action because of the uniqueness of each situation, the complex calculations involved in assessing the impact of any decision on all affected parties, and the inability to foresee all the far-reaching consequences of a decision.

In addition to the challenge of determining the right action to take, a second challenge is to actually behave in a manner consistent with what one holds to be right. Every society has codes of dos and don’ts to provide spiritual guidance at the level of behavior, yet undesirable behaviors are still widely found. There are inherent limitations in trying to act rightly when one’s thoughts and actions are not based in the field of pure consciousness. By contrast, pure spirituality spontaneously expresses itself in virtues, values, emotions, and actions.

This spontaneity of right action contrasts with current literature on spirituality in management that suggests that spiritual action entails difficulty, conflict, and failure. For example, McCormick (1994) depicts applied spirituality in terms of deliberate efforts through which one “actively attempts [emphasis added] to harmonize his life with the Beyond.” In a similar vein, Mitroff and Denton (1999) cite the case of a businessman having difficulty acting in a manner consistent with his own spiritual insights:

How could I believe myself to be spiritual, to believe that everything is fundamentally connected to everything else, that we are put here on earth basically to increase goodness and not just make money, and yet to continue to make things that were basically harmful to the world? (pp. 87–88)

Repeated experience of Transcendental Consciousness enriches the mind with positivity, clarity, and breadth of awareness. Inner fullness and peace become more established in the individual, and motivation
is transformed from self-interest to acting for the welfare of the world (Maharishi Mahesh Yogi, 1969, p. 209). As one’s individual mind expands to express more fully the unified field at the common basis of all phenomena, one thinks and acts in greater harmony with the whole of one’s social and physical environment. As reviewed below, research has found that the approach of Maharishi University of Management brings about changes in the direction of physical and emotional well-being, enhanced intelligence, and positive values, substantiating the argument that the experience of Transcendental Consciousness through systematic transcendence is the basis of enlivening the other levels of life, as indicated in Figure 1.

An Integrated System of Education at Maharishi University of Management

At Maharishi University of Management, knowledge and experience of pure consciousness form the basis of the college experience of our students, from the quality of life on campus to the curriculum. All aspects of the educational system are designed to foster the holistic development of the student. Our academic calendar is structured in blocks, so that students take one course at a time and can focus all their energies on that one subject. The daily schedule balances time for class, assignments, exercise or sports, meditation practice, and a good night’s sleep. The on-campus food service serves organically grown, vegetarian food. The faculty also meet with students on a regular basis to help them understand and assess their personal growth, inclusive of cognitive, emotional, social, and moral growth.

Modern educational theorists view learning as fundamentally a process of connecting new information to existing structures of knowledge that are meaningful to the learner (Caine & Caine, 1991). At Maharishi University of Management, we view the students’ personal growth as being the most meaningful to the learner, and our role as faculty includes facilitating students’ discovery of connections between their growing experience of Transcendental Consciousness and academic disciplines. Thus, both the experience of Transcendental Consciousness and the intellectual understanding of its relationship to all disciplines of study constitute the complementary components of the Maharishi University of Management curriculum.
Experiential Component

At the start of their academic programs, students take the introductory course in the Science of Creative Intelligence. This course, which presents the ontological and epistemological foundations outlined above, includes instruction in the Transcendental Meditation technique, so that students can directly experience the unified field of Being in their own consciousness.

The Transcendental Meditation technique is a simple, natural procedure practiced for 20 minutes twice a day sitting quietly with eyes closed (Roth, 1987). Easy to learn, it is taught in a standardized way by trained teachers. It requires no change in lifestyle and no special beliefs. Indeed, research shows that even highly skeptical and cynical managers have learned the technique without difficulty and gained the benefits of the program (Schmidt-Wilk, 2000).

The Transcendental Meditation technique involves neither concentrating on a perceptual object nor contemplating on the meaning or content of a thought. The technique enables awareness to experience progressive refinement of the thought process effortlessly and systematically, leading to directly experiencing the field of Being at the basis of the mind.

Students at Maharishi University of Management continue their practice of the Transcendental Meditation technique throughout their college career. Each semester, they enroll in a course of “Research in Consciousness” (RC), which runs concurrently with their academic courses. For their RC course, students attend group meditation practice twice a day in campus meditation halls.

Students who have practiced the Transcendental Meditation technique regularly for several months may elect to learn the advanced TM-Sidhi program, which fosters more rapid integration of pure consciousness into the dynamism of daily activity. The TM-Sidhi program is said to sharpen the senses, to develop human virtues, and to improve mind-body coordination. Participants report that this program enhances the inner experience of joy, peace, and integration (Gelderloos & van den Berg, 1989).
Intellectual Component
The intellectual component of the Science of Creative Intelligence course presents a set of principles underlying all disciplines of knowledge. These principles are expressed in a neutral language unconnected with any discipline, yet they may be appreciated as consistent with quantum unified field theories in physics and with disciplines as diverse as history, literature, or computer science. The course thus provides a transdisciplinary framework for appreciating expressions of the same themes in the language of the sciences, the arts, religions, and management (Boothby, 1997).

An example of an interdisciplinary principle from the Science of Creative Intelligence course is “Rest is the basis of activity.” The theme that everything in nature progresses through cycles of rest and activity can be seen in biological rhythms, musical melodies, or in the interplay of tradition and innovation as organizations evolve. Students also have the direct experience of this principle in that the deep rest and relaxation gained during the practice of the Transcendental Meditation technique energizes them for more dynamic activity during the day.

After this introductory course, undergraduates take a core curriculum including courses in the natural and social sciences, humanities, and the arts. Each of these subjects is taught with reference to the principles studied in the introductory course. Thus, even after one year of study at Maharishi University of Management, students have not only learned disciplinary content but they have also been exposed repeatedly from many angles to the idea that every discipline arises from a common source, one same Transcendental field. They also come to realize this same field is the consciousness they are awakening to in their daily meditation practice.

As faculty at Maharishi University of Management, we also use these interdisciplinary principles throughout our upper division and graduate-level courses to help students connect the new knowledge in our courses to their existing knowledge. We have developed various charts and teaching tools to facilitate this process (S.L. Dillbeck & M.C. Dillbeck, 1987).

On the following page is an example of a Main Point Chart from a lesson on decision-making, which makes connections between the
principles of the discipline and the students’ own growing experience of pure consciousness.

**MAIN POINT CHART**

Decision-making is the process of choosing one alternative from several. The basic elements of decision making are a goal, alternative courses of action, analysis of potential outcomes, and a choice of one alternative based on this analysis. Through repeatedly experiencing transcending, the mind grows in broad comprehension together with the ability to focus sharply. These qualities enable the decision-maker to make precise distinctions while maintaining a holistic perspective.

A business student commented on the advantages of using these charts in class:

The Main Point Chart gives you the essence of the lesson. The corresponding SCI points remind you that there is something more subtle at the basis of what you are learning; there is something more to life than just business; here’s your own growth. (S. Dillbeck, Heaton, & Kirouac, 1991, p. 65.)

Other charts, like the chart depicting levels of the mind shown earlier in Figure 1, organize the content of the discipline in layers—with more causal or fundamental layers underlying those that are more applied. The most fundamental level in these charts is the unified field, one’s own Transcendental Consciousness, which can be experienced and enlivened to support success at all other layers of the chart. The overall purpose of these teaching tools is to illustrate the interconnectedness of all elements of knowledge with their source, and the connection of that source with students’ growing experience of pure spirituality.

The valedictorian at the 1999 Maharishi University of Management commencement exercises, a transfer student who had attended two East Coast colleges before completing her undergraduate degree at Maharishi University of Management, provides eloquent testimony that this integrated pedagogical approach is actualized in, and appreciated by, students:

Staying at the surface of the knowledge just isn’t enough; neither is spreading the horizon further. Depth of knowledge and depth of expe-
experience are required. When a stone is thrown into a pond, the deeper it falls, the wider the ripples expand across the water. In our classes at Maharishi University of Management, ideas are pulled down to their origin, and at this level we find a connection with only one thing—ourselves. Nothing, no matter how far or deep or abstract or simple, nothing is ever outside of our Self. This experience in the classroom and in meditation creates comfort, creates confidence, creates intimacy with Nature, expanding our individual ripples across distant boundaries. This experience is lacking at traditional universities. This is fundamental at Maharishi University of Management. (Valentine, 1999)

Research on the Effectiveness of the Maharishi University of Management Integrated System of Education

Although Transcendental Consciousness is an inner personal experience, by definition not open to objective measurement, extensive research has identified concrete and measurable effects resulting from having this experience. Maharishi has commented on the relationship between science and spirituality:

With the tool of modern science, it has been possible to examine the concrete changes that take place in the nervous system as a result of the practice of the Transcendental Meditation technique, and it is these changes that bring about an overall feeling of fullness of life, which throughout the ages has been declared a spiritual value. (Maharishi Mahesh Yogi, 1997, Vol. III: 82)

Because of the systematic and standardized approach to teaching and verification of correct practice, the effects of the Transcendental Meditation technique have been open to experimental validation (Dillbeck & Orme-Johnson, 1987). In fact, the Transcendental Meditation technique has been the subject of “the most prolific research program on meditation” (Murphy & Donovan, 1997, p. 10). More than 500 published studies have been conducted at more than 200 universities and research institutes in more than 30 countries around the world in the areas of physiology, psychology, and sociology. This body of research has been shown to have applications to health, education, business, government, and rehabilitation.
We cannot do justice to all these studies in this article, but we highlight those of most interest to management educators. For reviews of the physiological and psychological effects of the Transcendental Meditation technique, please refer to Jevning, Wallace, and Beidebach (1992) and Alexander (1993), respectively. In business, the distinctive psychophysiological state of restful alertness produced by the Transcendental Meditation technique has been found to improve employee health, well-being, job satisfaction, efficiency, and productivity, which, in turn, appear to influence organizational climate, absenteeism, and financial performance (Schmidt-Wilk, Alexander, & Swanson, 1996).

Statistical meta-analyses, an objective and reliable procedure for identifying significant quantitative relationships among large numbers of studies, have found the Transcendental Meditation technique to be more effective than other forms of meditation and relaxation in reducing anxiety (Eppley, Abrams & Shear, 1989); improving psychological health as measured by the growth of self-actualization (Alexander, Rainforth & Gelderloos, 1991); and reducing tobacco, alcohol, and drug use (Alexander, Robinson, & Rainforth, 1994).

Finally, in the field of education, studies indicate that not only academic performance but also characteristics that contribute to successful learning—including intelligence, creativity, self-concept, visual perception, and mental health—increase in students who practice the Transcendental Meditation program as compared with controls. Table 1 summarizes studies conducted at four universities in the United States and one in the United Kingdom.

Higher Education for Higher Consciousness
Since the inception of Maharishi University of Management, the faculty have studied the growth of our students through research on student outcomes. The research indicates that this educational experience has impacts on the cognitive, affective, and moral dimensions of student development. Table 2 summarizes the research on students at Maharishi University of Management, whose academic program includes systematic transcendence through practice of the Transcendental Meditation technique. The studies in Table 2 marked with a superscript letter indicate that the addition of the TM-Sidhi program (Text continues after Tables 1 & 2.)
### Table 1

**Research on Students Practicing the Transcendental Meditation Program at Universities Other than Maharishi University of Management**

<table>
<thead>
<tr>
<th>Research Design</th>
<th>Sample</th>
<th>Dependent Variable</th>
<th>Measure</th>
<th>Finding</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomized pre-post with second post for waiting list control group</td>
<td>33 students at Purdue University: 17 assigned to relaxation, 16 assigned to TM technique</td>
<td>Anxiety</td>
<td>Spielberger State-Trait Anxiety Inventory (trait scale)</td>
<td>The TM technique was significantly more effective in reducing anxiety level than passive relaxation</td>
<td>M.C. Dillbeck (1977)</td>
</tr>
<tr>
<td>Pre-post longitudinal with control</td>
<td>71 undergraduates at Cornell University: 35 learned TM technique; 36 controls</td>
<td>Creativity</td>
<td>Torrance Test of Creative Thinking (verbal and figural forms)</td>
<td>After 5 months, the TM group scored significantly higher than controls on figural flexibility ( (p &lt; .006) ), figural originality ( (p &lt; .0005) ), and verbal fluency ( (p &lt; .02) )</td>
<td>Travis (1979)</td>
</tr>
<tr>
<td>Study Design</td>
<td>Participants</td>
<td>Outcome Measures</td>
<td>Results</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Randomized pre-post with alternate treatment and controls</td>
<td>69 students or spouses of students at Purdue University: 43 randomly assigned to (a) wait 2 weeks before learning TM or (b) passive relaxation for 2 weeks before learning TM; 26 no treatment controls</td>
<td>Habitual patterns of visual perception and performance</td>
<td>The TM technique was found to improve visual perception both on tasks in which habitual patterns of perception aid performance and on tasks in which habitual patterns of perception hinder performance.</td>
<td>M.C. Dillbeck (1982)</td>
<td></td>
</tr>
<tr>
<td>Randomized pre-post with controls</td>
<td>20 male master of science students at Cranfield Institute of Technology, UK: 10 assigned to TM technique; 6 controls (of original 10)</td>
<td>Academic performance</td>
<td>Postgraduate students who learned the TM technique showed better academic performance than controls after 6 months ($p = .019$)</td>
<td>Kember (1985)</td>
<td></td>
</tr>
<tr>
<td>Research Design</td>
<td>Sample</td>
<td>Dependent Variable</td>
<td>Measure</td>
<td>Finding</td>
<td>Study</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Randomized pre-post longitudinal</td>
<td>58 Black college students at University of Arkansas, Pine Bluff:</td>
<td>Overall mental health and well-being</td>
<td>Electroencephalograph coherence (EEG),</td>
<td>After 2.5 months, the TM groups improved significantly compared with</td>
<td>Gaylord et al. (1989)</td>
</tr>
<tr>
<td>with controls</td>
<td>50 were randomly assigned to either TM, Progressive Muscle Relaxation</td>
<td></td>
<td>Tennessee Self-Concept Scale</td>
<td>PR and C groups on self-concept, mental health, and EEG coherence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(PR), or cognitive therapy (C); 8 self-selected the TM technique</td>
<td></td>
<td></td>
<td>of the brain.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 Continued
Table 2

Research on Maharishi University of Management (MUM) Students

<table>
<thead>
<tr>
<th>Research Design</th>
<th>Sample</th>
<th>Dependent Variable</th>
<th>Measure</th>
<th>Finding</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-sectional data with reference data from two comparison groups</td>
<td>312 MUM students plus reference data for 635 students at University of California, Berkeley; and 366 students at a private liberal arts college with an innovative curriculum</td>
<td>Intellectual and non-intellectual aspects of personality, attitudes toward education</td>
<td>Questionnaire, Omnibus Personality Inventory</td>
<td>Students at MUM were found to be more intellectually oriented, more tolerant of authority and traditional religion, more socially outgoing and altruistic, more psychologically stable and more committed to higher education than students at the other colleges.</td>
<td>Brown (1976)</td>
</tr>
<tr>
<td>Pre-post longitudinal</td>
<td>15 MUM students</td>
<td>Nonverbal fluid intelligence, personality</td>
<td>Catell Culture Fair Intelligence Test, California Personality Inventory</td>
<td>MUM students increased in levels of intelligence, self-confidence, sociability, psychological health, and social maturity from freshman to senior years.</td>
<td>Aron, Orme-Johnson &amp; Brubaker (1981)</td>
</tr>
<tr>
<td>Research Design</td>
<td>Sample</td>
<td>Dependent Variable</td>
<td>Measure</td>
<td>Finding</td>
<td>Study</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Pre-post longitudinal with normative data</td>
<td>50 MUM students (field independence); 29 MUM students (intelligence); 26 of whom completed field independence measure</td>
<td>Cognitive style (field independence), fluid intelligence</td>
<td>Group Embedded Figures Test; Cattell Culture Fair Intelligence Test</td>
<td>MUM students improved significantly on intelligence and field independence from freshman to senior years ($p &lt; .005$).</td>
<td>M.C. Dillbeck, Assimakis, Raimondi, Orme-Johnson, &amp; Rowe (1986)</td>
</tr>
<tr>
<td>Pre-post longitudinal with control data</td>
<td>45 MUM students, 55 students from another university in Iowa</td>
<td>General intelligence, speed of mental processing</td>
<td>Cattell Culture Fair Intelligence Test; Hick's reaction time</td>
<td>After 2 years, MUM students showed significant improvement on intelligence and reaction time compared with controls, who showed no improvement ($p &lt; .005$).</td>
<td>Cranson et al. (1991)</td>
</tr>
</tbody>
</table>
Randomized pre-post control group from matched pairs; correlational

47 MUM students: 26 enrolled in TM-Sidhi program; 21 controls practicing TM program

Creativity; Brain functioning and psychological variables

EEG, Torrance Test of Creative Thinking, Wechsler Adult Intelligence Scale, Defining Issues Test, State of Consciousness Inventory, grade point average (GPA)

Students participating in TM-Sidhi course improved significantly in creativity compared with TM-practicing controls; TM and TM-Sidhi programs improved functional organization of the brain, indicating enhanced cognitive ability and emotional stability

Orme-Johnson, Wallace, Dillbeck, Alexander, & Ball (1982)*
<table>
<thead>
<tr>
<th>Research Design</th>
<th>Sample</th>
<th>Dependent Variable</th>
<th>Measure</th>
<th>Finding</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-sectional and pre-post with control group</td>
<td>15 MUM students and 15 students from a nearby college</td>
<td>Cognitive and affective development</td>
<td>Hermans Self-Investigation Method</td>
<td>MUM students scored significantly higher at pretest on all dimensions of psychological well-being and integration and after 9 months showed significantly greater gains in autonomy, spirituality, creativity, well-being, and integration compared with controls.</td>
<td>Gelderloos (1987)</td>
</tr>
<tr>
<td>Cross-sectional with controls</td>
<td>(a) 15 MUM students practicing the TM-Sidhi program and 10 controls from a nearby college</td>
<td>Cognition and perception of positively and negatively valued words</td>
<td>Word recall test; LaForge Interpersonal Checklist; Eysenck Personality Inventory; IPAT Anxiety Scale</td>
<td>MUM students have cognitive set oriented toward more positive values</td>
<td>Gelderloos, Goddard, Ahlstrom, &amp; Jacoby (1987)\textsuperscript{a}</td>
</tr>
</tbody>
</table>
### Table 2 Continued

<table>
<thead>
<tr>
<th>Cross-sectional and Pre-post longitudinal with controls</th>
<th>13 MUM students practicing the TM-Sidhi program; 12 MUM students practicing the TM technique; 11 non-meditating students from a nearby college</th>
<th>Psychological health and relationship of experiences of Transcendental Consciousness with psychological health</th>
<th>Herman’s Self-Investigation Methods</th>
<th>Cross-sectionally, experience with the TM and TM-Sidhi programs was positively related to psychological health ($p = .002$). Longitudinally, the meditating groups increased more on psychological health than controls ($p &lt; .03$)</th>
<th>Gelderloos, Hermans, Ahlstrom, &amp; Jacoby (1990)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-sectional with controls</td>
<td>96 MUM students; 30 controls from a large Midwestern university (10 premeditators and 20 non-meditators)</td>
<td>Moral development</td>
<td>Kohlberg’s Moral Judgement Interview</td>
<td>MUM students scored significantly higher than nonmeditators on moral maturity; no differences between nonmeditating and premeditating controls.</td>
<td>Nidich (1975)</td>
</tr>
<tr>
<td>Cross-sectional with matched controls</td>
<td>76 students: 47 MUM students 20 practicing the TM program and 27 practicing the TM-Sidhi program; plus 29 students from an Eastern college: 12 tested before learning the TM technique and 17 controls with no practice</td>
<td>Moral development</td>
<td>EEG coherence, Rest’s Defining Issues Test</td>
<td>MUM students displayed higher levels of principled thinking than either nonmeditating students or students about to learn the TM technique. Those practicing the TM-Sidhi program exhibited levels of principled moral reasoning higher yet than the student practicing the TM technique.</td>
<td>Nidich &amp; Nidich (1983)</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>------------------</td>
<td>------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Correlation</td>
<td>26 MUM students: 13 with cosmic orientation (beyond stage 6 orientation); 13 with noncosmic orientation</td>
<td>Relationship between EEG coherence and principles moral thinking</td>
<td>Rest’s Defining Issues Test</td>
<td>Students with cosmic orientation exhibited higher EEG bilateral frontal alpha coherence than noncosmic subjects ($p &lt; .01$)</td>
<td>Nidich, Ryncarz Abrams, Orme-Johnson, &amp; Wallace (1983)</td>
</tr>
<tr>
<td>Research Design</td>
<td>Sample</td>
<td>Dependent Variable</td>
<td>Measure</td>
<td>Finding</td>
<td>Study</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------</td>
<td>-------------------</td>
<td>---------</td>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>Cross-sectional with two reference groups listed in the manual</td>
<td>48 entering MUM students; 136 nonmeditating students and 29 “relatively self-actualized” people</td>
<td>Self-actualization</td>
<td>Shostrom’s Personal Orientation Inventory (POI)</td>
<td>MUM students scored significantly higher than a reference group of other college students on eight subscales of the POI. Their profile was similar to a reference group of self-actualized people</td>
<td>Orme-Johnson &amp; Duck (1977)</td>
</tr>
<tr>
<td>Pre-post longitudinal with matched controls</td>
<td>36 MUM alumni; 102 controls: 34 alumni from each of three control universities; all alumni pretested as students</td>
<td>Ego development, principled moral reasoning, and intimacy motivation</td>
<td>Loeinger’s Sentence Completion test, Rest’s Defining Issues Test; Thematic Apperception Test scored for intimacy motivation (McAdams)</td>
<td>After 10 years MUM alumni showed significant increases on ego development ($p = .0000002$), moral reasoning ($p = .01$) compared with controls</td>
<td>H.M. Chandler (1991); see also Alexander, Heaton, &amp; H.M. Chandler (1984)</td>
</tr>
<tr>
<td>Pre-post with controls</td>
<td>25 MUM students: 12 who learned the TM-Sidhi program and 13 who did no</td>
<td>Efficiency of concept learning, coherence of the brain, and flexibility of the nervous system</td>
<td>Computerized concept learning task, H-reflex recovery, and EEG coherence</td>
<td>Students who took the TM-Sidhi course improved their efficiency of concept learning compared with students practicing the TM program ($p &lt; .05$)</td>
<td>M.C. Dillbeck, Orme-Johnson &amp; Wallace (1981)</td>
</tr>
<tr>
<td>Research Design</td>
<td>Sample</td>
<td>Dependent Variable</td>
<td>Measure</td>
<td>Finding</td>
<td>Study</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Cross-sectional with matched controls</td>
<td>16 MUM students and 16 controls from nearby colleges</td>
<td>Efficiency of concept learning</td>
<td>Concept learning task and EEG measurements</td>
<td>MUM students displayed higher frontal EEG coherence associated with more efficient performance on cognitive tasks.</td>
<td>Dillbeck &amp; Araas-Vesely (1986)</td>
</tr>
<tr>
<td>Retrospective with control data</td>
<td>50 MUM graduate students, 25 who had learned the TM program during their undergraduate studies at other universities and 25 who had completed undergraduate degrees before learning the TM technique</td>
<td>GPA</td>
<td>College transcripts</td>
<td>GPA improved significantly after students learned the TM technique</td>
<td>Heaton &amp; Orme-Johnson (1977)</td>
</tr>
<tr>
<td>Correlation</td>
<td>26 male MUM students</td>
<td>Relationship between functional integration of the brain and math achievement</td>
<td>EEG coherence in the brain measured during the TM practice, final grades on sophomore year math courses</td>
<td>EEG frontal coherence was found to be positively correlated with math achievement and an added predictor beyond prior grades.</td>
<td>Nidich, Abrams, Jones, Orme-Johnson, &amp; Wallace (1981)</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Correlation</td>
<td>22 MUM students</td>
<td>Relationship between academic performance, neurological functioning, and EEG coherence</td>
<td>GPA, paired H-reflex recovery, EEG coherence</td>
<td>Positive correlation between high EEG coherence, enhanced neurological efficiency, and superior academic performance was found in students practicing the TM technique.</td>
<td>Wallace, Mills, Orme-Johnson, Dillbeck, &amp; Jacobs (1982)</td>
</tr>
<tr>
<td>Research Design</td>
<td>Sample</td>
<td>Dependent Variable</td>
<td>Measure</td>
<td>Finding</td>
<td>Study</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Cross-sectional of two cohorts</td>
<td>23 MUM students; 33 MUM students</td>
<td>Achievement levels on skills and knowledge of a general education</td>
<td>Academic Profile (Educational Testing Service)</td>
<td>Native English speakers scored in the 93rd and 91st percentiles on the two versions of the tests.</td>
<td>Jones (1989)</td>
</tr>
<tr>
<td>Pre-post with controls and correlation</td>
<td>47 art students: 16 MUM students and 31 nonmeditating students from another Iowa university</td>
<td>Field independence, art; achievement including GPA, artistic ability, and perceptions of art competence compared with peers</td>
<td>Group Embedded Figures Test; Questionnaire of Art Practice (designed for this study)</td>
<td>Field independence was significantly correlated with GPA and artistic ability; MUM students were significantly more field independent than controls.</td>
<td>Fergusson (1992)</td>
</tr>
</tbody>
</table>
Pre-post with controls and correlation

| 106 art students: 12 MUM students and 22, 38, and 34 nonmeditating students from three other Iowa universities, respectively |
| Field independence; art achievement including GPA, artistic ability, and perceptions of art competence compared with peers |
| Group Embedded Figures Test; Questionnaire of Art Practice |
| Field independence was positively correlated with GPA, artistic ability, and how students perceived personal artistic competence compared with peers. MUM students scored higher on field independence than controls. |

| Fergusson (1993) |

Note: Transcendental Meditation (TM); Electroencephalograph (EEG);

The studies marked with a superscript letter * indicate that the addition of the TM-Sidhi program further accelerates the development, and/or enhances the learning processes, fostered by the MUM system of education.
further accelerates the developmental, and/or enhances the learning processes fostered by the Maharishi University of Management system of education.

These objective findings support the proposition that the pedagogy of Maharishi University of Management promotes higher consciousness, greater personal integration, and greater capacity of comprehension. These effects are said to arise from systematically cultivating the experience of Transcendental Consciousness, or pure spirituality. In other words, pure spirituality has practical value in student life.

The research reviewed here may suggest measures that could be used in additional studies of holistic student development. Possible study designs might compare the outcomes at Maharishi University of Management with approaches at other institutions or might compare the effects of the Transcendental Meditation technique on students at other colleges with the effects of the Transcendental Meditation program and the whole institutional setting at Maharishi University of Management.

Implications for Management Educators
We have described an integrated system of management education at Maharishi University of Management. The various components of Maharishi University of Management’s approach work together synergistically within an institutional context that has an explicit goal of spiritual development. Yet, management educators may be able to adopt specific component features from this model for their individual development, for teaching in their classrooms, and for the development of their institutions.

First, instruction in the specific practice of the Transcendental Meditation technique is available around the world. Second, visitors to the Maharishi University of Management campus may enroll in the Science of Creative Intelligence course and in faculty development workshops in Maharishi University of Management teaching practices. Third, Maharishi University of Management’s introductory Science of Creative Intelligence course has been taught as a for-credit elective at other universities including Stanford, Yale, and the University of Arkansas. Students in these courses learned the Transcendental Meditation tech-
nique and studied transdisciplinary principles of nature, such as “Rest is the basis of activity” and “Inner is the basis of outer.”

With or without experience of these specific programs, management educators might also draw from the model of Maharishi University of Management the following four general principles for incorporating spirituality in management education.

**Suggestions for Management Educators**

1. Teach students that there is a spiritual basis to life and to business. A number of resources or approaches could be used according to your individual circumstances and preferences. For example, drawing on the “perennial philosophy” and new theories in science, the writings of Harman (1988) present a viewpoint that consciousness is the primordial and universal reality that manifests itself as the material universe. On the basis of that philosophy, Harman and Hermann (1990) present the constructive role of business in transforming society. From the scientific work of Capra (1982), students may gain a vision of a unified web of all life. Wheatley’s (1992) work explores deep theories about living systems to present visions of management in accord with nature. Hagelin’s (1998) *A Manual for a Perfect Government* argues that the holistic intelligence of the most basic level of nature can be harnessed in the administration of human institutions through groups that regularly enliven that field of intelligence in their own awareness.

In religiously affiliated institutions, readings from the scripture of that faith can present the spiritual basis of life. In other institutions, educators might use the perspective of comparative cultures to present various spiritual writings, including Native American and non-Western sources, that give a vision of the depth of our being and its interconnectedness to the wholeness of life.

Just as Maharishi University of Management’s Science of Creative Intelligence course provides a philosophical foundation for the whole curriculum, other institutions may create their own foundational course to lay out their institutions’ principles regarding pure and applied spirituality. By consciously integrating those principles into their later courses, these institutions may enable students to grow in understanding of how their philosophy connects to each of the disciplines they are studying.
2. Teach students that they can experience pure spirituality. Psychological writings about the full range of human development (Alexander et al., 1990; Maslow, 1971; Wilber, 1999) may serve to introduce students to the idea that experience of transcendence is within their possibilities and that such an experience would be a valuable source of wisdom. Harung, Heaton, Graff, and Alexander (1996) have connected advanced human development to outstanding performance in contemporary leaders.

Research publications on the effects of meditation may also introduce students to the range of their human potential. Pearson (in press) has compiled examples of inspiring experiences of pure spirituality from different periods of time throughout the world. Many students appear to be searching for this kind of experience to give meaning to their lives.

3. Assess the outcomes of spiritual aspects of management education. Attainment of spiritually oriented goals can be defined in measurable ways and assessed, so that educational practices can be refined and effective practices can be shared among management educators. Outcome measures can include individual psychological and physiological indicators, such as those reviewed in this article, and case studies of spiritual programs of management education and development, including observational and archival measures of personal and collective performance outcomes.

4. Further your personal understanding and experience of spirituality. For many educators, exploration of spirituality in management is a personal quest, impelled by an innate drive toward greater meaning and wholeness in one’s personal and professional life. Growing networks of fellow seekers, including interest groups within the Organizational Behavior Teaching Conference (OBTC), the International Assembly of Business Disciplines (IABD), and the Academy of Management, provide opportunities for exchange of knowledge and mutual support for personal transformation.
Finally, we would like to briefly address the question of institutional contexts for Maharishi University of Management’s approach to spirituality. We propose that because the knowledge of pure consciousness is scientifically based, it is appropriate to public institutions, and because it is spiritually based, it is appropriate to religiously affiliated institutions.

The theory and practice of the Science of Creative Intelligence were articulated with the intention that they could be applied to enrich higher education at any institution. Just as scientific research has led to the Transcendental Meditation technique gaining public funding in the fields of medical research and drug rehabilitation, so also research on the impact of this practice on educational outcomes may lead to its wider use in public education.

Within religious institutions, individuals may adopt the Transcendental Meditation program as an aid to spiritual development. Maharishi University of Management’s faculty and international student body include devout practitioners of Christianity, Judaism, Hinduism, Buddhism, Islam, and other religions, as well as individuals who have no formal religious affiliation. Regardless of beliefs, the educational practices of Maharishi University of Management have been found to lead to measurable outcomes that can be associated with growth of spirituality. While Maharishi University of Management’s educational system is independent of any religion, the experience of Transcendental Consciousness has been described by Maharishi as follows:

[T]he basis of the initial revelation that promoted the religion in the first place . . . with this experience of Transcendental Consciousness, the followers of religion, growing in higher states of consciousness, are naturally drawn to locate their experiences in their religious texts. (Maharishi Mahesh Yogi, 1994, pp. 234–235)

Research on the development of consciousness, Maharishi said, will take the phenomena recorded in religious texts out of the realms of faith and mysticism and make it practical in education:

In this generation, when we are in possession of the knowledge of deeper Laws of Nature and knowledge of the home of all the Laws of Nature, it is possible not only to account for the phenomena recorded in religious texts, but also to systematically apply that knowledge so
that every individual on earth may rise to that high level of possibility. (Maharishi Mahesh Yogi, 1997, Vol. I: 116)

**Conclusion**

Attempting to emulate 19th-century physical sciences, objectivity-seeking management education relied on materialist worldviews and methods that hindered our study and experience of the essentially spiritual foundation of our field. Movement of the field of management education toward a more spiritual paradigm can be facilitated by shifting our ontological and epistemological perspectives about the possibility and importance of spirituality in our discipline. It is now time to emulate those quantum physicists who have recognized the inseparability of human consciousness from the basic field of physical phenomena. We can research this field of consciousness through techniques of pure subjectivity and thereby awaken in ourselves and our students the spirituality that Drucker (1988) wrote “must animate all we do.”
References


*Maharishi’s programs to create heaven on earth: Glorification of inner and outer life—knowledge to bring fulfillment to every area of life*. (1992). Global Video Production.


row (Eds.), *Scientific research on the Transcendental Meditation program: Collected papers* (Vol. 1, Paper 76, pp. 470–475). Weggis, Switzerland: Maharishi European Research University.


A Quantum Metaphor of Organizations:
Implications for Business Education

Jane Schmidt-Wilk, Ph.D.
Dennis P. Heaton, Ed.D.
ABOUT THE AUTHORS

Jane Schmidt-Wilk, Ph.D., is Associate Professor in the Department of Management and Public Affairs at Maharishi University of Management, where she teaches courses in management and communication skills. Her research explores the development of top management teams in international settings. She has written on organizations as fields of consciousness in the 1999 book *Invincible Leadership* published by Maharishi University of Management Press.

Dr. Dennis Heaton is Chair of the Department of Management and Public Affairs at Maharishi University of Management and teaches Management Information Systems and Human Resource Management. He has a doctorate degree in Educational Leadership from Boston University. He is the author of numerous chapters and articles on higher stages of individual and organizational development.
ABSTRACT

The quantum metaphor has begun to be applied in management, contrasting with metaphors of the organization derived from classical physics. Metaphorically looking at organizations as quantum mechanical rather than classical phenomena shifts our attention from fixed roles to emergent possibilities, from discrete lines of authority to evolving networks of communication, and from mechanistic control to self-organization. As this shift is occurring in business practice, business education needs to adopt new perspectives and new educational technologies to enliven in students the characteristics described by the quantum metaphor.

Contrasting Quantum and Classical Models in Physics

Morgan (1986, p. 13) has explained that “by using different metaphors to understand the complex and paradoxical character of organizational life, we are able to manage and design organizations in ways that we may not have thought possible before.” A metaphor from quantum physics points in the direction of new perspectives and new possibilities in management practice and business education. Table 1 outlines contrasting points in the perspectives of classical and quantum physics and provides a framework for our discussion throughout the paper:

Table 1. Contrasting Models of Physical Reality

<table>
<thead>
<tr>
<th>Classical</th>
<th>Quantum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. from particles of inert matter</td>
<td>to lively fields of possibilities</td>
</tr>
<tr>
<td>2. from location in space and time</td>
<td>to non-localized</td>
</tr>
<tr>
<td>3. from discrete parts</td>
<td>to interconnecting whole</td>
</tr>
<tr>
<td>4. from mechanistic control</td>
<td>to self-organization</td>
</tr>
</tbody>
</table>

The model of classical physics says that everything consists of particles of inert matter that can be precisely located in time and space and that move when acted upon by outside forces. In the view of quantum physics, by contrast, the universe consists of wholly conceptual,
non-localized, non-material fields. What appear in classical physics as discrete objects and events are, according to the quantum model, interconnected in underlying, holistic fields that move by virtue of their own internal dynamism. John Hagelin, a world authority in the area of unified quantum field theories, explains that the deepest advances in quantum physics have revealed a single unified field: “Indeed, the entire universe, with all its diverse and multiform properties (charge, spin, color, flavor, etc.), is just a cosmic symphony—the vibrational states (fundamentals and overtones) of a single, underlying, universal, unified field of nature’s intelligence” (Hagelin, 1998, p. 48).

The quantum metaphor may seem abstract (because quantum fields are abstract) but its qualities (outlined in Table 1) can be identified in our experience of using the Internet. First, the Internet can be seen as an abstract field of information, full of vast, latent possibilities, which manifest into specific particles of communication according to how the users interact with it.

Second, we are getting more and more used to notions of phenomena that are not specified in time and space. When we use the Internet, it matters little where sender and receiver are. Third, in a recent book on psychology and the Internet, Gackenbach, Guthrie, and Karpen have described the Internet as an interconnecting whole:

The Internet has emerged as a single entity . . . displaying collective emergent behavior not evident or predictable from the parts involved, and rapidly showing itself to be a force that stirs and embodies the trends of the future in all areas of life (1998, p. 322).

The Internet, they observe, is a system with emergent properties which “itself adds new capabilities . . . significantly different than previous flat, static, local, technological and non-technological media and tools” (Gackenbach et al., 1998, p. 324). Finally, the classical metaphor of management does not fit the Internet, in that the Internet cannot be controlled in a top-down fashion—no one is in charge. Anyone with access to the Internet can create content, interact with anyone, and influence an emergent community of users.
Applying Physics Metaphors to Organizations

The model of classical physics has its counterpart in classical management theory with its principles of division of work and chain of command (Morgan, 1986). Wheatley (1992, p. 27) has observed how the Newtonian model of a mechanical universe was “captured by organizations in an emphasis on structure and parts . . . functions . . . roles. Page after page of organizational charts depict . . . the number of pieces, what fits where, who the big pieces are.”

As quantum physics and its explanatory potential have become better understood, the quantum metaphor has begun to be applied in thinking about the changing nature of organizations (Zohar, 1997). For example, in the quantum view, particles are lively possibilities of underlying, continuous, non-material fields that pervade the universe (see Table 1, row 1). In an analogous way, the identities of organizations and of individual players seem less tied today to distinct and fixed structures and boundaries. We are becoming more accustomed to virtual organizations and ad hoc roles that can appear momentarily and then dissolve. While the form of our organizations is becoming more ephemeral, a candidate for the more enduring substance of the organization is its culture. The organizational phenomena of culture, vision, and values have been described as unseen fields which pervade the organization (Wheatley, 1992; Zohar & Marshall, 1994).

The shift from inert matter to lively possibilities is also seen in the growing appreciation of non-material human capital. Writing in 1989, Gilder observed that the classical paradigm of a world composed of separate particles has become nothing other than “materialist superstition” (p. 120). He extended this “overthrow of matter” in physics to “the overthrow of matter in business organization” (Gilder, 1989, p. 116), observing that the dominant nations and corporations are those that have mastered not land and material resources but technologies and ideas. Building on this view, corporations today are identifying knowledge, information, and intelligent systems as the critical business resource:

The Industrial Age notion that the worth of a business should be measured mainly in terms of its goods and property no longer holds. . . . In the Digital Age, the single most important attribute of a successful company is the ability to collect data, sort through it to determine which
information is most important, and then make that information widely and easily accessible to its workforce.” (Microsoft, 1999)

The non-localized aspect of quantum reality (Table 1, row 2) can be seen in innovations such as flex-time, telecommuting, pagers/cell phones, and 7 day x 24 hour customer service which are obliterating the old space-time boundaries. Negroponte (1995) is one of many authors who believe that we are evolving toward a mode of digital living that is less dependent on being in a specific place at a specific time.

Fields organize events which seem separate in space and time. If organizations are like quantum fields, then the thinking and activity of their members can be highly correlated with each other without extensive layers of management (Harung, 1999). Zohar and Marshall (1995) see culture as a quantum phenomena which pervades the organization creating non-local correlations between the behavior of its members.

Our understanding of organizations is also illuminated by shifting to the quantum model of interconnected wholeness from the classical model of discrete parts (Table 1, row 3). A quantum view of the universe means we will see individual selves and our organizations as interrelated rather than independent. Ray (1993, pp. 4–5) writes of a new paradigm based on “wholeness and connectedness” and “doing business from our most profound inner awareness and in connection with the consciousness of others and the earth.”

Relationships among customers and suppliers are becoming boundary-less, as the systems within trading partners become more seamlessly integrated with each other. An implication of this changing world-view, Wheatley (1992) observes, is that we will move away from the model of the lonely hero who makes things happen by applying force and traveling great distances. We do seem to be shifting from organizations directed by classical bosses to more quantum-like teams and networks (Manz & Sims, 1993).

Finally, the quantum model elicits a shift from mechanistic control to self-organization (Table 1, row 4). Whereas the machine model of management based on classical physics emphasizes control through structure and imposed authority, a quantum model describes pervasive fields that organize themselves. Wheatley (1992) posits that a quantum approach in organizations means a move from managers who use force to direct others to a fluid system of relationships with mutual inter-
influence. She (1992) further suggests the possibility of an organization which moves gracefully in the unfolding dance of order already lively in the self-organizing universe (Jantsch, 1980). Maharishi Mahesh Yogi (1995, p. 8) presents a vision that management can utilize the "organizing power of Natural Law . . . automatically maintaining the well coordinated relationship of everything with everything else."

**Bringing the Quantum Metaphor to Life**

Business education today needs to develop its students to succeed in the new organizational environment described by the quantum metaphor. We have seen the abstract quantum principles come to life in the "unified field-based approach" to management education utilized at Maharishi University of Management. At Maharishi University of Management the unified field is presented as the foundation of management, and all the parts of business administration are seen as expressions of qualities of the unified field, such as all possibilities, omnipresent, integrating, infinite correlation, freedom, and self-sufficiency. These qualities are found growing in the life of the student through the experience of the abstract field of Transcendental Consciousness underlying the activity of the thinking mind. Students at Maharishi University of Management practice the Transcendental Meditation technique, which is also referred to as a technology for fathoming the unified field of all the laws of nature. This experience of the field nature of consciousness during the Transcendental Meditation technique develops managers who naturally enact quantum qualities such as holistic thinking (Gustavsson, 1995).
1992), synergistic team functioning (Schmidt-Wilk, 1996), and spontaneous peak performance (Harung, Heaton, Graff, & Alexander, 1996).

**Conclusion**

The quantum metaphor highlights the qualities business education needs to develop to keep up with changes in management practice. It enables us to see ourselves in ways that are less concrete and more abstract, less limited and more free, less isolated and more related in coherent wholes. Metaphorically looking at organizations as quantum mechanical rather than classical phenomena shifts our attention from fixed roles to emergent possibilities, from discrete lines of authority to evolving networks of communication, and from mechanistic control to self-organization. We have identified the Transcendental Meditation program as an educational technology which opens awareness to an unbounded field of possibilities to enliven quantum qualities in the student.

**References**


longitudinal study of effects on cognitive and affective functioning. *College Student Journal, 15*, 140–146.


This article, “A Quantum Metaphor of Organizations: Implications for Business Education” by Jane Schmidt-Wilk, Ph.D., & Dennis P. Heaton, Ed.D., here revised/updated, and reprinted with permission, was originally published in *Business Education Technology Journal, 1* (1), Spring, 1999.
Part IV

Employee Health and Health Care Costs
An Innovative Approach to Reducing
Medical Care Utilization and Expenditures

David W. Orme-Johnson, Ph.D.

Robert E. Herron, Ph.D.
ABOUT THE AUTHOR

David Orme-Johnson, Ph.D., received his B.A. from Columbia University in 1963 and Ph.D. from the University of Maryland in 1969 in experimental psychology. Dr. Orme-Johnson pioneered research on Maharishi’s Transcendental Meditation and TM-Sidhi programs in several areas, including autonomic stability, EEG coherence, intelligence, field independence, medical care utilization, prison rehabilitation, quality of life, and conflict resolution. His papers have appeared in such journals as American Psychologist, Psychosomatic Medicine, International Journal of Neuroscience, Personality and Individual Differences, and Journal of Conflict Resolution. Dr. Orme-Johnson was Chairman of the Psychology Department, Director of the Doctoral Program in Psychology, and Director of the Institute of World Peace at Maharishi University of Management (previously Maharishi International University, 1971–1995).

Robert E. Herron, Ph.D. is an independent researcher, writer, speaker, and consultant in medical cost reduction and health policy. He earned a B.A. in English in 1975, an MBA in 1985, and doctoral degree in management in 1993. From 1996 to 1998, he completed a post-doctoral program in the epidemiology of cardiovascular disease that was funded by the National Institutes of Health. Dr. Herron has taught a wide range of business and government policy courses at the undergraduate and graduate levels. Dr. Herron has conducted research to evaluate the cost-effectiveness of various methods of disease prevention and alternative medicine. He also conducted research that led to the development of new methods of analyzing medical costs and innovative means for reducing those costs. Dr. Herron has also done extensive policy research in many other fields, including on how to rescue national economies. He has served as a senior policy adviser and researcher for political parties.
ABSTRACT

In a retrospective study, we assessed the impact on medical utilization and expenditures of a multicomponent prevention program, the Maharishi Vedic Approach to HealthSM (MVAH). We compared archival data from Blue Cross/Blue Shield Iowa for MVAH (n = 693) with statewide norms for 1985 through 1995 (n = 600,000) and with a demographically matched control group (n = 4,148) for 1990, 1991, 1994, and 1995. We found that the 4-year total medical expenditures per person in the MVAH group were 59% and 57% lower than those in the norm and control groups, respectively; the 11-year mean was 63% lower than the norm. The MVAH group had lower utilization and expenditures across all age groups and for all disease categories. Hospital admission rates in the control group were 11.4 times higher than those in the MVAH group for cardiovascular disease, 3.3 times higher for cancer, and 6.7 times higher for mental health and substance abuse. The greatest savings were seen among MVAH patients older than age 45, who had 88% fewer total patient days compared with control patients. Our results confirm previous research supporting the effectiveness of MVAH for preventing disease. Our evaluation suggests that MVAH can be safely used as a cost-effective treatment regimen in the managed care setting.

Introduction

The United States spends more on medical services than any other country, yet among industrialized nations it has some of the worst health outcomes (e.g., for life expectancy at birth, the United States ranks 20th for males and 18th for females). Studies suggest that 50% of the deaths and 70% of the diseases in the United States are caused by unhealthy lifestyle habits, such as smoking, alcohol abuse, and improper diet. Managed care and government policy makers are faced with a quandary—trying to decrease medical costs caused mainly by lifestyle choices while maintaining personal freedom.

Unconventional medicine may help resolve this dilemma. A recent national survey found that one third of Americans choose a nonallopathic approach to treating common health problems. In addition, the National Institutes of Health has recommended studying existing groups that have been using natural medicine over a substantial period of time. Along these lines, our study focuses on the Maharishi Vedic Approach to Health (MVAH), a comprehensive program of natural medicine that
implements Ayur-Veda according to the ancient Vedic texts of India. Developed by Maharishi Mahesh Yogi in collaboration with leading physicians, MVAH is a prevention-oriented system designed to maintain optimal health by restoring balance in the physiology. The MVAH system offers noninvasive diagnostic techniques and prescribes specific daily and seasonal behavioral and dietary routines to strengthen the immune system and the homeostatic mechanisms. It makes use of an extensive materia medica describing the therapeutic use of medicinal plants. It includes antioxidant strategies, mind-body integration strategies, and techniques for strengthening the immune, cardiovascular, and digestive systems. The MVAH emphasizes the role of the environment in maintaining optimal individual and social health and thus even includes systems of music, architecture, and city planning.

The most widely researched MVAH methodology is the Transcendental Meditation program, which is highly effective for reducing stress and activating the restorative mechanisms of the body. Orme-Johnson provided direct evidence that the Transcendental Meditation technique improves general health in a 5-year study of health insurance statistics for 2,000 practitioners. He reported that when compared with normative data or with demographically similar control subjects, persons practicing this technique used 50% fewer inpatient and outpatient medical services. Evidence also suggests that the Transcendental Meditation technique reduces medical costs. Herron et al. evaluated the impact of Transcendental Meditation practice on the medical expenses of 677 French Canadians and found that medical costs were decreased by 5% to 7% annually. Herron et al. also reported that the Transcendental Meditation technique was more cost-effective than medication in treating hypertension. Our current study extends this research to persons using other aspects of MVAH in addition to the Transcendental Meditation program.

Methods
To analyze the impact of MVAH on medical utilization and expenditures, we compared data from persons using the MVAH program with those from a norm group and a control group. Data for the MVAH and control groups were obtained from archival health insurance annual reports provided by Blue Cross/Blue Shield of Iowa (BG/BS). Data for
the norm group were obtained from BC/BS reports on statewide normative data. The BC/BS reports contained: (1) medical utilization data by inpatient/outpatient status and disease categories; and (2) aggregate amounts BC/BS paid annually for its clients’ medical treatment during an 11-year period (1985 to 1995).

### Table 1

**Characteristics of the Norm, Control, and Maharishi Vedic Approach to Health (MVAH) Groups**

<table>
<thead>
<tr>
<th></th>
<th>Norm</th>
<th>Control</th>
<th>MVAH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (yr)</td>
<td>32.5</td>
<td>34.9</td>
<td>34.0</td>
</tr>
<tr>
<td>Percent Female</td>
<td>51.4</td>
<td>53.7</td>
<td>50.5</td>
</tr>
<tr>
<td>Coinsurance*</td>
<td>80/20</td>
<td>90/10</td>
<td>90/10</td>
</tr>
<tr>
<td>Deductible*</td>
<td>$100</td>
<td>$100</td>
<td>$50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Distribution†</th>
<th>Norm</th>
<th>Control</th>
<th>MVAH</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td>32%</td>
<td>26%</td>
<td>27%</td>
</tr>
<tr>
<td>20-34</td>
<td>21%</td>
<td>19%</td>
<td>5%</td>
</tr>
<tr>
<td>35-44</td>
<td>19%</td>
<td>21%</td>
<td>36%</td>
</tr>
<tr>
<td>45-54</td>
<td>14%</td>
<td>19%</td>
<td>29%</td>
</tr>
<tr>
<td>55-64</td>
<td>11%</td>
<td>12%</td>
<td>3%</td>
</tr>
<tr>
<td>65+</td>
<td>3%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

* Median
† Mean of 1994 and 1995

The Maharishi Vedic Approach to Health group consisted of faculty and staff members of Maharishi University of Management in Fairfield, Iowa, and their dependents. During the 11-year study period, the group size ranged from 417 persons in 1985 to 701 in 1995. The university population participates in many of the modalities of MVAH, which include twice-daily practice of the Transcendental Meditation and Transcendental Meditation-Sidhi programs (an advanced aspect of the Transcendental Meditation program), daily yoga and breathing exercises, herbal dietary supplements, and recommendations for diet and daily routine specific to the season and the individual’s health needs. In addition, two to three times a year many persons participate in an extensive physiologic purification program.6-8
The norm group consisted of approximately 600,000 Iowans enrolled in BC/BS. Data from this group for all 11 years (1985 to 1995) were compared with those for the MVAH group to assess consistency and reliability of the results.

To control for education level and profession, aggregate data on faculty members and their covered dependents from 18 other private colleges in Iowa for 1990 and 1991, and from 12 private colleges for 1994 and 1995 were supplied by Blue Cross/Blue Shield of Iowa Actuarial Services. We obtained only four years of data for the control group because of budgetary constraints and lack of available data for some years. These four years were representative of both the MVAH and the norm groups. The control group size was approximately 5,000 persons in 1990 and 1991, 3,282 in 1994, and 3,311 in 1995, with a mean aggregate group size of 4,148 for the four years. The mean size of the MVAH group during these four years was 693 persons. The mean age, sex, median coinsurance levels, and median deductible amounts were similar for all three groups (Table 1). However, because the available age distributions were somewhat different, we adjusted the data to control for this difference.

**Adjustment for Age Distribution**

Rates of medical utilization and expenditures were available for all three groups in each of six different age categories (<20, 20–34, 35–44, 45–54, 55–64, 65+) for 1994 and 1995. The utilization for the control and norm groups for each outcome (e.g., inpatient days per 1,000 persons, outpatient days per 1,000 persons, and hospital expenditures per person) was adjusted to reflect the age distribution of the MVAH group shown in Table 1. We used the following formula to adjust data from the norm and control groups: \( X_i = \sum \rho_j r_j \), where \( X_i \) is the age-adjusted utilization summed across all age categories for each medical outcome measure \( i \) for the norm or control groups, \( \rho_j \) is the proportion of persons in the MVAH group for age category \( j \), and \( r_j \) is the outcome measure for the norm or control groups for each age category \( j \). This adjustment was made for both 1994 and 1995, then applied to the remaining years of the study.

Because the number of persons in the MVAH group was too small to make meaningful comparisons in each of the age categories, we ana-
lyzed the data in two broad age categories, <45 and 45+. This gave the MVAH group a mean of 476 persons in the <45 category and 226 in the 45+ category. There were more than 1,000 persons in each category in the norm and control groups. The data in these two broad age categories were age-adjusted according to the formula described above.

Age adjustments were estimated for the years for which breakdowns by age distribution were unavailable (i.e., 1985–1990, 1992, and 1993 for the norm group; 1990 and 1991 for the control group) by using the mean age-adjustment factors from 1994 and 1995. This procedure had the effect of decreasing the norm and control groups, respectively, by 15% and 17.8% for patient days per 1,000 persons, by 3.4% and 0.6% for outpatient visits per 1,000 persons, and by 9.9% and 13.2% for hospital expenditures per person. These age adjustments could be expected to provide reasonable estimates because the age distributions of all three groups were stable over the 11-year period of the study.

**Type of Medical Services**

We compared the MVAH group with the control and norm groups according to four types of service: surgical, medical, obstetric, and mental health and substance abuse. These data were available for 4 years (1990, 1991, 1994, and 1995). The age-adjustment factors for total utilization and expenditures were applied to the medical, surgical, and mental health and substance abuse categories. Obstetric utilization was not age adjusted because all groups had approximately the same percentage of women aged 20 to 44 years.

**Diagnostic Categories**

We also analyzed data by 18 disease categories organized by organ systems. This is the standard reporting procedure used by BC/BS. Mean hospital admissions per 1,000 persons for all available years are reported, which includes eight years of data for the MVAH group (1985–1989, 1991, 1994, 1995), seven years of data for the norm group (1985–1989, 1994, 1995), and three years of data for the control group (1991, 1994, 1995). Data are missing because some years BC/BS did not report the data by diagnostic category. Some of the recent missing data were provided by special request, but data from other years were unavailable. Since the number of persons in the MVAH group was

317
relatively small, all available years of data were used to maximize the reliability of the results.

Age adjustment for data in each diagnostic category was made by applying the global correction to all categories; this procedure reduced the observed admissions per 1,000 persons by 15.8% in the norm group and 13.3% in the control group.

Results
Across all age categories, the MVAH group had fewer patient days per 1,000 persons and less inpatient and outpatient expenditures per 1,000 persons; this was also true for the two broad age categories of <45 and 45+ years. For persons younger than age 45, the hospital patient days per 1,000 persons in the MVAH group were 45% and 38% lower than that in the norm and control groups, respectively (Table 2). Among persons age 45 or older, hospital patient days per 1,000 persons in the MVAH group were 91% and 88% lower than that in the norm and control groups, respectively (Table 2). Outpatient visits per 1,000 persons were 53% and 61% lower in the MVAH group than in the norm and control groups, respectively, for persons younger than age 45 and 58% and 55% lower for persons age 45 or older (Table 2). Hospital inpatient and outpatient expenditures were 58% and 60% lower in the MVAH group than in the control and norm groups for persons younger than age 45 and 87% and 84% lower for persons age 45 or older.

Four- and Eleven-Year Comparisons
As shown in Table 3, the results were consistent across all years. Using the sign test, under the null hypothesis of no difference between the groups each year, the two-tailed probability of observing lower levels for all 11 years is $2 \times 0.511$ or $P = 0.001$.

Hospital Admissions and Length of Stay
The lower number of patient days per 1,000 persons in the MVAH group resulted from a combination of both a lower hospital admission rate and fewer days spent in the hospital. The age-adjusted 11-year mean hospital admissions per 1,000 persons was 57% less in the MVAH group compared with the norm group (29 versus 68). The 11-year mean length of stay in the hospital was 3.2 days in the MVAH
Table 2
Mean Annual Age-Adjusted Hospital Inpatient
and Outpatient Utilization and Expenditures by Age
for the Norm, Control, and MVAH Groups (1994-1995)

<table>
<thead>
<tr>
<th></th>
<th>Norm</th>
<th>Control</th>
<th>MVAH</th>
<th>% Diff (MVAH vs Norm)</th>
<th>% Diff (MVAH vs Control)</th>
<th>Ratio (Norm/MVAH)</th>
<th>Ratio (Control/MVAH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Patient Days/1,000</td>
<td>&lt; 45</td>
<td>197</td>
<td>176</td>
<td>-109</td>
<td>-38</td>
<td>1.8</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>45+</td>
<td>350</td>
<td>271</td>
<td>-33</td>
<td>-88</td>
<td>10.6</td>
<td>8.2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>246</td>
<td>205</td>
<td>86</td>
<td>-58</td>
<td>2.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Outpatient Visits/1,000</td>
<td>&lt; 45</td>
<td>414</td>
<td>498</td>
<td>-196</td>
<td>-61</td>
<td>2.1</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>45+</td>
<td>554</td>
<td>516</td>
<td>-234</td>
<td>-55</td>
<td>2.4</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>459</td>
<td>505</td>
<td>207</td>
<td>-59</td>
<td>2.2</td>
<td>2.4</td>
</tr>
<tr>
<td>Hospital Expenditures/Person*</td>
<td>&lt; 45</td>
<td>434</td>
<td>459</td>
<td>-183</td>
<td>-60</td>
<td>2.4</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>45+</td>
<td>822</td>
<td>661</td>
<td>-104</td>
<td>-84</td>
<td>7.9</td>
<td>6.4</td>
</tr>
</tbody>
</table>

*Hospital expenditures are inpatient plus outpatient hospital expenditures, in 1995 dollars.
group compared with 5.1 days in the norm group. For the four years of comparison with the control group, the age-adjusted mean admissions per 1,000 persons were 63 for the norm group, 59 for the control group, and 27 for the MVAH group. The mean length of stay was 4.8 days for the norm group, 5.0 for control group, and 3.6 for the MVAH group. Compared with the MVAH group, the rates of hospital admissions for the norm and control groups were 2.4 and 2.2 times higher, respectively.

Professional services (please see Figure 1), including physician consultations, laboratory work, x-ray films, pharmacy services, ambulance, and medical equipment, for the MVAH group were consistently lower than those for the norm and control groups for all years.

Figure 1. Age adjusted hospital inpatient utilization by type of service for statewide normative data (Norm), the Control group of other colleges in Iowa, and the *Maharishi Vedic Approach to Health* group (means of years—1990, 1991, 1994, 1995).
### Table 3
Yearly Rates of Hospital Patient Days, Outpatient Hospital Visits, Total Medical Expenditures, Percent Differences, and Ratios for the Norm, Control, and MVAH Groups.

<table>
<thead>
<tr>
<th>Year</th>
<th>Norm*</th>
<th>Control*</th>
<th>MVAH*</th>
<th>% Diff † (MVAH vs Norm)</th>
<th>% Diff † (MVAH vs Control)</th>
<th>Ratio † (Norm/ MVAH)</th>
<th>Ratio † (Control/ MVAH)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hospital Patient Days/1,000</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>471</td>
<td>--</td>
<td>108</td>
<td>-73</td>
<td>--</td>
<td>3.7</td>
<td>--</td>
</tr>
<tr>
<td>1986</td>
<td>455</td>
<td>--</td>
<td>118</td>
<td>-69</td>
<td>--</td>
<td>3.3</td>
<td>--</td>
</tr>
<tr>
<td>1987</td>
<td>463</td>
<td>--</td>
<td>103</td>
<td>-74</td>
<td>--</td>
<td>3.8</td>
<td>--</td>
</tr>
<tr>
<td>1988</td>
<td>475</td>
<td>--</td>
<td>54</td>
<td>-87</td>
<td>--</td>
<td>7.5</td>
<td>--</td>
</tr>
<tr>
<td>1989</td>
<td>472</td>
<td>--</td>
<td>85</td>
<td>-79</td>
<td>--</td>
<td>4.7</td>
<td>--</td>
</tr>
<tr>
<td>1990</td>
<td>465</td>
<td>509</td>
<td>125</td>
<td>-68</td>
<td>-70</td>
<td>3.2</td>
<td>3.3</td>
</tr>
<tr>
<td>1991</td>
<td>402</td>
<td>416</td>
<td>84</td>
<td>-75</td>
<td>-75</td>
<td>4.1</td>
<td>4.1</td>
</tr>
<tr>
<td>1992</td>
<td>381</td>
<td>--</td>
<td>57</td>
<td>-82</td>
<td>--</td>
<td>5.7</td>
<td>--</td>
</tr>
<tr>
<td>1993</td>
<td>339</td>
<td>--</td>
<td>103</td>
<td>-64</td>
<td>--</td>
<td>2.8</td>
<td>--</td>
</tr>
<tr>
<td>1994</td>
<td>302</td>
<td>258</td>
<td>104</td>
<td>-59</td>
<td>-51</td>
<td>2.5</td>
<td>2.0</td>
</tr>
<tr>
<td>1995</td>
<td>277</td>
<td>241</td>
<td>68</td>
<td>-71</td>
<td>-66</td>
<td>3.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Mean ’85-95</td>
<td>409</td>
<td>--</td>
<td>92</td>
<td>-74</td>
<td>--</td>
<td>3.8</td>
<td>--</td>
</tr>
<tr>
<td>Mean ’90, 91, 94, 95</td>
<td>362</td>
<td>356</td>
<td>95</td>
<td>-69</td>
<td>-67</td>
<td>3.2</td>
<td>3.1</td>
</tr>
<tr>
<td><strong>Outpatient Visits/1,000</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>309</td>
<td>--</td>
<td>113</td>
<td>-62</td>
<td>--</td>
<td>2.6</td>
<td>--</td>
</tr>
<tr>
<td>1986</td>
<td>321</td>
<td>--</td>
<td>120</td>
<td>-61</td>
<td>--</td>
<td>2.6</td>
<td>--</td>
</tr>
<tr>
<td>1987</td>
<td>342</td>
<td>--</td>
<td>163</td>
<td>-51</td>
<td>--</td>
<td>2.0</td>
<td>--</td>
</tr>
<tr>
<td>1988</td>
<td>381</td>
<td>--</td>
<td>204</td>
<td>-45</td>
<td>--</td>
<td>1.8</td>
<td>--</td>
</tr>
<tr>
<td>1989</td>
<td>412</td>
<td>--</td>
<td>194</td>
<td>-51</td>
<td>--</td>
<td>2.1</td>
<td>--</td>
</tr>
<tr>
<td>1990</td>
<td>465</td>
<td>331</td>
<td>184</td>
<td>-59</td>
<td>-44</td>
<td>2.4</td>
<td>1.8</td>
</tr>
<tr>
<td>1991</td>
<td>460</td>
<td>374</td>
<td>178</td>
<td>-60</td>
<td>-52</td>
<td>2.5</td>
<td>2.1</td>
</tr>
<tr>
<td>1992</td>
<td>476</td>
<td>--</td>
<td>221</td>
<td>-52</td>
<td>--</td>
<td>2.1</td>
<td>--</td>
</tr>
<tr>
<td>1993</td>
<td>471</td>
<td>--</td>
<td>219</td>
<td>-52</td>
<td>--</td>
<td>2.1</td>
<td>--</td>
</tr>
<tr>
<td>1994</td>
<td>480</td>
<td>497</td>
<td>200</td>
<td>-57</td>
<td>-60</td>
<td>2.3</td>
<td>2.5</td>
</tr>
<tr>
<td>1995</td>
<td>471</td>
<td>518</td>
<td>214</td>
<td>-53</td>
<td>-58</td>
<td>2.1</td>
<td>2.4</td>
</tr>
<tr>
<td>Mean ’85-95</td>
<td>417</td>
<td>--</td>
<td>182.7</td>
<td>-55</td>
<td>--</td>
<td>2.2</td>
<td>--</td>
</tr>
<tr>
<td>Mean ’90, 91, 94, 95</td>
<td>469</td>
<td>430</td>
<td>194</td>
<td>-57</td>
<td>-55</td>
<td>2.3</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Total Medical Expenditures per Person (1995 Dollars)‡</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>1,898</td>
<td>--</td>
<td>527</td>
<td>-69</td>
<td>--</td>
<td>3.2</td>
<td>--</td>
</tr>
<tr>
<td>1986</td>
<td>1,593</td>
<td>--</td>
<td>561</td>
<td>-61</td>
<td>--</td>
<td>2.6</td>
<td>--</td>
</tr>
<tr>
<td>1987</td>
<td>1,500</td>
<td>--</td>
<td>491</td>
<td>-64</td>
<td>--</td>
<td>2.8</td>
<td>--</td>
</tr>
<tr>
<td>1988</td>
<td>1,577</td>
<td>--</td>
<td>434</td>
<td>-69</td>
<td>--</td>
<td>3.3</td>
<td>--</td>
</tr>
<tr>
<td>1989</td>
<td>1,601</td>
<td>--</td>
<td>503</td>
<td>-65</td>
<td>--</td>
<td>2.9</td>
<td>--</td>
</tr>
<tr>
<td>1990</td>
<td>1,675</td>
<td>1,651</td>
<td>614</td>
<td>-59</td>
<td>-57</td>
<td>2.5</td>
<td>2.3</td>
</tr>
<tr>
<td>1991</td>
<td>1,585</td>
<td>1,497</td>
<td>570</td>
<td>-59</td>
<td>-56</td>
<td>2.5</td>
<td>2.3</td>
</tr>
<tr>
<td>1992</td>
<td>1,582</td>
<td>--</td>
<td>513</td>
<td>-64</td>
<td>--</td>
<td>2.8</td>
<td>--</td>
</tr>
<tr>
<td>1993</td>
<td>1,552</td>
<td>--</td>
<td>565</td>
<td>-60</td>
<td>--</td>
<td>2.5</td>
<td>--</td>
</tr>
<tr>
<td>1994</td>
<td>1,537</td>
<td>1,557</td>
<td>610</td>
<td>-56</td>
<td>-55</td>
<td>2.3</td>
<td>2.2</td>
</tr>
<tr>
<td>1995</td>
<td>1,533</td>
<td>1,588</td>
<td>533</td>
<td>-61</td>
<td>-61</td>
<td>2.6</td>
<td>2.6</td>
</tr>
<tr>
<td>Mean ’85-95</td>
<td>1,600</td>
<td>--</td>
<td>538</td>
<td>-63</td>
<td>--</td>
<td>2.7</td>
<td>--</td>
</tr>
<tr>
<td>Mean ’90, 91, 94, 95</td>
<td>1,575</td>
<td>1,573</td>
<td>582</td>
<td>-59</td>
<td>-57</td>
<td>2.4</td>
<td>2.3</td>
</tr>
</tbody>
</table>

*These data are the observed values, not adjusted for age. Control group data were available only for 1990, 1991, 1994, and 1995.
†These percentages were age-adjusted to provide a conservative estimate.
‡Total expenditures are the total of all Blue Cross/Blue Shield charges, including inpatient and outpatient hospital charges, physicians' fees, procedures, x-ray films, laboratory work, etc.
Pathologic Versus Obstetric Utilization

To distinguish pathologic from non-pathologic use of the hospital, use for diseases was separated from use for normal childbirth. The age-adjusted 11-year mean patient days per 1,000 persons for diseases (non-obstetric) was 80% lower in the MVAH group than in the norm group.

The mean rate of childbirth over the 11-year period from 1985 to 1995 for the MVAH group was slightly but not significantly lower than that for the norm group: 14.5 births per year in the MVAH group compared with 15.6 in the norm group. Persons in the MVAH group spent a mean of 2.2 days in the hospital for childbirth compared with 3.1 days for the norm group.

For the 4 years of comparison with the control group, hospital admissions per 1,000 persons for childbirth were 14.8 for the norm group, 12.5 for the control group, and 11.0 for the MVAH group. For the MVAH group, only 74% of the hospital patient days were for illness, compared with 91% for the control group and 88% for the norm group.

Utilization by Type of Service

For all types of medical services, the MVAH group had fewer patient days per 1,000 persons than did the control and norm groups (Figure 1). Patient days per 1,000 persons in the MVAH group were 91% and 86% lower than in the norm and control groups, respectively, for mental health and substance abuse, 72% and 74% lower for surgical, 66% and 68% lower for medical, and 42% and 22% lower for obstetric.

Outpatient hospital visits per 1,000 persons in the MVAH group were 94% and 95% lower for mental health and substance abuse, 50% and 54% lower for surgical, 59% and 54% lower for medical, and 10% and 10% lower for obstetric services compared with the norm and control groups, respectively. Moreover, total inpatient and outpatient hospital expenditures in the MVAH group were 92% and 89% lower for mental health and substance abuse, 69% and 71% lower for surgical, 51% and 49% lower for medical, 42% and 21% lower for obstetric, and 57% and 51% lower for x-ray film and laboratory work compared with the norm and control groups, respectively.
Diagnostic Categories of Disease

The different diagnostic categories, ranked in descending order by their normative expense, are shown in Table 4. Hospital admission rates in the MVAH group were lower than those in the norm group for all disease categories and lower than those in the control group in 16 of the 17 categories. Using the sign test, under the null hypothesis of no difference between the groups for each disease, the two-tailed probability of observing lower levels for all 17 diseases is \( P = 0.000015 \), and the probability of 16 out of 17 is \( P = 0.0002 \). In the one category (blood/spleen) in which admissions were lower in the control group than the MVAH group, the difference was not substantial (0.08 fewer admissions per 1,000 persons). This was the smallest absolute difference of all disease categories.

The category with the highest normative costs was heart/vessel, which includes hypertension, coronary heart disease, heart attack, stroke, aneurysm, angina, and heart failure. Cardiovascular diseases are expensive because of their high prevalence and high charges per admission. Age-adjusted admissions per 1,000 persons for heart/vessel in the norm and control groups were 10.7 and 11.4 times higher, respectively, compared with the MVAH group.

Admissions per 1,000 persons for diseases of the digestive system, the second most expensive category, were 2.8 times higher in the norm group and 1.9 times higher in the control group compared with the MVAH group.

The third most expensive category is benign/cancerous tumors, which includes non-tumorous cancers such as leukemia, lymphoma, and Hodgkin's disease. Admissions per 1,000 persons were 3.3 times higher in both the norm and control groups, compared with the MVAH group. Admissions per 1,000 persons for injuries/poisonings, the fourth most expensive category, were 3.1 and 1.7 times higher in the norm and control groups, respectively, than in the MVAH group.

The fifth most expensive category is mental health and substance abuse, which includes all mental and behavioral disorders, alcohol abuse, and drug abuse. Admissions per 1,000 persons were 10.6 times higher in the norm group and 6.7 times higher in the control group compared with the MVAH group.
### Table 4
Hospital Admissions by Treatment Category for the Norm, Control, and Maharishi Vedic Approach to Health (MVAH) Groups

<table>
<thead>
<tr>
<th>Treatment Categories</th>
<th>Normative Costs per 1,000*</th>
<th>Hospital Admissions/1,000</th>
<th>Ratio † (Norm/ MVAH)</th>
<th>Ratio † (Control/ MVAH)</th>
<th>% Diff (MVAH vs Norm)</th>
<th>% Diff ‡ (TM only vs Norm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart/Vessel</td>
<td>$96,223</td>
<td>8.41</td>
<td>8.70</td>
<td>0.66</td>
<td>10.69</td>
<td>-92</td>
</tr>
<tr>
<td>Digestive</td>
<td>$56,924</td>
<td>8.93</td>
<td>6.00</td>
<td>2.73</td>
<td>2.76</td>
<td>1.91</td>
</tr>
<tr>
<td>Benign/Cancerous Tumors</td>
<td>$53,727</td>
<td>4.93</td>
<td>4.90</td>
<td>1.28</td>
<td>3.25</td>
<td>3.34</td>
</tr>
<tr>
<td>Injuries/Poisonings</td>
<td>$48,216</td>
<td>6.30</td>
<td>3.40</td>
<td>1.70</td>
<td>3.12</td>
<td>1.74</td>
</tr>
<tr>
<td>Mental Health and Substance Abuse</td>
<td>$43,956</td>
<td>5.41</td>
<td>3.30</td>
<td>0.43</td>
<td>10.63</td>
<td>6.68</td>
</tr>
<tr>
<td>Bones/Muscles/ Ligaments</td>
<td>$37,864</td>
<td>4.54</td>
<td>4.20</td>
<td>0.25</td>
<td>15.28</td>
<td>14.58</td>
</tr>
<tr>
<td>Nose/Throat/Lung</td>
<td>$36,698</td>
<td>7.98</td>
<td>4.30</td>
<td>0.88</td>
<td>7.68</td>
<td>4.26</td>
</tr>
<tr>
<td>Genital/Urinary</td>
<td>$34,136</td>
<td>5.92</td>
<td>5.70</td>
<td>3.41</td>
<td>1.46</td>
<td>1.45</td>
</tr>
<tr>
<td>Symptoms with Unknown Causes</td>
<td>$19,366</td>
<td>4.23</td>
<td>2.20</td>
<td>0.68</td>
<td>5.27</td>
<td>2.83</td>
</tr>
<tr>
<td>Nerves/Eyes/Ears</td>
<td>$14,274</td>
<td>2.18</td>
<td>1.40</td>
<td>0.53</td>
<td>3.50</td>
<td>2.31</td>
</tr>
<tr>
<td>Other</td>
<td>$12,131</td>
<td>1.67</td>
<td>0.40</td>
<td>0.00</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Virus/Bacterial Infections</td>
<td>$11,365</td>
<td>1.83</td>
<td>1.80</td>
<td>0.13</td>
<td>12.31</td>
<td>12.50</td>
</tr>
<tr>
<td>Glands/Metabolism/Immune System</td>
<td>$10,894</td>
<td>1.65</td>
<td>2.10</td>
<td>0.13</td>
<td>11.12</td>
<td>14.58</td>
</tr>
<tr>
<td>Birth Defects</td>
<td>$9,071</td>
<td>0.89</td>
<td>1.10</td>
<td>0.00</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Perinatal</td>
<td>$8,131</td>
<td>0.41</td>
<td>0.60</td>
<td>0.13</td>
<td>2.74</td>
<td>4.17</td>
</tr>
<tr>
<td>Skin/Nails/Hair</td>
<td>$5,253</td>
<td>0.88</td>
<td>0.60</td>
<td>0.13</td>
<td>5.96</td>
<td>4.17</td>
</tr>
<tr>
<td>Blood/Spleen</td>
<td>$4,191</td>
<td>0.47</td>
<td>0.20</td>
<td>0.28</td>
<td>1.43</td>
<td>0.63</td>
</tr>
<tr>
<td>Total</td>
<td>$502,419</td>
<td>66.63</td>
<td>50.90</td>
<td>13.30</td>
<td>4.22</td>
<td>3.32</td>
</tr>
</tbody>
</table>

* Normative costs/1,000 are in 1995 dollars. They are the statewide normative hospital costs from Blue Cross of Iowa for all available data, which was for 1985–1989, 1994, and 1995.
† Age adjusted.
‡ Data on Transcendental Meditation (TM)-only subjects from previous study of 2,000 meditators over 5 years.
The last two columns in Table 4 compare data from the MVAH group with that from a Transcendental Meditation-only group from a previous study. Hospital admission rates were lower in the MVAH group than the Transcendental Meditation-only group in 16 of the 17 diagnostic categories. In particular, admissions per 1,000 persons for infectious diseases were 93% lower in the MVAH group compared with the norm group but only 30% lower in the Transcendental Meditation-only group compared with the norm group. Total hospital admissions per 1,000 persons for disease were 80% lower in the MVAH group but only 67% lower in the Transcendental Meditation-only group compared with the norm group.

**Discussion and Conclusion**

The rates of medical utilization and expenditures in the MVAH group were substantially lower than those for the control and norm groups over all years, on all outcome measures, in all age groups, and for all disease categories. The greatest reductions in medical utilization and expenditures were seen for hospitalizations and among older persons in the MVAH group. For example, the MVAH group spent 58% and 65% fewer days in the hospital compared with the control group and norm groups, respectively. For persons age 45 or older, the number of hospital days in the MVAH group was 88% and 91% lower than that in the control and norm groups, respectively. These results are consistent with previous research suggesting the substantial impact of the Transcendental Meditation program on aging, as indicated by lower biologic age, lower blood pressure, and improved mental health, physical health status, and longevity.

A similar pattern of relatively greater benefit for older persons was found in previous research on health insurance statistics for a group practicing the Transcendental Meditation program without other aspects of MVAH. In our current study, patient days per 1,000 persons for those age 45+ in the MVAH group were 91% lower than that for the norm group, compared with 68% lower for persons in the Transcendental Meditation program in the previous study. In addition, compared with the previous Transcendental Meditation-only study, MVAH produced greater reductions in hospital admission rates compared with the norm group in 16 of 17 disease categories. Thus the other strategies
included in MVAH, in addition to the Transcendental Meditation program, may have an impact in reducing hospitalization for serious illnesses.

We controlled for a number of factors that influence medical utilization. All groups had similar sex distributions, deductibles, and coinsurance levels; all were from the same geographic location (Iowa). The patients being in the same geographic location controlled for local patterns of medical practice, cost structure, and climatic influences on health. Since the same carrier covered all groups, Blue Cross/Blue Shield of Iowa, they all had the same limits on what the carrier would pay for specific services. The fairly low deductible amounts and coinsurance levels of the MVAH group would tend to encourage medical utilization rather than discourage it. In addition, we controlled for long-term trends in medical utilization and costs by making comparisons among groups over the same years.

The use of archival insurance data ensured objectivity and accuracy and provided a 100% response rate. Education level and profession were controlled by comparing the MVAH university population with a control group from colleges in the same state. Our overall conclusions were not changed when the control and norm groups were age adjusted to be equivalent to that of the MVAH group.

The effect of MVAH was not merely a shift from inpatient to outpatient utilization, because outpatient utilization was also reduced by more than 50%. The results do not appear to be due to an attitude bias against conventional medicine, because non-pathologic (obstetric) utilization was normal in the MVAH group. The reduction in conventional medical utilization apparently does not represent a shift to alternative medicine, which is not covered by Blue Cross/Blue Shield. Alternative medicine is used to supplement conventional medicine, not replace it. Alternative medicine generally is used for minor, chronic health problems, such as headaches, insomnia, chronic pain, and general stress; we found reductions for all major diseases, not only minor problems. The MVAH system was used by the experimental group primarily as a prevention program, not as a substitute for conventional medicine.

One important factor not controlled for was consumption of drugs, alcohol, and tobacco, because the MVAH group is virtually drug, alcohol, and tobacco free, whereas the control group was not.
equivalence of the control group could be viewed as a confounding factor. However, a wide range of evidence suggests that Transcendental Meditation practice reduces drug, alcohol, and tobacco consumption. Even though the Transcendental Meditation technique requires no change in lifestyle, six randomized studies and meta-analyses indicate that it reduces substance abuse. In addition, evidence suggests that the Transcendental Meditation program normalizes abnormal neuroendocrine mechanisms responsible for substance abuse. These studies indicate that reduced substance abuse in the MVAH group is not a confounding factor but rather is a factor that mediates the observed reductions in medical utilization and expenditures. It appears that Transcendental Meditation practice, and perhaps other aspects of MVAH, reduce the use of drugs, alcohol, and tobacco, and that these reductions contribute to improved health.

Other meta-analyses have shown that the Transcendental Meditation program is highly effective in decreasing trait anxiety and increasing global mental health (self-actualization). This suggests that the low rates of medical utilization for mental health and substance abuse observed in the MVAH group are a result of the Transcendental Meditation technique rather than self-selection. The estimated combined impact on all-cause mortality of eliminating consumption of alcohol and tobacco is approximately 25%, far less than the effects observed in our study.

Another difference between the MVAH and control groups is diet. The MVAH system advises against eating red meat, and most persons in the MVAH group follow a lactovegetarian diet. The effects of a vegetarian diet on health do not appear to be as broad as those found in our study. The magnitude of the effect of a vegetarian diet on medical utilization is generally much less, between 15% and 20%, than that found in our study. One large study illustrating the specific effects of a vegetarian diet found an 18% reduction in total mortality in male vegetarians but no significant effect in female vegetarians compared with the general population. In addition, the researchers found that the reduced mortality in men was almost entirely due to a decreased incidence of cardiovascular disease.

Studies of Seventh-Day Adventists provide a comparison for the MVAH group for the combination of vegetarian diet and abstinence
from tobacco, alcohol, and drugs. Although direct comparisons of Seventh-Day Adventists with our MVAH group are tentative without controlling for demographic and measurement factors, the annual rates of surgeries and hospitalization reported in the literature for vegetarian, non-smoking, and non-alcohol-consuming Seventh-Day Adventists are more than twice as high as for the MVAH group.25

The MVAH program emphasizes true primary prevention through health promotion and early detection and correction of imbalances before they progress to disease.6,8 The herbal compounds prescribed by the MVAH system exhibit antioxidant, cardioprotective, antineoplastic, immunomodulatory, and neurophysiologic effects. These herbal preparations also decrease the toxic effects of chemotherapy and toluene. The physiologic purification programs of MVAH have been shown to reduce cardiovascular risk factors and improve overall physical and mental well-being.

These studies suggest that the Transcendental Meditation program induces a psychophysiologic balance. In a balanced psychophysiology, lifestyles spontaneously become health-supporting, instead of life-damaging. A meta-analysis of 32 studies28 found that the Transcendental Meditation technique reduces somatic arousal to a greater extent than ordinary rest, providing the optimal condition for the body’s homeostatic mechanisms to reduce stress and restore balance. This meta-analysis also found that outside of meditation, meditators have lower resting levels of heart rate, respiration rate, and plasma lactate, as well as greater autonomic stability than control subjects, indicating greater baseline efficiency. From this deeply rested, stable baseline the autonomic system responds to challenges more rapidly and fully, and recovers more quickly afterward.29 The many health-related effects of the Transcendental Meditation program can be seen as a direct result of the reduction in stress that takes place during meditation. Studies show decreased anxiety,20 normalization of neuroendocrine processes,19 decreased hypertension16,17 and hypercholesterolemia,30 increased exercise tolerance in patients with angina pectoris,31 and general improvements in health.11,32 Because of increased systemic balance, the individual becomes better able to make healthy lifestyle choices, as indicated by decreased drug, alcohol, and tobacco consumption18,33 and more healthful dietary preferences.
However, because the MVAH group are all faculty, staff, and family members of Maharishi University of Management, they represent a committed group of Transcendental Meditation practitioners. Research has demonstrated the importance of social support for promoting health. Would the results be as robust in a sample of MVAH participants scattered in the general community or in samples randomly assigned to the MVAH program? Randomized trials and meta-analyses on components of the MVAH program suggest that the results are robust. However, the effects of the MVAH program as a whole on the general population are a question for further research.

If this system of medicine is to be relevant to managed care, the American public must be open to trying it. A national survey found that 82% of Americans polled specifically about MVAH expressed interest in the Transcendental Meditation technique and MVAH if these methods were shown to be effective and could help cut insurance costs; 56.5% of those surveyed wanted more information to improve public awareness, 47.9% wanted to see more funding and research to better understand the techniques, and 42.3% wanted to include reimbursement for these techniques in Medicare, Medicaid, and private health plans. In addition, more than two million Americans have learned the Transcendental Meditation technique. Thus the American public appears to be interested in MVAH, which our study, together with previous research, indicates is an effective means of preventive medicine.

Acknowledgments

We thank Michael Dillbeck, Ph.D., and Roger Chalmers, M.D., for their excellent review of the manuscript and suggestions; we also thank Susan Shatkin, M.S., for her assistance in preparing this manuscript for publication.

References


This article, “An Innovative Approach To Reducing Medical Care Utilization and Expenditures,” by David W. Orme-Johnson, Ph.D.
& Robert E. Herron, Ph.D., here revised/updated, and reprinted with permission, was originally published in *American Journal of Managed Care* 1997; 3:137–144.
Can the *Transcendental Meditation* Program
Reduce the Medical Expenditures of Older People?

*A Longitudinal Cost-Reduction Study in Canada*

Robert E. Herron, Ph.D.

Kenneth L. Cavanaugh, Ph.D.
Robert E. Herron, Ph.D., is an independent researcher, writer, speaker, and consultant in medical cost reduction and health policy. He earned a B.A. in English in 1975, an MBA in 1985, and doctoral degree in management in 1993. From 1996 to 1998, he completed a post-doctoral program in the epidemiology of cardiovascular disease that was funded by the National Institutes of Health. Dr. Herron has taught a wide range of business and government policy courses at the undergraduate and graduate levels. Dr. Herron has conducted research to evaluate the cost-effectiveness of various methods of disease prevention and alternative medicine. He also conducted research that led to the development of new methods of analyzing medical costs and innovative means for reducing those costs. Dr. Herron has also done extensive policy research in many other fields, including on how to rescue national economies. He has served as a senior policy adviser and researcher for political parties.

Kenneth L. Cavanaugh, Ph.D., is Professor of Applied Statistics at Maharishi University of Management as well as Senior Research Scientist at M.U.M.’s Institute of Science, Technology and Public Policy. He received his B.A. with honors from Yale University, Master’s degrees from Stanford University and Princeton University, and Ph.D. from the University of Washington. Dr. Cavanaugh has authored or co-authored more than 30 published research papers on Maharishi Technologies of ConsciousnessSM and other topics in applied statistics. A major focus of his research has been the impact of the group practice of the Transcendental Meditation and TM-Sidhi programs on the quality of life in society.
**ABSTRACT**

We examined whether a method for enhancing psychological and physiological balance and health, the Transcendental Meditation (TM) technique, can reduce medical expenditures in people over 65 years old. Inflation-adjusted payments to physicians for treating 163 Transcendental Meditation practitioners were compared with those for 163 control participants matched for age, sex, and median pre-intervention payments. Yearly changes in physician payments were estimated for each participant using separate least squares regressions for pre- and post-intervention periods. During the pre-meditation period, mean changes in payments differed nonsignificantly between groups (p = .27). After learning the Transcendental Meditation technique, the mean annual change in payments for Transcendental Meditation practitioners was significantly lower than for controls (p = .001). The Transcendental Meditation group’s five-year cumulative reduction relative to controls was 70%.

**Economic Environment of Physician Services in Canada**

With universal health care for all its citizens, the coverage of Canada’s medical system seems ideal compared with that of the United States. In the U.S., the percentage of workers without health insurance rose from 15% in 1979 to 23% in 1995 (Kronick & Gilmer, 1999). The Census Bureau reported that 15.3% of US citizens, or 42.6 million people, had no health insurance in 1999 (Hall, 2000).

In Canada, all citizens are entitled to full, free physician and hospital services for all types of necessary care (excluding unnecessary treatment such as elective cosmetic surgery). In Canada, there is also comprehensive medical expense record keeping for individuals (before and after age 65). There is greater uniformity and standardization in Canadian medical care than in the US (Whitcomb, & Desgroseilliers, 1992). Each Canadian province operates an independent health insurance plan that functions according to the guidelines of the Canada Health Act. Both the federal and provincial governments pay for the operation of the provincially administered health plans. In 1971, the Canadian provinces began providing health insurance plans that cover all medically necessary physician and hospital care.
Declining Federal Support of Medicare

Canada’s economic problems affect its medical care system. Per citizen, the Canadian national debt is one of the highest in the world, and Canada's political leaders believe this situation might threaten their economic progress (Emes & Kreptul, 2000). To restore economic balance, Prime Ministers Mulroney and Chretien have attempted to diminish their national debt and budget deficits through several means, including the reduction of the federal government’s contributions to the provincial medical care systems. Before 1980, Ottawa paid over 50% of the nation’s annual medical expenditures. In the 1990s, however, the federal contribution to the provincial medical plans was less than 30% of total expenses, and these outlays may continue to decline further in the long-term (Horry & Walker, 1994). Most health economists and other experts have concluded that the development of new, advanced medical technologies is the main contributor to the long-term increase in medical care spending (Fuchs, 1999). As Bethune (2000) explained “For more than a decade, high-tech, high-cost medicine has been colliding with the escalating health-care demands of an aging population.” Rising health care expenses are a major concern for Canadians (Demers, 1996; Dalziel, 1996).

FIGURE 1. Per Capita Mean Annual Physician Payments for Canada and Quebec Province for All Age Groups and Sexes (in current Canadian dollars).
Figure 1 shows the average annual physician payments for Canada as a whole and Quebec Province in current dollars from 1981 to 1994 (includes all age groups). On average, Quebec physician expenses were lower than those for Canada as a whole during this period. This phenomenon has been attributed to Quebec’s application of more rigorous physician fee controls (Evans et al., 1989; Barer, Barer, & Labelle, 1988).

**Declining Medical Quality and Services**

Since the federal government began reducing contributions to provincial health care systems, many Canadians have noticed a decline in the quantity and quality of medical care in Canada. “The results, as governments struggled to balance budgets in the 1990s, have been a shock to Canadians: hospital closures, delisted services, lengthy waiting lists, overcrowded emergency rooms, doctors and nurses heading south—and a system still costing $86 billion a year to run” (Bethune, 2000). Many diagnostic and surgical procedures available in the US and other developed nations are unavailable or scarce in Canada (McArthur, Ramsay, & Walker, 1996). Canada ranks low compared with other developed nations for availability of diagnostic equipment (i.e., CT scanners and MRI devices) (McArthur, Ramsay, & Walker, 1996).

In response to this crisis, the Premier of Quebec, Lucien Bouchard, stated that remedying the problems of the Quebec health care system will be the highest priority of his ruling party, the Parti Quebecois (Thompson, 2000). The premiers of the other Canadian provinces are also taking steps to improve medical care for their citizens. For example, the Conservative government in Alberta Province has introduced legislation to privatize much of their medical care system (Janigan, 2000). For many Canadians this is a drastic remedy. Nevertheless, support for privatizing at least portions of Canadian medical care seems to be increasing. A recent poll suggests that 58% of Canadians favor privatizing parts of their medical care system (Kennedy, 2000). The survey also indicated that 29% of those questioned believe governments will be unable to contain medical expenses by operating the system more effectively, and 45% think that medical costs will continue to rise rapidly (Kennedy, 2000). The provincial premiers are requesting increased medical care funding from the federal government surplus.
Prevention and Medical System Effectiveness

Even if the provincial premiers obtain increased federal funds for their health plans, there will be a need to improve medical system effectiveness. As Geddes (2000) pointed out, “Some observers are worried that the emphasis on restoring funding in Canada threatens to delay badly needed reforms.” Expanded disease prevention, for instance, is needed (Evans, Barer, & Marmor, 1994). Cost-effective, scientifically proven preventive interventions would be desirable because research shows that at least 70% of all disease is preventable (Evans, Barer, & Marmor, 1994; US Department of Health & Human Services, 1991, 1996, 2000). Most disease is self-inflicted—caused by an epidemic of unhealthy habits, including improper diet, stressful lifestyles, inadequate exercise, smoking, and alcohol and drug abuse (Evans, Barer, & Marmor, 1994; US Department of Health & Human Services, 1991, 1996, 2000). These factors are responsible for a wide range of chronic diseases, including heart disease, cancer, and stroke. Unhealthy lifestyles are also a major contributor to skyrocketing medical costs. Yet, for decades a relatively small percentage of medical expenditures have been spent to address these problems (Evans, Barer, & Marmor, 1994).

From the most comprehensive viewpoint, the best medical care is that which never needs to be given because of prevention. Paradoxically, past attempts to “reform” Canadian Medicare have focused mainly on the financing and delivery of even more medical treatment, and not Herron & Cavanaugh prevention. Consequently, the Canadian medical system may continue to be an unnecessarily expensive “disease-care” system (Evans, Barer, & Marmor, 1994).

Canadian leaders have been pressured by various groups such as the Canadian Medical Association and drug industry to spend ever-increasing amounts of money on more medical treatment. However, allocating more money without reforms in overall approach may make their system increasingly expensive but not necessarily more effective in producing healthy people (Geddes, 2000). To achieve improved effectiveness, a fundamental change in strategy seems to be needed (Evans, Barer, & Marmor, 1994). This study evaluated the Transcendental Meditation program, which might be a key component in a prevention-oriented health care system. The study was executed in Canada because it could be conducted there at a lower expense (approximately) 1/10th)
than the cost for a similar Medicare study conducted in the United States.

**Complementary/Alternative Medicine**

The use of Complementary/Alternative Medicine (CAM) is growing rapidly in both Canada (Blais, Maïga, & Aboubacar, 1997; Millar, 1997; Kelner & Wellman, 1997) and the United States (Astin, Pelletier, Marie, & Haskell, 2000; Eisenberg, Davis, Ettner, Appel, Wilkey, Van Rompay, & Kessler, 1998; Druss & Rosenheck, 1999; Astin, 1998; Paramore, 1997; Eisenberg et al., 1993). CAM is being taught in medical schools (Wetzel, Eisenberg, & Kaptchuk, 1998) and even being used and prescribed by some conventional physicians (Borkan, Neher, Anson, & Smoker, 1994). According to the US National Institutes of Health’s National Center for Complementary & Alternative Medicine, “CAM covers a broad range of healing philosophies (schools of thought), approaches, and therapies that mainstream Western (conventional) medicine does not commonly use, accept, study, understand, or make available” (see: http://nccam.nih.gov/nccam/an/general/index.html#whatcam). The Transcendental Meditation program could be considered a form of CAM.

**The Transcendental Meditation Program**

The Transcendental Meditation technique of Maharishi Mahesh Yogi is a standardized procedure practiced for 15 to 20 minutes twice daily while sitting comfortably with eyes closed. The Transcendental Meditation practice involves the use of specific sounds that have beneficial vibratory effects on the nervous system (Sharma & Clark, 1998). During the Transcendental Meditation session, the mind transcends even the subtlest thoughts to achieve a unique state of deep physiological rest (Jevning, Wallace, & Beidebach, 1992).

Over 600 studies have previously examined the Transcendental Meditation technique’s impact on numerous health, lifestyle, physiological, psychological, and other outcomes (Alexander, Robinson, & Rainforth, 1994; Alexander, Robinson, Orme-Johnson, Schneider, & Walton, 1993; Alexander, Rainforth, & Gelderloos, 1991; Alexander, Langer, Davies, Chandler, & Newman, 1989; Orme-Johnson & Walton, 1998; Orme-Johnson & Herron, 1997; Eppley, Abrams, & Shear,
1989; Dillbeck & Orme-Johnson, 1987). The Transcendental Meditation technique produces distinctive physiological and psychological effects that have been reported to be useful in preventing disease and promoting health (Sharma & Clark, 1998; Sharma, 1993). The physiological effects include:

(a) reduced carotid atherosclerosis; atherosclerosis is a cause of strokes and heart attacks (Castillo-Richmond et al., 2000),

(b) lower baseline cortisol levels, a stress hormone (Subrahmanyam & Porkodi, 1980; Jevning, Wilson, & Davidson, 1978; Jevning, Wilson, & Smith, 1978),

(c) reduced blood pressure, in both the general population (Cooper & Aygen, 1978; Wallace, Silver, Mills, Dillbeck, & Wagoner, 1983; Alexander et al., 1989) and hypertensive patients (Schneider et al., 1995; Walton, Pugh, Gelderloos, & Macrae, 1995),

(d) decreased heart rate (Dillbeck & Orme-Johnson, 1987; Wallace, 1970; Wallace & Benson, 1972),

(e) reduced respiratory rate (Dillbeck & Orme-Johnson, 1987; Wallace, 1970),

(f) global reduction in somatic arousal, which indicates a more relaxed and balanced style of physiologic functioning (Jevning et-al., 1992),

(g) reduction of neuroendocrine correlates of drug abuse (Walton & Levitsky, 1994), and

(h) reduction of chronic stress (Orme-Johnson & Walton, 1998; Eppley, Abrams, & Shear, 1989).

With regard to its psychological effects, the Transcendental Meditation technique’s most important contribution to health may be to decrease health-damaging habits such as tobacco use, heavy alcohol
usage, and drug abuse, which are behavioral correlates of chronic stress (Alexander, Robinson, Orme-Johnson, Schneider, & Walton, 1993; Alexander, Robinson, & Rainforth, 1994; Brooks & Scarano, 1985; Gelderloos, Walton, Orme-Johnson, & Alexander, 1991; Royer, 1994; Taub, Steiner, Weingarten, & Walton, Herron & Cavanaugh 1994; Orme-Johnson & Walton, 1998). These findings are important because half of all deaths (McGinnis & Foege, 1993) and most diseases (Evans, Barer, & Marmor, 1994; US Department of Health and Human Services, 1991, 1996, 2000) have been attributed to such unhealthy lifestyle factors.

When considering medical utilization, one cross-sectional study (Orme-Johnson, 1987) examined medical utilization by 2,000 Transcendental Meditation practitioners compared with controls using five years of health insurance data. When compared with normative data or other groups of similar profession, Transcendental Meditation participants had 50% lower inpatient and outpatient medical utilization. This trend held across all age groups and disease categories. Clinically significant findings included 87% less hospitalization than norms for heart disease and 55% less hospitalization than norms for cancer. For this cross-sectional study, the participants’ medical utilization data were unavailable for the period prior to their starting the Transcendental Meditation program.

**Purpose of the Study**
In the present longitudinal cost minimization study, the sole purpose was to assess whether practice of this meditation procedure can contribute to the reduction of medical expenditures. This study was not designed to elucidate the causal mechanisms of how the intervention reduces medical expenses. Furthermore, this study was not conducted to document the relationships among Transcendental Meditation practice and numerous health-related variables, such as actual health status, perceived health status, lifestyles, socioeconomic levels, self-efficacy, race, sex, age, ethnicity, medical beliefs, job satisfaction, or employment status. Thus, the hypothesis was that the practice of the Transcendental Meditation technique would reduce medical payments in Quebec, Canada.
Methods

Design
This retrospective, longitudinal, pre- and post-intervention study compared 14 years of government payments to physicians for treating two groups—a sample of 163 Quebec health insurance enrollees who practiced the Transcendental Meditation technique and 163 controls who did not practice this procedure. Medical expense data for this study were provided by the Régie de l’assurance-maladie du Québec (RAMQ), the government health insurance agency for the province of Quebec.

Sample
Transcendental Meditation Group. The Transcendental Meditation group examined in this study was drawn from a broader sample of 1,418 Quebec citizens of all ages who practiced the Transcendental Meditation technique. A Transcendental Meditation practitioner was defined as a person who had learned the Transcendental Meditation technique in the standard seven-step course taught by the Quebec Transcendental Meditation program organization. Recruitment of participants occurred between September 1990 and September 1992. Participants were solicited by distributing questionnaires to Transcendental Meditation practitioners who attended events at the Montreal Transcendental Meditation Program Center and by mailing questionnaires to Transcendental Meditation practitioners throughout the province. Unfortunately, no records were kept on the number of people who attended events or received questionnaires at the Montreal Transcendental Meditation Program Center. Also, accurate records were not kept on the number of people who were mailed questionnaires. No financial or other material incentives were provided to encourage response or participation in the study. These solicitations yielded a total of 1,756 returned questionnaires. Of the returned questionnaires 1,418 were both legible and complete enough to use.

Data on Transcendental Meditation participants were collected using a one-page questionnaire that explained the study and asked each participant for several items of information: (a) medical insurance number (which enabled the government health insurance agency for Quebec to retrieve the participant’s physician payment records), (b) date of
Transcendental Meditation instruction (which enabled us to determine the participants’ pre- and post-intervention periods), (c) present occupation, (d) level of regularity in practicing the technique (regular, irregular, or stopped), and (e) age and sex. All participants who had learned the Transcendental Meditation technique were included in this intent-to-treat analysis (regardless of their indicated regularity of practice).

The Transcendental Meditation group is a nonprobabilistic or convenience sample because the Transcendental Meditation participants self-selected to practice the Transcendental Meditation technique and later self-selected into the study, and the number of possible respondents was indefinite.

Control Group. The Non-Transcendental Meditation group examined in this study was drawn from a broader sample of 1,418 Quebec citizens of all ages who did not practice the Transcendental Meditation technique. The control group in this study is a probabilistic sample because it was randomly selected by an independent organization, the Régie de l’assurancemaladie du Québec (RAMQ).

Participants Over 65 Years Old Selected. Using the information the participants provided on their age, the Transcendental Meditation and Non-Transcendental Meditation groups were divided into two groups (a) those equal to or over 65 years of age and (b) those less than 65 years of age.

The participants were matched by age, sex, and median annual pre-intervention physician payments to avoid the possibility of regression to Herron & Cavanaugh, the mean. Thus, only those equal to or over age 65 and who could be matched with control participants by age, sex, and their median annual pre-intervention physician payments were analyzed and reported in this study. A previous study analyzed the physician expenses of all participants in both groups (Herron & Hillis, 2000).

Of the 2,836 participants (1,418 in each of two groups; average age: 38 years) in the broader sample, 163 Transcendental Meditation practitioners and 163 Non-Transcendental Meditation participants were over 65 years and could be matched by age, sex, and their median annual pre-intervention physician payments. After matching was completed, there were 78 males and 85 females in each of the two over-65 groups with a mean age of 72 years (range: 65 to 82 years). The over-65 Tran-
Measures
The dependent variable in this study was annual payments in inflated-adjusted Canadian dollars (constant 1992 Canadian dollars) to private physicians for treating the participants over 65 years old in all settings. The demarcation point of age 65 was used because during adult life medical expenditures tend to grow slowly, but from age 65 onwards, these expenses grow exponentially (Meerding, Bonneux, Polder, Koopmanschap, & van der Maas, 1998; Hodgson & Cohen, 1999; Waldo, Sonnefeld, McKusick, & Arnett, 1989). The independent variable was stress-reduction treatment status: Non-Transcendental Meditation controls or Transcendental Meditation practitioners. The Régie de l’assurance-maladie du Québec has maintained centralized database records of its payments to private physicians from 1981 onwards, and RAMQ provided the total annual physician payments for each of the 326 participants in both groups (163 Transcendental Meditation Group and 163 Non-Transcendental Meditation controls) from 1981 to 1994. Other medical expenditure data, such as medical tests, hospital, and drug costs, were unavailable for individual participants in the RAMQ database. RAMQ has been considered a reliable source of physician expenses and related data for Quebec, and it has provided these data for other similar studies (e.g., Préville, Potvin, & Boyer, 1998).

Statistical Methods
To make all years (1981–1994) of data comparable, annual physician expenses for each participant were adjusted for inflation using the medical cost component of the Canadian government’s Consumer Price Index (CPI). This CPI was provided by Statistics Canada at its website, http://www.statcan.ca. All data in this study were analyzed and presented in constant 1992 Canadian dollars.

Our objectives were to estimate the mean annual inflation-adjusted change in payments to physicians in Canadian dollars, to evaluate the statistical significance of this change between groups, and to estimate the magnitude of this change as a percentage both between groups and within groups. To accomplish these goals, the annual change in pay-
mements was estimated for each participant using least squares regression. Each participant’s annual, inflation-adjusted expenses were regressed on time using a simple linear least squares model, with separate regressions for the pre- and post-intervention periods. The resulting slopes were used to estimate each participant’s pre- and post-intervention rate of change in physician expenditures per year in 1992 Canadian dollars. The Transcendental Meditation participants started the intervention in different years, on average, in 1988. For the control group, the time period 1981–1988 was used to estimate the annual rate of change before the intervention. The period 1987–1994 was the post-intervention period for the control group with 1987 as the base year for the linear least squares regression calculation. For the Transcendental Meditation group, the annual rate of change before the intervention was estimated using the years 1981 until the year Transcendental Meditation practice commenced. The period for estimating the post-intervention annual rate of change for the Transcendental Meditation participants was the year immediately before the start of Transcendental Meditation practice to all subsequent years for which expense data were available.

The distribution of annual changes in physician payments for both groups, as estimated by the regression slopes for the pre- and postintervention periods, was non-normal with heavy tails (see skewness and kurtosis in Table 1). Although it is well-known that the t-test for the difference in the mean of two independent samples is quite robust to nonnormality, including heavy-tailed distributions such as these, nonetheless the t-test may be unduly affected by a few extreme cases or outliers (Hogg, 1979, 1974; Kingery, Ellsworth, Corbett, Bowden, & Brizzolara, 1994; Zhou, Melfi, & Hui, 1997). Thus, in analyzing the differences in the annual change in physician payments between groups, the Transcendental Meditation and Non-Transcendental Meditation groups were compared using both the t-test and the non-parametric Mann-Whitney U test (Wilcoxon rank-sum test). As an alternative robust test, the groups were compared using t-tests based on 1% and 5% trimmed means (Hogg, 1974, 1979). The 1% trimmed mean is the mean of the annual change in payments after the largest 1% and the smallest 1% of the observations have been omitted. Similarly, the 5% trimmed mean omits the largest and smallest 5% of the annual changes in payments. Thus, the 1% and 5% trimmed means provide
Table 1*  
Summary Statistics and Nonparametric Comparison of Payments to Physicians for Treating Non-Transcendental Meditation and TM Participants 65 Years and Older

<table>
<thead>
<tr>
<th></th>
<th>Pre-intervention Total Payments</th>
<th>Pre-intervention Yearly Change</th>
<th>Post-intervention Yearly Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-TM (n=163)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>5.59</td>
<td>-306.61</td>
<td>-225.70</td>
</tr>
<tr>
<td>Maximum</td>
<td>1639.14</td>
<td>256.19</td>
<td>464.26</td>
</tr>
<tr>
<td>Range</td>
<td>1633.50</td>
<td>562.80</td>
<td>690.04</td>
</tr>
<tr>
<td>Mean</td>
<td>196.61</td>
<td>2.28</td>
<td>21.63</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>227.83</td>
<td>59.34</td>
<td>85.26</td>
</tr>
<tr>
<td>Standard Error</td>
<td>17.84</td>
<td>4.65</td>
<td>6.68</td>
</tr>
<tr>
<td>Skewness</td>
<td>3.04</td>
<td>-1.15</td>
<td>2.33</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>13.06</td>
<td>8.93</td>
<td>8.82</td>
</tr>
<tr>
<td>Median</td>
<td>125.46</td>
<td>2.80</td>
<td>2.94</td>
</tr>
<tr>
<td><strong>TM (n=163)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>-193.12</td>
<td>-848.79</td>
</tr>
<tr>
<td>Maximum</td>
<td>1649.75</td>
<td>242.98</td>
<td>821.87</td>
</tr>
<tr>
<td>Range</td>
<td>1648.75</td>
<td>436.10</td>
<td>1668.66</td>
</tr>
<tr>
<td>Mean</td>
<td>203.63</td>
<td>11.70</td>
<td>-12.41</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>226.84</td>
<td>51.23</td>
<td>119.59</td>
</tr>
<tr>
<td>Standard Error</td>
<td>17.77</td>
<td>4.01</td>
<td>9.37</td>
</tr>
<tr>
<td>Skewness</td>
<td>3.03</td>
<td>0.76</td>
<td>-.23</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>13.10</td>
<td>4.73</td>
<td>27.70</td>
</tr>
<tr>
<td>Median</td>
<td>130.39</td>
<td>3.48</td>
<td>-7.03</td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( p = .408 )</td>
<td></td>
<td>( p = .274 )</td>
<td>( p = .001 )</td>
</tr>
</tbody>
</table>

* The pre-intervention median total physician payments, pre-intervention yearly change, and post-intervention yearly change in payments for the Non-Transcendental Meditation and Transcendental Meditation groups were compared using the Mann-Whitney U test (Wilcoxon rank-sum test). Data is expressed in 1992 Canadian dollars.
estimates of the means for the middle 98% and middle 90% of the population values. The trimmed means were compared using the t-test for independent samples without the assumption of equal variances. Test statistics were calculated using SYSTAT 5.2 (1992, SPSS Inc., Chicago, IL). The reported p-values for all tests are two-sided, and all confidence intervals were calculated at the 95% level.

If the practice of the Transcendental Meditation program had no effect, then one would expect the estimated average annual change in expenditures to be nonsignificantly different between the two groups in the post-intervention period. On the other hand, a significantly lower average annual change in expenditures for the Transcendental Meditation group compared with controls during the postintervention period would support the hypothesis that the Transcendental Meditation technique reduced the use of conventional medical care and related expenditures.

Estimates of the annual percentage rate of change in inflation adjusted physician expenses for the post-intervention period were calculated using both the means and trimmed means. Between and within group estimates of percentage change were also made. For the between group estimate, the annual change percentages were calculated by dividing the estimated annual change in expenses by the median of the year before the intervention commenced. These medians were $141.90 for the Transcendental Meditation group and $143.31 for the Non-Transcendental Meditation group. For the within group estimate, the five-year cumulative and annualized change percentages were calculated. The five-year cumulative percentage change estimate was calculated by dividing the group mean of the last year of physician expense data by the corresponding mean of expenses in the year immediately before the intervention commenced. This result was multiplied by 100 to give a percentage. The within group annualized compound percentage change was estimated using a commonly applied financial method (Brigham & Gapenski, 1985). Similarly, within-group percentage changes were calculated using the median and trimmed means.

Results

Figure 2 shows the 1% trimmed mean of annual inflation-adjusted payments to private physicians for treating Non-Transcendental Medi-
tation and Transcendental Meditation participants age 65 or older during the pre- and post-intervention periods. Because the participants in both groups in Figure 2 are over age 65, their expenses in the first year of the study were higher than those shown in Figure 1 for the general population, which had a lower average age. We calculated results for the pre- and post-intervention periods.

**Pre-Intervention Period**

Figure 1 shows a trend of increasing physician payments for the Quebec and Canadian populations from 1981 to 1994. Similarly, in Figure 2 during the pre-intervention period we see a general trend of rising payments for both the Transcendental Meditation and Non-Transcendental Meditation groups. Table 1 presents the summary statistics for both groups for the pre- and post-intervention periods. The mean annual change in physician payments for the Transcendental Meditation group ($11.70 per year) was higher than that for the Non-Transcendental Meditation group ($2.28 annually), but this difference was not statistically significant ($p = .27$, Mann Whitney U test) (see Table 1). Likewise, the pre-intervention median total annual physician payment for the Transcendental Meditation group ($130.39) did not differ significantly from that for the controls ($125.46) ($p = .41$) (Table 1). Table 2 reports the comparable results for the t-tests for independent samples, both trimmed and untrimmed, for differences in pre-intervention payment increases. No significant differences in annual payment increases between groups were found on any of the t-tests at the .05 level.

Annual increases in physician payments during the period of this study were typical in Quebec due to increased utilization of physicians’ services (Régie de l’assurance-maladie du Quebec, 1982–1995). In Quebec, between 1982 and 1992, there was a major increase in payments to specialists, especially for treating the elderly (Demers, 1996). General practitioners also started providing more expensive services than in previous years (Demers, 1996; Dalziel, 1996). Thus, consistent with the general rise in medical payments in Quebec during this period, both the Transcendental Meditation and Non-Transcendental Meditation groups exhibited similar increasing trends in physician payments prior to the intervention. As shown in Figure 2, immediately prior to the onset of the intervention period, both groups had simi-
lar annual physician payments, as measured by the 1% trimmed mean ($339.35 for the Transcendental Meditation group and $293.69 for the Non-Transcendental Meditation group), but this difference was not significant—nonparametric Mann-Whitney U test ($p = .99$). Likewise, the pre-intervention medians were very close (Table 1).

**Post-Intervention Period**
In Figure 2, during the post-intervention period, we see that the Non-Transcendental Meditation group’s expenses continued to rise while the Transcendental Meditation group’s expenses declined substantially below those for the control group. In the post-intervention period, as shown in Tables 1 and 2, the Non-Transcendental Meditation group’s estimated annual physician payments continued to increase at a higher rate of annual change than in the pre-intervention period. The latter increase appears to be typical of this over-65 age group during this period in Quebec (Demers, 1996; Dalziel, 1996). In contrast, during the post-intervention period, the Transcendental Meditation group’s physician payments decreased steadily. As reported in Table 1, mean annual changes in physician payments for the Transcendental Meditation group were significantly less than the controls for the post-intervention period ($p = .001$, Mann-Whitney U test). Likewise, as shown in Table 2, all t-tests for the group difference in mean annual change in physician payments were statistically significant at the .001 level. Table 3 presents the within-group estimates of cumulative and annualized change in physician payments. The five-year cumulative declines ranged from 58.99% to 69.84%. Overall, these data suggest that the rising trend in physician expenses for the Transcendental Meditation group during the preintervention period was significantly reversed after the participants learned the Transcendental Meditation technique. Thus, these data strongly suggest that a medical cost reduction benefit may have resulted from the Transcendental Meditation practice.
Table 2

<table>
<thead>
<tr>
<th>Estimators groups</th>
<th>Annual expense change (95% confidence levels)</th>
<th>Pre</th>
<th>Post</th>
<th>P-value</th>
<th>Annual % change</th>
<th>P-value</th>
<th>Annual % change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>$$2.28$$ (11.39, -6.83)</td>
<td>$$21.63$$ (34.72, 8.54)</td>
<td>.27</td>
<td>.001</td>
<td>15.09</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-TM (n=163)</td>
<td>$$11.79$$ (9.65, 3.92)</td>
<td>$$-12.41$$ (5.94, -30.77)</td>
<td>.27</td>
<td>.001</td>
<td>-8.75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TM (n=163)</td>
<td>$$-9.51$$ (19.65, -3.92)</td>
<td>$$34.04$$ (29.44, 8.41)</td>
<td>.27</td>
<td>.001</td>
<td>23.84</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difference b</td>
<td>$$8.03$$ (11.39, -6.83)</td>
<td>$$34.04$$ (34.72, 8.54)</td>
<td>.27</td>
<td>.001</td>
<td>23.84</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1% Trim. Mean</td>
<td>$$11.79$$ (10.33, -3.75)</td>
<td>$$18.93$$ (19.91, 6.00)</td>
<td>.27</td>
<td>.001</td>
<td>9.04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-TM (n=159)</td>
<td>$$3.29$$ (9.14, -1.09)</td>
<td>$$12.96$$ (19.91, 6.00)</td>
<td>.27</td>
<td>.001</td>
<td>9.04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TM (n=159)</td>
<td>$$4.02$$ (17.87, 4.78)</td>
<td>$$-12.00$$ (-1.32, -22.66)</td>
<td>.27</td>
<td>.001</td>
<td>-8.46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difference b</td>
<td>$$4.96$$ (11.39, -6.83)</td>
<td>$$22.84$$ (34.72, 8.54)</td>
<td>.27</td>
<td>.001</td>
<td>15.09</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5% Trim. Mean</td>
<td>$$9.98$$ (14.94, 5.92)</td>
<td>$$-9.98$$ (-2.37, -17.39)</td>
<td>.27</td>
<td>.001</td>
<td>-6.96</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-TM (n=147)</td>
<td>$$9.98$$ (14.94, 5.92)</td>
<td>$$-9.98$$ (-2.37, -17.39)</td>
<td>.27</td>
<td>.001</td>
<td>-6.96</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TM (n=147)</td>
<td>$$9.98$$ (14.94, 5.92)</td>
<td>$$-9.98$$ (-2.37, -17.39)</td>
<td>.27</td>
<td>.001</td>
<td>-6.96</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difference b</td>
<td>$$9.96$$ (11.39, -6.83)</td>
<td>$$22.84$$ (34.72, 8.54)</td>
<td>.27</td>
<td>.001</td>
<td>15.09</td>
<td></td>
</tr>
</tbody>
</table>

Note: All dollar figures are in 1992 Canadian dollars. The p-values indicate the significance of the comparison between the Transcendental Meditation and Non-TM groups.

1. The p-values indicate the significance of the comparison between the Transcendental Meditation and Non-TM groups.
Discussion

The results reported above tend to support the hypothesis of decreased payments to physicians for treating Transcendental Meditation practitioners over age 65. The Transcendental Meditation practitioners’ mean physician payments decreased 23.84% annually relative to controls (Table 2). For the within subject estimation of percentage change in physician payments, the Transcendental Meditation participants exhibited a five-year cumulative decline of almost 70% in payments relative to controls (Table 3). The results were significant using several statistical tests, including parametric, nonparametric, and robust methods. Thus, the findings were not sensitive to one particular method for analyzing the data that might have yielded a uniquely favorable result.

These longitudinal results are supported by a previous cross-sectional study of Blue Cross and Blue Shield enrollees in the US. In that study, participants over age 45 who practiced the Transcendental Meditation program for many years and who utilized advanced procedures in the Maharishi Vedic Approach to Health had 88% fewer total hospital days over an 11-year period compared with controls. They also incurred total medical expenditures that were approximately 60% below the levels for controls and norms (Orme-Johnson & Herron, 1997).

In this ongoing research project in Quebec, the Transcendental Meditation group’s 23.8% annual decline relative to controls (Table 2) or 69.8% five-year cumulative decline (Table 3) is of a larger magnitude than those previously reported for the general Quebec population (5% to 13% annual decreases) (Herron et al., 1996; Herron & Hillis, 2000). The elderly typically have had more years of exposure to stress, and the accompanying stress-related psychological and physiological imbalances can contribute to increased illness and attendant medical expenses. It appears that the over-65 Transcendental Meditation participants in this study may have experienced a significant improvement in health that resulted in a reduction in physician expenses. Given the previous research in this area, the present results may be due to reduction in stress and increased psychological and physiological balance resulting from the Transcendental Meditation practice.
Table 3
Within Group Cumulative and Annualized Percentage Change in Physician Payments During Five-Year Post-Intervention Period

<table>
<thead>
<tr>
<th>Estimators</th>
<th>Groups (n)</th>
<th>Cumulative 5-year % change</th>
<th>Annualized &amp; change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Non-TM (n=163)</td>
<td>39.22</td>
<td>6.84</td>
</tr>
<tr>
<td></td>
<td>TM (n=163)</td>
<td>-30.62</td>
<td>-7.05</td>
</tr>
<tr>
<td></td>
<td><strong>Difference</strong></td>
<td><strong>69.84</strong></td>
<td><strong>13.89</strong></td>
</tr>
<tr>
<td>Median</td>
<td>Non-TM (n=163)</td>
<td>43.44</td>
<td>7.48</td>
</tr>
<tr>
<td></td>
<td>TM (n=163)</td>
<td>-26.23</td>
<td>-5.90</td>
</tr>
<tr>
<td></td>
<td><strong>Difference</strong></td>
<td><strong>69.67</strong></td>
<td><strong>13.38</strong></td>
</tr>
<tr>
<td>1% Trimmed Mean</td>
<td>Non-TM (n=159)</td>
<td>39.21</td>
<td>6.83</td>
</tr>
<tr>
<td></td>
<td>TM (n=159)</td>
<td>-30.61</td>
<td>-7.04</td>
</tr>
<tr>
<td></td>
<td><strong>Difference</strong></td>
<td><strong>69.82</strong></td>
<td><strong>13.87</strong></td>
</tr>
<tr>
<td>5% Trimmed Mean</td>
<td>Non-TM (n=147)</td>
<td>33.38</td>
<td>5.93</td>
</tr>
<tr>
<td></td>
<td>TM (n=147)</td>
<td>-25.61</td>
<td>-5.75</td>
</tr>
<tr>
<td></td>
<td><strong>Difference</strong></td>
<td><strong>58.99</strong></td>
<td><strong>11.68</strong></td>
</tr>
</tbody>
</table>

*Difference equals TM group minus Non-TM group

Issues in Interpretation
This study has limitations that affect the interpretation of results. A major concern is the issue of self-selection. Participants elected to start and continue practice of the Transcendental Meditation technique and also chose to
Those who entered the study may not be representative of all those who began the technique. Those who chose to begin the practice of the Transcendental Meditation technique may not be representative of the general population or the control group. In this study, the method of sampling limits the generalizability of the results. This limitation was considered acceptable because this ongoing project is the first longitudinal study attempting to assess the long-term medical costs of individuals over age 65 who practice the Transcendental Meditation technique. As such, this study can be considered preliminary in nature. To improve the design, future randomized research should include an active control group of committed practitioners of some other complementary/alternative medicine therapy (CAM).

![Graph showing trimmed mean of annual inflation-adjusted payments to private physicians for treating Non-Transcendental Meditation and Transcendental Meditation participants age 65 or older in all settings.]

FIGURE 2. 1% Trimmed Mean of Annual Inflation-Adjusted Payments to Private Physicians for Treating Non-Transcendental Meditation and Transcendental Meditation Participants Age 65 or Older in All Settings

The results can be interpreted in the context of the earlier studies that have evaluated the health effects of the Transcendental Meditation program. Many of these studies, including randomized clinical trials, indi-
cate that the Transcendental Meditation technique can improve health status, decrease tobacco use, reduce substance abuse, and decrease other unhealthy habits (Alexander et al., 1994, 1993, 1991, 1989; Orme-Johnson & Walton, 1998; Orme-Johnson & Herron, 1997; Eppley et al., 1989; Dillbeck & Orme-Johnson, 1987). When considering the previous research on the Transcendental Meditation program and the intractable and complex factors involved in rising medical expenses for the elderly in Quebec (Demers, 1996; Dalziel, 1996), it seems unlikely that self-selection or sampling methods alone could account for the observed results.

Because we did not monitor the participants’ adherence to the Transcendental Meditation course instructions, we do not know what level of compliance the participants may have had. All participants who learned the Transcendental Meditation technique in the standardized course were included in this study and analyzed on an intent-to-treat basis. Thus, one could argue that the results might be conservative because we may have underestimated the actual effect of the Transcendental Meditation technique on medical expenditure reduction. The effect of the procedure and the power of the study might have been reduced to the degree that the Transcendental Meditation participants may have failed to comply with the instructions for correct practice of the Transcendental Meditation technique (Hulley, Feigel, Martin, & Cummings, 1988). For most research designs, including randomized clinical trials, the intent-to-treat analysis is preferred to evaluation based on compliance, which is often difficult to measure accurately and reliably (Morales, 1996; Fisher, 1999).

Another potential issue is the possibility of regression towards the mean. The elderly tend to have higher medical expenses than the general population. Whenever extreme values are examined, regression to the mean is a potential concern. Regression towards the mean has been defined as a tendency of extreme measures to move closer to the mean when they are repeated over time. This phenomenon was first described by Galton in 1885 and since described in medical settings by many authors (McDonald & Mazzuca, 1983). Figure 2 shows that in the first three years of the study, the one percent trimmed means of annual physician payments were similar. Subsequently, the Transcendental Medi-
The group's expenses increased faster than those for the controls in the pre-intervention period.

However, regression to the mean seems an unlikely explanation for the results reported in Tables 1, 2, and 3 because the two groups were equivalent with regard to age, sex, insurance plan, medical access, median annual physician payments, and median change in annual total physician expenses before the intervention. Table 1 shows the pre-intervention median payment for the Transcendental Meditation group ($130.39) differed nonsignificantly from that of the controls ($125.46) ($p = .41). Likewise, in Table 2, we see that in the pre-intervention period, the annual change in expenses was nonsignificantly different on all statistical tests. Also, for the year prior to the intervention, follow-up statistical tests showed that the difference in physician expenses between groups was nonsignificant based on both the nonparametric Mann-Whitney U test ($p = .99$) and the t-test ($p = .34$). In sum, it does not appear that the post-intervention results can be plausibly attributed to regression toward the mean.

Alternative explanations for the results, such as the placebo effect, must also be considered (Eisenberg et al., 1993). In a meta-analysis of 146 independent outcomes, Eppley et al. (1989) found the Transcendental Meditation technique was significantly more efficacious than a placebo or other relaxation techniques in reducing anxiety (stress). Moreover, several studies showing positive effects of the Transcendental Meditation technique on hypertension (Schneider et al., 1995; Alexander et al., 1989; Orme-Johnson & Walton, 1998) and psychological health (Alexander et al., 1991; Orme-Johnson & Walton, 1998; Eppley et al., 1989; Brooks & Scarano, 1985; Taub et al., 1994) have used prospective, random assignment designs that included both placebo and active control groups. Thus, the placebo effect seems an unlikely explanation for the results.

Another possible explanation could be that the Transcendental Meditation participants increased more than control participants in their use of other unconventional care, or complementary/alternative medicine (CAM), which was not monitored in this study. To date, there have been no studies in Canada evaluating whether the Transcendental Meditation technique has been used as a substitute or complement to Western medicine. There is no evidence that the utilization
patterns of the Transcendental Meditation program differ from those of other forms of meditation or CAM. Although approximately 14% of the Quebec population uses some form of CAM (Millar, 1997), the Quebec government keeps records only of utilization of standard physician treatment, because RAMQ pays only for conventional care and not for CAM. From Tables 1 and 2, we see that before starting the technique, the Transcendental Meditation group’s use of conventional physician care was increasing faster than that for the Non-Transcendental Meditation group. However, upon commencing the technique, Transcendental Meditation participants may have reduced their conventional care, and started utilizing more complementary/alternative medicine than controls. However this explanation appears unlikely for the following four reasons.

First, Eisenberg et al. (1993), Eisenberg et al. (1998), Astin et al. (2000), Astin (1998), Druss and Rosenheck (1999), and Paramore (1997) provide evidence from US national surveys suggesting that unconventional medical care is generally used to supplement or complement conventional medical treatment and not to replace it. Druss and Rosenheck (1999) explained, “unconventional therapies appear to serve more as a complement than an alternative to conventional medicine.” Astin (1998) found that 95.6% of his sample used alternative care to complement their conventional treatment, and only 4.4% used CAM as primary care. The same phenomenon also appears to occur in Canada (Blais, Maïga, & Aboubacar, 1997; Millar, 1997; Kelner & Wellman, 1997).

Second, past research indicates that users of unconventional medicine are more likely to have higher physician utilization than the rest of the population. Druss and Rosenheck (1999) found that “Overall, having any visit for unconventional therapies was associated with an approximately twofold increase in the odds of having a physician visit.” They also found that for those who practice some form of meditation (excluding TM), there was a 1.45 odds ratio (CI, 0.88 – 2.49; p < .001) for increased visits to conventional physicians. Paramore (1997) found that “users of alternative care made almost twice as many visits to conventional (or orthodox) medical providers as nonusers made.” In Canada, users of CAM tend to have more chronic illnesses than the general
population (Millar, 1997; Kelner & Wellman, 1997), which usually leads to higher physician utilization rates.

However, the meditators in this study showed the opposite trend in physician use. What might explain this difference? Recent meta-analyses have indicated that different relaxation methods produce widely differing results (Orme-Johnson & Walton, 1998). Transcendental Meditation practice appears to be associated with decreased physician utilization because of improved actual health status (Castillo-Richmond et al., 2000; Schneider et al., 1995; Alexander et al., 1989; Orme-Johnson & Herron, 1997). Other factors, however, might also be involved. For instance, there is evidence that Transcendental Meditation practice improves brain function, which might affect health-related lifestyles and psychological and physiological health. Numerous electroencephalographic (EEG) studies have found that Transcendental Meditation practice produces distinctive and comprehensive EEG patterns, indicating enhanced brain orderliness (Travis & Wallace, 1997; Mason et al., 1997; Petrenko, Orlova, & Lyubimov, 1993; Travis & Orme-Johnson, 1990; Banquet, 1973). Several neuroendocrine studies also indicate the Transcendental Meditation technique generates major changes in the neurophysiology in the direction of improved health (Walton et al., 1995; Walton & Levitsky, 1994; MacLean et al., 1994; Subrahmanyam & Porkodi, 1980; Jevning, Wilson, & Davidson, 1978; Jevning, Wilson, & Smith, 1978).

Reduced anxiety (Eppley et al., 1989) may affect perceived health status, another determinant of medical care use. Transcendental Meditation practice strengthens self-efficacy (Alexander et al., 1991), which may influence utilization rates. Research shows that the Transcendental Meditation technique improves cognitive flexibility (Alexander et al., 1989; Dillbeck, 1982), which might enable meditators to easily adopt new lifestyles that are less health-damaging and more health-promoting and thus help reduce medical expenses. There is also evidence that the Transcendental Meditation practice broadens comprehension (Dillbeck, Assimakis, Raimondi, Orme-Johnson, & Rowe, 1986; Gelderloos, Lockie, Chuttoorgoon, 1987; Pelletier, 1974) and improves orientation toward more positive values (Gelderloos, Goddard, Ahlström, & Jacoby, 1987), which may affect health-related habits, health status, and medical usage. Future research might explore the numerous
possible mediating variables that may interact to reduce medical utilization and expenses. However, it was beyond the scope of this study to investigate the causal mechanism underlying the observed results.

Third, until recently, many forms of CAM have been difficult to obtain in Quebec. At the request of the Quebec physicians’ association, the provincial government has discouraged the practice of many forms of unconventional medicine during most of the years covered by this study, 1981–1994. The highly publicized trial of Dr. Gaston Naessens is an example of this policy (Bird, 1990). Chiropractic care was legalized in 1973 and acupuncture in 1986. CAM has grown rapidly in recent years in the large cities. However, Quebec still lags behind other Canadian provinces and the United States in CAM utilization. In the US, Eisenberg et al. (1998) estimated that almost half the population uses some form of CAM. In contrast, in Quebec only 14% of the people use CAM, but in the Canadian Prairie and British Columbia, usage rates range from 19% – 21% (Millar, 1997).

Fourth, if the Transcendental Meditation participants had a higher socioeconomic status (SES) than the controls, they would have had more money to spend on unconventional medicine. We have data on the occupation of the Transcendental Meditation participants, but RAMQ did not provide that data for the Non-Transcendental Meditation group. Thus, no comparison could be made on socioeconomic status. However, the Transcendental Meditation participants’ professions were distributed evenly among numerous occupations with most falling into the middle-class, or medium SES, as found in numerous US national surveys. Eisenberg et al. (1998) explained that “the use of alternative therapies is distributed widely across all sociodemographic groups.”

Even if the Transcendental Meditation participants had more out-of-pocket money to spend on unconventional medical care, it is unlikely that socioeconomic status alone could account for the results of this study. The reason is that CAM usage in Canada is a complex, multidimensional phenomena that involves personal beliefs or worldview, health status, education, age, gender, disenchantment with allopathic medicine, and other variables in addition to socioeconomic level (Blais et al., 1997; Millar, 1997; Kelner & Wellman, 1997). An important finding is that randomized studies have shown that the Transcendental
Meditation technique produced health improvements for individuals of all socioeconomic levels. For example, randomized studies have shown that Transcendental Meditation practitioners from low socioeconomic strata exhibited numerous statistically significant improvements on health and lifestyle outcomes (Castillo-Richmond et al., 2000; Schneider et al., 1995; Alexander et al., 1989; Brooks & Scarano, 1985; Taub et al., 1995). Thus, for the four above reasons, the substitution of unconventional medical care for conventional care appears to be an unlikely explanation for the results in this study.

**Low Physician Fees in Quebec**

Compared with the other Canadian provinces and the US, average physician payments in Quebec have been extremely low. This phenomenon is mainly due to vigorous physician fee control by the Quebec government (Evans, Barer, & Hertzman, 1991; Evans, Lomas, Barer et al., 1989; Barer, Evans, & Labelle, 1988). Figure 1 shows the average annual physician payments in Quebec have been lower than the Canadian average during the years of this study. In Quebec, the prices of physician services are determined by periodic negotiations between the Quebec Ministry of Health and Social Services and the doctors’ organization. The government sets prices for each physician service in each region of the province. In the Quebec medical system, market forces do not interact to affect price, and physician fees there are relatively low even in the midst of a physician shortage. Normally, when there is a shortage of a service its price will tend to rise. However, the elimination of natural market forces might help explain why in Quebec there are amazingly low physician fees compared with other areas of North America.

**Policy Implications**

The results of the present study may have important policy implications for government health insurance programs that cover the elderly in Canada and possibly other nations with similar medical systems. Most countries need to find innovative ways to reduce the medical expenses of their fast-growing, elderly populations. Since many Canadians have adopted alternative health approaches (Blais et al., 1997; Millar, 1997;
Kelner & Wellman, 1997), the CAM intervention examined in this study might be applied to reduce physician expenses on a large scale.

The post-intervention, mean annual percentage decline of 23.8% for the Transcendental Meditation group in Table 2 represents potential savings for the Canadian medical system. For example, the federal Ministry of Health’s statistical division, Health Canada, estimated that all of the provinces combined spent approximately $12 billion for physician services in 1999. With a 23.8% reduction (Table 2) the Canadian physician payments could be reduced approximately $3 billion in one year, and this savings might be expected to continue for at least five years, the post-intervention length of this study. If the five-year cumulative decline of almost 70% shown in Table 3 were applied, there would be cumulative savings of $8 billion for the Canadian medical system. Such results from preventive interventions appear to be consistent with previous research (Messonnier, Corso, Teutsch, Haddix & Harris, 1999; Pelletier, 1999, 1996).

In Canada, payments to physicians have been approximately 20% of total annual health sector spending. The findings in our study cannot be extrapolated to make inferences about total medical expenditures. However, the present results on physician payments may be important because doctors’ decisions determine most other medical expenditures such as medical testing, prescription medication, follow-up doctor’s visits, surgery, and hospitalization (Eisenberg, 1986).

Although it has limitations, this study supports and extends the earlier research on the Transcendental Meditation technique and contributes to the growing evidence that the procedure may reduce medical care utilization and expenses. If one considers the health care spending outlook for the next decade, it is encouraging to see that it might be possible to reduce at least one component of national medical expenditures. The results of this preliminary study suggest that the Transcendental Meditation program should be seriously considered as a possible component of any comprehensive cost containment strategy or medical system reform program. Further research on this topic is clearly warranted.
References


techniques for hypertension: Are they effective? *Annals of Internal Medicine, 118*(12), 964–972.


Gelderloos, P., Goddard, P.H., Ahlström, H.H., & Jacoby, R. (1987). Cognitive orientation toward positive values in advanced partici-
pants of the Transcendental Meditation and TM-Sidhi program. *Perceptual and Motor Skills, 64*, 1003–1012.


Authors’ Note: This ongoing study was funded by Mr. and Mrs. Fred Gratzon and the Lancaster Foundation of Bethesda, Maryland. Stephen L. Hillis, Ph.D. provided invaluable suggestions and advice. Deep appreciation also goes to Ginette R. Herron, M.S., who served as the research assistant and French translator for this study. We wish to acknowledge the helpful comments and editorial suggestions of Martha Bright, M.L.S.
Holistic Health for Holistic Management

Dennis P. Heaton, Ed.D.
ABOUT THE AUTHOR

Dennis P. Heaton, Ed.D., is Professor of Management, Co-Director of the Ph.D. Program in Management, and Dean of Distance Education and International Programs at Maharishi University of Management in Fairfield, Iowa. His previous publications include articles and invited chapters on management education, leadership, ethics, higher stages of development, and peak performance. He has been directing Ph.D. students’ research in areas of socially and environmentally responsible business, including the effects of green buildings on human resources, consumer attitudes toward genetically modified food, moral development and ethical decision-making in accountants, the financial impact of environmental management systems, and Maharishi Mahesh Yogi’s program to eliminate poverty.
Holistic health means not just an absence of disease, but optimal balance, vitality, happiness, and mental clarity. Holistic health has its basis in the inner intelligence of nature which is latent in the consciousness of every individual. This same inner intelligence is also the wellspring of holistic management, which is characterized by maximum achievement with least effort; spontaneous and frictionless coordination; doing well by doing good; and harmony with the natural environment. Practices which promote holistic health for the individual also unfold the capacity to achieve increasing degrees of fulfillment, good fortune, and positive social impact in one’s work.

What Is Holistic Health?
The World Health Organization (1999) defines health as “a state of complete physical, mental, and social well-being” and not merely the absence of disease or infirmity. Health is, by definition, a holistic phenomenon. Dictionary meanings of the word whole include sound, healthy, restored, healed. Definitions of health include hale, sound, or whole in body, mind, or soul. The words health, whole, and holy, in fact, share a common root word and are hyperlinked to each other in Webster’s Dictionary on the World Wide Web (Webster’s Dictionary, 1999).

The term holistic health is used to refer to concepts and practices that in some respects are opposite of those of the paradigm of modern medicine. Modern medicine focuses on the health problem. Holistic health considers the whole person—including body, environment, relationships, purpose, and knowledge. It offers not only alternative treatments for disease, but an emphasis on primary prevention and health promotion. While disease care in modern medicine is dependent on institutions and professionals, holistic health is more oriented toward self-understanding, self-administered practices, and healthy living. Evidence of the limitations of modern medicine can be seen in the fact that while the United States has the highest per capita health care costs of any nation—approximately $1.2 trillion spent on health in 1999 (Smith, Heffler, Freeland, & the National Health Expenditures Projection Team, 1999)—it is estimated that over 100 million Americans suffer from at least one chronic disease, for which modern medicine can only offer palliation (Hoffman, Rice, & Sung, 1996).

The differences between conventional medicine and holistic health can be seen in how they approach cardiovascular diseases. When the structure of
the heart and/or arteries become damaged by disease, modern medicine resorts to surgical procedures—including coronary artery bypass grafts, heart transplant, or angioplasty (inflating balloons inside clogged arteries to expand their capacity). A more natural alternative to surgery is a program designed by Dr. Dean Ornish. This program, which involves the systematic use of low-fat vegetarian diet, exercise, and stress reduction in combination, can clear clogged arteries—promising large savings over the average cost ($20,000–$550,000) of angioplasty and bypass surgery (Neergaard, 1999). Moreover, Ornish (1999) also recognizes that the health of the heart is very much related to our emotions and relationships. In Love & Survival he argues that personal intimacy and other aspects of emotional well-being motivate us to make better lifestyle choices and give us stronger immune systems, better cardiovascular functioning, and longer life expectancies.

Another natural alternative which has been tested for treatment and prevention of heart disease is the Transcendental Meditation program, the most thoroughly researched meditation practice—with more than 500 studies on its effects on mind, body, and environment (Murphy & Donovan, 1996; Schmidt-Wilk, Alexander, & Swanson, 1996; Sharma, & Alexander, 1996). A study on hypertension in elderly African-Americans found that the Transcendental Meditation program was twice as effective in reducing high blood pressure as progressive muscle relaxation and about equally as effective as medication, but without harmful side effects (Schneider et al., 1995). A further study found that the Transcendental Meditation program was more cost-effective in the treatment of hypertension than any of five classes of hypertensive drugs studied (Herron, Schneider, Mandarino, Alexander, & Walton, 1996). During the practice of the Transcendental Meditation technique there are reductions in heart rate and oxygen consumption, and increased electroencephalographic (EEG) coherence indicative of a state of profound restful alertness, distinct from eyes-closed relaxation or sleep (Alexander, Cranson, Boyer, & Orme-Johnson, 1986). The profound relaxation gained during the practice is said to dissolve mental and physical stress. Research indicates that practice of the Transcendental Meditation technique leads to decreased anxiety (Eppley, Abrams, & Shear, 1989); reduced health insurance utilization (Orme-Johnson, 1987; Herron, Hillis, Mandarino, Orme-Johnson, & Walton, 1996); improved health, improved productivity, and improved relations in

A Tale of Two Workers
How holistic health practices can influence personal and professional fulfillment can be illustrated with the following tale about Beth and Joan, two recent college graduates working in professional positions.

Beth works for a company which is a pioneer in making solar energy feasible on a large scale. This work satisfies her personal mission to reduce the burning of fossil fuels. Beth enjoys taking care of her health. The food she eats is from organic natural food stores and restaurants. Her cottage is near the county park, where she gets some outdoor recreation just about every day. Beth’s life routines maintain a balance of rest and activity. She retires and rises at an early hour and she practices the Transcendental Meditation technique every day. Beth nourishes her senses with her hobby of photography. She nourishes her heart by spending time each week with her fiance, her friends, and her family. She nourishes her mind with classes and readings about her interests in photography and about natural medicine. Beth is on a path of personal growth through which she is discovering more and more each day about how to attune herself with nature and unfold her limitless human potential.

Joan likes creating software and she likes the challenges and the successes of working in a high-growth industry. But lately, to meet the project deadlines at work, she has been pushing herself to work up to seventy hours per week. On many nights, dinner means grabbing some fast food or snacks and rushing back to her office and computer. Joan knows that she has been gaining weight and has resolved to join a health club to work out regularly, but she hasn't yet found the time. She is not aware that her restless sleep and her anxious nerves may be side-effects of too many evenings on the computer. To relax at night, especially on the weekend, she has gotten into the habit of having a few alcoholic drinks. To get herself going again the next morning, she relies on caffeine. Somewhere in the back of her mind, Joan is beginning to wonder about the choices she has made and what her life is becoming.

Someone like Beth has her work life balanced with her other nurturing interests and routines. On the other hand, the tale of Joan represents a lifestyle with greater risk of developing a disabling health problem that would require significant health-care expenditures and diminish her par-
ticipation in the workforce. Because stress and illness hurt employers with worker absenteeism and health-care expenditures, more and more employers are investing in health promotion and fitness programs for their employees (Harrison, 1999; Pelletier, 1999).

Beyond the impact of health problems on expenses, absenteeism, turnover, and quality of individual life, we would expect that the health of workers also impacts the health of the world they help create through their work. Someone like Beth, who is attentive to the quality of food, water, and air which she puts into her body, would be more likely to eschew producing high volumes of pollutants or landfill. She would be as sensitive about the purity of her outer environment as she is about her inner environment. We would expect that someone like Joan, on the other hand, who is learning to live with strain, junk food, and chemical stimulants in her physiology, would tolerate more imbalance, strain, and waste products in her environment.

It can be argued that not only the beauty and health of our physical environment but also the quality of products and services sold and bought in society are expressions of the health of our workers. A worker who is growing in stress and “disease” might more readily act in ways that are damaging to the ethical quality of life in the workplace and the community-at-large. A healthy person, on the other hand, enjoying a natural state of vitality, mental clarity, and emotional well-being, would be less inclined to participate in producing and consuming the array of unnatural stimulations and escapes which clutter today’s media and shopping shelves. Indeed, it is those members of society who have the greatest psychological health (Maslow, 1998) who tend to enrich society with innovative thinking, aesthetic creativity, and moral leadership. It would be interesting to see more systematic research exploring the relationship between holistic-health practices and various values and behaviors at the workplace.

From Holistic Health to Holistic Management

As more and more individuals are pursuing holistic health in their personal lives, there is a parallel trend toward wholeness in the values and management principles of organizations. The field of management has seen the emergence of what Biberman and Whitty (1997) call a spiritual paradigm of work, which balances material objectives with values of meaning and community. A central element in this transformation, they report, is various types of meditation practices and spiritual disciplines (cf. McDonald,
For Srinivas (1999), workplace spirituality is “a life-oriented quest for personal integration and meaning, a personal commitment to self-discovery and self-transformation and inner growth” (1999, p. 33). Biberman, Whitty, King, and Neal argue that “holistic management education that taps more of the human potential of both teacher and students will better prepare graduates for the unpredictable and ever-changing business world” (1999, p. 7).

The same quality of balance which characterizes individual health is essential to holistic management. Marcic explains, “A healthy organization would have a balance of material and physical development, intellectual growth, and a deep concern for human issues” (1997, p. 28). Indeed it is by being balanced in one’s personal life that a manager can bring a more balanced perspective to the tasks of goal setting and decision-making for the organization (Covey, 1989). Meditation practices bring a profound experience of wholeness in the quest for holistic health (Schneider et al., 1997). This same experience is central to holistic management. Ray writes of a new paradigm of holistic management based on “wholeness and connectedness . . . from our most profound inner awareness” (1993, pp. 4–5). Hagelin (1998) has argued the holistic intelligence of the unified field—the most basic level of nature according to quantum field theories—can be harnessed in the administration of human institutions by promoting the experience of one’s own pure consciousness. Following Maharishi Mahesh Yogi’s (1995) treatise on wholeness in management, Heaton and Harung (1999) have described characteristics of holistic management based on the full development of human consciousness, including maximum achievement with least effort, spontaneous and frictionless coordination, doing well by doing good, and harmony with the natural environment. Each of these characteristics is described in the paragraphs which follow.

**Maximum Achievement with Least Effort**

Modern physics holds that all known laws of nature function through the principle of least action (Hagelin, 1998). In an organization grounded in nature’s intelligence, things would seem to run almost by themselves. The members would display a high degree of personal self-sufficiency, full expression of individual creativity and intelligence, excellence in action, coherent social interactions, and frictionless progress without strain—in short, doing least and accomplishing most. This relationship between healthy individuals
and healthy industry has been expressed by Maharishi: “To maintain a strong, growing economy, all that is necessary is to utilize the infinite creativity and organizing power of Nature which is latent within everyone” (1996, p. 78).

**Spontaneous and Frictionless Coordination**

Simultaneous coordination of numerous elements is evident in systems in nature. Consider, for example, the vast number of automatic processes continuously taking place in our body—self-regulating homeostasis, respiration, cardiovascular activity, metabolism in each cell—and the synchronized movements of celestial bodies in the universe. In a similar way, holistic management in an organization will be expressed as all the parts spontaneously align in a coherent wholeness. Highly coherent physical systems are found to take on special properties such as superconductivity—where electrons aligned together create a powerful field that can reject any disruption from external magnetic influences—and superfluidity—a state of zero viscosity in which a liquid will continue to flow indefinitely once set in motion (Wallace, 1993). With growth of holistic health, work and communication within the organization become more like these coherent phenomena. Those working in such an organization will commonly experience fortuitous coincidences in which the work of others is found to spontaneously support what one is trying to accomplish.

**Doing Well by Doing Good: Prosperity and Social Value**

Wheeler and Sillanpaa (1997) describe a more holistic framework for business planning which considers how the business creates value for multiple stakeholders—including employees, managers, investors, local/global communities, government and civil society, suppliers and business partners, future generations, and the natural environment. There is an increasing appreciation that businesses which live by moral principles excel in the long run in simultaneously fulfilling the interests of investors, employees, and society (Collins & Porras, 1994). Steingard, Fitzgibbons, Heaton, and Schmidt-Wilk (2000) extend the stakeholder perspective by recognizing the significance of the experience and understanding of the unifying element of consciousness. They argue that awakening the inner intelligence of the members of a business is the key to fulfilling the social and environmental responsibilities of the business. They report on the experience of teaching a course on the consciousness-based stakeholder corporation, which teaches
students to evaluate how companies promote mind-body-spirit evolution for their employees and contribute to creating “Heaven on Earth.”

**Harmony with the Natural Environment**

In recent decades, science and technology have extended the impact which human actors have on the natural environment of our planet but not without “unintended ecological degradation” (Shrivastava, 1995). The goal of environmental sustainability—doing business without harming the physical or social environment—is now becoming increasingly appreciated by corporations. Leaders in environmental management recognize, however, that sustainability requires a new educational approach to transform human thinking . . . and . . . increase the rate of people’s evolutionary consciousness toward a ‘new mind’” (Gladwin, Kennelly, & Krause, 1995). Holistic management constitutes just such a “new mind”—realizing the spiritual depth of our being where we are one with nature, enabling us to live in harmony with the natural world.

**Holistic Management in Action at Sunshine Energy Systems**

Let’s come back to the tale of Beth and Joan and update the story, so as not to leave Joan on a path toward disease. The impulse to health is natural, innate, and difficult to resist. Joan heeded that impulse to health and by good fortune she got some opportunities to change toward a healthier life.

Joan was having dinner with her friend Laura on a Friday night and they got to talking about the passion for environmentalism that they both shared as undergraduate students. Laura suggested that Joan look into the possibility of finding a new job with Sunshine Energy Systems, a growing local business renowned for its environment-friendly practices.2 Joan applied and was hired for a software position at Sunshine. She began to participate in a series of health promotion programs sponsored by her new employer. She took a course of meditation, and a course on diet and health. Her eating habits began to change as she enjoyed the delicious organic food available at the company cafeteria. As her social life shifted toward her new friends from Sunshine, gradually Joan’s alcohol and coffee habits fell away. She joined exercise sessions offered at the worksite.

Joan began to recognize that the holistic health that was growing in her and the other members of her company was definitely related to the appealing climate, healthy products, and exceptional success which the company
was producing. She enjoyed talking about this with Beth, one of the founders of the company, whom Joan had come to meet in a seminar at the company about holistic management.

Joan: I am very impressed with the waste management practices in this company. It appears that there are practically no by-products from manufacturing which end up dumped into the environment.

Beth: That’s right. Our insulation research and development group has just developed an electromagnetic radiation shielding material with better performance and lower cost than anything we’ve seen before. And the source of the material is a by-product from the manufacturing of solar energy collection devices by our company and other manufacturers. Joan, it sounds like environmentalism is a pretty important value for you.

Joan: Yes, it sure is. I joined Sunshine to help move the world from fossil fuel-based energy systems to non-polluting solar power. I noticed that Sunshine has been expanding throughout the world because you are offering energy supply and distribution systems which are not just the cleanest, but also the least expensive. I wanted to be a part of what you are doing.

Beth: What is your experience of working here at Sunshine?

Joan: This is an exceptional place to work. I’ve really enjoyed the smooth coordination that I see between individuals and between departments.

Beth: It is a common experience here that we are thinking in ways that anticipate each other and will easily synchronize together.

Joan: Its seems to me that just as Sunshine creates low-resistance energy transmission systems, so also Sunshine has created a low-resistance culture, where people work together without friction or loss of energy.

Beth: We have been employing specific practices, including group meditation, to cultivate a coherent field of consciousness within our organization. This has paid off in achieving exceptional business results without wearing out our people. We liken our coherence to a laser which has great power with minimum expenditure of energy because the photons are in synchrony with one another.

Joan: This is sure different than my last job. There we all worked long hours, got tired, and almost always seemed to be in a crisis—rushing to put out one fire or another.

Beth: Do you find now that you are able to get enough accomplished without working such late hours?

Joan: I think I’m more productive now, even though working fewer hours.
I find that daily meditation especially helps me to bring more clarity and creativity to my work, which enables me to solve problems more quickly and more simply. Like yesterday. I had started writing a software program which I thought would take about four days of work. After meditation last evening, a simpler way of writing the program came to me, and I was able to get the whole thing finished today, with about ten percent of the lines of code I had originally planned to use.

Beth: It is just this kind of creativity that is the basis of the success of our whole company. Our engineers have reported that detailed ideas for complete product designs bloom in their minds—like the experience that some musical composer has written about. These intuitive solutions, they report, turn out to become the most holistic, economical, error-free, environmentally friendly, and aesthetically pleasing products. We believe that we wouldn't be the world leaders in clean and economical energy systems unless we had attuned ourselves to natural law through holistic health practices, including technologies of consciousness. Nature is the most creative engineer and the most efficient manager. We can make products that are friendly to the natural environment because we as individuals and as a collective entity are friendly with nature within.

Conclusion

The beginning of the millennium presents us an opportunity to commit ourselves to creating the future we want for our individual lives and for the organizations in which we work. Many of us are like Joan—tired of an imbalanced life, and moving toward greater personal wholeness; tired of a more conventional workplace, and moving toward a more fulfilling organizational setting, where we participate in enacting holistic management. Holistic health enlivens that inner intelligence that can facilitate the natural growth of our individual and collective capability to create a better world without accumulating strain. By adopting holistic health practices, we can help ourselves and our organizations to grow to new levels of efficiency, quality, pollution-free progress, prosperity, and fulfillment.

References


*Awakening Students to Social and Environmental Responsibility Through “Transformational Stakeholder Management.” Symposium for the SIM Track of the Midwest Academy of Management Annual Meeting, Chicago, April, 2000.*


This article, “Holistic Health for Holistic Management,” by Dennis P. Heaton, Ed.D., here revised/updated, and reprinted with permission, was originally published in G. Biberman & M. Whitty (Eds.), Work and Spirit: A Reader of New Spiritual Paradigms for Organizations. Scranton, PA: University of Scranton Press.

Part V

Appendices
Modern Science and *Vedic Science*:

An Introduction

Kenneth Chandler, Ph.D.
ABOUT THE AUTHOR

Kenneth Chandler holds a Ph.D. in Philosophy from the University of Texas at Austin. He served as Head of the Department of the Science of Creative Intelligence at Maharishi International University (today, Maharishi University of Management). Dr. Chandler continues his research into consciousness and is currently at work on a book on descriptions of the experience of transcending and pure consciousness in the mainstream classics of philosophy, science, religion, and the arts. It will be a three-volume set covering from the Vedic tradition to the present.
(The following article served as the Introduction to the inaugural issue of the journal *Modern Science and Vedic Science*.)

**Modern Science and Vedic Science:**

**An Introduction**

This journal (*Modern Science and Vedic Science*) provides a forum for research on the forefront of mankind’s expanding knowledge of the universe. It is devoted to exploration of the unified field of all the laws of nature through the combined approaches of modern science and ancient Vedic science, as brought to light by Maharishi Mahesh Yogi. The identification of the unified field by modern physics is only the first glimpse of a new area of investigation that underlies all disciplines of knowledge, and which can be explored not only through objective science but through a new technology of consciousness developed by Maharishi.

The unified field is now beginning to be understood through modern physics as the unified source of the entire universe, as a unified state of all the laws of nature from which all force and matter fields sequentially emerge according to exact dynamical principles. As each science and each academic discipline progresses to uncover its own most basic laws and foundational principles, each is beginning to discover that the roots of these laws and principles can be traced to the unified field.

This journal recognizes a new method of gaining knowledge of the unified field that combines the approach of the modern sciences with that of the most ancient of sciences, the ancient tradition of Vedic science. Many thousands of years ago, the seers of the Himalayas discovered, through exploration of their silent levels of awareness, a unified field where all the laws of nature are found together in a state of wholeness. This unity of nature was directly experienced to be a self-referral state of consciousness which is unbounded, all-pervading, unchanging, and the self-sufficient source of all existing things. They experienced and gave expression to the self-interacting dynamics through which this unified field sequentially gives rise to the diversity of all laws of nature. That experience is expressed in the ancient Vedic literature.
In our own time, Maharishi has brought to light the knowledge of this ancient science and integrated it with the modern sciences in such a way that Vedic science and modern science are now seen as complementary methods of gaining knowledge of the same reality—the unified field of all the laws of nature. The knowledge of this ancient science that Maharishi has brought to light is known as Maharishi Vedic Science.

Maharishi Vedic Science is to be understood, first of all, as a reliable method of gaining knowledge, as a science in the most complete sense of the term. It relies upon experience as the sole basis of knowledge, not experience gained through the senses only, but experience gained when the mind, becoming completely quiet, is identified with the unified field. This method, examined in relation to the modern sciences, proves to be an effective means of exploring the unified field of all the laws of nature. On the basis of this method, complete knowledge of the unified field becomes possible. It is possible to know the unified field both subjectively on the level of direct experience through exploration of consciousness and objectively through the investigative methods of modern science. Maharishi Vedic Science gives complete knowledge of consciousness, or the knower, complete knowledge of the object known, and complete knowledge of the process of knowing. In knowing the unified field, all three—knower, known, and process of knowing—are united in a single unified state of knowledge in which the three are one and the same.

Maharishi has developed and made available a technology for the systematic exploration of the unified field. This technology is a means by which anyone can gain access to the unified field and explore it through experience of the simplest and most unified state of consciousness. As this domain of experience becomes universally accessible, the unified field becomes available as a direct experience that is a basis for universal knowledge. The technology for gaining access to the unified field is called the Transcendental Meditation technique and its advanced programs, and the science based on this experience, which links modern science and Maharishi Vedic Science in a single unified body of knowledge, is called the Science of Creative Intelligence.

Maharishi is deeply committed to applying the knowledge and technology of the unified field for the practical benefit of life. He has
developed programs to apply this knowledge to every major area of human concern, including the fields of health, education, rehabilitation, and world peace. These applications of Maharishi’s technologies of consciousness have laid it open to empirical verification and demonstrated its practical benefit to mankind. Hundreds of scientific studies have already established its usefulness. From these results, it is clear that Maharishi’s technologies of consciousness are far more beneficial than technologies based on present day empirical science; they promise to reduce and even eliminate war, terrorism, crime, ill health, and all forms of human suffering.

These technologies, which are the applied value of Maharishi Vedic Science, represent a great advance in methods for gaining knowledge. Past science was based on a limited range of knowledge gained through the senses. This new technology opens to mankind a domain of experience of a deeper and more far-reaching import. It places within our grasp a new source of discovery of laws of nature that far exceeds the methods of modern science, yet remains complementary to these methods.

Modern science and Maharishi Vedic Science, explored together, constitute a radically new frontier of knowledge in the contemporary world, opening out vistas of what it is possible for mankind to know and to achieve, which extend far beyond present conceptions, and which demand a re-evaluation of current paradigms of reality and a reassessment of old conceptions of the sources and limits of human knowledge.

This introductory essay will provide a preliminary understanding of what the unified field is, what Maharishi Vedic Science is, and how Maharishi Vedic Science and modern science are related. It also defines fundamental concepts and terminology that will be frequently used in this journal and surveys the practical applications of this new technology. We begin with a description of the unified field as understood in modern science.

The Unified Field of Modern Science

Within the last few years, modern theoretical physics has identified and mathematically described a unified field at the basis of all observable states of physical nature. Einstein’s hope of finding a unified field theory to unite the electromagnetic, gravitational, and other known
force fields has now been virtually realized in the form of unified quantum field theories. Instead of having several irreducible and distinct force fields, physics can now mathematically derive all four known force fields from a single supersymmetric field located at the Planck scale ($10^{-33}$ cm or $10^{-43}$ sec.), the most fundamental time-distance scale in nature. This field constitutes an unbounded continuum of non-changing unity pervading the entire universe. All matter and energy in the universe are now understood to be just excitations of this one, all-pervading field.

Physics now has the capacity to describe accurately the sequence by which the unified field of natural law systematically gives rise, through its own self-interacting dynamics, to the diverse force and matter fields that constitute the universe. With a precision almost undreamed of a few years ago, the modern science of cosmology can now account for the exact sequence of dynamical symmetry breaking by which the unified field, the singularity at the moment of cosmogenesis, sequentially gave rise to the diverse force fields and matter fields. It is now possible to determine the time and sequence in which each force and matter field decoupled from the unified field, often to within a precision of minute fractions of a second. This gives us a clear understanding of how all aspects of the physical universe emerge from the unified field of natural law.

Mathematics, physiology, and other sciences have also located a unified source and basis of all the laws of nature in their respective disciplines. In mathematics, the foundational area of set theory provides an account of the sequential emergence of all of mathematics out of the single concept of a set and the relationship of set membership. The iterative mechanics of set formation at the foundation of set theory directly present the mechanics of an underlying unified field of intelligence that is self-sufficient, self-referral, and infinitely dynamic in its nature. Investigations into the foundations of set theory are ultimately investigations of this unified field of intelligence from which all diversity of the discipline emerge in a rigorous and sequential fashion. In physiology, it is the DNA molecule that contains, either explicitly or implicitly, the information specifying all structures and functions of the individual physiology. In this sense, therefore, it is DNA that unifies the discipline by serving as a unified source to which the diversity of physiological functioning can be traced.
Each of the modern sciences may indeed be said to have glimpsed a unified state of complete knowledge in which all laws of nature are contained in seed form. Each has gained some knowledge of how the unified field of natural law sequentially unfolds into the diverse expressions of natural law constituting its field of study. Modern science is now discovering and exploring the fundamental unity of all laws of nature.

**Maharishi Vedic Science**

Maharishi Vedic Science is based upon the ancient Vedic tradition of gaining knowledge through exploration of consciousness, developed by the great masters in the Himalayas who first expressed this knowledge and passed it on over many thousands of years in what is now the oldest continuous tradition of knowledge in existence. Maharishi’s work in founding Maharishi Vedic Science is very much steeped in that ancient tradition, but his work is also very much imbued with the spirit of modern science and shares its commitment to direct experience and empirical testing as the foundation and criterion of all knowledge. For this reason, and other reasons to be considered below, it is also appropriately called a science. The name “Maharishi Vedic Science” thus indicates both the ancient traditional origins of this body of knowledge and the modern commitment to experience, system, testability, and the demand that knowledge be useful in improving the quality of human life.

The founders of the ancient Vedic tradition discovered the capability of the human mind to settle into a state of deep silence while remaining awake, and therein to experience a completely unified, simple, and unbounded state of awareness, called pure consciousness, which is quite distinct from our ordinary waking, sleeping, or dreaming states of consciousness. In that deep silence, they discovered the capability of the mind to become identified with a boundless, all-pervading, unified field that is experienced as an eternal continuum underlying all existence. They gave expression to the self-sufficient, infinitely dynamic, self-interacting qualities of this unified state of awareness; and they articulated the dynamics by which it sequentially gives rise, through its own self-interacting dynamics, to the field of space-time geometry, and subsequently to all the distinct forms and phenomena that constitute the universe. They perceived the fine fabric of activity, as Maharishi explains it, through which this unity of pure consciousness, in the pro-
cess of knowing itself, gives rise sequentially to the diversity of natural law and ultimately to the whole of nature.

This experience was not, Maharishi asserts, on the level of thinking, or theoretical conjecture, or imagination, but on the level of direct experience, which is more vivid, distinct, clear, and orderly than sensory experience, perhaps much in the same way that Newton or Einstein, when they discovered the laws of universal gravitation or special relativity, enjoyed a vivid experience of sudden understanding or a kind of direct “insight” into these laws. The experience of the unified field of all the laws of nature appears to be a direct experience of this sort, except that it includes all laws of nature at one time as a unified totality at the basis of all existence—an experience obviously far outside the range of average waking state experience.

The ancient Vedic literature, as Maharishi interprets it, expresses, in the sequence of its flow and the structure of its organization, the sequence of the unfoldment of the diversity of all laws of nature out of the unified field of natural law. The Veda is thus to be understood as the sequential flow of this process of the oneness of pure consciousness giving rise to diversity; and Maharishi Vedic Science is to be understood as a body of knowledge based on the direct experience of the sequential unfoldment of the unified field into the diversity of nature. It is an account, according to Maharishi, of the origin of the universe from the unified field of natural law, an account that is open to verification through direct experience, and is thus to be understood as a systematic science.

These ancient seers of the Vedic tradition developed techniques to refine the human physiology so that it can produce this level of experience, techniques that were passed on over many generations, but were eventually lost. Maharishi’s revival and reinterpretation of ancient Vedic science is based on his revival of these techniques which have now been made widely accessible through the training of thousands of teachers of the Transcendental Meditation program. He has thus provided a reliable method of access to this field of direct experience where the oneness of pure consciousness gives rise to the diversity of the laws of nature; and he has also developed applications of this technology that render it open to experimental testing. These applications will be considered below.
Maharishi describes the experience of this unified field of consciousness as an experience of a completely unchanging, unbounded unity of consciousness, silently awake within itself. Gaining intimate familiarity with the silence of pure consciousness, Maharishi holds, one gains the ability to experience within that silence an eternal “fabric” or “blueprint” of all laws of nature that govern the universe, existing at the unmanifest basis of all existence. This unmanifest basis of life, where all laws of nature eternally reside in a collected unity, is experienced as the fabric of the silent field of consciousness itself, which is not in space and time, but lies at the unmanifest basis of all manifest activity in space and time. Through Maharishi’s work, this experience comes to be understood (as we see below) as a normal state of consciousness that arises in the natural course of human development.

Glimpses of this universal domain of experience, where all possibilities reside together in an eternally unified state, have been reported in almost every culture and historical epoch, from Plato to Plotinus and Augustine, and from Leibniz to Hegel and Whitehead. Scientists like Kepler, Descartes, Cantor, and Einstein also appear to have written of it and seemingly drew their insights into the laws of nature from this experience. Descartes (1908) writes, for example, of an experience that he had as a young man of “penetrating to the very heart of the kingdom of knowledge” and there comprehending all the sciences, not in sequence, but “all at once.” Scientists and writers from many traditions have described this experience of unity, which confirms that it is completely universal, and not a product of a particular cultural tradition. Just as the Vedic tradition has been misunderstood, however, so have those descriptions of consciousness found in these different cultural traditions; for without a technique that makes the experience systematically accessible to everyone, the understanding that this is a universal experience of the most fundamental level of nature’s activity has been obscured, and has not before now emerged into the light of universal science.

According to Maharishi Vedic Science, it is not only possible to gain direct experience of the unity of natural law at the basis of the manifest universe, but one can also directly experience the unity of nature sequentially giving rise to the diversity of natural law through its own self-interacting dynamics. Maharishi’s most recent research has
centered on delving deeply into the analysis of these self-interacting dynamics of consciousness.

**The Self-Interacting Dynamics of Consciousness**

When one gains the capability, through practice of the Transcendental Meditation technique, of remaining awake while becoming perfectly settled and still, one gains the ability to experience a completely simple, unified, undifferentiated, self-referral state of pure consciousness, which is called Saṁhitā in the Vedic literature, in which knower, known, and process of knowing are one and the same. Consciousness is simply awake to itself, knowing its own nature as simple, unified pure consciousness. Yet in knowing itself, the state of pure consciousness creates an intellectually conceived distinction between itself as knower, itself as known, and itself as process of knowing. In Vedic literature, this is reflected in the distinction between Rishi (knower), Devatā (process of knowing), and Chhandas (object of knowledge). According to Maharishi, from the various interactions and transformations of these three intellectually conceived values in the unified state of pure consciousness, all diverse forms of knowledge, all diverse laws of nature, and ultimately all diversity in material nature itself sequentially emerge.

The conscious mind, awake at this totally settled and still level of awareness, can witness the mechanics by which this diversification of the many out of the unity of pure consciousness takes place. The mechanics of Rishi, Devatā, and Chhandas transforming themselves into Saṁhitā, Saṁhitā transforming itself into Rishi, Devatā, and Chhandas, and Rishi, Devatā, and Chhandas transforming themselves into each other are the mechanics by which the unity of pure consciousness gives rise to the diversity of natural law. These mechanics are expressed in the sequential unfoldment of Vedic literature. These are the self-interacting dynamics of consciousness knowing itself, which, Maharishi asserts, sequentially give rise to all diversity in nature.

Maharishi (1986) describes this self-referral state of consciousness as the basis of all creative processes in nature:

This self-referral state of consciousness is that one element in nature on the ground of which the infinite variety of creation is continuously emerging, growing, and dissolving. The whole field of change emerges from this field of non-change, from this self-referral, immortal state of
consciousness. The interaction of the different intellectually conceived components of this unified self-referral state of consciousness is that all-powerful activity at the most elementary level of nature. That activity is responsible for the innumerable varieties of life in the world, the innumerable streams of intelligence in creation. (pp. 25–26)

The Structure of Maharishi Vedic Science
One of Maharishi’s most important contributions to Vedic scholarship has been his discovery of the Apaurusheya Bhashyā, the “uncreated commentary” of the Rk Veda, which brings to light the dynamics by which the Veda emerges sequentially from the self-interacting dynamics of consciousness. According to Maharishi’s analysis, the Veda unfolds through its own commentary on itself, through the sequential unfoldment, in different-sized packets of knowledge, of its own knowledge of itself. All knowledge of the Veda is contained implicitly even in the first syllable “Ak” of the Rk Veda, and each subsequent expression of knowledge elaborates the meaning inherent in that packet of knowledge through an expanded commentary. The phonology of that syllable, as analyzed by Maharishi, expresses the self-interacting dynamics of consciousness knowing itself. As pure consciousness interacts with itself, at every stage of creation a new level of wholeness emerges to express the same self-interacting dynamics of Ṛishi, Devatā, and Chhandas.

Thus the body of Vedic literature reflects, in its very organization and structure, the sequential emergence of all structures of natural law from the unity of pure consciousness. Each unit of Vedic literature—Rk Veda, Sāma Veda, Yajur-Veda, Atharva Veda, Upanishad, Āraṇyakas, Brāhmaṇa, Vedāṅga, Upāṅga, Itihās, Purāṇ, Smriti, and Upaveda—expresses one aspect or level of the process. As Maharishi (1986) describes it:

The whole of Vedic literature is beautifully organized in its sequential development to present complete knowledge of the reality at the unmanifest basis of creation and complete knowledge of all of its manifest values. (p. 28)

Veda, Maharishi asserts, is the self-interaction of consciousness that ultimately gives rise to the diversity of nature. The diversity of creation sequentially unfolding from the unity of consciousness is the result of
distinctions being created within the wholeness of consciousness, as consciousness knows itself. Thus from the perspective of Maharishi Vedic Science, the entire universe is just an expression of consciousness moving within itself: All activity in nature is just activity within the unchanging continuum of the wholeness of consciousness.

Through the texts of ancient Vedic science, as interpreted by Maharishi, we possess a rich account of the emergence of diversity out of the unity of natural law. On the basis of this account, it becomes feasible to compare the Vedic description of the origin of the universe with that of the modern sciences.

Modern Science and Maharishi Vedic Science

When Maharishi heard from major scientists of the recent advances of unified field theory in physics, he asserted that modern science had glimpsed the unified field described in ancient Vedic science. “The knowledge of the unified field,” he said (1986, p. 29), “has been discovered by modern science during just the last few years, but the complete knowledge of the unified field has always been available in the Vedic literature.” Modern science, he proposed, had now arrived at the edge of comprehending, through unified quantum field theories, what Vedic science had described on the basis of exploration of the least excited state of consciousness since ancient times: that all diversity in nature sequentially emerges from a unified source through a precise self-interacting dynamics. Modern experimental science and Maharishi Vedic Science could now be seen as two diverse yet mutually complementary approaches to knowing the same underlying reality—one through the empirical method, the other through the exploration of the least excited state of consciousness. Through Maharishi’s inspiration, this has become a major research program that has engaged the attention of many scientists and that has yielded very rich results.

Over the past decade, Maharishi has participated in numerous symposia with major scientists on the theme of exploring modern science and Vedic science to discover detailed structural similarities in their descriptions of the unified field. These symposia have attracted eminent unified field theorists, mathematicians, and physiologists, including a number of Nobel laureates, as well as many of the most highly recognized Pandits of the Vedic tradition. Out of these interactions has come
a meeting of two traditions, East and West, on the ground of their common theme: the investigation of the unified field. Those who have followed these symposia have recognized a deep and impressive structure of knowledge common to both traditions. Both identify a boundless, all-pervading field underlying all states of matter and energy in the universe; both locate it on the most fundamental time-distance scale of nature; both assign to it the same properties of self-sufficiency, self-interaction, infinite dynamism, unboundedness, and unity, among many other common attributes; both identify a threefold structure at the basis of all nature; and both describe a dynamics by which the diversity of nature sequentially emerges from this unified field according to precise laws. The result of these symposia has been that many scientists, following Maharishi’s lead, now feel confident to assert that the unified field described by physics and the unified field of consciousness described by Vedic science are one and the same.

In the first issue of Modern Science and Vedic Science, the lead article by John Hagelin explored many of the deep connections between contemporary unified field theory in physics and Maharishi Vedic Science from the standpoint of an active field theorist. His work brought these two diverse methods of inquiry into close relation, drawing upon both the latest developments of unified field theories and the direct experience of the unified field.

Dr. Hagelin presented evidence for Maharishi’s assertion that the unified field of consciousness and the unified field of physics are the same. His main empirical evidence for this new paradigm was drawn from experimental research in the social sciences on the “Maharishi Effect”—the measurable effects on society resulting from the practice of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying. As further evidence for the identity of consciousness and the unified field, he cited deep parallels between the descriptions of the unified field found in physics and Maharishi Vedic Science. These strikingly similar descriptions support the conclusion that modern science and Maharishi Vedic Science are two complementary methods of approach to the same underlying unity of nature.
The New Paradigm of the Unity of Nature

It is a common belief that the unified field of physics is an objective reality of nature and that consciousness is a subjective experience, and that the two belong, consequently, to different categories of existence. According to this understanding, one is purely material, the other is purely mental, and the two cannot, therefore, be equated.

Through the experience of pure consciousness described in Maharishi Vedic Science, that unified level of intelligence is experienced, not as a mere subjective and localized phenomenon of thought or sensation, but as a non-changing, unbounded field of Being, pervading all forms and phenomena in the universe on a non-active, silent, unmanifest level. Objective and subjective aspects of nature are seen as but two manifest modes of this unified field at the unmanifest basis of existence. A thorough examination of the nature of the unified field in physics and the descriptions of unbounded consciousness brought to light by Maharishi support the thesis that they are but two complementary modes of apprehending a single underlying reality.

The view of nature as consisting of billiard-ball-type objects, each separate, discrete, and isolated from the other, belongs to the old classical Newtonian view of the world. Quantum field theory in modern physics no longer views nature in this way, but provides a new understanding in which the primary reality is that of quantum fields. All forms of matter and energy are understood to be excitations of these underlying fields. In the last year and a half, the apparently different fields of gravity, electromagnetism, and the weak and strong interactions have been theoretically unified as different levels of expression of one single underlying field. All forms and phenomena in the universe are just modes of vibratory excitation of this one all-pervading unified field.

Today, the success of modern physics in unifying our understanding of physical nature is mirrored in the success of Maharishi Vedic Science in unifying our understanding of consciousness. When the unbounded level of pure consciousness is gained as a direct experience, all activity in nature is experienced as an excited state of that one all-pervading field. Since quantum field theory also describes all activity in the universe as excitations of one underlying field, the simplest interpretation is that there is a single unified field which can be known both
through direct experience and through the objective sciences. In this new understanding of the unity of nature, mind and matter cease to be viewed as ultimately different and come to be seen as expressions of a deeper unity of unbounded consciousness.

The unity of nature is not merely a hypothetical unity, nor a unity of intellectual understanding or interpretation. It is a unity of direct experience that has been described in almost every tradition and every historical epoch. Maharishi Vedic Science only brings to light what has been the experience of many of the greatest minds throughout history. What is radically new is that Maharishi has provided a systematic and reliable method by which anyone can gain access to this level of experience. This method of access is the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying.

**The Transcendental Meditation and TM-Sidhi Programs, including Yogic Flying**

The Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, have been introduced by Maharishi as an effective means for opening the unified field to all as a direct experience. In this way, the unified field becomes universally accessible to systematic exploration.

The key component of these programs is the Transcendental Meditation technique, which provides a systematic procedure by which the mind is allowed to settle naturally into a state of restful alertness, the self-referral state of pure consciousness, in which the mind is completely silent and yet awake. In this way, the state of pure consciousness, which has been the subject of philosophical speculation throughout the centuries, can now be investigated on the basis of direct experience. Maharishi’s immensely important contribution to the clarification and elucidation of this experience of pure consciousness will be a theme for analysis in future issues of this journal.

This quiet, still level of consciousness has rarely been experienced in the past because no systematic and effective technique has been available for providing that experience. The Transcendental Meditation technique is a simple, natural, and effortless procedure for allowing the awareness to settle into a state of deep silence while remaining awake. It has proved to be uniquely effective in making this level of experience widely accessible. Through the deep rest gained during the
practice of the technique, balance is systematically created on all levels of physiological functioning, and the nervous system is habituated to a more settled, coherent, and alert style of functioning. In time, a state of completely integrated functioning is gained, in which pure consciousness is spontaneously and permanently maintained. Once this state is established, the silent, self-referral field of awareness is always present as a stable, non-changing ground underlying all changing states of awareness. This integrated state of consciousness, Maharishi holds, is the basis of all excellence in life and provides the foundation for the further development of higher states of consciousness through the practice of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying.

Maharishi’s Programs for the Development of Higher States of Consciousness

The ultimate purpose of all aspects of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, and Vedic Science is the development of consciousness, the unfoldment of the full human potential to live life in enlightenment. Enlightenment is that fully developed state of life in which one enjoys complete knowledge and lives in total fulfillment. In this state, one lives in harmony with all the laws of nature, enjoying the full support of natural law to achieve any desire without making mistakes.

Maharishi has identified a specific sequence of higher states of consciousness, each distinct from waking, dreaming, and sleeping, which, he asserts, arise in the normal full course of human development. Each state of consciousness unfolds on the basis of a concrete shift in the mode of the individual’s neurophysiological functioning. These states can be distinguished from waking, dreaming, and sleeping on the basis of their distinct physiological correlates. The higher states of consciousness that arise in this developmental sequence are, Maharishi asserts, a source of greater joy, knowledge, and fulfillment than ordinary waking state life.

The attainment of these higher states of consciousness is the basis for fully understanding and applying the theoretical assertions of Maharishi Vedic Science. Maharishi Vedic Science is just the exposition of the full range of direct experience that unfolds during the course of the natural
development of human consciousness. These states of consciousness are universal stages of human development accessible to everyone through the practice of Maharishi’s technologies of consciousness. What before was shrouded in the veil of mysticism is now scientifically understood as a normal, natural stage of human life available to anyone.

An article in the first issue of *Modern Science and Vedic Science*, by Dr. Charles Alexander and others (1987) examined the empirical evidence, drawn from behavioral and neurophysiological research, for the existence of these higher stages of human development. This article unfolded the scientific basis for understanding and verifying higher states of consciousness from the standpoint of a developmental psychologist, and laid the basis for a new paradigm of human development.

**Research on the Relation between Modern Science and Maharishi Vedic Science**

Each individual nervous system, when refined through Maharishi’s technologies of consciousness, is an instrument through which the silent field of pure unbounded consciousness becomes accessible as a field of inquiry. Since the unified field is all-pervading and everywhere the same, a nervous system finely enough attuned in its functioning can gain the ability, according to Maharishi, to experience and identify itself with that unbounded, undifferentiated, and unified field underlying all activity in nature. By taking one’s awareness from the gross level of sensory objects to perception of finer levels of activity, one gains the ability to experience that level of nature’s functioning at which the unity of pure consciousness gives rise to diversity. Gaining this unified state of consciousness is the means by which anyone can experience and confirm the structure of knowledge and reality described in Maharishi Vedic Science. This is partly what makes Maharishi Vedic Science a precise, verifiable science: All theoretical structures of the science can be verified through a reliable, systematic, effective technology. Other foundational aspects of this science will be considered below.

Maharishi’s technologies of consciousness become, in the modern world, a method for the investigation of the unified field and the most refined level of nature’s activity through direct experience. Modern physics, through its objective method of inquiry, has glimpsed a unified field underlying all of nature, but physics has reached a fundamental
impasse in its ability to experimentally investigate the unified field, because the energies required to probe these finer scales exceed those attainable by any conceivable particle accelerator technology. When physics can go no further, Maharishi’s technologies of consciousness, facilitate inquiry beyond the limitations of the objective approach by providing an effective means of exploring the unified field on the level of direct experience.

This exploration of the unified field through the subjective experience of consciousness is a well-structured program of research. It is guided by the knowledge of Maharishi Vedic Science set forth by Maharishi in conjunction with the modern sciences. When descriptions of the unified field from the standpoint of modern science, of Maharishi Vedic Science, and of direct experience coalesce, the three together provide a basis for complete knowledge. This program of research is based on Maharishi’s exposition of the Vedic literature as a complete and detailed expression of the unified field.

According to Maharishi’s exposition of the Veda, the sequential emergence of the diverse laws of nature from the unified field can be directly experienced in the field of consciousness as a sequence of sounds; these are presented in the sequential emergence of phonological structures of the Vedic texts. Veda is just the structure of the self-interacting dynamics through which the unified field gives rise to the diverse expressions of natural law. Fundamental theoretical concepts in physics and other disciplines, insofar as they are valid descriptions of nature, should therefore correspond to different aspects of Vedic literature that describe these realities from the standpoint of direct experience.

The basic program of research of modern science and Maharishi Vedic Science, as conceived by Maharishi, thus has three major goals: (1) to develop an integrated structure of knowledge by fathoming the depth of correspondence between the principles of modern science and Vedic Science; (2) to provide, from Maharishi Vedic Science, a foundation in direct experience for the most profound theoretical concepts of modern science; and (3) to resolve the impasse faced by the objective approach of modern science through the addition of the subjective approach of Maharishi Vedic Science, which provides complete knowledge of nature on the basis of the complete development of the knower.
In another issue of *Modern Science and Vedic Science* [see Vol. 5, Pt. 1 of this series], Dr. M.H. Weinless (1987) explored set theory and other foundational areas of modern mathematics in relation to Maharishi Vedic Science. In a proposed issue, Drs. R.K. Wallace, D.S. Pasco, and J.B. Fagan (1988) explore the fundamental relationship between Maharishi Vedic Science and the foundational areas of modern physiology, such as molecular biology. Their paper also discusses the extent to which fundamental principles of Maharishi Vedic Science can be used to further investigation of DNA structure and function.

The discovery of deep structures of knowledge and principles common to Maharishi Vedic Science and modern science represents such a profound contribution to our understanding of nature that this journal was founded to foster continued scholarly investigation of the interrelations between these complementary methods of gaining knowledge. Knowledge gained by direct experience of the fine fabrics of nature’s activity, and knowledge gained by the experimental methods of modern science coalesce in a new integrated method of inquiry that offers both the fundamental principles of modern science and the expressions of direct experience in Maharishi Vedic Science as two facets of one reality of nature’s functioning.

Maharishi (1986) sums up the relation between Maharishi Vedic Science, modern science, and his technologies of consciousness:

Maharishi Vedic Science is applied through the Technology of the Unified Field. We speak of the unified field in connection with Maharishi Vedic Science because of the similarity of what has been discovered by physics and what exists in the self-referral state of human consciousness. The Technology of the Unified Field [That is, Transcendental Meditation and TM-Sidhi programs, including Yogic Flying—Eds.] is a purely scientific procedure for the total development of the human psyche, the total development of the race. This is a time when objective, science-based progress in the world is being enriched by the possibility of total development of human life on earth, and this is the reason why we anticipate the creation of a unified field-based civilization. (p. 35)

On the basis of the universal availability of this domain of experience, an empirical science of consciousness becomes possible for the first time.
The Science of Creative Intelligence: Foundations of a New Science of Consciousness

The unified science that links the objective method of modern science and the subjective method of Maharishi Vedic Science, while preserving the integrity of each, is called the Science of Creative Intelligence (SCI). Maharishi himself has laid the foundations of this new science by showing, first, how a precise subjective science of consciousness is established on the basis of the direct experience of consciousness in its pure form; and second, how the experimental method can be used to test empirically the assertions of the subjective science. Through Maharishi’s work, for the first time in history, the full potential of human consciousness can be investigated both through direct experience and through the objective methods of modern science. The foundations of this new science linking the subjective and objective method will now be considered.

Experiential Foundations

Prior to Maharishi’s work, the term consciousness was considered too vague and indefinite to be allowed into scientific discussion. It was excluded from science as a metaphysical term because consciousness was not objectively observable, and therefore apparently not amenable to scientific investigation. Through Maharishi’s work, the concept of consciousness has been given a precise, well-defined meaning on the basis of direct experience, and its relation to the objective framework of science has been precisely specified.

The experience of pure consciousness, available to anyone through regular practice of the Transcendental Meditation technique, is a basis for precise experiential knowledge of consciousness in its simplest, most fundamental, and most unified state. Even though consciousness can never be an object of experience, when the conscious mind becomes completely settled in a wakeful state, it experiences its own nature as pure wakefulness, pure consciousness, without any activity or objective content. Through the repeatable, systematic experience of this silent but wakeful state of mind, the concept of pure consciousness, which has been subject to conjecture and debate throughout the centuries, is now available to direct experience.
Having laid the basis for introducing consciousness into science as a precise concept, it remained for Maharishi to develop a program of applied research to test theoretical predictions of Maharishi Vedic Science. Identifying consciousness with the unified field provides a precise understanding of where consciousness is located in the framework of the sciences. To create an empirical science of consciousness, however, it was also necessary to account for how consciousness could be investigated through experimental research.

**Empirical Foundations**

Maharishi’s work has laid the foundation for an experimental investigation of consciousness. He has led the way in drawing out predictions of Vedic science that are open to testing, translating discussions of consciousness, derived from experience of higher states of consciousness, into predictions of experimentally observable phenomena. Three examples will illustrate this principle.

Pure consciousness, as was noted above, is experienced during the practice of the Transcendental Meditation technique as a state of pure restful alertness. This purely subjective experience does not, however, establish objectively whether it is in fact a state of deep rest and alertness, or only seems to be. If a person is in a deep state of rest and alertness, Maharishi has asserted, then physiological evidence of deep rest and alertness should be observable. Reduced levels of oxygen consumption, reduced breath rate, and other measures of more refined physiological activity would be predicted. Patterns of EEG coherence in the alpha range, indicative of restful alertness, should also be observed. Early pioneering research by Dr. R.K. Wallace (1986) found that these changes do indeed occur. In this way, statements about the subjective experience of consciousness were translated into empirically verifiable assertions. The basis of this correlation between consciousness and physiology is a principle, fundamental to Maharishi’s thinking, that for every state of consciousness there is a corresponding state of physiological functioning. The range of physiological correlates of the experience of pure consciousness is a subject of continuing research.

Consider a second example. Pure consciousness is understood in Maharishi Vedic Science as a clear and settled state of awareness. Anyone who gains this state is said to have a mind like a placid lake, unrippled
by waves, and thus able to reflect the world in a precise, non-agitated manner. Maharishi drew from this several predictions. One is that a person growing in the ability to experience pure consciousness would experience more stable and orderly physiological functioning. This can be translated into the testable prediction that subjects regularly practicing the Transcendental Meditation program display increased stability of the autonomic nervous system. Another prediction is that the practice of the Transcendental Meditation program will produce greater perceptual clarity and greater orderliness of thinking. Translated into specific terms, this leads to the prediction that practicing the Transcendental Meditation program will produce measurable increases on such scales as auditory discrimination, brain wave coherence, and problem solving ability. Research has been designed, carried out, and reported in the literature which measures the growth of these parameters in groups practicing the Transcendental Meditation program by comparison to control groups, thus providing objective verification of the predicted correlates of the subjective experience of pure consciousness.

A third example of how assertions of Maharishi Vedic Science can be translated into testable form is found in the sociological experiments on the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying. The hypothesis is that a group of people practicing this technology in one place, by bringing their awareness to the level of perfect orderliness in the unified field, will enliven qualities of harmony and orderliness in collective consciousness, thus producing measurable positive changes in the quality of societal life. Many experiments have been designed by Maharishi and carried out, demonstrating the power of this technology to produce significant changes in the level of coherence, positivity, balance, and stability in society, even on a global scale. (See Experimental Research, below.) The results of these experiments strongly support Maharishi’s assertion that consciousness is identical with the unified field.

Experimental Research
Over 600 hundred experimental studies in the areas of physiology, psychology, and sociology provide substantial confirmation of many basic assertions of Maharishi Vedic Science in the arena of empirical science. Many of these studies, now published in major scientific jour-
nals throughout the world, have been collected in the volumes called *Scientific Research on the Transcendental Meditation Programme: Collected Papers, Vols. 1–6* (1977–1991). This research provides experimental validation of the efficacy of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying. Because this research—from over 600 scientific studies at over 300 universities and research institutions in 33 countries, published in more than 100 scientific journals—is too extensive to summarize here, the reader is referred to the *Collected Papers* for articles cited in this and other professional journals. Overall, this research probably represents the most concerted, well-designed research program on a potential means to benefit mankind ever conceived. Its present standing is that, taken together as a body of research, it is one of the most impressive confirmations of a theory of human potential ever executed.

Although it is beyond the scope of this introduction to go into the details of this research, it is worthwhile to mention some of the broad categories of scientific investigation that have evolved to guide the research program of the Science of Creative Intelligence. The main areas of research include studies on the individual and society. Research on benefits to the individual may be further subdivided into studies of physiological changes (both during and after the practice); cognitive, psychological, and behavioral changes; benefits to health and social behavior; and benefits to athletic performance, performance in business, and academic performance. Research on social benefits through collective practice may be further grouped into research on families, city populations, national populations, and global population. These research studies fall into the categories of crime prevention, accident prevention, benefits to economy, health, violence reduction, and world peace.

On the basis of this research, basic assertions of Maharishi Vedic Science become verifiable through empirical science. There is, moreover, a unity of theory underlying these diverse predictions and tests. These studies, taken as a whole, constitute a coherent research program that tests the prediction that repeated experience of the unified field results in greater orderliness, coherence, and positivity, in both individual and social life. Research on these changes not only tests fundamental theory, but demonstrates the practical benefits of this new
technology. Maharishi’s technologies of consciousness become open to experimental testing precisely because they have significant practical applications in improving every area of human life.

Practical Applications of the Transcendental Meditation and TM-Sidhi Programs, including Yogi Flying

Maharishi has frequently asserted that the purpose of Maharishi Vedic Science is to benefit life, not merely to give knowledge for its own sake. Knowledge, he holds, is for action, action for achievement, and achievement for fulfillment. The ultimate purpose of Maharishi Vedic Science and its applied technology is, therefore, to bring human life to fulfillment.

Maharishi’s technologies of consciousness bring fulfillment to individual life by unfolding the full potential of consciousness. When higher states of consciousness are realized, Maharishi emphasized, life is lived in “twenty-four-hour bliss.” Gaining contact with the unified field, one enjoys spontaneous right action, lives life in total accord with all the laws of nature, and accomplishes any life-supporting desire. Violations of natural law cease, and all suffering, which is caused by violation of natural law, comes to an end. Life is lived free from mistakes, in inner and outer fulfillment. Such is the fundamental purpose of the technologies Maharishi has created.

Perfect Health

Maharishi’s technologies of consciousness have important practical applications in the area of health. According to Maharishi, sickness arises from imbalance. Perfect health means wholeness, balance on all levels of life. When individual life is established in the unified field of all the laws of nature, all actions are spontaneously in accord with natural law. In terms of physiological functioning, this means perfect integration and balance, from the biochemical and molecular levels to the macroscopic, organismic levels.

Maharishi Ayurveda is an integral part of Maharishi Vedic Science. It is a revitalized form of the ancient ayurvedic science of life and health, restored to its original purity and effectiveness by Maharishi.
According to Maharishi, the cornerstone of Ayurveda is the development of consciousness. Perfect health in mind, body, and behavior is the result of perfect balance in consciousness and physiology. This develops through the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, when the mind identifies itself with the unified field, the field of perfect balance and wholeness.

Maharishi Ayurveda combines Maharishi’s technologies of consciousness with specific procedures to treat and prevent illness and promote longevity. Maharishi Ayurveda Medical Centers have been established in many countries to eliminate the basis of sickness, create perfect health, and reverse the aging process. Over the last fifteen years, research into the effects of Maharishi’s technologies of consciousness, on health have been carried out at research institutions all over the world, and Maharishi’s recent emphasis on Ayurveda provides many new research opportunities for investigating the applications of Vedic Science in the area of health.

Maharishi’s technologies of consciousness also include technologies to accomplish specific goals of individual and social life. The TM-Sidhi program has been founded by Maharishi to utilize the knowledge and the organizing power of the unified field for improving achievements in every area of human endeavor.

Unfolding Full Human Potential through the Transcendental Meditation and TM-Sidhi programs

When one gains the level of experience of the self-interacting dynamics of consciousness, Maharishi holds, one gains command over all the laws of nature. Stationed at the source of all the laws of nature, at the “central switchboard” of nature’s activity, human consciousness can command all the laws of nature to create any desirable effect in the material world. Maharishi has brought forth a program for gaining mastery over all the laws of nature, based on the formulations found in the ancient Yoga Sūtras of Patanjali, one of the principal books of Vedic literature. This is the TM-Sidhi program, in which the mind gains the ability to function from the level of the self-interacting dynamics of the unified field. Once established in pure self-referral awareness through the practice of the Transcendental Meditation program, an individual
gains the ability to draw upon the organizing power of the unified field to accomplish anything. Since the unified field is the source of all existence, its organizing power is infinite, and one who functions from this level has unlimited organizing ability. Established in that unified field of all possibilities on the unmanifest level of existence before consciousness assumes the form of matter, all possibilities open to one’s awareness and one can govern the expressions of the unified field as it transforms itself into matter. As Maharishi (1986) expresses it:

In this program, human awareness identifies itself with that most powerful level of nature’s functioning and starts to function from there. The purpose of the TM-Sidhi program is to consciously create activity from that level from where nature performs. (p. 74)

Through the practice of the TM-Sidhi program, Maharishi predicts, it will become possible to achieve levels of body-mind coordination hitherto deemed impossible. It will be possible, he asserts, to realize the ancient dream of flying through the air, and to develop highly enhanced powers of hearing, seeing, and intuition that extend the senses far beyond the limits currently conceived to be possible. In the Yogic Flying technique, which Maharishi developed from the Yoga Sūtras, the silent state of self-referral consciousness is integrated most fully with outer activity as the body lifts in spontaneous hops, generating inner bliss and maximum coherence in brain functioning. Other Vedic texts describe the ability to move through the air at will as a result of perfection of this Yogic Flying technique. By activating laws of nature that are now hidden to ordinary methods of scientific investigation, the TM-Sidhi program provides a research methodology to explore what is possible for mankind to achieve on the basis of functioning from that level where the conscious mind has become identified with the unified field. This is the basis of a technological revolution more powerful and beneficial to life than any conceived through empirical science.

The Maharishi Effect
The TM-Sidhi program, when practiced in groups, is even more powerful than the TM-Sidhi program practiced alone. The collective practice of the TM-Sidhi program can produce an influence that affects the entire world in measurable ways. This global influence of coherence
generated through the group practice of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, has been called the “Maharishi Effect.”

As early as 1960, Maharishi predicted that when individuals practice the Transcendental Meditation and TM-Sidhi programs in sufficiently large groups, a measurable increase in orderliness, coherence, and positive trends would be observed in society. By enlivening the life-supporting and evolutionary qualities of the unified field, such as perfect orderliness, infinite dynamism, and self-sufficiency, Maharishi held, these qualities would be enlivened in collective consciousness and this would have positive, measurable effects on a wide social scale.

Over the years, social scientists developed formulas for predicting the size of the group necessary to create a “phase transition” in society to a measurably higher quality of life. These formulas, calculated on the basis of analogous phase transitions, from disorder to orderliness, studied in physics, came out to be approximately one percent of a population practicing the Transcendental Meditation program, and a much smaller percentage, on the order of the square root of one percent, practicing the TM-Sidhi program.

Since 1978, many experimental studies have been performed to measure the effect of large groups practicing the TM-Sidhi program. Experimental confirmation of the principle has been the consistent result. The Maharishi Effect is now as well documented as any principle of modern social science. In creating this technology, Maharishi has provided an effective method of social change that operates from the silent, harmonizing level of the unified field to produce a transformation in the quality of collective consciousness, thereby effortlessly creating coherence on a global scale. Maharishi (1986) describes how this effect is produced:

The transcendental level of nature’s functioning is the level of infinite correlation. When the group awareness is brought in attunement with that level, then a very intensified influence of coherence radiates, and a great richness is created. Infinite correlation is a quality of the transcendental level of nature’s functioning from where orderliness governs the universe. (p. 75)

D. W. Orme-Johnson and M. C. Dillbeck (1987) have summarized the empirical research on the Maharishi Effect. They surveyed
experimental studies documenting the sociological improvements resulting from the group practice of the TM-Sidhi program. Based on these results Maharishi asserts that the collective practice of the TM-Sidhi program in groups of 8000 (the square root of one percent of the world’s population) would produce coherence in the collective consciousness of the entire world. Statistically significant reductions in crime, accidents, fatalities, and disease, and other positive benefits on a global scale observed during experimental periods have established this as an effective means of changing collective consciousness and thereby changing the quality of life in the world—simply by enlivening the source of order and coherence at the basis of nature, from the level of the unified field.

**Maharishi’s Program to Create World Peace**

The most dramatic application of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, is Maharishi’s program to create world peace through the creation of a permanent group of 8000 collectively practicing Maharishi’s technologies of consciousness. These technologies are a basis for eliminating negativity and destructive tendencies throughout the world. Large groups of experts in the TM-Sidhi program, creating coherence, during experimental periods, have provided ample opportunity for scientific research. During these experimental periods, conflict and violence have been reduced in war-torn areas and negative trends have been reversed. Over thirty studies have established the efficacy of this technology to eliminate conflict and promote life-supporting, positive trends throughout the world.

Maharishi clearly lays out the basis of his program to create world peace. Stress, he holds, is the basic cause of all negativity, violence, terrorism, and national and international conflicts. Stress generated by the violation of natural law causes strained trends and tendencies in the environment. Through the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, human intelligence can be identified with the unified field, and violations of natural law will cease. “Reinforcement of evolutionary power in world consciousness is the only effective way,” Maharishi holds, “to neutralize all kinds of negative
trends in the world and maintain world consciousness on a high level of purity” (Maharishi’s Program to Create World Peace, 1986, p. 7).

The global applications of this new science and technology are almost beyond present levels of imagination. Yet scientific research has found measurable reductions in levels of violence, crime, and other indications of negativity during the practice of the TM-Sidhi program in sufficiently large groups during experimental trial periods. Here for the first time in history is a scientific basis for creating world peace, ending terrorism, and reducing the negative trends of society.

On the basis of these studies, Maharishi holds that world peace can be guaranteed now, within a few years, through the establishment of groups of 8000; he holds that perfect health and unlimited longevity can be achieved for individual life, and that balance, coherence and health in society can be established in our generation. War, crime, poverty, and all problems that bring unhappiness to the family of man can be entirely eliminated. Life, he holds, can be lived in absolute abundance and fulfillment. Maharishi has called upon every significant individual in the world to act now to adopt this program for world peace by creating groups of 8000 collectively practicing the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, to establish world peace and guarantee its perpetuation.

The practical benefits that Maharishi foresees through these new technologies are far greater than those achieved by the technology based on present science. As science has investigated deeper levels of nature, from microbes to molecules to atoms, new technologies have emerged which apply the knowledge in areas such as medicine and nuclear power. In drawing upon the deepest and most powerful level of natural law, the level of the unified field, Maharishi Vedic Science lays the basis for much more powerful technologies still. Where modern medicine has been able to eliminate some diseases by drawing upon microscopic levels, Maharishi Vedic Science lays the basis for the elimination of all disease, and more importantly, for the creation of perfect health and reversal of aging. While modern science has produced nuclear technology but no technology for peaceful resolution of conflict, Maharishi Vedic Science draws upon the infinite organizing power of the unified field at the basis of nature to create social harmony
and world peace while preserving cultural integrity and stimulating prosperity and progress.

**Maharishi’s Technologies of Consciousness as a New Method of Gaining Knowledge**

The bold assertions about what is practically possible through the application of Maharishi’s technologies of consciousness must be understood in the context of the new method of gaining knowledge that Maharishi has founded. The history of science testifies that as new methods of gaining knowledge of deeper and more unified levels of natural law become available, more powerful and useful technologies become available. Maharishi’s technologies of consciousness are based on the deepest and most unified level of knowledge of nature. It should not be surprising, therefore, that this technology provides a radically new source of organizing power to fulfill the highest goals of mankind.

These technologies of consciousness offer a fundamentally new approach to knowledge that has not been available before. In asserting that it is possible for one individual to know all the laws of nature and the entirety of the universe within his or her own consciousness, Maharishi is well aware that he is introducing an account of human potential that goes well beyond the concept of the limits of knowledge that has dominated in the scientific era. This new paradigm of knowledge must be examined in a new light.

It is a widespread belief in the modern age that the only valid method of gaining knowledge is by moving outward through the senses, that is, through the methods of the empirical sciences. It is, however, only the historical failure of subjective approaches that has led to this belief. It cannot be thought that the senses are the only way of gaining knowledge, and those who cling to the belief that it is, only allow old habits to stand in the way of exploring new possible sources of knowledge.

Subjective approaches to knowledge in the past failed to bear fruit because they failed to provide an effective and reliable method of access to an invariant and universal domain of direct experience. They thus failed to establish independent standards of knowledge, they failed to produce methods of distinguishing truth from error, they failed to produce consensus even among those practicing the same method, and
they failed to produce practical technological benefits through the practice of the method.

Maharishi’s technologies of consciousness are different from subjective approaches in the past, and must therefore be considered on separate grounds. They provide an effective, reliable method of opening the mind to an invariant and universal level of nature which is everywhere, and yet not ordinarily open to experience because the mind usually functions on more active levels. By providing a technology to make this non-active level of nature available as a direct experience, Maharishi has made this domain available to all as a new field of inquiry; and, where there is a new source of experience of something universal, unchanging, and objectively verifiable, a new source of knowledge is available.

The Science of Creative Intelligence gives a new account of how complete knowledge is possible. When the mind becomes completely settled and still, according to this account, it gains the ability to perceive on the most refined levels of nature’s functioning—the all-pervading unified field where all laws reside in a collective totality. It not only experiences this unified field, it becomes identified with it; it is the unified field and thus knows the unified field as its own universal Self. On this level of knowledge, there is no separation of knower from the known. Nothing lies outside the range of the knower. All laws of nature and everything in the universe can be known as intimately as one’s own Self. Mind and body cease to be seen as separate realities. Maharishi (1986) says:

In reality our self-referral state of consciousness is the unified field—not an object of knowledge as a rose is when we say, “I see that rose.” The unified field is not an object in this way; it is the subject itself. The unified field is a self-referral state of awareness that knows itself, and in knowing itself is the knower and the known, both together. (p. 96)

On this account, there is no distinction between the knower and the reality that it knows. Since it is the Self that knows itself, there is nothing ultimately outside the consciousness of the knower, and there are therefore no limits on what can be known. [This unbounded value of the Self is written with an uppercase “S” to distinguish it from the ordinary, localized self we typically experience.] If true, this account of knowledge provides a fundamentally new source of discovery of the
laws of nature, like the empirical sciences, in that it relies on experience as a source of knowledge, but distinct from these sciences in that it draws upon a wider range of experience. As a new source of discovery, it extends the power of scientific investigation; yet it remains within the scope of empirical science by being subject to procedures of objective verification.

**Maharishi University of Management**

Maharishi University of Management, formerly Maharishi International University, was founded by Maharishi in 1971, based on the principles of the Science of Creative Intelligence. One of the major functions of this University is to show how each discipline and each level of natural law arises from the unified field of pure consciousness. The specialty of Maharishi University of Management is the knowledge of the unified field of pure consciousness from the standpoint of each academic discipline. At Maharishi University of Management, each modern discipline traces the diversity of laws back to a unified source in the unified field of pure consciousness and shows how the diversity of laws emerge from this unified field through the self-interacting dynamics of consciousness. Just as physics and mathematics have discovered increasingly unified levels of natural law at the basis of their discipline, thus tracing the diversity of its laws to their source in the unified field, so every academic discipline can ultimately show how its laws derive sequentially from the unified field. This project of unification of knowledge, a long sought goal throughout Western intellectual history, is now being systematically pursued and completed at Maharishi University of Management.

This enterprise includes developing charts to show how each modern discipline arises from the unified field of pure consciousness. For each discipline, a Unified Field Chart has been constructed to show how the discipline sequentially emerges from the unified field through the self-interacting dynamics of knower, known, and process of knowing. These Unified Field Charts constitute a major unification of knowledge, showing at a glance how all the diversity of knowledge emerges from a unified source.

Since the unified field is understood as a field of consciousness, and consciousness is the most fundamental level of each student’s own Self,
the study of the unified field at Maharishi University of Management constitutes a method of systematically relating all knowledge to the student’s Self. The success of Maharishi University of Management’s Consciousness-Based education is due in part to this program of relating all knowledge to the unified field and the unified field to the Self. Because all students and faculty at Maharishi University of Management collectively practice the Transcendental Meditation technique, regularly gaining the direct experience of the unified field of pure consciousness, this unified field increasingly becomes a living reality. This unified field ceases to be an abstract concept and becomes as intimate as the Self. The experience of faculty and students has been that learning and inquiry is joyful and most fulfilling in this environment of Consciousness-Based education.

[The reader is referred to other issues of the journal Modern Science and Vedic Science as well as to other volumes in this book series Consciousness-Based Education: A Foundation for Teaching and Learning in the Academic Disciplines for articles illustrating how Maharishi Vedic Science is transforming our understanding of modern academic disciplines. —Eds.]

Maharishi’s Work in Historical Perspective: An Appreciation

Maharishi has created a major watershed in world intellectual history. He has laid the foundation for a fundamental change both in intellectual history and in the history of technology and civilization itself. His work has created a new paradigm of the unity of human knowledge, and, we may expect, will unify the sciences and humanities in a more integrated way than ever before. He has, moreover, brought to an end the old notion that man is born to suffer and that life is a struggle. The practical programs he has founded provide a scientifically validated basis for reducing and even eliminating crime, war, terrorism, poverty, and other problems that beset mankind; more importantly, his discoveries make it possible to live life in the fulfillment of pure knowledge and permanent bliss consciousness and to achieve the highest goals of human endeavor. He has laid the basis for a new civilization, founded on new principles of complete, reliable, useful, fulfilling knowledge—
the knowledge of the unified field of pure consciousness as the perfectly orderly, unified source of nature.

Maharishi is unique in the world today. He has not offered conjectures and hypotheses about reality and human potential, nor does he set himself up as a final authority on matters of knowledge when he speaks rather of experience as the ultimate basis of knowledge. The experience of which he has spoken is derived from a new source, from the level of fully developed human life gained when one’s awareness is open to the unified field of pure consciousness. Maharishi’s life is an example of that which he taught. Unlike those whose teaching is based solely on the personal authority of the individual, Maharishi has founded universities, sciences, technologies, and other institutions based on universal principles through which any individual can gain the direct experience of the fully unfolded nature of life and validate the truth of what is described in the science. Because of this, Maharishi is held in highest esteem by millions of people around the world.

Maharishi has provided the means of unfolding the dormant creative genius within everyone, and he has established institutions through which the knowledge of how to unfold this potential will be perpetuated generation after generation. He has, moreover, used this knowledge to found programs to create perfect health, progress, prosperity, and permanent peace for the world—programs to end suffering and allow life to be lived in spontaneous accord with natural law. These institutions are not just ideals, but functioning institutions whose practical achievements are now well documented and available for all to examine.

Everyone now has the ability, with the availability of the Transcendental Meditation and TM-Sidhi programs, including Yogic Flying, to engage in this great experiment of identifying one’s awareness with the total potential of natural law and to spontaneously live in accord with all the laws of nature while established in the awareness of the unified field of pure consciousness. The experience of approximately three million people who have learned the Transcendental Meditation technique testifies to its practicality and its effortlessness and ease of practice. Experimental studies have shown that its benefits are real and concrete. On this basis, Maharishi has foreseen the creation of a new era of civilization—Heaven on Earth—in which life will be lived
in fullness and abundance without suffering. Maharishi’s work eliminates the very basis of stress and suffering and lays the ground for a new civilization, a unified field-based, ideal civilization that draws on the infinite organizing power of the unified field of pure consciousness to bring human life to fulfillment.

References


Wallace, R. K., Orme-Johnson, D. W., & Dillbeck, M. C. (Eds.).
CONSCIOUSNESS-BASED EDUCATION AND MANAGEMENT


Kenneth Chandler’s “Modern Science Vedic Science: An Introduction,” here revised/updated, was originally published in Modern Science and Vedic Science, 1(2), p. v–xxvi. It is reprinted with permission of the publisher.
Electronic Resources and Publications

LINKS

Education

Maharishi University of Management: www.mum.edu
Maharishi School of the Age of Enlightenment:
   www.maharishischooliowa.org
Maharishi’s Consciousness-Based Education: www.CBEprograms.org
International Foundation of Consciousness-Based Education:
   www.CBEfoundation@ifcbe.org
David Lynch Foundation for Consciousness-Based Education and
World Peace: www.davidlynchfoundation.org

Transcendental Meditation Program

Maharishi’s Technologies of Consciousness: www.tm.org
Maharishi Channel: www.maharishichannel.in
Maharishi Lectures and Interviews (film clips): www.tm.org/maharishi
Invincible America Assembly: www.invincibleamerica.org
Global Country of World Peace: www.globalcountry.org
Global Good News Site: www.globalgoodnews.com
Fortune Creating Homes: www.FortuneCreatingHomes.com
Sthapatya Veda: www.sthapathyaveda.com

Research

Center for Brain, Consciousness, and Cognition: www.drfredtravis.com
Truth about TM: www.truthabouttm.org

PHONE NUMBERS

1-888-LEARN TM (1-888-532-7686)
Maharishi University of Management (1-641-472-7000)
PUBLICATIONS

These publications are available from Maharishi University of Management Press: http://mumpress.com and at the MUM Bookstore.

Books by Maharishi Mahesh Yogi

Science of Being and Art of Living
Bhagavad-Gita: A New Translation and Commentary, Chapters 1–6
Celebrating Perfection of Education
Celebrating Perfection in Administration
Vedic Knowledge for Everyone
Inaugurating Maharishi Vedic University

Consciousness-Based Books Imprint from MUM Press

The series Consciousness-Based Education: A Foundation for Teaching and Learning in the Academic Disciplines contains 12 volumes, available in 2011.

Maharishi Vedic Science  |  Education
Physiology and Health  |  Physics
Mathematics  |  Literature
Art  |  Management
Government  |  Computer Science
Sustainable Living  |  World Peace

Each volume includes a paper introducing the Consciousness-Based understanding of the discipline and a Unified Field Chart that conceptually maps all branches of the discipline, illustrating how the discipline emerges from the field of pure consciousness, the Self of every individual. These charts connect the “parts” of knowledge to the “wholeness” of knowledge and the wholeness of knowledge to the Self of the student.

Subsequent papers show how a Consciousness-Based approach may be applied in various branches of the discipline; these papers include occasional examples of student work. Each volume ends with an appendix describing Maharishi Vedic Science and Technologies of Consciousness in detail.