

UNIVERSITY OF CINCINNATI

March 19 80

I hereby recommend that the thesis prepared under my supervision by MICHAEL FAULKNER

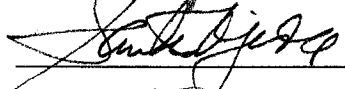
entitled THE SCIENCE OF CREATIVE INTELLIGENCE --

TRANSCENDENTAL MEDITATION: A CORRELATIVE STUDY WITH THE

ART OF VIOLIN PLAYING.

be accepted as fulfilling this part of the requirements for the degree of DOCTOR OF MUSICAL ARTS

Approved by:


THE SCIENCE OF CREATIVE INTELLIGENCE--
TRANSCENDENTAL MEDITATION:
A CORRELATIVE STUDY WITH THE ART OF
VIOLIN PLAYING

A thesis submitted to the
Division of Graduate Studies
of the University of Cincinnati
in partial fulfillment of the
requirements for the degree of
DOCTOR OF MUSICAL ARTS IN VIOLIN
in the College-Conservatory of Music

1980

by

Michael H. Faulkner

B.M., University of Cincinnati, 1968
M.M., University of Cincinnati, 1974

UMI Number: DP15756

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI[®]

UMI Microform DP15756

Copyright 2009 by ProQuest LLC.

All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest LLC
789 E. Eisenhower Parkway
PO Box 1346
Ann Arbor, MI 48106-1346

CONTENTS

	Page
INTRODUCTION.....	1
 CHAPTER	
I. THE FUNDAMENTALS OF TRANSCENDENTAL MEDITATION.	5
Transcendental Mediation and the Science of Creative Intelligence--an Introduction...	5
The Call for a New Consciousness.....	6
The Realization of Human Potential.....	8
Thought: the Basis of Action.....	8
The Direction of Science--Toward Ultimate Reality.....	10
The Field of Being.....	12
How TM Works: a Summary.....	14
 II. THE SCIENCE OF CREATIVE INTELLIGENCE.....	 17
A. The Principles That Promote the Ex- perience of the Pure Nature of Creative Intelligence.....	19
B. The Qualities of Creative Intelli- gence.....	22
C. The Principles That Promote the De- velopment of the Qualities of Creative Intelligence.....	23
The Principles of the Science of Creative Intelligence.....	25
 III. THE ESSENTIALS OF VIOLIN TECHNIQUE AND THE SCIENCE OF CREATIVE INTELLIGENCE.....	 34
SECTION I:	
The Essentials of Violin Technique as Defined by Ivan Galamian.....	34
Three Common Items in all Systems of Violin Playing and the Science of Creative Intelligence.....	34
Left Hand: Essential Factors in the Development of the Left Hand.....	38
The Right Arm.....	39
On Practive.....	41

	Page
Emphasis on Maximum Functioning of the Nervous System.....	42
Stress and the Violinist's <u>Raison d'Etre</u> --the Performance Situation.....	43
The Outer and Inner Structure of the Mind.....	45
SECTION II:	
The Principles of the Science of Creative Intelligence--Increasing our Understanding of Technique.....	47
The Principles of the Science of Creative Intelligence and the Fully Developed Bow Stroke.....	48
IV. POLNAUER-MARKS AND SZENDE-NEMESSURI: SCIENTIFIC ORIENTATION IN THE STUDY OF VIOLIN PLAYING AND THE SCIENCE OF CREATIVE INTELLIGENCE.....	56
Polnauer-Marks--Twentieth Century Gestalt.....	57
The Physiology of Violin Playing.....	58
V. CREATIVITY AND THE PRACTICE-PERFORMANCE SEQUENCE.....	62
VI. THE TM SIDHI PROGRAM: INCREASED SENSITIVITY OF THE EAR.....	65
CONCLUSION.....	69
BIBLIOGRAPHY.....	72

INTRODUCTION

A time has arrived in the history of the study of violin technique when the most efficient methods of playing in terms of energy expenditure are being scientifically established. It is only a matter of time before the serious student will have at his disposal the scientific instruments necessary to help him or her more quickly identify optimal playing techniques. This will be a positive development in the area of instrumental performance. However, it is my contention that the above possibilities for the advancement of technique will not provide the answer which will permit the aspiring violinist or instrumentalist to find the ultimate fulfillment on his instrument. I believe that the independent development of consciousness adjunct to technical-musical studies holds the key to achieving the fulfillment on our instrument sought by all but attained by too few. Because of this belief, which grew out of my involvement with the Transcendental Meditation program and my study of the Science of Creative Intelligence, I felt it was necessary for me to undertake this present study.

All systems of violin playing emphasize the physical or the physical-mental approach where the application of

a "correct and appropriate" exercise or series of exercises is purported to bring the desired result. Sometimes this result follows and sometimes it doesn't. For those who fail there are a hundred answers ranging from a simple lack of talent to a hopelessly inept intellect. The real reasons for the failure to achieve fulfillment are hidden within the individual psyche stored within the nervous system. Problems which might not be related to violin playing or performance at all could be causing specific difficulties resulting from the release of stress in the emotional performance situation.

How then may one break these phantom barriers which loom so large, which appear and disappear so illogically in the practice room and on the stage? The solution lies within our innate creativity which is waiting for full release. The Transcendental Meditation technique has been proven beyond a doubt to be able to develop one's inner resources through a purification of the nervous system by the release of stress. This "house cleaning" proceeds quietly from within. Nature works on those areas of greatest need first, but because of the holistic nature of creative intelligence all areas of individual life will be touched on and improved. All musical abilities and perceptions will be deepened and expanded as our consciousness grows toward unboundness. This is not a dream; the possibility for fulfillment exists now.

There is a need to create an approach to violin playing (or to the study of any instrument) which is more responsive to the individual in a personal, more intimate way, yet which might be seen to be encompassed by timeless universal principles uniting all men and all things. The aim is then not to see violin playing as merely violin playing, but as a creative function expressive of the individual raised to a universal timeless stature. The principles of the Science of Creative Intelligence are such universal principles. They are simple yet they are profound.

For this correlative study I have chosen representative texts on violin playing of two different types which are widely known and respected. The first is Ivan Galamian's Principles of Violin Playing and Teaching which is based on tradition and well-tested empirical knowledge. The second type of text is scientific in nature. I have chosen Frederick Polnauer and Morton Marks' Senso-Motor Study and its Application to Violin Playing and Ottó Szende and Mihály Nemesurri's The Physiology of Violin Playing. It will be shown that the conclusions and recommendations of each author, though couched in different language, all share a common basis which is of great significance to this study.

A constant updating of vocabulary to keep pace with contemporary thought has been in progress since the seventeenth century when the violin evolved into its present form. The

many treatises on violin playing provide examples of this fact. The present study continues in this tradition. It is yet another beginning which should have no end. I claim it to be relevant and important to our art, and I hope this study will be continued and greatly refined.

This study may be seen to have two purposes: 1) to examine the Transcendental Meditation technique and its potential to bring fulfillment to the violinist; and 2) to take the principles of the Science of Creative Intelligence and show how they may deepen our understanding of our involvement with the instrument, make our art more intimate, and place it within a universal framework.

CHAPTER I

THE FUNDAMENTALS OF TRANSCENDENTAL MEDITATION

Transcendental Meditation and the Science of Creative Intelligence-- An Introduction

The Maharishi Mahesh Yogi came to the United States in 1959 with a message--that it is easy to unfold the full potential of mind and heart and live a life of freedom, fulfillment, and happiness. He proposed the technique of Transcendental Meditation as a way to restore balance to life and to give strength and dignity to man. Transcendental Meditation is a simple mental technique which is practiced twice daily for twenty minutes in the morning and evening. In the Transcendental Meditation program the mind is quieted through the use of a meaningless but carefully chosen word called the mantra, and is taken beyond the familiar level of wakeful experience to a state of profound rest coupled with heightened awareness. (This movement of the mind is seen to uphold a tendency in all of nature to move to areas of less resistance or of greater "charm.") This state is the source of creative intelligence, an eternal reservoir of unlimited energy, intelligence, power, and peace. When one is able to utilize this field of unlimited energy and potential all aspects of life are seen to improve and flourish. The

scientific data which has been collected in the past twenty years attests to the effectiveness of this method for reducing stress, expanding conscious awareness, and unfolding full human potential.

The Science of Creative Intelligence is the theoretical aspect of the practical technique called Transcendental Meditation. The theoretical framework of the Science of Creative Intelligence is derived from a combination of Western scientific methods of objective investigation and the ancient wisdom of subjective development proclaimed in the Vedas (the entire body of Hindu sacred writings). It draws together knowledge of the nature, origin, development, range, and application of creative intelligence in individual life and throughout creation.

The Call for a New Consciousness

The contemporary emergence of the ancient technique of TM may be recognized as having been born out of a present universal social and personal need. The contemporary psychologist Charles Reich, in his book The Greening of America, chronicles a disintegration of the American social fabric in our technological and impersonal society. Reich finds a crisis in America in man's inability to act and in the loss of a feeling of self. He calls this the most devastating form of impoverishment which stems not from a loss of will, but from the inability to put existing knowledge to creative use. He articulates a need:

The great and urgent need of these times is transcendence . . . the last two hundred years have fundamentally and irrevocably altered the terms of man's existence. The price of survival is an appropriate consciousness and social order to go along with the revolution of science and technology that has already occurred. The chaos we are now experiencing is the inevitable result and predictable consequence of our failure to rise to this necessity. . . . What is called for is a higher logic and a higher reason The creation of a new consciousness is the most urgent of America's real needs.¹

The TM technique, an effective method for the expansion of consciousness, may be seen to fill this need.

Erick Fromm, in Escape from Freedom, discusses the powerless, insecure, and isolated individual in modern society who has become free from the bonds which once gave security and meaning to life and which provided a social and personal orientation. This "negative freedom" he contrasts with "positive freedom" which may be attained by the realization of "Self." The act of realizing the Self implies growth, evolution, or change which is basic to life. Without change development cannot take place. Change therefore is the most characteristic quality of life and the flow of change is a basic and eternal truth. Our actions and decisions are designed to bring us more happiness, peace, love, or fulfillment. The desire for expansion, growth, or development stems from the nature of life itself and forms the basis of all progress

¹Charles A. Reich, The Greening of America (New York: Random House, 1970), pp. 69-70.

and improvement.

The Realization of Human Potential

The tendency toward the realization of human potential is described by contemporary psychologists and is called variously self-actualization, self-realization, integration, or psychological health. Abraham Maslow says, "Man demonstrates 'in his own nature' a pressure toward fuller and fuller Being, more and more perfect actualization of his humanness . . ."² He further states that there seems to be "a single ultimate value for mankind, a far goal toward which all men strive . . . this amounts to realizing the potentialities of the person . . . [to] becoming fully human, everything that a person 'can' become."³

Maharishi Mahesh Yogi calls Maslow's "ultimate value" the absolute field of creative intelligence, the source of unlimited potential and fulfillment out of which creation flows. It is locatable through the faculty of our consciousness and can be most readily reached through the practice of the TM technique.

Thought: The Basis of Action

If man is to find fulfillment he must act. It is thought which underlies all action. What is the source of thought? To discover this it is necessary to consider the characteristics

²Abraham H. Maslow, Toward a Psychology of Being, 2nd ed. (New York: VanNostrand Reinhold Co., 1968), p. 160.

³Ibid., p. 153.

of thought: 1) it flows, and therefore must have energy; 2) it can, to some extent, be detected and measured by scientific instruments; 3) it has direction. Thought leads us on the physical level for example, to different locations, or on the level of the mind, it leads us from confusion to understanding. (In thinking the mind chooses; one could therefore conclude that another aspect of the mind is that it is intelligent.)

A thought flows because of energy, and that flow takes a direction because of intelligence. Energy and intelligence are therefore fundamental to both action and to thinking. What is the source, then, of this energy and intelligence? From where comes the creative intelligence and energy which are expressed in thought and action? At a deep, intimate, fundamental level of life, far deeper than thinking, an unlimited source of energy and intelligence must exist.

Maharishi has provided an example to illustrate the occurrence of thought in the mind. He compares it to the rising of a bubble of air from the bottom of a pond. It begins as a very small bubble but as it rises it becomes larger and larger until it finally bursts on the surface. The mind is like an ocean,

The surface layers of the mind function actively while the deeper levels remain silent. The functioning surface level of the ocean of mind is called the conscious mind . . . and it is at this level

that thoughts are appreciated as thoughts.⁴

The Direction of Science--
Toward Ultimate Reality

All of the sciences seek to uncover the ultimate nature of life, to discover the essence of man and the universe and to ultimately locate the source, the stuff of creation. Science has found different levels of creation--the molecular, atomic, subatomic, etc.--all coexisting. At each of these levels of existence we may observe its peculiar qualities and we discover that our perceptions are quite different depending on which level we are speaking. The fact that one level exists does not preclude the existence of the others. However, it does indicate that none of these levels of reality is the ultimate level, and that our perceptions are not the ultimate perception of the essential nature of the object.

Science believes that the atomic level of life is omnipresent. It seems logical to assume the existence of some ultimate level of life, finer than the finest levels of matter and energy, which is the source of all energy and intelligence which gives rise to the vastness of creation. Such a field could also be omnipresent, in all things and in man.

⁴Maharishi Mahesh Yogi, The Science of Being and the Art of Living, rev. ed. by the author (Livingston Manor, New York: Maharishi International University Press, 1966), p. 54.

Knowledge of all life depends on our direct perception or direct experience. Such knowledge is empirical knowledge. For experience to take place there must be a subject and an object, an experiencer and an object of experience linked by the faculty of perception. In experiencing a thought there is the experiencer, who thinks, and the object of experience, the thought itself. One experiences a thought just as he experiences all of relative existence. Just as science delves into deeper levels of existence, it should be possible to reduce thought to increasingly subtler levels until we eventually arrive at the source of thought.

. . . since thought is an energy impulse, a part of creation, it is at least conceivable that we could--by experiencing the subtle levels of a thought and then transcending the subtlest, finest level--directly perceive the ultimate constituent of reality. This field of life, as the source of all creation, the field from which all manifest creation rises, would undoubtedly have to be an unlimited ocean of energy, creative potential, intelligence and power.⁵

Science tells us that matter is nothing but formless energy. Take the inert rock uranium. When its atomic structure is excited it is capable of producing an immense explosion. Energy is found everywhere in creation, and the more deeply we penetrate, the more powerful that energy is found to be.

There is also an order, an intelligent structure, on all levels of creation. This ordering aspect we term

⁵Jack Forem, Transcendental Meditation (New York: E.P. Dutton and Co., 1978), p. 30.

intelligence, and because everything, even at the minutest level, proceeds according to order and the laws of nature, we must assume that the deepest level of life, the source of life or basis of creation, must be a source of intelligence just as it must be a source of energy. Because it underlies and gives rise to all of creation, its creative potential and power must be virtually unlimited.

The Field of Being

"Being" in the first chapter in the Maharishi Mahesh Yogi's book The Science of Being and Art of Living is defined as pure, unmanifest existence, which underlies all that exists. It is a field of creative intelligence which expresses itself in every form as the basis of all manifestation. Just as we may say that the atomic or subatomic level of life is omnipresent--locatable deep within the structure of anything in creation--we can at least intellectually accept the possibility of a still deeper, deepest level of life, which we could call being.

According to Maharishi's definition, this field of pure creative intelligence is the source and basis of all creation, the source of all thought. Although it is present throughout creation, in its pure unmanifest essence it lies beyond the realm of relative experience, subtler than the subtlest field of life, inaccessible to ordinary perception. This is why it is said to be "transcendental," and the technique of experiencing it is thus termed "Transcendental Meditation."⁶

⁶Ibid., p. 33.

Maharishi refers to this field as pure consciousness,⁷ the basis for all experience. It is obvious that consciousness must underlie all experience. Before thought, feeling, speaking, or acting, is being. When we trace a thought to its origin it is this field of Being or pure consciousness which we locate.

We do not ordinarily experience Being, the essential nature of the mind, because our attention is always projected outward through the senses. The mind, as pure consciousness, is the experiencer and does not experience itself, just as the eye seeing does not see itself.

Man's life has two aspects, the inner, unmanifest, unchanging, pure field of Being, and the outer, ever-changing field of activity and experience. A man, to be fulfilled, must live both of these aspects of his life simultaneously. The growth and success of a man's life depends on his inner development, his state of consciousness.

The purpose of TM is to connect the outer field of activity with the unbound potentiality of the inner man, thereby enriching all aspects of life.

⁷As defined by Lawrence H. Domash, " . . . pure consciousness is a condition wherein self-awareness is present, but thought activity is absolutely nil. . . ." David W. Orme-Johnson and John T. Farrow, eds., with a foreword by Maharishi Mahesh Yogi and an introduction by Lawrence H. Domash, Scientific Research on the Transcendental Meditation Program: Collected Papers, Volume 1. (Livingston Manor, N.Y.: Maharishi European Research University Press, 1977), p. 17.

How TM Works: A Summary

Stated most simply, TM works by providing the mind with the opportunity to temporarily quiet the directed activity characteristic of the waking state, while spontaneously cultivating a high degree of awareness and alertness. This is accomplished by allowing the mind, according to its natural tendency, to perceive a thought at progressively earlier and more satisfying steps in its development, until the thought is perceived at the moment of its genesis. At that time the attractiveness of the source of thought, the inner field of pure (unmanifest) creative intelligence, is so great that the mind "transcends" the thinking process and the body correspondingly attains a hypometabolic state known as "restful alertness." In this calm quietness the body is allowed to carry out with exceptional efficiency repairs and adjustments which are not possible during activity, yet which are also not accomplished during the duller form of rest obtained during sleep. The ensuing physiological activity of this normalization of the body and nervous system generates a corresponding increase of mental activity, and the alert mind gently re-enters activity refreshed, relaxed, and revitalized.⁸

The TM technique is psychologically self-regulating; stress which is dissolved and the degree of normalization accomplished in the nervous system is roughly proportional to the degree of rest obtained. This is an on-going process and all will not be cured or accomplished overnight. However, individual development is maximized while discomfort is minimized.

Positive benefits of the practice of the TM technique are documented in Scientific Research on the Transcendental Meditation Program: Collected Papers, Volume 1. This volume

⁸ Maharishi International University Catalogue 1974-75 (Los Angeles: Maharishi International University Press, 1974), p. 31.

is an important reference work supporting the present study, and hereafter will be referred to as the Collected Papers. The experimental studies on the Transcendental Meditation Program collected in this volume cover a very broad range of specialities within physiology, biochemistry, neuroscience, psychology, medicine, and sociology. The findings reported in the individual papers fall into two broad categories: first, measurements of the changes in physiology recorded during the active twenty minute period of the TM technique; and second, the measurement of cumulative effects of the TM program by the methods of physiology, psychology, and sociology. It may be concluded from this body of scientific research not only that the TM program has a real effect, but that it supports a definite direction of human growth, which is characterized by improved functioning mentally, physiologically, and emotionally.

Maharishi's theoretical description⁹ of the reason for the facts found in these papers is put in terms of creative intelligence: its source, mechanics, and goal, and its connection with physiology. For those unfamiliar with the body of knowledge found in the Science of Creative Intelligence an introduction follows. SCI includes three streams of

⁹Maharishi Mahesh Yogi, Science of Creative Intelligence: Knowledge and Experience, a thirty-three lesson videotaped course (Seelisberg, Switzerland: Maharishi International University, 1972).

information: direct personal experience, the formulations of the ancient Vedic seers arising from their internal insights into the workings of the mind, and the laws of nature as discovered by the modern sciences, from physics to biology.

CHAPTER II

THE SCIENCE OF CREATIVE INTELLIGENCE

The Science of Creative Intelligence is scientific because creative intelligence can be 1) logically explained to satisfy intellectual inquiry; 2) directly experienced in its pure state; 3) objectively verified through repeatable experiments; 4) artistically actualized in its fuller values; and 5) be fully unfolded and practically applied by anyone in all fields of activity.

The Science of Creative Intelligence has been defined in the following manner:

Creative Intelligence is the impelling life force which expresses itself in the evolutionary process, creating and ordering all forms and relationships in the universe. At the basis of creative intelligence is its own unmanifest nature which is pure intelligence, pure existence, pure consciousness, the source and substance of all creation, itself eternal and non-changing. Its unmanifest nature as consciousness is present in all its manifestations. Therefore no manifestation is foreign to consciousness--the whole range of creative intelligence, manifest and unmanifest, is open to direct experience. The marvel in creative intelligence is in creating a means by which it can experience and enjoy the wholeness of itself in the infinite variety of its own creation. The human nervous system is that means. Human consciousness can realize the truth of every aspect of creation in terms of its own Self and naturally become capable of accomplishing anything--enjoying the full range of creative intelligence in its infinite potential. The purpose of the Science of Creative Intelligence is to provide the theoretical and practical knowledge necessary and sufficient to culture human consciousness to enjoy the full potential

of creative intelligence and to live a life of eternal freedom playing in the field of all possibilities.¹⁰

The course of study of the Science of Creative Intelligence discusses the features of creative intelligence and explains how the Science of Creative Intelligence can bring fulfillment to all aspects of life. SCI locates creative intelligence, defines its properties, and describes the mechanics by which pure creative intelligence expresses itself in the diversity of manifest creation.

The orderliness of nature and the ability of the mind to order reveal a basic intelligence (defined here as the element of orderliness) common to both man and nature. This orderliness is fundamental to all knowledge. The universal quality of life, or intelligence, is to grow, to evolve, to expand, and to progress--it is creative. This element of creative intelligence in itself is the subject matter of the Science of Creative Intelligence, which may be defined as the study of the nature and growth of orderliness in man, and through him, in the world at large.

Basic to the Science of Creative Intelligence is the finding that there exists a source from which creative intelligence issues and a goal towards which it progresses as the process of evolution unfolds. This source and goal are identical and may be identified as the innermost area of one's

¹⁰ Maharishi Mahesh Yogi and the Faculty of the Maharishi International University, The Science of Creative Intelligence, A Definition (Fairfield, Iowa, October 1975), no page.

own life on the level of the source of the thinking process; this is creative intelligence in its pure form, the unmanifest pure field of creative intelligence. This innermost field is the origin of deepest energy, peace, and happiness in the life of man. Knowledge of this field is the most precious of all knowledge.

The study of the Science of Creative Intelligence has three main features: 1) the principles that promote the experience of the pure nature of creative intelligence; 2) the qualities of creative intelligence; and 3) the principles that promote the development of the qualities of creative intelligence.

A. The Principles That Promote the Experience of
the Pure Nature of Creative Intelligence

It has been discovered through the Science of Creative Intelligence (hereafter referred to as SCI) that the natural tendency of the mind is such that it has the capacity to spontaneously come into direct conscious awareness of the source of creative intelligence in life--the field of pure intelligence. The mind experiences this as the infinitely expanded value of its own innermost nature, unbounded pure consciousness, which coincides with the physiological state of restful alertness of the nervous system (see the Collected Papers).

The principles which describe the natural tendency of the mind toward this experience of unboundness or ultimate fulfillment are,

- 1) the principle of taking the correct angle (diving)
- 2) the principle of increasing charm
- 3) the principle of gravity
- 4) the principle of the comfortable ride
- 5) the principle of intelligence through rest, or the highest first

1) The principle of taking the correct angle (diving); meditation is like diving. The diver needs only to take the correct angle or set the initial condition and then let go. Through the vehicle of the mantra the mind is quieted and automatically takes a natural way to finer levels of thought. This is simply a principle of least action. The principle of least action is universal in nature which structures and accomplishes all things in the most efficient manner.

2) The principle of increasing charm; the mind moves in the direction of increasing charm on the basis of lively innocence, for no effort is made to take any direction. The mind is said to be innocently lively. The principle of least action is upheld by this process.

3) The principle of gravity; the individual mind gravitates toward unbounded awareness, toward the cosmic mind (in the direction of more and more). This is its path of progress. With gravity the nearer its center is approached the faster the speed becomes. This phenomenon is also experienced in meditation. As the goal of unbounded awareness approaches the mind speeds to experience it.

4) The principle of the comfortable ride; the procedure of transcending is one which is soothing and comfortable. In

the TM technique the mantra moves the mind down to deeper levels of consciousness to the transcendental and into the pure field of creative intelligence, the goal. The process is a comfortable one. As the mind becomes used to regularly experiencing the pure field of creative intelligence the path to the transcendent is quickly transversed, allowing the mind to reside in the absolute field for longer periods of time and accelerating progress, the release of stress, and the purification of the nervous system.

5) The principle of intelligence through rest, or the highest first; the pure field of creative intelligence is the highest value of life which one may attain. Maharishi likes to use an analogy to explain this principle. He says when the fort governing an entire territory is captured then the entire territory is won. Once the mind has risen to the highest value, the pure field of creative intelligence, it is able to use it and infuse its values into all of life. Through the deep rest which the nervous system receives during TM it is able to gain momentum toward more efficient, thorough, and spontaneous activity.

The Science of Creative Intelligence then may be seen as the focal point and basis of interdisciplinary study, for SCI studies intelligence itself, where all the individual disciplines study the expressions of intelligence. SCI is a most important and useful first science and is a major contribution to the knowledge of our age. The ability to precisely locate

and define the element of pure creative intelligence changes that term from a loose generalization into something concrete, definite, and real. Such precision, based on experimental verification (see the Collected Papers) allows the Science of Creative Intelligence to further define the qualities of creative intelligence.

B. The Qualities of Creative Intelligence

Creative intelligence is found to be expansive, innovative, inclusive of opposite values, integrative, discriminative, self-perpetuating, self-perfecting, progressive, self-sufficient, invincible, and holistic. The above qualities grow in the life of a person who has learned to increase his own creative intelligence by contacting the inner source of pure creative intelligence through the practice of the TM technique. SCI then defines the complete range of individual human development as it grows from ordinary stages to its full potential in ultimate fulfillment. This development is the evolution of consciousness and is divided into the seven states of consciousness available to man.¹¹ They represent the increasingly complete inclusion of the full range of values of creative intelligence.

¹¹See: David Orme-Johnson, "The Dawn of the Age of Enlightenment: Experimental Evidence That the Transcendental Meditation Technique Produces a Fourth and Fifth State of Consciousness in the Individual and a Profound Influence of Orderliness in Society," Scientific Research on the Transcendental Meditation Program: Collected Papers, Volume 1, pp. 671-691.

C. The Principles That Promote the Development
of the Qualities of Creative Intelligence

Having located creative intelligence and defined its properties it remains to describe the mechanics by which pure creative intelligence expresses itself in the diversity of manifest creation. The principles which are involved here are exemplified by the principle of rest and activity and the principle of the purification of the path. These mechanisms further explain how a person, having learned to use the natural tendency of his mind to contact the source of pure creative intelligence, will spontaneously experience the growing infusion of that creative intelligence in every aspect of his life. Regular experience of the inner field of pure creative intelligence, interspersed with periods of activity, causes one to automatically develop the complementary values which are characteristic of creative intelligence itself: profound inner silence together with dynamic creative energy. Each time the mind transcends, the nervous system is cleansed both of stresses which accumulate daily and also of deep seated stresses which have accumulated over the life of the individual. As with all of nature this process of purification is a spontaneous one. As it continues, the individual is more and more able to act and react spontaneously in a correct manner--one which is in tune with nature.

Maharishi International University in Fairfield, Iowa, has developed a set of principles which are descriptive of the entire range of creative intelligence from the fullness of the

absolute to fulfillment in the relative. These principles follow: "Fullness, being Purposeful, Spontaneously becomes Active, takes a Direction toward Progress, and Transcending, Accelerates Integration of Stability and Adaptability, and Enjoys Evolution in Self-Purification, Harmony, and Fulfillment."¹²

All of the laws of nature, of necessity, fall within the boundaries of the fullness of the absolute and the fulfillment of all creation. Within them are structured all of the arts and sciences which, in their separate languages, seek to define and order these laws. It would follow then that the principles which are descriptive of creative intelligence as it manifests itself in the relative and which is made known through our consciousness would form the basis of all sciences and in a broad sense be descriptive of all of the laws of nature.

The following principles of SCI form the basis of this correlative study with violin playing. They should be descriptive of an ultimate technique and can be used to develop a deeper understanding and greater awareness of what we do.

Our playing, structured within our consciousness, directed by the mind, and carried forth by the body, consists of hundreds and hundreds of individual motions which are initiated and completed or fulfilled in a specific sequence. The degree of fineness or regulation of this sequence is an important determining

¹²A complete elaboration of these sixteen principles, entitled Principles of the Science of Creative Intelligence: An Elaboration, was prepared by the faculty of the Maharishi International University for the second year of a three year secondary education curriculum, 1975.

factor in the level of artistry of the performance. The direction which is outlined here--of initiation, direction or growth, and fulfillment--is ultimately described by the principles which follow. Detail in reference to violin playing is reserved for a later chapter.

The Principles of the Science of Creative Intelligence

Principle of Fullness--the fullness of creative intelligence, the source of all creation. During the TM technique we gain the experience of fullness. We experience the field of pure creative intelligence at the source of thought. In nature this principle reveals that the whole of life is contained in every part.

Principle of Purposefulness--creative intelligence and the orderly fulfillment of creation. Our natural desires for more and more and our efforts to achieve more and more demonstrate the purposefulness of activity in life. During the TM technique the same purposefulness belongs to the natural activity of the mind as it moves systematically towards greater happiness and fulfillment. Here is the universal nature of the principle of purposefulness. Growth in nature is not random, but orderly and purposeful. The natural tendency of life to grow is purposeful, and developing the fullness of life is the purpose of growth towards fulfillment.

Principle of Spontaneity--progress from the nature of creative intelligence. The nature of life is to grow, and the spontaneity of growth belongs to the nature of life.

The mind spontaneously goes to finer and finer levels of thought and transcends the finest aspect of thought to experience the field of pure creative intelligence. Any stresses blocking the progress of the mind towards pure creative intelligence are cleared away in a spontaneous manner. Contacting the field of pure creative intelligence in the TM technique spontaneously gives rise to growth in all areas of our activity.

Principle of Activity--creative intelligence acts to express fullness everywhere. The principle of activity expresses life in waves of living. It is through action that life is lived. The inward stroke of the TM technique, the refinement of inner activity, gives rise to more dynamic action, which leads to greater achievement and indicates the development of fullness of life. The range of activity of creative intelligence stretches from the finest relative (subatomic particles) to the most expanded aspect of the universe (clusters of galaxies). Knowledge is the basis of action, action is the basis of achievement, achievement is the basis of fulfillment. Thus knowledge is at the basis of fulfillment.

Principle of Direction--creative intelligence and the law of least action. The principle of direction has its seat in the principle of activity. Direction is born of action and serves to guide its destiny to the goal. In the TM technique, mental activity automatically takes the proper direction. All growth in nature, as in individual life, is

directed in such a way as to display most efficient action. The law of least action is a general principle of nature.

Principle of Progress--creative intelligence and the process of change. The principle of progression indicates progress under all circumstances, progress even in spite of all negativity. This principle emerges from the invincible quality of creative intelligence. It is at the basis of change, which upholds evolution in steps of rest and activity. In the TM technique, progression of the mind toward finer levels of thought leads to the transcendental unboundedness of pure intelligence. Despite any stresses and strains, the mind is able to progress effortlessly towards the unbounded. Creative intelligence inspires action in a progressive direction. In order for action to be completely effective it must have a two-fold nature: 1) to clear impediments from the path, and 2) to structure the steps of progress. As creative intelligence grows in our awareness, we find progress is spontaneous, and we feel the obstacles less and less. The nature of life is to grow. Creative intelligence precipitates all growth; it is at the basis of all expressions of life.

Principle of Transcending--the movement of creative intelligence from fullness to fullness. The principle of transcending is natural to life. The nature of life being progressive, every step of progress transcends the previous

achievement. This principle is emphasized in the TM technique as the mind progressively transcends the experience of finer states of thought and finally transcends the finest state of thought. Transcending the field of change (the relative), experiencing the unbounded field of the non-changing (the absolute), and then reentering the relative field of boundaries with full awareness of unboundedness, we enjoy 200% of life (the full values of both the absolute and the relative). Spontaneously we develop the full value of creative intelligence in all the relative phases of living.

Principle of Acceleration--speeding towards the goal. The principle of acceleration has its seat in the principle of transcending. It is the nature of the mind to move towards the transcendent, which is a field of happiness, intelligence, and creativity. As the mind approaches its goal, it naturally accelerates its speed. The deep rest achieved through the practice of the TM technique accelerates progress, developing the fullness of life. This follows nature, where every aspect rests before acting, and where less is done to accomplish more.

Principle of Integration--unity in diversity. The principle of integration is so profusely witnessed in creation that we may say there is integration everywhere. Through integrated knowledge integrated action becomes possible. The Science of Creative Intelligence produces integrated knowledge because it brings to light the field of pure

intelligence which is the common basis of all branches of knowledge, the TM technique integrates the inner silent and outer active aspects of life, giving rise to an integrated awareness. The field of pure creative intelligence is the basis of all integration and the basis of developing the fullness of life. The diverse universe is integrated by the unity underlying the diversity.

Principle of Stability--creative intelligence as the basis of the continuity of life and all progress. The principle of stability is based on the pure nature of creative intelligence. The source of all activity is a non-changing, stable field of inexhaustible fullness. This field is at the source of thought. During the TM technique we dip into the field of pure creative intelligence. Creative silence grows in our awareness until it is felt in the midst of dynamic activity. The combination of these two qualities leads to developing the fullness of life.

Principle of Adaptability--assurance of progressive change. The principle of adaptability arises out of the progressive and intelligent nature of life. In order to continue to progress, the stability of life must have infinite adaptability structured into it. The TM technique produces the stability that is essential to adaptability. By dipping into the stability of the field of pure creative intelligence, we gain stability in our awareness. This is the basis of adaptability. Adaptability is essential for

evolution. Every species in nature has evolved by successfully adapting to the changing environment. Change is basic to life and adaptability ensures progressive change toward developing the fullness of life.

Principle of Joyfulness--nature charms the world to growth. The principle of joyfulness arises out of the progressive nature of life. Joy is not separate from life, but is structured in its very nature, which is to unfold creativity and to evolve. During the TM technique mental activity is refined as the mind moves inward towards the charm of the field of pure creative intelligence. The finer levels of thought are more charming; therefore every step of the TM technique is a step of increasing charm. Expansion of happiness is the basic drive of all activity in every sphere of life. Developing the fullness of life is life's natural inclination to grow towards increasing charm.

Principle of Evolution--the unfoldment of full potential of life. The principle of evolution arises spontaneously out of the nature of life to grow. On the basis of increasing happiness life unfolds more and more of its own nature into the different aspects of expressed, manifest creation. Both the inward and outward strokes of the Transcendental Meditation program are evolutionary. The inward stroke of the TM technique is due to the natural tendency of the mind to evolve, and the outward stroke is due to the natural tendency of the body to evolve. As a result of purifying the nervous system

during meditation, we unfold full mental potential and evolve to higher expressions of life. Evolutionary action is on the basis of expanded awareness. Developing the fullness of life, we evolve in steps of desire and fulfillment of desire. As the nervous system grows and evolves more, desires become more effective in realizing the goal and therefore more fulfilling and more evolutionary. This force in nature is responsible for the unfoldment and development of all levels of life throughout the ages.

Principle of Purification--removing obstacles to progress. The process of purification is built into the process of evolution and for that matter, the principle of purification is built into the principle of evolution. When we progress, resistance to progress is spontaneously overcome. Purification is built into progress. It is the nature of the mind and body to purify themselves. By allowing the mind to go to more refined states during meditation, the body is provided with deep rest that allows stress, an impurity in the nervous system, to dissolve. As strength is gained one becomes less affected by stress in the environment. Everything in creation has within itself the ability for self-purification. Purity is therefore the natural state of life. In the process of developing the fullness of life impurities are naturally dissolved.

Principle of Harmony--actions in tune with nature. The principle of harmony is structured in the nature of life in its perpetual progression. The expression of harmony is found

in the life-supporting nature that the process of evolution produces. The center of harmony is the innermost core of life, the fountainhead of all springs of existence and intelligence. By enlivening this innermost core of life--the source of thought within us--it is possible to enliven harmony in our physiology, psychology, sociology, and the whole of ecology. This has been demonstrated by scientific research on the TM technique, which shows that the process of meditation releases stress and results in greater harmony. Harmony in the individual naturally results from a purified nervous system. Progress in nature is harmonious and systematic. It is the creative intelligence underlying all progress that is the basis of this harmony.

Principle of Fulfillment--realization of full potential. Wholeness of the nature of creative intelligence is contained in every expression of it in nature. On this basis everything in nature is found ever-blossoming in fresher expressions, showing progress in the direction of fulfillment. The principle of fulfillment is expressed in the very nature of life to grow. The field of pure creative intelligence is, of its own nature, blissful and the contact of the mind with bliss leads one's awareness to fulfillment. The state of fulfillment is achieved when the essential nature of creation is fully expressed. For example the fulfillment of the life of a tree is the seed. The fulfillment of the tree is in the reproduction of its original value--from seed to seed is the fulfillment of the life of the

tree. The principle of fulfillment is seated in the self-sufficiency of fullness. It is the state of self-sufficiency that is experienced as fulfillment.

CHAPTER III

THE ESSENTIALS OF VIOLIN TECHNIQUE AND THE SCIENCE OF CREATIVE INTELLIGENCE

Section I: The Essentials of Violin Technique as Defined by Ivan Galamian

Ivan Galamian in his book Principles of Violin Playing and Teaching¹³ looks at the totality of violin technique and then breaks his discussion down into a consideration of the right and left arms. He consistently returns to a single basic emphasis: the mind-muscle unit. A distillation of his discussion follows. The emphasis cited above should be recognized throughout, for the improvement of mind-muscle coordination through the purification of the nervous system is a most important by-product of the practice of the TM technique.

Three Common Items in all Systems of Violin Playing and the Science of Creative Intelligence

In the introduction to Principles of Violin Playing and Teaching Mr. Galamian singles out three major items which are common to almost every system of violin playing and which

¹³Ivan Galamian, Principles of Violin Playing and Teaching (Englewood Cliffs, New Jersey: Prentice Hall, 1962).

concern the very foundation of all violin teaching.

The first point concerns the contemporary insistence upon compliance with rigid rules for everyone and everything that has to do with violin playing.

The teacher must realize that every student is an individual with his own personality, his own characteristic physical and mental make-up, his own approach to the instrument and to music . . . naturalness should be his first guiding principle. "Right" is only what is natural for the particular student, for only what is natural is comfortable and efficient.¹⁴

Important here is the word "natural." What is natural is in tune with nature and that which is in tune with nature obeys the natural laws which form the basis of all manifest creation.

In order to discover the basic principles of violin playing which form the basis of all natural technique one need only examine the respected treatises from the eighteenth century to the present. These principles have always been recognized by great teachers and performers but have never been clearly distilled or given the meaningful framework which is now provided by the Science of Creative Intelligence. The twentieth century has given us deeper insights into the mechanics of violin playing through the application of scientific procedures, yet this knowledge is still not integrated in our awareness. The study of this integration represents an entire new area of inquiry for contemporary man.

¹⁴Ibid., p. 1

Since all knowledge is structured in consciousness it would follow that an in-depth study of consciousness (the mechanism through which we know and experience all things) together with the expansion of consciousness, achieved through the practice of the TM technique, would provide a basic structure and vehicle through which we might come to know and identify the principles which form the basis of all fields of knowledge. Specifically with reference to the art of violin playing we could identify those principles operative on all levels of violinistic activity--mental, emotional, and physical--which are descriptive of any "natural" technique. In doing this we gain an intellectual understanding of our craft provided through the vehicle of the structure of these laws which govern the most intimate attribute of our awareness--which is consciousness.

Galamian's first point stresses the fact that naturalness in playing is that which is "right" and therefore will be the most comfortable and efficient. That which is natural must flow, take its own course, and be spontaneously right. If our playing is ever to achieve this naturalness and spontaneity then our consciousness, which is responsible for all that we do, must be in tune with nature (the absolute).

The second of Mr. Galamian's three important points states, " . . . that however important the individual elements in violin technique are, more important still is the understanding of their

'interdependence' in a mutual, organic relationship."¹⁵

Mr. Galamian provides an example stating that if the bow is held in a specific way then the functioning of the fingers, hand, wrist, and arm will fall into a certain organic pattern. (A method for evaluating the "rightness" of such an organic pattern using the principles of the Science of Creative Intelligence will be presented shortly.)

Science has taught us and we have learned through our observations of nature that successful integration of the diversity of creation is essential to the fulfillment of each individual part. The study of the Science of Creative Intelligence is a study of the integration of all of existence. This study together with the practice of the TM technique provides a secure and expanded basis for the understanding of our art.

Mr. Galamian's third point states:

I would like to point to the one-sided overemphasis on the purely physical and mechanical aspects of violin technique, the ignoring of the fact that what is paramount in importance is not the physical movements as such but the "mental control over them." The key to facility and accuracy and, ultimately, to complete mastery of violin technique is to be found in the "relationship of mind to muscles," that is, in the ability to make the sequence of mental command and physical response as quick and precise as possible. Therein resides the fundamental principle of violin technique that is being overlooked and neglected by far too many players and teachers.¹⁶

It is this sensory-motor performance that is so readily improved

¹⁵Ibid., p. 2.

¹⁶Ibid., p. 2.

through the practice of the TM technique.¹⁷

Left Hand: Essential Factors in the Development of the Left Hand

When considering the left hand in violin playing there are two basic problems: 1) fingering the notes, and 2) the vibrato. Fingering the notes itself consists of two basic elements, the development of intonation and timing. Galamian sums up the essentials in the development of sound intonation as: a) a sense of touch, highly developed for the feeling of location as well as distance; b) constant guidance and intense control by the ear; c) correct and facile application of the frame (the basic shape of the hand as it plays the octave interval); and finally d) the ability to make instantaneous adjustments in pitch to meet the musical requirements of the moment.

Timing is the second element in the problem of fingering the notes. Mr. Galamian differentiates between musical timing and technical timing. Musical timing means the actual sounding of the notes in the exact rhythmical pattern and the exact speed required by the music. Technical timing means the making of the necessary movements of both the left hand and the right hand in the exact moment and at precise speed that will ensure correct musical timing. In the left hand the fingers often have to be prepared ahead of the time of sounding. The

¹⁷See Section E, "Motor and Perceptual Ability, and Athletic Performance" in the Collected Papers.

same is true of the bow which has to be placed in preparation (such as in the martelé stroke and in staccato bowings), before the actual playing of the notes. The musical timing is the deciding factor. If this is to be perfect, it presupposes correct technical timing of each hand by itself and a correct combination between the two for any rhythm, any speed, or any required change of speed.

The mastery of the entire timing complex (the technical timing plus the combination of the two hands) is entirely a question of "correlation" of the immediate and accurate response of the muscles to the directives of the mind.¹⁸

The second basic problem in left hand violin technique is the vibrato. In order to vibrate correctly the left hand must not squeeze the neck of the instrument. Squeezing creates intense strain and paralyzes any action of the hand. Although squeezing is a physical problem it is rooted in the psychological fear that the violin will be dropped. Players in all stages of advancement tend to squeeze in order to feel more securely in contact with the instrument.

The Right Arm

Mr. Galamian states that the technique of the right arm is based on a system of springs both artificial, i.e., the resilience of the bow hair and flexibility of the bow stick, and natural, i.e., joints of the shoulder, elbow, wrist, fingers, and thumb. It is the system of natural springs

¹⁸Galamian, p. 23.

with which Galamian is concerned. There must be a resiliency and "springiness" in the functioning of the whole arm from the shoulder to the fingertips so that the tone will not be hard and ugly and the bowing clumsy and uncontrolled. This system of springs is not loose at all times, for in the process of bowing it needs to be set at various degrees of tension. This is accomplished by muscular action. The muscles may be firm, but should not lose their basic springlike quality by becoming actually rigid. The bow must be held in such a way as to permit the freest play in the working of all the springs involved, and in their interaction and coordination.

In his discussion of the fundamentals of the right arm Mr. Galamian continues with the description of the holding of the bow, the physical motions, and the drawing of a straight bow stroke. He then discusses tone production and various bowing patterns. However, the proper functioning of the natural system of springs which Mr. Galamain first discussed is of central importance to the rest of his discussion of the right arm.

Concluding the section on the right arm, Galamian discusses special bowing problems and emphasizes the need for precise and sensitive coordination. Concerning the bow attack he says:

. . . if, at the frog before the initial attack, the bow is suspended in the air from the arm and wrist, the player gains the advantage of getting, in the last decisive instant, the exact feeling of weight and balance of the whole of the bow-arm-hand unit. This last minute feeling permits a more precise and sensitive coordination of all factors involved in producing, from the start, a tone with exactly the desired quality in dynamic and nuance.

Galamian expands on this:

A very important factor in "quality" of the attack is how the vibrato is used. It has to be exactly coordinated with the rapidly changing dynamics and has to increase and decrease in both width and speed in accord with the corresponding increase and decrease of sound volume.¹⁹

On Practice

In his final chapter on practice Mr. Galamian emphasizes the necessity for mental alertness. If the mind wanders while the fingers mechanically carry on their tasks both time and effort are wasted.

For all types of technical practice, the principle of "mental preparation" is of paramount importance. It means that the mind always has to anticipate the physical action that is to be taken and then to send the command for its execution.²⁰

Correlation is designated as the key to technical control. Practice aimed at the building of technique or the overcoming of particular difficulties must center on the development and improvement of this correlation. In order to accomplish this Galamian writes that it is necessary

. . . to present to the mind, for transmission to the muscles, problems that progress from the simple to the ever more complicated. These are problems of timing and coordination in the form of various patterns of rhythm, of bowing, of accentuation, and of the combination of all three of these factors.²¹

¹⁹Ibid., p. 85.

²⁰Ibid., p. 95.

²¹Ibid., p. 95.

Mental preparation must be supplemented, he continues, by the sharpest and most constant supervision by the critical ear.

The "sound" produced has to be under permanent scrutiny. The ear is always the final judge in deciding what is good and what is not.²²

Unfortunately we too often hear subjectively: "The ability for honest, objective hearing is the most essential prerequisite for efficient practice."²³

Emphasis on Maximum Functioning of the Nervous System

Having distilled the essentials of violin technique as presented by Mr. Galamian one may recognize that irrespective of the aspect of technique with which he is dealing a single (though variously stated) emphasis is always present which is: on correlation, coordination, and the interaction of muscles; on timing; on the immediate and accurate response of the muscles to the directives of the mind; and on mental alertness. Stated most succinctly the emphasis is on maximum functioning of the mind-muscle unit or on the central nervous system. The improvement of its functioning of course is paramount to the continuing development of one's technique. However, Mr. Galamian's solution, to present the mind-muscle unit with problems to

²²Ibid., p. 101.

²³Ibid., p. 102.

solve of an increasingly complex nature (those of rhythm and coordination) is, and can only be, a partial solution.²⁴

It is true that Mr. Galamian is in agreement with other great pedagogues such as Otakar Sevcik, who wrote volumes of rhythm-coordination exercises, and with Dounis, Yost, and Flesch. For many violinists this road to mastery of the instrument, which Mr. Galamian calls long and arduous, leads to the technical-artistic fulfillment which is sought. However, for an even greater number of violinists such preparation, though diligently undertaken, has not proven sufficient to reliably sustain a high level of artistic performance. This is because of stresses and strains in the nervous system, both from the rigors of daily living and from deep-seated emotional-psychological stresses which we all seem to carry silently with us at all times and which are cumulative or perhaps even inborn.

Stress and the Violinist's Raison d'Être--
the Performance Situation

Stresses which are highly personal in nature seem to surface in situations which require deep emotional involvement such as performance. In such instances the mind-muscle correlation breaks down just when it is most needed. Our consciousness in performance is brought to the deepest level of

²⁴Basic exercises of rhythm and coordination are contained in Galamian's book Principles of Violin Playing and Teaching. They are presented in an exhaustive manner in a second book (co-authored by Frederick Neumann) Contemporary Violin Technique. (New York: Galaxy Music Corporation, 1963).

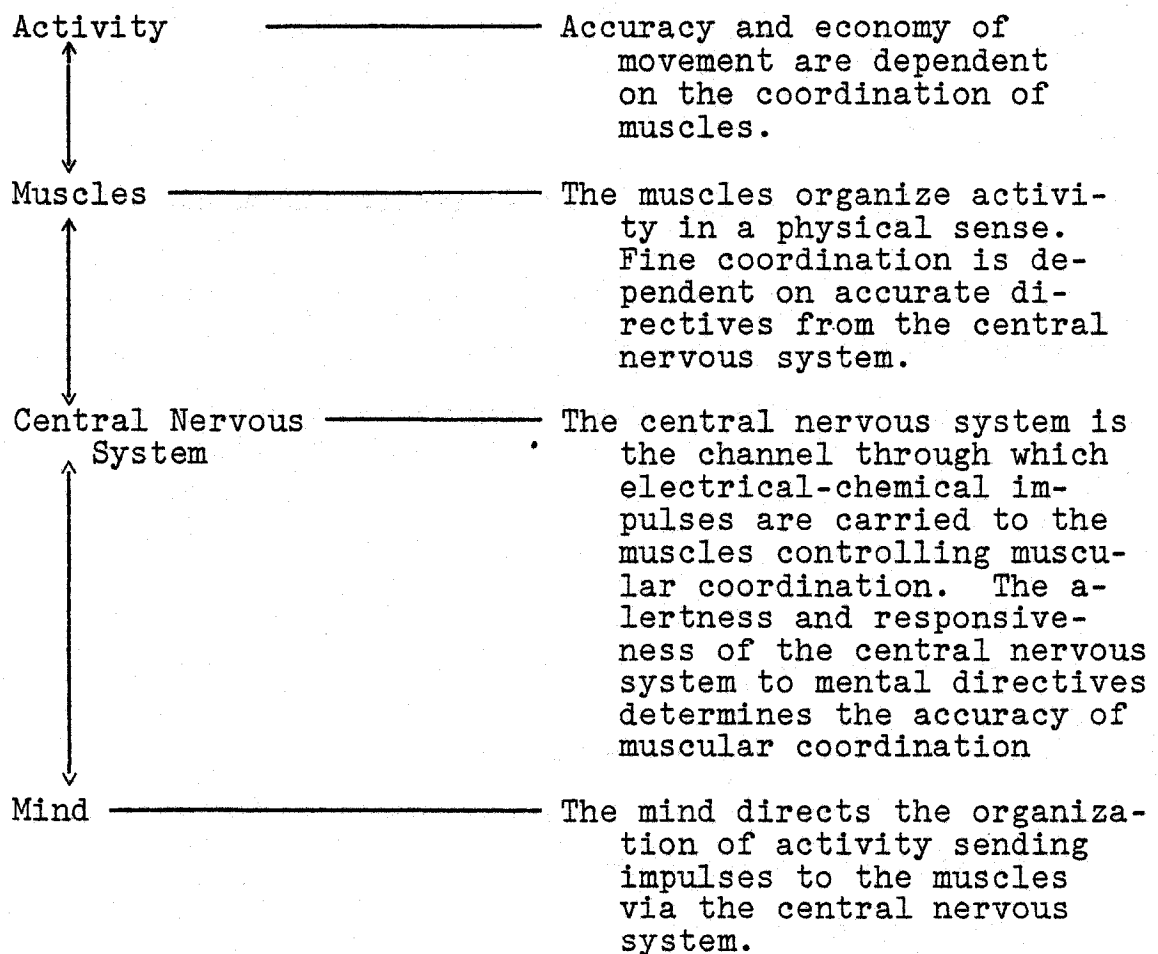
the mind where the most powerful emotions reside. Their uncontrolled release into a nervous system which is not sufficiently strong causes an overload and short circuit situation producing memory lapses, bow tremblings, uncontrollable shaking, finger sluggishness, a nervous and uncontrolled vibrato, etc. To those who have experienced these effects they are upsetting and unnerving. Must the accomplished musician assume that all is hopeless and that no further recourse exists? If one continues to work and search for solutions to this serious problem, it is possible to find information which, when applied, is of some help. Katõ Havas' book Stage Fright--Its Causes and Cures²⁵ is an example of an excellent new book which has helped many people.

However, the root of the problem is still not addressed. Maharishi Mahesh Yogi provides an example throughout his writings and teachings which illustrates this situation: when a tree is sick the wise gardener does not treat the symptom of the withered flower or the yellowing leaf, but rather goes to the source of the problem; he waters and nurtures the root. The solution to the problem is not found within the problem itself. This is also true in the performance situation. The problem is not external but rather it lies within the central nervous system. Only in its purification through the expansion of consciousness will problems begin to disappear.

²⁵Katõ Havas, Stage Fright--Its Causes and Cures: With Special Reference to Violin Playing (London: Bosworth & Co., 1973).

The Outer and Inner Structure of the Mind

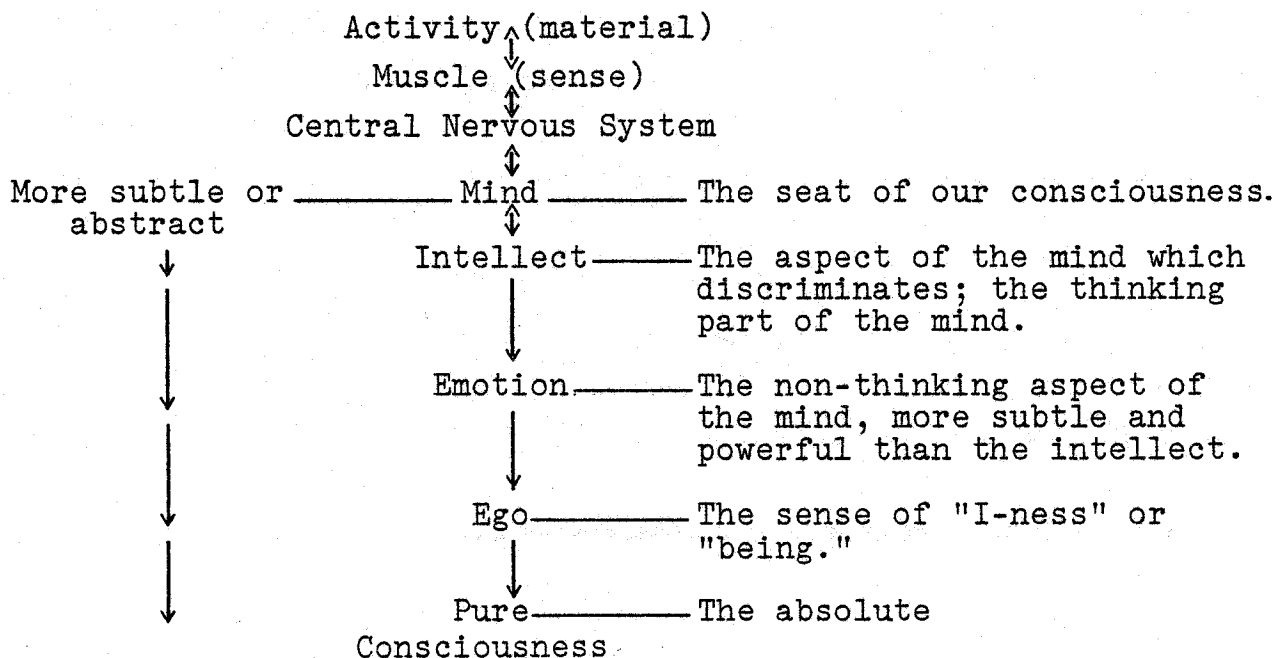
The steps of progress (purification of the nervous system) are realized in cycles of rest and activity. Through deep rest gained by the practice of the TM technique the mind and body are prepared for more efficient, dynamic, and creative activity. A diagram will be helpful in clarifying this structure of the mind as it projects itself into activity.



The Structure of the Mind to Activity--
An Outer Structure

It is evident that the most important link between dynamic and efficient activity and the mind directing that activity is the central nervous system. It is basically on the level of the mind-central nervous system that contemporary texts on any aspect of violin playing sustain their discussions. Deeper levels are only alluded to.

One should be familiar with the deeper structure of the mind and with the absolute field on which the mind itself is based if one is to gain a more intimate understanding of activity--in this case the art of violin playing--and its supportive structure.²⁶ It will be necessary to expand the previous diagram as it appears above to include the deeper structure of the mind itself.



The Deeper Structure of the Mind

26 This calls for an endeavor having two aspects--experiential and intellectual. We may daily experience the absolute through the practice of the TM technique and the intellect may be challenged and satisfied through a study of the Science of Creative Intelligence.

It is our consciousness which allows us to gain information. The senses project this information on our consciousness (our mind), but the senses of themselves are unable to order this information. It is the intellect, the aspect of the mind which discriminates and directs, which allows us to order what the senses project into the mind.

The ability to think precedes the ability to order. It is the very force of life itself which pushes a thought into our mind. The ego or the sense of "I-ness" or "being," which might be thought of as resting on the top of pure consciousness, "feels" or "watches" this happen. The emotion which is more subtle and powerful than the intellect knows the thought first. The intellect discriminates and channels the thought out into the field of action. It is through this channel that we act and react to all of life's situation. Through the vehicle of our consciousness, structured in the mind, a link exists with the absolute.

How much more meaningful, then, our discussion of correlation and coordination of the mind-muscle unit becomes when we recognize it as linked to the absolute in consciousness through the deeper channels of the mind.

Section II:
The Principles of the Science of Creative
Intelligence--Increasing Our Understanding
of Technique

The essentials of technique have been distilled and it has been pointed out that an individual's technique has the

possibility of fulfillment when the nervous system is purified through continued contact with the unbounded field of creative intelligence. A deeper intellectual understanding of ourselves and our own technique may be gained through the application of the principles of the Science of Creative Intelligence which articulate the path of fulfillment. These principles can be used as an expanded check-list in order to distill the rightness of a particular function within a given system of violin playing. This is precisely because these principles are descriptive of, and built into, all of the laws of nature. The individual components of playing and the finished artistic product may be seen in a far larger and more meaningful framework. An example of how this procedure may be structured follows.

The Principles of the Science of Creative Intelligence
and the Fully Developed Bow Stroke

A particular bowing motion is to be analyzed in all of its aspects on the basis of the principles of the Science of Creative Intelligence. These principles are completely integrated and mutually supportive. They should be descriptive of the fully developed bow stroke. (Please refer to these sixteen principles already discussed on pages 25-33.)

Principle of Fullness. The principle of fullness in nature reveals that the whole of life is contained in every part. Every individual muscle used in a bowing motion begins

in a state of fullness. The muscles are tonically²⁷ set in maximum readiness to perform their specific function. Having done so they drop out of the sequence of motion and return to the tonic state, ready to perform their individual function again.

Principle of Purposefulness. Growth in nature is not random, but orderly and purposeful. Everywhere we look in nature we find an orderly, systematic, and purposeful progression towards more and more expression of creative intelligence. Developing the fullness of our own playing is the purpose of the growth towards fulfillment of the individual bow stroke. This purposefulness is seen in the successful, efficient completion of each part motion in bowing and in the entire completed motion itself. Purposefulness is evident in the desire to develop an accomplished technique which one strives for in order to gain fulfillment on one's instrument.

Principle of Spontaneity. The spontaneity of growth belongs to the nature of life. The natural tendency of life is to reach fulfillment in a spontaneous manner. The bow stroke must exhibit this quality in the fullness of its sound and in the ease with which it is initiated and carried forth to completion through all of its part-motions.

Principle of Activity. Creative intelligence acts to

²⁷A tonic state refers to muscles which have a certain amount of rigidity such as in the maintenance of a particular posture. This should be understood as a most efficient state of readiness with the possibility of remaining in such a state as long as is necessary.

express fullness everywhere. The activity of the bow stroke should produce a sound which projects the fullness of the appropriate emotion. Such activity is fulfilling and will be achieved as the nervous system is purified through contact with the pure field of creative intelligence.

Principle of Direction. The principle of direction begins in the principle of activity. Direction is born of action and serves to guide its destiny to the goal. The natural direction of the bow stroke forms the basis of the development of the fullness of technique. The importance of the proper direction for the bow cannot be overstated.

Principle of Progress. Progress is at the basis of change. It upholds evolution in steps of rest and activity. Each part-motion in a bow stroke (and each bow stroke itself) proceeds in steps of rest and activity. To be most effective the individual stroke must proceed without interference from unnecessary muscular involvement. Through the practice of the TM technique creative intelligence grows in our awareness; we find progress in our life to be spontaneous and we feel obstacles less and less. The same progress will be felt in every aspect of the bow stroke.

Principle of Transcending. The principle of transcending is natural to life. The nature of life being progressive, every step of progress transcends the previous achievement. The increasing restfulness which the mind is able to gain in the process of transcending is the basis of dynamic action

and the direct means of developing the fullness of life. The body as well as the mind gains deeper rest and is prepared for more efficient activity. The execution of the bow stroke exemplifies this principle of transcending on every level. The muscles, returning to the tonic ready position, transcend activity and remain in an efficient state of restful readiness.

Principle of Acceleration. The principle of acceleration has its seat in the principle of transcending. The nature of the mind is to move toward the transcendent, the field of happiness, intelligence, and creativity. The mind accelerates its speed as the goal is approached. Deep rest gained in the transcendent accelerates the rate of progress in developing the fullness of life; one is able to "do less and accomplish more." This means maximum efficiency in decision making when planning the larger architecture of bow strokes within a given work and maximum efficiency in the execution of individual strokes themselves on the level of the muscles.

Principle of Integration. The principle of integration is manifestly evident everywhere in creation. The field of pure creative intelligence is the basis of all integration. As this pure field becomes infused into our awareness, creative silence begins to be present in the midst of dynamic activity, and our lives become more integrated and coherent, developing the fullness of life. A successful integration of all part-motions in an individual bow stroke is essential

to the fulfillment both of its individual parts and of the entire stroke in an accomplished technique. (Proper integration of all elements of technique is essential.)

Principle of Stability. Creative intelligence is the basis of the continuity of life and of all progress. This principle is based on the pure nature of creative intelligence. This source of all activity is a non-changing, stable field of inexhaustable fullness. The stability (dependability) of the changing bow stroke has its basis in the non-changing absolute through our consciousness and the channel of mind-nervous system-muscles. The bow stroke in all its aspects will become more stable with the growing infusion of the absolute into our consciousness.

Principle of Adaptability. The principle of adaptability arises out of the progressive and intelligent nature of life. In order to continue to progress, the stability of life must have infinite adaptability structured into it. Adaptability is essential for evolution. In the evolution or progress of a bow stroke the muscles must continually be adaptable to the changing requirements of the moment. Physical adaptability is increased as stability is gained in one's awareness through repeated contact during the practice of the TM technique with the stable field of pure creative intelligence. The range of adaptability built into the human physiology and psychology ensures progressive change towards developing the fullness of life.

Principle of Joyfulness. This principle arises out of the progressive nature of life. Joy is sustained in the two-fold nature of life which is to unfold creativity and to evolve. During the TM technique each finer level of thought is experienced as more charming. As one experiences the greater ability of the mind-body to control the bow stroke the joy of the individual will increase. In developing the fullness of the stroke, just as in developing the fullness of life, one recognizes life's natural inclination to grow towards increasing charm.

Principle of Evolution. The principle of evolution arises spontaneously out of the nature of life to grow. As a result of purifying the nervous system during meditation, we unfold full mental potential and evolve to higher expressions of life. This force in nature is responsible for the unfoldment and development of all levels of life. The unfoldment and development of the full potential of the bow stroke will parallel the evolution of consciousness. As the stroke becomes freer and fuller the principle of evolution is upheld. A bow stroke which is correctly executed is evolutionary to the development of one's technique and therefore towards one's fulfillment.

Principle of Purification. The process of purification is built into the process of evolution and the principle of purification is built into the principle of evolution. As we progress, resistance to progress is spontaneously overcome.

By nature the mind and body purify themselves. This ability to self-purify resides within everything in creation. Purity then is a natural state of life. As the mind becomes purified the ability of the body to execute desired movement, such as a specific bow stroke, in an ultimately efficient manner will be increased. The uninhibited flow of the bow stroke upholds the principle of purification.

Principle of Harmony. The principle of harmony is structured in the nature of life in its perpetual progression. The expression of harmony is found in the life supporting nature that the process of evolution produces. By enlivening the innermost core of life--the source of thought within us--it is possible to enliven harmony in our physiology, psychology, sociology, and the whole of ecology. All functions of an individual in harmony with himself and nature will be harmonious. All part-motions within a bow stroke will be in harmony and proportion with each other and with the whole. It will indicate the fullness within. A bow stroke whose parts systematically fulfill their function most efficiently support the principle of harmony.

Principle of Fulfillment. The principle of fulfillment is expressed in the very nature of life to grow. The field of pure creative intelligence is, of its own nature, blissful. Contact of the mind with bliss leads one's awareness to fulfillment. Developing this fullness gives both inner and outer fulfillment. Every aspect and part-motion of the bow stroke will speak in fullness from the inner functioning of

the nervous system and muscles to the free, unencumbered stroke speaking in the purity of its sound. Such a stroke speaks in and out of fullness.

A new vocabulary is here presented--one which is relevant on all levels of concern in violin playing and is therefore ultimately useful. Implications of its usefulness will grow in one's awareness as one's consciousness moves toward unboundedness.

CHAPTER IV

POLNAUER-MARKS AND SZENDE-NEMESSURI: SCIENTIFIC ORIENTATION IN THE STUDY OF VIOLIN PLAYING AND THE SCIENCE OF CREATIVE INTELLIGENCE

In this study I feel compelled to include a brief discussion of two prominent texts dealing with the more clinically scientific studies of violin playing. My purpose is 1) to illustrate that the knowledge available through the Science of Creative Intelligence is relevant irrespective of the orientation of the material; and 2) that the basic conclusions drawn by these authors parallel those of Ivan Galamian which have already been discussed. These two texts are Senso Motor Study and its Application to Violin Playing²⁸ by Frederick Polnauer and Morton Marks, and The Physiology of Violin Playing²⁹ by Ottó Szende and Mihály Nemessuri.

It was mentioned in an earlier chapter that contemporary psychologists such as Abraham Maslow, Charles Reich, Erich Fromm and others are calling for a restructuring of contemporary

²⁸Frederick Polnauer and Morton Marks, Senso Motor Study and its Application to Violin Playing, 2nd ed. (Urbana, Illinois: American String Teachers Association, 1964).

²⁹Ottó Szende and Mihály Nemessuri, The Physiology of Violin Playing (London: Collet's Publishers, Ltd., 1971).

thinking and chronicle the changes which have and are taking place in the world today. The pace of change is ever accelerating and in all walks of life a process of re-definition of concepts and basic vocabulary seems to be perpetually in progress. How exciting it is to discover the work which is proceeding at Maharishi International University in Fairfield, Iowa, and at Maharishi International University at Weggis, Lake Lucerne, Switzerland, which unites all systems of knowledge through the Science of Creative Intelligence. Knowledge so defined becomes timeless and infinitely valuable. This may be seen as the culmination of Gestalt thinking which was born and has grown in popularity in the twentieth century. It has been most influential on violin playing.

Polnauer-Marks--Twentieth Century Gestalt

We are living in an age of Gestalt theories. Gestalt theory is expressed in the following way: "There are wholes, the behavior of which is not determined by that of their individual elements, but where the part processes themselves are determined by the intrinsic nature of the whole."³⁰ Gestalt theory seeks to determine the nature of such wholes. It is also significant to motion science (the science of movement), which is another new twentieth-century discipline existing somewhere between the fields of physiology and psychology.

Frederick Polnauer's book Sensor Motor Study and its Application to Violin Playing explores violin playing in depth

³⁰Polnauer and Marks, p. 1.

with the latest findings of motion physiology and Gestalt psychology. The book emphasizes that all of man's sensor-motor performance is closely related, including the field of musical performance. The book is significant because it represents the first attempt to offer a thorough analysis of motion involvement of the body as a whole, unlike traditional approaches which deal with partial motions of the hand, arm, or fingers.

Polnauer's studies, which focus on the bow arm, show that the problems of bowing are not restricted to the bow arm alone. Optimal bowing technique calls for an optimal coordination of the movements of the whole body. Polnauer observes similar experiences in the study of left hand technique. His conclusion is that it is more useful now to think in terms of "total body" technique instead of right and left hand technique.³¹

The Physiology of Violin Playing

Ottó Szende and Mihály Nemessuri's text is also Gestalt in orientation. The authors are concerned with the physiological changes taking place during violin playing. They wanted to answer questions of muscular activity involved in violin playing. In addition to an investigation of neuromuscular

³¹This conclusion supports the growth of interest in total body involvement in the playing process. Yehudi Menuhin's work, which was influenced by Eastern Philosophy, is a good example of this. See Yehudi Menuhin, Six Lessons with Yehudi Menuhin (New York: The Viking Press, 1971).

processes in violin performance they also studied changes in respiratory gas exchange and cardiac functions occurring in the course of violin performance. They sought a more complete picture of the interconnections of all processes taking place within the human organism during violin playing. Their intent was not to deal with methodology but to give a summary of the problems existing in the physiology and psychology of playing. We owe them a great deal for expanding our awareness of violin playing on the level of physiology.

A quote from Szende and Nemessuri's text is provided to illustrate the contrast with Galamian's presentation in terms of general orientation of material and vocabulary.

Our muscles are provided with a rich network of blood and lymph vessels. The vigorous metabolism of muscles is safeguarded by this dense network of capillaries embracing each muscle fibre. The draining effect of rhythmical muscle contraction and relaxation contributes generously to the work of recirculating venous blood: another reason why violonists [sic] should not keep their body stiff while playing. A strainless and rhythmical muscular activity will promote the circulation in the lower limbs. Rigid anchorage in the centre of gravity will too soon lead to exhaustion, whereas a reciprocating motion proves to be more expedient and causes less strain.³²

Through the science of physiology our knowledge of why and how is growing. However, in the final analysis the knowledge which is gained will have to be translated into a vocabulary which the performing musician can understand and identify with. In the above quote the authors are simply underscoring

³²Szende and Nemesurri, p. 23.

the need for a proper balance between rest and activity of muscles. Muscular action above the tonic state proceeds in alternate cycles of rest and activity. With this proper balance, the nature of each individual muscle required in a complex movement is itself fulfilled and brings fulfillment to the whole. At this point the principles of the Science of Creative Intelligence may be applied, just as they were applied to a bowing motion in the previous chapter. In this manner we move into a larger frame work of understanding.

The studies of Polnauer-Marks and Szende-Nemessuri are both attempts to find optimal techniques with respect to violin study. Both texts present conclusions which are basically in agreement with Mr. Galamian. It does not matter whether the concern is with the rôle of the whole body in violin playing, or with bowing, the stopping of the strings by the fingers, the vibrato, or the change of position. Repeatedly we find the same basic emphasis variously stated as a need for: coordination, balance--or the establishment of a dynamic balance within the body, regulation of muscular tension, stability, flexibility, adaptability of muscles for proper movement, freedom of movement, elasticity, and economy in the maintenance of the least possible tension of the muscles and the return to this state. We are back where we were at the conclusion of our discussion of Mr. Galamian's text. Everything

is taken back to central nervous activity. It is here that improvements need ultimately to be made in order to gain a mastery over our instrument and the performing situation. All "methods" of improvement approach the problem from the outside (i.e. Galamian's rhythm and coordination exercises) and in many cases this approach, if carefully undertaken, proves to be sufficient to achieve the desired results. In such instances the nervous system in the specific area of musical performance is able to be sharpened sufficiently. Others, because of their psychic make-up involving deep-seated stresses, need further help. The TM technique offers a new direction and an ultimate solution to the problems the violinist faces.

Through the practice of the TM technique problems may be worked from the inside out. It will be found that the inward stroke of meditation will aid us in the outward stroke of activity which involves the traditional time-tested approaches to the study of our instrument. Both approaches, I believe, are necessary.

CHAPTER V

CREATIVITY AND THE PRACTICE-PERFORMANCE SEQUENCE

Creativity, the ability to create new ideas or things, is highly prized in all professions. In an efficient practice situation our creativity spontaneously structures a method of working out the problems which present themselves. The goal is the performance situation where all elements are in proper proportion and where those elements flow in waves of joy. The performances of the contemporary violinist, Itzhak Perlman, exhibit this joyful flowing quality.

There are four stages of creativity which may be identified in the practice-to-performance sequence: preparation, incubation, illumination, and verification. We are familiar with the first and fourth stages for they directly involve the intellect. The other two stages, incubation and illumination, we know little about; however, in knowing what consciousness is we can know about the other two.

Preparation takes the most time. It is at this first stage that we employ and develop the skills and use the information available to us that we will need to arrive at a solution. In our case the solution is the finished high level performance. At the stage of preparation the senses bring in information. The senses don't make any order out of this

information; it is the intellect which orders. Our consciousness allows us to gain information which the senses project on it.

The second stage, the period of incubation, takes place away from the instrument. This occurs when one separates oneself from the problem, when one becomes un-involved. The alternation of practice followed by dissociation from the intense involvement of the practice situation has positive effects on one's continued growth. Incubation is what pure consciousness is (maximum consciousness), where the mind gains needed rest away from the problem. This is precisely what happens in the practice of the TM technique; the mind gains maximum rest preparing it for more efficient and dynamic activity.

At the stage of illumination the solution seems to come together on the level of "feeling." It comes as a thought; the flow of life itself pushes it up into our mind and the solution comes together on the level of our consciousness. The emotion "knows" this first, for the emotion is that part of our consciousness which is closest to pure consciousness. The ego "feels" and "watches" this happen and the solution is felt to come from "beyond me." A feeling of satisfaction, happiness, and expansion grows out of the swirling images as the solution comes together in the individual consciousness. At this point one begins to be able to achieve in a more spontaneous manner and with a greater sense of ease what previously might have been difficult or impossible. Perhaps a

method of working a particular section presents itself, or a particular fingering, or hand attitude is realized thereby eliminating a problem altogether.

Verification is the final stage in which the intellect verifies the solution. The images of the solution which have presented themselves are taken and applied to a real situation; they are put into a communicative stage. The inner desires of the performing individual are able to be realized in practice and performance situations.

Both the intellect and the emotions are involved in the creative process. This dual involvement is evident in the stage of preparation. It is the emotion, however, which is involved in the stage of illumination and the intellect in the stage of verification.

These four stages in the creative process--preparation, incubation, illumination, and verification--happen because of the structure of the mind. To gather information and develop skill is equally important with achieving pure consciousness, for it is nature--the laws of creation--which provide us with a solution. These solutions lie in the transcendental field, the absolute field of creative intelligence. When the mind gains unbounded awareness the artist will be able to sing in and out of the fullness of life.

CHAPTER VI

THE TM SIDHI PROGRAM: INCREASED SENSITIVITY OF THE EAR³³

The TM program has been described as a means of creating a silent state of awareness. Sometimes this is called a "state of least excitation of consciousness." This designation for the silent state of awareness has been used since Lawrence Domash, a physicist in the Department of Physics, Maharishi European Research University, Weggis, Switzerland, proposed a specific connection between the pure consciousness state and macroscopic quantum mechanisms of the brain in the Collected Papers.³⁴ Domash,

. . . sees the process of the TM technique as a relaxation of the nervous system to a regime of extremely low excitation, with results parallel to states of least excitation in quantum mechanics including the occurrence of long-range temporal and spatial orderliness. The pure consciousness state experienced during the TM technique is interpreted

³³See: Orme-Johnson and Farrow, Collected Papers: "Part V, The TM Sidhi Program," pp.701-725; specifically the study by Geoffrey Clements and Stephen L. Milstein titled "Auditory Thresholds in Advanced Participants in the Transcendental Meditation Program," pp. 719-722.

³⁴Ibid., see: Lawrence Domash, "The Transcendental Meditation Technique and Quantum Physics: Is Pure Consciousness a Macroscopic Quantum State in the Brain?" pp. 652-670.

in terms of quantum physics as a zero-entropy vacuum state, and a hypothesis is put forward suggesting a form of superconductivity in the brain.³⁵

The TM Sidhi procedures take this development one step further and show how silence can be activated to achieve the fulfillment of desires and intentions from the silent level of the state of least excitation of consciousness.³⁶ These TM Sidhi techniques are designed to elicit certain creative capabilities which in the past have been considered quite beyond the normal human repertoire of behavior. These abilities include knowledge of objects hidden from view, awareness of past and future, fully developed feelings of friendliness and compassion, enhancement of sensory thresholds to near the quantum mechanical level, invisibility, and levitation or "flying." By virtue of adapting specific procedures at the level of pure consciousness it is possible to make use of fundamental physical laws in such a way as to achieve the outstanding performance which is detailed in the research on the TM Sidhi Program. The purpose of these procedures is

³⁵Ibid., p. 651.

³⁶The basic element in the TM Sidhis is the experience of "Sanyama," as described by Patanjali, a late second century B.C. Indian scholar and philosopher, in his Yoga Sutras. Sanyama is a spontaneous mental process that begins to take place once pure consciousness is established to a sufficient degree of stability to co-exist with mental activity. A modern translation of Patanjali's Yoga Sutra may be found in The Wisdom of China and India, trans. and ed. by Lin Yutang (New York: Modern Library, 1942), pp. 127-130

. . . to demonstrate to the student that he indeed possesses, in the form of the simplest state of his own awareness, the means to achieve all that is necessary or desirable in life and also to strengthen the stability of pure consciousness by repeatedly subjecting it to procedures which integrate it with dynamic activity.³⁷

The TM Sidhi performances are neither new nor impossible and find their roots in the heritage of mankind. One need only refer to the scriptures of any faith to find witnessed instances of individuals who have performed such feats. They simply were attuned to and in tune with the laws of nature.

Of special interest to this correlative study is a paper included in the Collected Papers entitled "Auditory Thresholds in Advanced Participants in the Transcendental Meditation Program" by Geoffrey Clements and Stephan L. Milstein. The subjects of this study had been performing a number of Sidhi procedures including specific procedures to enhance the capabilities of all the senses. Even before the practice of the specific TM Sidhi procedure being tested, the subjects showed auditory thresholds eleven decibels more sensitive than the population mean. After the Sidhi procedure for "super-normal hearing," thresholds increased by a further three decibels. Many subjects reported the faintest levels of sound to be exquisitely clear and beautiful and said that they were able to appreciate the abstract form of the sound as it developed to the level of manifest perception.

Up until this point no comment has been offered concerning

³⁷Orme-Johnson and Farrow, p. 701.

Mr. Galamian's statement of the necessity of the critical ear in violin Playing. He emphasized the importance of the ear as the "final judge" of what is good or not and asserted that the ability for honest, objective hearing was the most essential prerequisite for efficient practice. The implications of the TM Sidhi study on auditory thresholds are far reaching for the performing musician. One may at this time only speculate about the other hearing and perceptual abilities which might be gained through this particular advanced mental technique.

CONCLUSION

Those who have become involved in the Transcendental Meditation program have had a whole new world opened to them. Visions of the spontaneous fulfillment of desires are rapidly becoming realities for those involved in the exciting work of the TM Sidhi program. For the violinist the real possibility of the fulfillment of our desires necessitates a basic restructuring of our thinking. The major intent of this study was to initiate this process. It seems appropriate then to conclude with a set of fundamentals for violinists in this new "Age of Enlightenment."

1) We possess the ability within our consciousness to realize the fulfillment of our desires, musical, technical, or otherwise. These desires will be spontaneously and efficiently achieved when the nervous system is sufficiently purified and when the mind has full access to the absolute. The "long and arduous" path to complete mastery of our instrument will be significantly shortened and made infinitely more joyful. The "suffering artist" should and will become a myth.

2) Concerning practice: a) In practice situations it will be necessary, when dealing with a specific problem, only to have the goal in mind. Once a starting point is

determined the path to the solution (fulfillment) will be spontaneously structured. b) All that will be necessary for the maximum sounding of a bow stroke will be to place the bow and begin. Our desire for it to sound as we intend it and to be accomplished most efficiently will spontaneously bring it to fulfillment. This, after all, is nature's way. c) The coordination of the mind-muscle unit will function maximally. d) We will spontaneously hear and be able to accurately correct any mistakes (intonation, rhythm, articulation, etc.). e) Practice time will be maximally efficient. We will do less and accomplish more.

3) In performance: a) Our music will speak from the most basic level of life. It will proceed from the heart and speak of the maximum values of life. It will possess the ability to enliven these qualities in the hearts of others. b) Shifting, vibrato, the use of the bow, etc., will be consistently accurate and maximally expressive. c) The emotion of the music will be powerfully and most fully projected. d) There will be no fear in performance, no cramping, trembling or uncontrollable nerves. The performer will realize himself as one with the audience and all boundaries will be dissolved. e) The performer simultaneously will perform with maximum individuality together with universal values. This list may be infinitely expanded.

The initial reaction to the above of course will be skepticism, only because we have been traditionally conditioned

to limitations. The age of man's fulfillment has been initiated because traditional boundaries are truly being dissolved. This makes it an exciting time to be alive and working.

BIBLIOGRAPHY

- Beckworth, Lynne Louise, and Boissonnault, Lyse. "Growth of Affective Learning In the Light of the Science of Creative Intelligence, Action Research in Higher Education." Master's Thesis, Maharishi International University, Fairfield, Iowa, 1976.
- Bloomfield, Harold; Cain, Michael Peter; Jaffe, Dennis T.; Kory, Robert B; et al. TM: Discovering Inner Energy and Overcoming Stress. New York: Dell Publishing Co., 1975.
- Clynes, Manfred. Sentics, the Touch of Emotions. Garden City, New York: Doubleday and Co., Inc., 1977.
- Davis, James E. "A Summary of the First International Symposium on the Science of Creative Intelligence." Paper submitted in fulfillment of a graduate education course at the University of Kansas, 1971.
- Flesch, Carl. The Art of Violin Playing: Book I. Technique In General: Applied Technique. New York: Carl Fisher, Inc., 1924.
- Forem, Jack. Transcendental Meditation. New York: E. P. Dutton & Co., 1973.
- Fromm, Erich. Escape from Freedom. New York: Farrar and Rinehart, Inc., 1941.
- Galamian, Ivan and Neumann, Frederick. Contemporary Violin Technique. New York: Galaxy Music Corporation, 1963.
- Galamian, Ivan. Principles of Violin Playing and Teaching. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1962.
- Godfrey, Dan; Jones, Paul; Stone, Tom; and Westbrook, Peter. "Notes" for the core course in music, Maharishi International University, Fairfield, Iowa, n.d.
- Havas, Katõ. Stage Fright--Its Causes and Cures: With Special Reference to Violin Playing. London: Bosworth & Co., 1973.

Maharishi International University Catalogue, 1974/75. Los Angeles: Maharishi International University Press, 1974.

Maharishi Mahesh Yogi. The Science of Being and Art of Living. Revised Edition. Livingston Manor, New York: Maharishi International University Press, 1975.

Maharishi Mahesh Yogi and the Maharishi International University Faculty. "The Science of Creative Intelligence: a Definition." Fairfield, Iowa, 1975.

Maharishi Mahesh Yogi. Science of Creative Intelligence: Knowledge and Experience. A thirty-three lesson videotaped course. Seelisburg, Switzerland: Maharishi International University, 1972.

Maslow, Abraham H. Toward a Psychology of Being. New York: Van Nostrand Reinhold Co., 1968.

Menuhin, Yehudi. Six Lessons with Yehudi Menuhin. New York: The Viking Press, 1971.

Neumann, Frederick. Violin Left Hand Technique. Urbana, Illinois: American String Teachers Association, 1969.

Orme-Johnson, David W. and Farrow, John T., eds., with a foreword by Maharishi Mahesh Yogi and an introduction by Lawrence H. Domash. Scientific Research on the Transcendental Meditation Program: Collected Papers, Volume 1. Livingston Manor, New York: Maharishi European Research University Press, 1977.

Orme-Johnson, David W. Individual Life in Accord with the Laws of Nature: A New Paradigm of Social Order. Weggis, Switzerland: Maharishi European Research University Press, 1975.

"Philosophy Course Outline for Second Year Students." Fairfield, Iowa: Maharishi International University, n.d.

Polnauer, Frederick and Marks, Morton. Senso-Motor Study and Its Application to Violin Playing. 2nd ed. Urbana, Illinois: American String Teachers Association, 1964.

"Principles of the Science of Creative Intelligence: An Elaboration." The second year of a three year secondary education curriculum. Fairfield, Iowa: Maharishi International University, n.d.

Reich, Charles A. The Greening of America. New York: Random House, Inc., 1970.

Shapiro, Jonathan Stephen. The Relationship of Selected Characteristics of Transcendental Meditation to Measures of Self-Actualization, Negative Personality Characteristics, and Anxiety. Los Angeles: University of Southern California, 1974.

Szende, Ottó and Nemessuri, Mihály. The Physiology of Violin Playing. Translated by I. Szmodis. London: Collet's Publishers, Ltd., 1971.

Thompson, Keith Erling. "Rest and Activity in Creative Process and the Science of Creative Intelligence." Undergraduate Thesis for Goddard College, Plainfield, Vermont, 1973.

Tournier, Paul. The Meaning of Persons. New York: Harper and Brothers, 1957.

Truch, Stephen. The TM Technique and the Art of Learning. Totowa, New Jersey: Littlefield, Adams, and Co., 1977.

Yutang, Lin, ed. The Wisdom of China and India. Translated by Lin Yutang. New York: Modern Library, 1942.