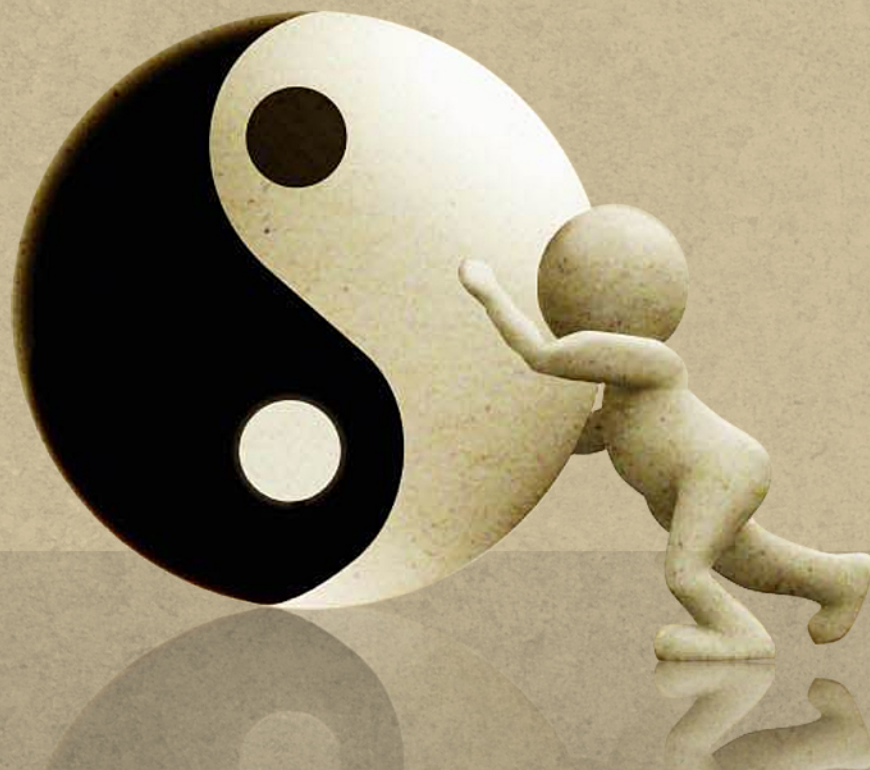


**Science-based Theory of Destiny**

# *Genetic Fate, Environmental Chances and Your Destiny*



**Sie-Ling Chiang**, PhD, Engineer, Author

**Cornelius Brady**, VP, Landscape Co., Translator

*Can the secrets of life be revealed ?*

## About the Book Cover

The book cover illustrates the theory of destiny in a nutshell. On the base of a road is a Ball of Destiny which consists of two basic components: Gene (G) and Environment (E). They interact throughout one's life time from birth (point of conception) to death much like Yin and Yang in the classic Chinese philosophy of Taoism. Behind the ball is a person, regardless of age or gender, pushing and directing one's destiny toward its goals and dreams. In the pursuit of one's happiness, one must constantly and unavoidably make numerous Choices (C) and Decisions (D) along the way. One's destiny is the result of this complex dynamic process which can be expressed as a simple mathematical formula, i.e.  $\text{Destiny} = (G \times E) \times (C \& D)$ .

See [The Genius in All of Us](#) by David Shenk (2010) for  $G \times E$

## About the Author

Sie-Ling Chiang



Sie-Ling Chiang was born and raised in Tainan, Taiwan. He graduated from Cheng Kung University with a B.S. degree in Civil Engineering in 1960. After one year of military service as a second lieutenant, and two years of working in the Taiwan Water Conservancy Bureau, he came to the USA for graduate study in the State University of Iowa majoring in Hydraulics. One year later, with a M.S. degree, he worked for the Pennsylvania Department of Forest and Water for four years before moving to the Pennsylvania State University to pursue a higher graduate degree in water resources management in 1968. Three years later, he earned a PhD in Civil Engineering with a water resource major.

Dr. Chiang then returned to the Commonwealth of Pennsylvania, Department of Environmental Resources to serve as planning chief to lead the development of the State Water Plan for four years. In 1975 he became a US citizen and was hired by the Federal Department of the Interior (USGS & BLM) to serve in various capacities as follows until 2004 when he retired from the Federal services.

- Mineral Management Advisor under AD, Bureau of Land Management (BLM), including responsibilities for advancing sustainable resource development planning and coordination of the Bureau's strategic plan
- Chief, Division of Mineral Policy and Economic Analysis, BLM
- Chief, Division Fluid Mineral Lease Operations & Reservoir Management, BLM
- Chief, Branch of Onshore Environmental Management, US Geological Survey
- Chief, Environmental and Safety Section, Geothermal Office, USGS

During these periods, Dr. Chiang also published nearly forty technical papers in water resource, mineral resource and environmental management. However, the author of this book on personal "destiny" strongly believes that this single publication will have broader, deeper and greater impact on the society than all his technical publications. The author invites readers to read his "Preface" to find out why and how a civil engineer turned into a life philosopher and published this new science-based theory of destiny titled "Genetic Fate, Environmental Chances and Your Destiny." It is new and unique!



Are you in despair? Are you lost?

Are you feeling: life is miserable? future is obscure? don't know what to do?

Are you thinking: pray to the Almighty? to see fortune-tellers?

**Wait a moment!**

Please spend some of your time to read this book and then make your decision

After you have read this book you will believe:

**After all –**

You are the best fortune-teller for yourself!

You are the best fortune-changer for your own future!

**Because –**

In this world, you best understand your own past and present.

In this world, you are the one who can control your future.

## FOREWORD

Abundant in great kindness and enthusiasm, my dear old friend Dr. Sie-Ling Chiang asked me to write a foreword for this great book authored by him. I feel extremely honored to accept this task. The simple reason is that I had been encouraging him to write a book to deepen and broaden the discussion in his article “Genetic Fate, Environmental Chances and Your Destiny” that was published in *The Taiwan Tribune* in 1999. After seven years of study and research on more than fifty relevant books, numerous articles and associated literature, Dr. Chiang finally completed an in-depth and science-based book that synthesizes the information into the best and modern practical handbook on the personal philosophy of life. I was also deeply honored and had great joy to be his first reader of the manuscripts of the book. Therefore, I am very happy to write my personal thoughts on this book.

My most overwhelming thought after reading this book is that readers will develop a healthy personal philosophy of life that will enable them to control their own destiny. So this is an excellent and important book which everyone should read and learn. The author, in his own Preface, wrote clearly about his main purposes for writing this book. These are: 1) to “minimize or eliminate the superstition and predestination beliefs in Taiwan’s society,” and 2) to help each reader “form a correct and healthy personal philosophy of life”, so that each reader of this book will be best able to “create, control and determine his or her own destiny in the journey of life.” The more I read through the whole book, the more I firmly believe that this book will enlighten the minds of its readers, so as to make them become firm believers in a positive and productive life journey, and they themselves are the captains of their individual journey in life. Therefore, I fully agree that Dr. Chiang will definitely reach his expected goals in writing this book. Hence, I congratulate Dr. Chiang in his great achievement of reaching his stated purposes of writing this book.

In this book, Dr. Chiang applies scientific concepts and approaches to clearly redefine the traditional “Fate” (Ming), “Chance(s)” (Yuen), and “Destiny” (Ming- Yuen). To “Fate” (or Ming), he defines it as influenced by factors or elements that are endowed and come with one’s own birth of life (point of conception); these are determined by the genetic factors or genes, so he calls it as “Genetic Fate”; while to “Chance(s)” (or Yuen), he defines it as influenced by factors or elements that are probabilistically random in nature, and these factors or elements are encountered after one’s birth. Therefore, all the post-birth factors or environmental elements such as individual’s behavior and other social and natural environmental factors will influence and determine the “Chance(s)”, or the probabilistic chance(s) or opportunities of one’s life. Therefore, Dr. Chiang defines this combination of all post-birth environmental factors as “Environmental Chances”. Finally, he defines one’s “Destiny” (Ming- Yuen) as the trail or path one has been going through in the journey of life.

Dr. Chiang emphasizes that each individual knows the best of his or her own endowed “Genetic Fate”. This includes an individual’s own traits and features as well as the nature of physical and health conditions and inclination of one’s interests and capabilities. Therefore, each person should be their own best and most accurate “fortune teller”, or diagnostic physician on his or her own “Genetic Fate”. However, “Environmental Chances” are influenced by factors or elements that are probabilistically random in nature and sources. Among these factors or elements there are some factors or elements that one can influence or better control, so these factors are called self “controllable Environmental Chances”, while the rest of the factors or elements that one has difficulty or not able to control or influence are called “uncontrollable Environmental Chances.” The author defines that all these factors or elements that an individual has the opportunity to choose, influence, manage and decide are called “controllable Environmental Chances.”

In order to increase the success in taking opportunities of the favorable “controllable Environmental Chances”, the authors emphasize that each individual should sharpen one’s own capability of discernment and making judgment, and prepare oneself for grasping the favorable opportunities when they come. To make oneself ready for that, one will have to continuously work hard to learn, improve, and discipline oneself so as to increase the range and options of making choices, to strengthen one’s capability of making favorable judgments, so as to increase the chances of success in whatever endeavor one intends to do. These types of efforts are called “Enhancement of Environmental Chances” (or Gai-Yuen). To me, in economic terms, the meaning of his term, “Enhancement of Environmental Chances” is to constantly and continuously increase investment in one’s “human capital” to enhance and sharpen one’s capability in intellectual power, discernment power, social and life skills needed in the society. Today, the investment in “Enhancement of Environmental Chances” is the most important factor contributing to one’s success in life in our “knowledge-based economy”. In other words, each individual’s favorable opportunities, or “Enhancement of Environmental Chances” will always depend on one’s knowledge, skills and efforts.

In sum, we can conclude that one’s capability of “fortune telling” or telling “the Genetic Fate” will rely on one’s understanding of self; and one’s capability of “Enhancement of Environmental Chances” will also rely on one’s effort to develop and strengthen one’s own capability to thrive in life. If all folks in a society understand the principles elucidated in this book, there is no reason to continuously keep the existing superstitions and predestination beliefs. Certainly some folks will save money from not having to pay for seeking advice from fortune tellers who in turn “seek fairies and beg Oracles” for help.

Therefore, I have confidence to say that this book will help its readers form a correct, healthy personal philosophy of life. It will further free the Taiwanese society, or any other societies in the world from the traditionally permeated, suffocating predestination beliefs currently in existence there. So I could boldly claim that this book will serve as the most effective and timely medicine to cure the Taiwanese society, or any other societies in the world that suffers from the traps of various types of deep-rooted superstitions and predestination beliefs.

Taiwan is among one of the most advanced democratic countries in the world today. It is also among the top world performers in the fields of education, economy, culture, arts, sciences, environmental protection, and athletic activities. The unbelievable fact in life is that after having established their “free and democratic” system, the majority of Taiwanese, individually or the society as a whole, seem still unable to fully grasp the great favorable opportunities to change their destiny, or to grasp their “Enhancement of Environmental Chances”. I believe that the excellent enunciations in this book by Dr. Chiang, once being read, learned and applied, will bring great confidence among the entire Taiwanese society (or any other societies which apply the concepts and theories of this book), and will further enhance their efforts toward “Enhancement of Environmental Chances” which simply means to increase capability of grasping the favorable opportunities so as to change their eventual Destiny. Only by going through this transformation process, the Taiwanese society (or any other traditional societies of the world) can actively move forward to become a normal, healthy and new society and will build a new and modern country in our ever changing and challenging world.

Liu-Hsiung Chuang, Ph.D.

## PREFACE (Author)

January 2004, I retired from the Bureau of Land Management, US Department of the Interior at the age of 66. Ever since, whenever I met a relative, friend or old colleague, the first question always was “what have you been doing since your retirement.” “I am writing a book!” I replied with excitement and enthusiasm. They were all eager to know the kind of book I was writing. Pausing a moment and with a smile, I said “It is not an engineering book as you may be thinking, rather, this is a book about personal destiny; a science-based explanation of Genetic **Fate** (Ming 命), Environmental **Chances** (Yuen 運) and Your **Destiny** (Ming- Yuen 命運)”. I emphasized my scientific approach to the subject of **Destiny**. In the modern scientific concept, I utilize the existence and dynamic interaction of the two basic components, **Nature** and **Nurture** in our life to explain the formation of one’s **Destiny**. This is not a traditional unscientific fortune-telling book.

During the past few decades, Taiwan and many other countries have strived to make great progress in education. However, I saw no reduction in the proportion of people believing in predestination and superstitions. As a result, it has not only become a worsening problem in the psychological health of individuals but also made people more selfish and hence hindered a progress toward the modern civilized society. We must teach and preach to people as to how one can formulate and establish a healthy personal philosophy of life starting from childhood and up. Following through with a clear understanding of my scientific theory of destiny as presented in this book, you will become a competent driver in steering your life with confidence toward your goals and dreams. I do believe that my contribution to society from this book will far exceed that from my professional publications in engineering.

Since I was a young man raised in southern Taiwan, I have had multiphasic interest in acquiring knowledge. As I was growing up, especially after college, I loved to read not only those books of heaven (astronomy) and earth (geography, geology), but also those interests in-between heaven and earth such as philosophy of life, medicine, biology, laws and sociology. As a civil engineering graduate, I was puzzled by the nature of the universe. I had a desire to learn about time, space and the origin of the universe.

The first such book I bought was The Theory of the Universe (Chinese 宇宙論), written by Professor Chen Lee of the National Taiwan University. That book gave me a starting point to understand the highly mysterious, complicated universe. Since then I was destined to understand the relationship between the theory of the universe and the philosophy of life. Eventually, such consideration triggered my interest and determination to connect Life to Destiny. Therefore, let me say that I have spent a few decades of my life observing and studying Life and Destiny before I published this book.

Following the completion of my graduate degrees and subsequent working for eleven years in the USA, I was invited back to Taiwan to participate in the national Modern Engineering and Technology Seminar of 1974. This was my first visit to my homeland with a family of four, since I left Taiwan for graduate study in the US in 1963. There were many more trips made after 1974. It was during my second trip back to attend a special seminar, when I had a chance to chat with my eldest brother, Sie-Ho Chiang, about personal Destiny. He had been studying fortunetelling methodology for many years. Knowing that I was interested in the scientific theory of fortunes/destiny, he told me seriously the conclusion derived from his observation on the fortunes of an automobile. He used a Ford car as an example and told me, “As a brand-new car rolls out of the factory, its style, color, standard equipment and



functionality have been fixed/given, and that is Ming ( 命 or 'genetic' Fate) of this automobile.

Thereafter all its encounters are due to Yuen ( 運 or environmental Chances). Thus, the so-call Ming ( 命) is its birth factor (as the car is being manufactured); while post-birth factor (as the car is being used and maintained) is called Yuen ( 運).” Intellectually, he concluded with full confidence that the destiny or Ming-Yuen ( 命運) of a car is the result of the interactions between the birth factor and post-birth factor throughout its life span.

My brother’s clear and simple illustration in a rather scientific manner culminated the direction and methodology I used in dealing with this centuries-old issue and dilemma in the world, especially in the Asian cultures. What I need to do, obviously, was to substitute the non-living thing (car) with a living, intelligent human being. I would constantly ask myself these questions: What is a person’s genetic Fate (Ming)? What are the person’s environmental Chances (Yuen) and, how does a person’s Destiny (Ming-Yuen) come about?

Following many years of pondering, investigation and study, I have finally reached this conclusion which is the basic framework of this book!

Genetic Fate (Ming 命) is what everybody is born with and is referred to as the Initial Factor of destiny; Environmental Chances (Yuen 運) is what everybody encounters in their life and is referred to as the Subsequent Factor of destiny. One’s destiny (Ming- Yuen 命運) is manifested through the interactions of these two factors and effectuated by the judgment, choices and decisions one makes along the course of one’s life!

Based on this concept, I published in 1999 a Chinese article which presented my concept in Genetic Fate, Environmental Chances and One’s Destiny. The paper, as it was the first science-based book on the subject, was a surprise to and loved by the Taiwanese-Chinese communities. There were plenty of good words and support for this fresh new concept and explanation over the age-old traditional concept of fortunes/destiny which may be termed “pre-determinism / pre-destination”.

At the time of the publication of the article, Dr. Liu Hsiung Chuang was a senior economist in the US Department of Agriculture. He has been my dear friend and alumnae throughout junior and senior high schools. On the first reading of the article, Dr. Chuang quickly recognized its significance and positive influence this new concept could have on Taiwanese society. He was the first person encouraging and advising me to write a book as soon as possible. He firmly believed that the book will greatly benefit Taiwan’s individuals and society as a whole.

During the following five years while I was working as a special assistant in the Bureau of Land Management, in the US Department of the Interior, I spent my leisure time collecting articles and buying books pertinent to my subjects of pursuit. Over this period, a total of more than 50 references covering astronomy, philosophy, physics, biology, bio-chemical technology, medicine, studies of the human brain, psychology, geology, archeology, religion, textbooks on Buddhism, Christianity, and even some fortunetelling books, were collected. It is understandable that a tremendous amount of time is required just to read over these references, not to mention the time it takes to understand them well, to think through, and to develop the interrelationship among various pieces of knowledge learned from these articles and books. And, finally I systematically and logically organized these pieces of knowledge together with my own thoughts to establish the foundation and the framework of this book. The actual

writing did not start until the beginning of year 2005 and was published in 2008. In a two-year time period that it took to complete the original Chinese language book, I used about one-half of the time pondering how to write, organize and to express this science-based theory of destiny. This translated English version was started in 2009 in cooperation with Cornelius Brady and was completed in 2012.

The book is divided into two parts; three quarters in text, and one quarter in appendices. The text portion was written at a ninth grade reading level. However, because Chapter 4 on Environmental Chances requires knowledge of some basic probability theory, this book is suitable for senior high school students and graduates. Materials that are of a technical or an intellectual nature such as genes, consciousness, science or religion, that require special topical discussion are placed under Appendices 1 – 4. For those who would like to dive deeper into these subjects, please refer to these appendices for more details. Appendix 5, adopted from AARP magazine, may be used to scientifically predict your longevity, if you are interested in knowing it.

I believe that real evaluation of this book should come from the readers. Therefore, I sincerely invite readers to comment and discuss. I have also invited three gentlemen with special relationships to me to provide prefaces for the book. First, Dr. Liu Hsiung Chuang, an economist and the “midwife” of this book; second, Dr. Brian Lee, my nephew and an electrical engineer will provide future updates and revisions to Chinese versions to the book as new scientific discovery calls for necessary revision in the future; the third is Mr. Cornelius Brady, a horticulturist who provided translation of the original text from Chinese into English and will provide any future updates and revisions for this English version of the book.

Sie-Ling Chiang, Author

## PREFACE (Translator)

My name is Cornelius Brady and I have served as the translator for this book which was originally written and published in Mandarin Chinese by the author who was born and raised in Taiwan. I grew up in the Pittsburgh area and later attended The Pennsylvania State University where I graduated with a BS in Horticulture. I knew early on in life that I had a love for science and the outdoors and that the combination of these interests would be part of my future.

Throughout high school I discovered a love for writing and my studies at college reinforced my aptitude for technical writing related to a variety of topics such as agronomy, soil science, entomology, horticulture, and plant propagation. After graduation I was fortunate to be employed by a company that embraced many of the practices of Dr. W. Edward Deming, noted statistician, author, lecturer, professor and consultant. Dr. Deming was best known for his significant contributions to Japan's innovative and high quality products and economic power. These practices included adopting the process of continuous improvement and increasing quality and customer satisfaction while simultaneously decreasing costs over time. Deming advocated a System of Profound Knowledge that included the Appreciation of a System, Knowledge of Variation (statistical), Theory of Knowledge, and Knowledge of Psychology.

This initial exposure to process improvement has led me to a lifelong quest for knowledge and self improvement that ultimately allowed me to cross “paths” with the author, Sie-Ling Chiang. While regularly visiting a local recreation center for my midday swim session, I first observed Sie-Ling and his wife playing ping pong in the all purpose area of the recreation center. I took the opportunity to introduce myself later in the locker room and professed that I too enjoyed ping pong and Sie-Ling quickly invited me to join him the following Wednesday to play. After a couple of weeks, Sie-Ling introduced his book to me and the subject matter so intrigued me that our ping pong sessions became frequently interrupted by deep philosophical discussions related to the book. It was soon apparent that our interests were quite similar and other coincidences such as my love of writing and both claim Penn State University as our alma mater. Sie-Ling expressed to me that he was looking for a partner to assist in translating his book into English and asked if I would be interested in collaborating on this project.

My initial reaction (and of most people that I have related this story) is that I do not speak Chinese! Sie-Ling assured me that speaking Chinese was not a prerequisite for translating the book and that he would provide the basic translation framework and that I would provide the “cultural” translation that would be more appropriate for western readers. And so began what I affectionately have referred to as “Wednesdays with Sie-Ling” as we scheduled ping pong every Wednesday morning and our “Book Club” in the afternoon. Our ping pong matches became increasingly more competitive and lively and our afternoon book translation sessions provided a perfect balance of the morning physical activity and the afternoon’s profoundly intellectual stimulus.

Translating the book was much more difficult than I had anticipated. I soon discovered that although estimates vary, the Chinese language contains over 50,000 characters and no two characters are ever contextually identical. The Chinese language is so rich in its depth and meaning that it was often problematical to find a descriptive equivalent in the English language. Each three or four hour afternoon session included the author's rough literal translation of each successive paragraph followed by a series of question and answer dialogue to determine the full meaning and intent of his original Chinese text. Each session was recorded and handwritten notes were added to the text to be included prior to final editing. In addition, many parts of the book were updated to include applicable current events and recent related scientific breakthroughs.

This book has been extremely rewarding to be a part of for many reasons. My friendship with the author has been both intellectually stimulating and our high-spirited ping pong matches have provided many hours of enjoyment. The basic premise of the book is very important to me as it has been to the author. A quote by William Jennings Bryan, (*US lawyer, orator, & politician 1860 - 1925*) states that "Destiny is no matter of chance. It is a matter of choice. It is not a thing to be waited for; it is a thing to be achieved". This book illustrates this philosophy that although our destiny is certainly tied to our own genetic makeup and affected by our own environment, the choices and decisions that we make and the efforts that we put forth to enhance our opportunities plays a crucial role in our journey through life.

One of the intriguing aspects of this book is that the author has successfully melded all of the different aspects of the "Nature versus Nurture" debate that so many other authors have written about. He has created an all encompassing science based theory of destiny that systematically defines our innate qualities ("nature") and our personal experiences ("nurture") and redefines these terms as "Nature AND Nurture" with emphasis on the constant interaction between these two factors. Readers can experience the wealth of knowledge in this book and use the book as a guide for creating and enhancing their personal destiny as they journey through life. The key learning point for readers that may believe in predeterminism/predestination is that we can create and enhance our destiny by the "enhancement of environmental chances" and by making proper choices and decisions throughout our life.

Cornelius Brady

*This book is dedicated to my three lovely grandchildren and their devoted and loving parents.*

*Ellis Serina Chiang, son of Andrew Chiang & Elaine Serina*

*Jenna Mei Anderson & Justin Lin Anderson, respectively daughter and son of Thad LeRoy Anderson & Annette Chiang Anderson*

*I would like to acknowledge the efforts of my daughter Annette Chiang Anderson for the final editing of this book. Her dedicated and diligent assistance is greatly appreciated.*



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## Chapter I Introduction

The publication of this book is twofold: first, new scientific definitions for Genetic Fate, Environmental Chances and Your Destiny. Second, I hope readers will establish a healthy personal belief system in the journey to pursue through life, to steer and create his/her own destiny to the extent that he/she can.

### The New Definition of Destiny

Destiny - where did it start? Where did it come from? I do not intend to answer these questions on the origins of destiny. Destiny is a term that is well used by everyone. My own curiosity leads me to look at two ancient Chinese dictionaries. The more I look at the definitions, the more perplexed I am. Please take a look at the following definitions.

Ming (命): God given fate; God determined gains and losses; luck and fortune by God; all of these things, happiness and unhappiness, are out of human control.

Yuen (運): An invisible force “chi” in the life process or flow of energy that sustains humans. By definition, this is also out of human control.

Ming-Yuen (命運): Predestination, meaning destiny, which is out of human control or predetermined.

According to the Chinese definition, Ming is synonymous with Ming-Yuen and Yuen is also synonymous with Ming-Yuen and therefore all three terms are synonymous with one another and all share the implication that they are predetermined and therefore out of human control.

The Chinese language contains thousands of characters that independently have their own meaning however often two characters are combined to form a new term that describes a more complete and enhanced connotation of the word and brings fuller meaning to its definition.

Words such as beauty (美麗), appropriate (適當), tranquil (安靜), recognize (認識), understand (明白), mistake (錯誤), justice (公正) are two word terms in Chinese that represent a much deeper meaning than the individual Chinese characters can represent alone. So when Ming (命) and Yuen (運) are combined to form Ming-Yuen (命運) the meaning is not synonymous with the individual definitions of the words and creates a much more encompassing meaning.

Many people believe that Yuen (運) can be changed, which is true, therefore Ming-Yuen (命運) can also be changed or enhanced; consequently Ming-Yuen (命運 – destiny) is not totally out of human control.

In 2006 while I was in Taiwan, I looked in a modern dictionary edited by Ho Chou, editor-in-chief. I realized after comparing the modern definition of these three terms above with the ancient dictionary there is no difference. However the new dictionary definition of destiny says that destiny is a trend of changes (things or persons). Surprisingly, an example given as a use of the word is, “my destiny is in my own hands and under my control.” The dictionary example is contrary to the traditional definition. Attention readers, the dictionary does not eliminate this doubt in personal belief. No wonder readers are confused as to the meaning of these terms.

The time has come to provide new definitions for these terms. As the author of this book, I will give separate definitions for the meanings of Ming and Yuen based on a scientific point of view. And following this, I will define the combination of this word Ming-Yuen (which means destiny) a whole new meaning. Furthermore, I will use many examples to explain the correct way to treat this word “destiny.” The hope is that this new definition, after a close review by the Taiwanese Minister of Education, will be used to add these definitions to the modern dictionary.

## **Philosophically Speaking**

At the beginning of this chapter, I have stated that the second purpose to publish this book is to hope readers will establish a “healthy personal belief system” in the journey to pursue through life, to steer and create their own destiny to the extent that you can. Now I would like to explore with readers the concept of healthy personal belief system. This is a serious and profound matter and we must systematically approach this subject. It is necessary to start talking about philosophy from which we then discuss the value of human life and finally talk about the healthy personal belief system.

So what is philosophy? Professor Pei-Jung Fu, in his book “My View of Philosophy” (1990), gave his definition. He said, “Philosophy is based on people’s rationalization to explore or study the fundamental truths of the universe and the truths of human life.” After we have learned these basic truths we can apply these truths to real life and to evaluate the “cultural ecology.” Philosophy is usually further divided into natural philosophy and philosophy of life.

In the 1960’s, Professor Tzen Lee, in his book called “The Theory of the Universe,” discussed the universe and science. He said that the theory of the universe is a study of the physical world of philosophy also known as natural philosophy which is now referred to as physics. Science studies the causes of the status and phenomenon of the individual subjects; applied observations and experiments repeatedly to prove their truth and reliability. The study of philosophy is a holistic view of the universe and the purpose or goal is to determine the “cause of the causes” of the scientific findings. In fact, the greatest discoveries of modern science such as the Big Bang Theory, Quantum Physics, DNA, and the Theory of Relativity, etc., have now been considered to have found the so called “cause of the causes” and that can replace the aforementioned “natural philosophy”.

Professor Pei-Jung Fu talked about the relationship of human life and the universe. This relationship is best studied and understood from various disciplines of science ranging from astronomy, physics to biology, physiology, psychology and sociology, etc. which are all science related. What is needed in modern philosophy is “integrated knowledge” of these fields of science and related studies in order to provide insights into and endorsement of a healthy personal believe system; that philosophy of life should be founded on philosophy of nature.

French philosopher Jean-François Revel, in his book “The Monk and the Philosopher,” pointed out that “from the sixth century BC to the sixteenth century AD, the Western Philosophy consisted of two branches of philosophy and of these two branches one concentrated on the way of living and the other is the knowledge of nature. From the middle of the seventeenth century philosophy lost interest on the first branch (way of living) and abandoned it and left that part to the treatment by religions. The second branch (knowledge of nature) was replaced by science. The current realm of philosophy (the remaining higher level disciplines above both branches) is confined to areas beyond the study of natural science and is called metaphysics (concerned with explaining the fundamental nature of being and the world that encompasses it). This area of study is still full of uncertainties.” This is the status and scope of the modern philosophy.

Dr. Shih Hu (1891-1962), a world renowned modern philosopher in China, believed that the task of philosophy is to solve problems. He was a very strong advocate of science in solving problems of life. Dr. Hu firmly believed that both the value of life and the personal philosophy can be approached scientifically. (see Appendix 4)

In summary, we can understand that modern philosophy is more focused on the philosophy of life (i.e. personal belief system), and the study of proper attitudes towards handling people and situations. Professor Fu said that the so-called “integrated knowledge” from a practical point of view is to create a personal value system. All people living in the world should carry out meaningful personal value system through their own choice. When this is done, the true value of philosophy is revealed.

## Value of Life

We are ready to talk about the value of life. The value of life can be addressed from two perspectives: the meaning of life and the purpose of living. Although science may not directly answer the questions of the value of life (Appendix 4), integrated knowledge from the various discoveries in modern biology, geology, archaeology, physiology, psychology, sociology, medicine, zoology and other various sciences, will provide the theories and foundations for the meaning of life and the purpose of living. (see Appendix 1 and 2).

Let us retreat from a wide range of the universe to the earth under our feet and take a look at the various aspects of humanity and their busy comings and goings in the society and ask: what is everyone pursuing? What are they busy doing? In other words we may simply ask these two deeper questions: what is the meaning of life and what is the purpose of living?

In accordance with the principles of the theory of evolution, every kind of animal on earth, possesses at their birth self-survival and protection instincts. (Ridley, 1999; Schroeder 1997; Lipton, 2005). At the same time the individual has a born tendency to contribute to the survival and welfare of their species. (Ridley, 1999; Zukav, 1990; Lama, 2005; Lipton, 2005). I call the former self instinct and the latter greater-than-self consciousness. Within these concepts lies the answer to the question of the value of life.

### (A) Self Instinct

Self instinct is the driving force for meeting the basic physical needs and the security needs of humans. In his book entitled “Brain Revolution” (1996), Shigeo Haruyama, MD, quoted Dr. Maslow’s five basic needs of human instinct and renamed them as the five F’s: Fucking (sexual desire), Feeding (desire for food), Flocking (togetherness of species), Fighting (self-defense), Fleeing (escape). Dr. Haruyama said that instincts are generally considered to be the original impulse and are unable to be controlled with our free will. These basic instincts are generally



derived from the “reptilian brain,” the original most ancient part of the brain located under the limbic system and neocortex of the human brain. If these basic needs are denied, then the individual and the species cannot survive.

The renowned psychologist Abraham Maslow established the five levels of basic human needs referred to as the hierarchy of needs as shown in Figure 1. From the bottom to the top, this five levels of hierarchy of needs consists of (1) physiological needs (2) safety needs (3) love and belonging (4) esteem (5) self-actualization. Generally speaking, the lower hierarchy of needs have to be satisfied to some extent before one would pursue to meet the higher levels of needs in the hierarchy.

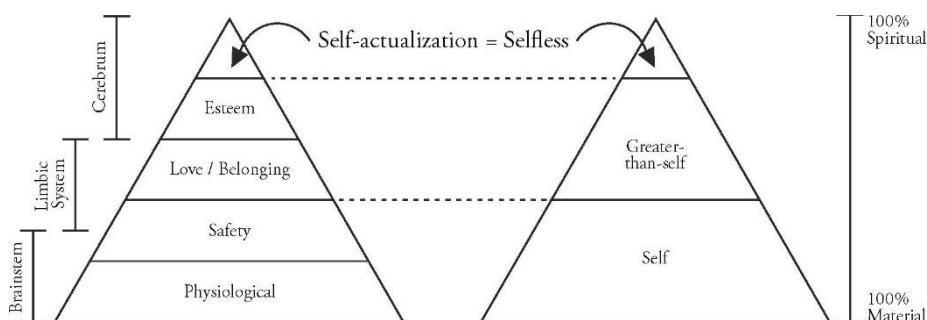


Figure 1

Figure 2

The first and second level of the hierarchy of needs in Figure 1 is equivalent to the instinct ability of the “self” level in Figure 2. The third and fourth levels of the hierarchy of needs is equivalent to the “greater-than-self” consciousness level in Figure 2. The highest (fifth) level of the hierarchy of needs, self-actualization can be considered equivalent to the “selfless” level in Figure 2. The self, greater-than-self and selfless levels are displayed side by side with the hierarchy of needs to show their correlation.

Dr. Haruyama emphasized that when any of Maslow’s hierarchy of needs are satisfied, it will stimulate the nervous system resulting in the secretion of endorphins which promotes happy feelings and good health. The higher the level of the need is on the hierarchy, the richer will be the satisfaction when the need is fulfilled. Furthermore, the lower the hierarchy of the need is when satisfied, the intensity of the happiness is stronger; however, it is short lived. This is sometimes referred to as “pleasure.” The higher the hierarchy of need is when satisfied, the intensity of the happiness is not as strong; however, it lasts a long time. The highest (fifth) level of the hierarchy of needs, (self-actualization) when satisfied, will provide the highest level of

happiness; however, very few people will reach this level. Perhaps this is the ultimate goal of the pursuit for mankind.

Further clarification on the difference between happiness and pleasure is now in order. According to the book “Destructive Emotions, A Scientific Dialogue with the Dalai Lama” (narrated by Daniel Goleman), happiness is understood to be a deep sense of peace and a host of positive qualities such as altruism. Pleasure depends upon the place, the circumstances and the object of its enjoyment. Pleasure exhausts itself in the enjoying. By contrast, a deep sense of fulfillment does not depend upon time, location or objects. It is different from pleasure in almost every way.

#### (B) Greater-than-self Consciousness

For the maintenance of the species or groups welfare and to sustain its survival, primitive social animals such as bees and ants, carry out their genetically determined roles within the species to divide the work load. For example, bee species include queen bees, drone bees, soldier bees and worker bees. The queen bee and drone bees have a mission to reproduce and create future generations; the soldier bees are responsible for the security of the colony and will carry out the mission to defend against enemies even upon death; the worker bees carry out the mission to create, repair and maintain the nest and to find and store food for the colony and the future generations.

Social apes are very different in contrast to bees. Living in groups, individuals rely on the group to survive therefore they all have the need for “belonging” to the group. Individuals within the group will establish hierarchy with the highest ranking male ape as the group leader. When the interests and survival are threatened, then the male leader will lead the male apes to defend the territory and to protect the female and younger apes from injury by enemies. This behavior is very likely from the greater-than-self consciousness of the apes.

Human society is much more similar to apes, however, it is more complex and much more sophisticated. Individuals, couples, families, extended family, communities, and countries represent many different levels of hierarchy in human society. Individual’s group consciousness also expands progressively upward with each greater social group. In other words, usually a person acts to defend one’s family welfare or survival more strongly than one’s community or country. This greater-than-self consciousness, after all, is common human nature. By the same reasoning, when a country’s welfare is threatened by a foreign invader, the leader of the country can easily rally and raise this greater-than-self consciousness for the nation.

Love may be considered one of the basic elements of greater-than-self consciousness which is a very important emotional sentiment. Love originates from the motherly love of mammals which is a natural mechanism for survival of the new born. In the book, “A General Theory of Love,” the authors (Lewis, et al, 2000) compare the evolution of fish, birds, dogs and apes with the evolution of the human brain. Starting with the reflex-response-only reptilian brain

(no emotion) associated with lower level animals and then through evolution process, new layers were added on top of that brain to form the brain of the higher level animals. The authors pointed out that between the reptilian brain and the neocortex layers in the human brain lies the limbic system which is the center of emotion. Buddhism’s “compassion” and Christianity’s “love” are the high level and respectable emotion which is what Zukav (1990) called the emotion above and beyond the emotion of the five main human senses. Zukav considered this to be the most important strength for survival of human society. This corresponds with the third and fourth levels of the hierarchy of needs. In a group or social environment, people must rely on the action and behavior of these groups who strive to satisfy the needs for love and belonging as well as being respected to maintain peace, justice and mutual cooperation to advance the welfare and happiness of the society.

Readers, please note that the “self” level (see Figure 2) relies on self instinct as stated in Section (A); while the “greater-than-self” and “selfless” levels rely on the greater-than-self consciousness as stated in Section (B). Why is it? After all, there is a difference between the human brain and the brains of cats and dogs and the brains of crocodiles. The human brain contains a reptilian brain at the base which is surrounded by the limbic system which is enclosed by the neocortex. Although the cortex is uniquely associated with all mammals, the human neocortex is the most highly developed of all mammals. The neocortex is the center of human consciousness as it provides the highest level of thinking, reasoning, judgment and communication. This ability allows human beings to raise the needs for love and belonging to being respected and ultimately to the level of self-actualization. This is not what the reptilian brain and the limbic system can accomplish. To conclude, the greater-than-self level cannot be accomplished through the self-instinct of the material world, rather it must rely on the consciousness of the spiritual world.

The fifth level is referred to as self-actualization, the highest level of consciousness that can be achieved. The former President of Taiwan, Dr. Teng-hui Lee, who is a Christian, received an honorary doctorate of Theology in 2005. He said that he often asked himself, “Who am I?” For more than three decades after pondering this question, he finally found the answer: “I am the I without me”. This is the heart of Dr. Lee’s “selfless” consciousness state. Another person to achieve the “selfless” state is the current Buddhist leader His Holiness Dalai Lama. In his reply to Dr. Cutler during an interview when asked “are you happy?” without hesitation, he replied, “I am very happy!” Apparently the Dalai Lama has reached the “selfless” consciousness state of sustainable happiness. (Lama and Cutler, 1998).

### (C) Conclusion

The “purpose of living” is founded on the satisfaction of the basic materialistic human needs, then striving toward the “greater-than-self” awareness levels, and ultimately striving for the highest level of selfless. The “meaning of life” is to sustain the survival and prosperity of the community/species that is to work toward the satisfaction of the “greater-than-self” and “selfless” realms. Together, the purpose of living and the meaning of life constitute the value of life.

What are people really pursuing in life? What is the ultimate purpose of living? All in all, everyone wants to satisfy the “self” and “greater-than-self” basic needs and even attain the highest realms of “selfless” to be rewarded with happiness. The pursuit of happiness is the ultimate purpose of life, and it is also a basic human right as described in the United States Constitution.

## Healthy Personal Belief System

Finally, we find a foundation and structure of the “healthy personal belief system.” Any personal philosophy that is founded in “natural philosophy” and “philosophy of life” is a positive and healthy personal belief system.

### (A) Natural Philosophy

According to research and reasoning in modern physics, astronomy, mathematics, biology, geology and archeology, the author has summarized the basic theory and conclusions relating to the nature of the universe that is relevant to human living.

- The beginning of the Universe (Big Bang Theory), the formation of the solar system and the earth are occurrences by chance and probability.
- The life of all living things are limited, change is the only constant in the universe.
- The changes of the universe, including the evolution of all living things on Earth follow the Buddhist philosophy of the rule of circulation: birth, growing, decay and vanish.
- The mass and energy of the universe is immortal (never disappears), however the mass and energy are interchangeable (Theory of Relativity).

- The laws of cause and effect (causal relationship) are generally applicable; even the rare miracle also has its causes.
- I Ching stated that the philosophy of Yin and Yang which are opposite to each other yet also complementary to each other, are moving in a mutually dynamic balance to form a perfect union. Examples: within the nucleus of an atom, the proton has a positive electrical charge which is equal and opposite of the negative charge; Newton's third law of motion states that for every action, there is an equal and opposite reaction such as when a ball on a string rotates around in a circle in balance, the centrifugal force is equal and opposite of the centripetal force; men and women in society – they are opposite and yet complementary and the sustainability of human society depends on the dynamic balance and combination of the two genders.

In the journey of life, if we remember these “Golden Rules” and accept them as common truths and act accordingly, we will feel the inner peace and serenity in our minds.

#### (B) Philosophy of Life

The philosophy of life, also known in this book as one's “personal belief system,” by definition is our attitude towards the way we deal with human relationships and the way we handle things. (see Chapter II for more details). In accordance with the previous section on the “value of life,” we can list the following important conclusions.

- The “pursuit of happiness” is the goal in life for everybody
- The “purpose of living” is to meet the basic material needs for “self” as a foundation, and then to progress towards meeting the needs of “greater-than-self” and even towards meeting the needs of “selfless” consciousness as the ultimate goal.
- The “meaning of life” is to sustain the population and prosperity of the group/species which belong to “greater-than-self” and “selfless” consciousness levels while still meeting the needs of the “self” level as the foundation.
- The “purpose of living” and the “meaning of life” are like two sides of the same coin as both are going on simultaneously. The “purpose of living” can be compared to an individual relay race passing on the baton at the end of life to the next generation. The “meaning of life” can be compared to an endless marathon race with sustainability and prosperity for the species.

## Chapter II Personal Belief System and Theory of Destiny

Value systems are the foundation for the establishment of a “personal belief system.” Personal belief system is like a doctrine which is a thought, a belief and a force. When you have a certain personal belief system it will guide people toward a certain path. The path you have walked and that you will walk is your destiny. Canadian entrepreneurial expert Evan Carmichael states that “Each of us lives out of a personal philosophy (i.e. personal belief system). This personal philosophy shapes our behaviour and emotions, guides our choices and decisions, dictates our motivations.”

In this chapter, I will discuss the personal belief system and the theory of destiny with the hope that the readers will recognize and understand the latest available categorization of the personal belief systems and theories of destiny. I will also attempt to introduce a so-called “healthy personal belief system” and to recognize this book as the “science-based theory of destiny.” Of course, if the readers agree, then the theory is to be called Sie-Ling Chiang’s theory of destiny.

### Personal Belief System (人生觀)

In the Chinese dictionary of phrases, we can find the “personal belief system” definition. The simplest definition is the fundamental view of life and the more sophisticated definition is your personal opinion about life and your attitude toward living. A more detailed definition is described in a book entitled “The Introduction of Buddhism to the Educated” by Master Ling Po Yu. In the book, he defines the personal belief system as a viewpoint and understanding toward the value and meaning of life as well as your behavior in society and how you handle your life with people and things. Although the definitions are slightly different in wording, the basic concepts are consistent.

In the modern “living” Chinese dictionary, another definition of “personal belief system” was found which describes it as referred to above except it emphasizes a more systematic knowledge basis. This systematic knowledge is the basis to address a healthy personal belief system by approaching it in a more methodical and principled way.

I remember an educational movie titled “You Are What You Were, When You Were Young.” In the movie, psychologists claim that the personal value systems are formed from birth to



adolescence and these personal value systems are strongly influenced by parents, families and schools. Although this personal value system forms the primary foundation for establishing an initial personal belief system, our belief system is often modified throughout one's lifetime based on the experiences throughout one's lifetime. Your personal value system continues to filter or screen and modify your personal belief system as you gain new knowledge and experience through your lifetime.

From early childhood to adolescence, all people are still learning and absorbing knowledge, however, not quite knowing what their personal belief system is or should be. However, experience tells us that people will start to establish their personal belief system as they grow older. Of course, the timeline differs by individual in establishing their personal belief system. As we age, our outlook towards life tends to become clearer and more affirmative. Therefore, older people's views on life may become more insistent based on the perception of wisdom gained from years of experience, and they tend to speak a bit more philosophically.

A personal belief system will not only differ by individuals, but also will change with encounters in the environment. Ask a person, "What is your personal belief system?" and the answer will not be the same. However, it can be summarized in a range of answers including "I do not know," to "I never thought about it," to the very philosophical expression of opinion. In the next sections, I will present the different categories of personal belief systems. Examples include those that have religious influences, those who are artistically inclined people, and there are those that have scientific education. Each group of people may have a different outlook on life because of their background. Youth, middle-aged, and older individuals will have a different personal belief system. Also, men's and women's personal belief system will have some fundamental differences.

Even for the same individual during one's life journey, one may encounter unexpected good luck and make a fortune or encounter bad luck and suffer disasters beyond their control. This may create change in his/her personal belief system. For this reason, based on these experiences, one may change one's goals and thus change one's destiny.

Our life is constantly changing but the change needs to have "order" so we will not feel lost or in disorder. Your personal belief system is not only the guidance of your life, but also will psychologically comfort yourself to provide security, and allow you to face all the adversity and misfortune, so if you fall you can get up to continue to reach your goals.

### ***Dogmatic Personal Belief System***

Although many adults cannot comprehensively say what their personal belief system is, they are able to mention their specific beliefs on a variety of subjects that help to guide their lives. Most people have a guiding principle (norms) in dealing with human relationships and how they handle things. Whether or not people can strictly follow these principles is a different matter. This depends upon their willpower, determination and perseverance.

These guiding principles in dealing with human relationships and how we handle things are mostly learned behaviors. Leo Buscaglia in his book (1984) “Love” teaches the real meaning of love as well as the process of learning to love during a lifetime. Learning to love starts with the love from a mother and her ‘motherly’ teaching, continuing through the love from family and relatives, and then through the school years. We are also shaped by our social connections and the environment as well as through self-learning and self-reflection. In addition, a rare meeting with a “wise” individual that imparts some profound knowledge or experience that may influence your life greatly.

There are many doctrines and guidelines for living, and there are many such books written on the subject. I will now quote a number of proverbs, idioms, old sayings, even some words of wisdom, and categorize them into philosophy, self-improvement and human behavior, and doing things right. I am presenting this list of examples in each category to you, the readers, for your edification. Please feel free to use your pen to check off these words of wisdom to confirm if these contribute to your personal belief system and to reflect if these beliefs are healthy.

#### **A. Philosophical**

- You reap what you sow
- No pain, no gain
- There is no free lunch
- A journey of 1000 miles begins with a single step
- Happiness is peaceful living
- Better to compare with those that have less than you so you can be happy with what you have
- The greater the risk, the greater the reward
- God loves you
- God is 3 feet above your head, don’t cheat
- You do not know what will happen tomorrow so why worry
- Pre-determinism (pre-destiny) prevails so accept it
- Human power conquers over nature (versus living in harmony with nature)
- Knowledge is the culmination of learning and questioning

- Confucius says food and sex are basic human nature
- Man's nature is good however bad behavior is learned
- Mountains can be changed however old habits die hard
- Marriages are matches pre-destined

#### B. Self-Improvement and Human Behavior

- Those who respect others will always be respected; those who love will always be loved
- Don't do to others what you don't want others to do to you
- Treat others as you would like to be treated
- If you borrow and repay, you are more likely to be able to borrow again
- Life is but an empty dream, enjoy it while you can
- If you have harmony in your home, then everything you do will be successful
- Do not get angry - tolerate for a moment and the winds and waves will calm down; take one step back and you will see the big picture and the insignificance of your anger
- The more often you smile, the healthier you become
- What goes into the mouth is the source of sickness; what comes out of the mouth is the cause for mishap
- Pay attention to your daily diet and practice proper exercise
- To maintain proper balance in body chemistry, eat more alkaline foods (e.g. fresh fruits and vegetables) and drink green tea
- If three people are walking together, at least one could be your teacher and can provide learning for you
- If you fail to achieve a task, take time to reflect upon yourself to determine what went wrong
- If you want to rule the world, start with self cultivation, managing the family, then national affairs and finally world peace and prosperity
- Honesty is the best policy
- Frugality is a virtue
- He who helps himself will be helped by others
- Establish yourself first before you try to help others
- To love others, you must first love yourself
- Do one good deed every day

#### C. Doing Things

- Things get done by people (i.e. you must take action to get results) just do it
- Always have a plan, be persistent; if you start big, end big
- If you are aware of the extremes, always lean towards the middle
- Perseverance is the recipe for success
- Trust is the basis for success in business
- Having courage, confidence and patience are keys to success
- Perseverance is the key for success

- Without struggle there is no success
- Create a win-win situation
- You can't get something for nothing
- Slow and steady wins the race; be a good winner, and do not be discouraged if you lose
- Pursue your own goals; do not wait for things to happen
- Keep your vision broad; do not look into the well to see the reflection of the sky
- Do not make a mountain out of a mole hill
- Do not create a problem out of nothing; do not make a small issue into a large issue
- Reduce large problems to smaller ones and then solve the smaller problem
- Keep your eye on the big picture while keeping your hands on the details
- Think about sustainability

If you can recall or remember what we believe in terms of these doctrines and guidance, we would have the opportunity to experience or carry out these doctrines in life. If these doctrines pass the test, we will be more confident of these doctrines and put them into practice. If these doctrines do not work, we will abandon them, modify them or replace them with a new doctrine. Therefore, our personal belief system, just as the goals that we pursue, can be modified throughout life.

While in Taiwan, I found in the bookstore many books on the principles of life and the philosophy of living. The titles and book designs were very attractive. Some books teach you to believe in something, and other books tell you to change something to achieve certain objectives. Those bookstore books and this book are very complementary and together can guide you towards success and happiness in life. The following book titles and the previously presented doctrines can be reviewed by you, the readers, for your benefit.

- Channel anger towards creating positive solutions
- Good habits lead to good fortune (destiny)
- Change the way you learn, and you will change your life
- Changing the way you think will lead to changing your destiny
- Changing your attitude will allow you to get out of the woods
- Believe in yourself, and you can change anything
- Use your brain power and not brute force
- Change yourself around, and you will change the situation around
- I am the master of my life
- Your biggest enemy is yourself
- Let your burdens go to be truly happy

### ***Religious Personal Belief System***

To understand a religious outlook on life, we should first understand the definition of religion.

The modern Mandarin dictionary defines religion as follows:

Religion is a social phenomenon of people who believe in and worship supernatural gods or spirits. It is a reflection of human consciousness that confronts various natural and social forces. It is based on the mental states of fear, imitation, curiosity or hope, which arise from the sense of mystery in understanding the universe and human life. On this basis, it develops a system of beliefs about rewards for good actions and punishment for evil deeds, thereby transforming human life and cultivating faith. This is known as religion.

Please read this definition a second time and we will understand the root causes of the formation of religion, and the impact of religious life on human societies and its role and purpose.

Obviously, the rewarding of good behavior and punishment for bad behavior also known as the “carrot and stick” approach, is a central theme for all religions and is used to make up for deficiencies in social regulations (such as morals). Therefore, religions have their own special arena which is based on love and compassion.

The early origins of religion may be traced back to early humans, when the modern humans (*Homo sapiens*) appeared. Religion may have likely formed when modern humans formed a neocortex, because the neocortex is the center of human consciousness and also the source of the soul and spiritual needs. Modern psychology and behavioral expert Dean H. Hamer, in 2004, published the book called “The God Gene.” In this book, he said that he found at least one gene that can control emotions and consciousness. This gene was named by him as the God gene. It does not prove the existence or nonexistence of God. This gene gives the tendency for spiritual beliefs, but does not dictate what type of religion to believe in. Different religious beliefs, similar to different languages, are acquired after birth by and influenced by the environment as well as local historical and cultural traditions. Hamer’s book has caused much controversy and debate; therefore, this should not be taken as definitive scientific proof.

If human beings possess the needs and instincts for spirituality, then if you compare these people with non-religious people, I would suggest that religious people will have a different outlook on life, known as the religious personal belief system.

Regardless of whether it is Christianity, Judaism, Islam or Buddhist, these religions have two common beliefs; (1) the faithful believe that after death the soul or consciousness will continue to exist. (2) the pursuit of the faithful is not only in this life's happiness but also in the pursuit of happiness of the soul or consciousness after death in heaven or paradise.

Therefore, the faithful's interpretation of the meaning of life is a long term happiness beyond this world. The purpose of living, in addition to meeting the basic human needs such as Maslow's hierarchy of needs (as mentioned prior), the faithful will also take into account the pursuit of life after death in eternal life. Therefore, in everyday life, believers could have some differences in their personal belief system which will be different than nonbelievers. Let us look at the personal belief system of Buddhism and Christianity.

#### A. Buddhism Personal Belief System

In his book, "Introductory Buddhism for Scientists," chapter VI, Ling Bo Yu introduced the Buddhism personal belief system. He used cause and effect and karma (the accumulations of good and evil), the Eighth Consciousness of Buddhism (see Appendix 2), and the Buddha-nature as cornerstones to evaluate the value of life and meaning of life.

- From the causal standpoint looking life: there are many different causes and consequences of the universe, the fundamental laws of variation of birth and death. If you plant a melon seed, you will grow melons. If you plant peas, you will grow peas.
- From the karma standpoint looking at life: karma is the result of past actions. Sufferings and happiness is determined by our instantaneous intentions, and, therefore, we must purify our consciousness so we can create our own environment for our future life.
- From the Eighth Consciousness of Buddhism standpoint: this is the basic root source of Buddhism. The meaning of life does not rely on sensory pleasures of the current human body but resides in the purification of eternal life. Purification of our life can be restored to the original purity of human nature upon ridding of the six sensory contaminates.
- From the Buddha-nature standpoint of life: the Buddha-nature is the basic nature of all humans and is the most powerful and virtuous capability. Our instantaneous intentions can lead to seas of suffering however after ridding the cloudy six contaminates then we can restore the bright virtue of human nature and therefore we can recover to the original human nature and achieve the Buddha-nature. This is the highest goal of our human life.

Ling Bo Yu concluded that the Buddhists personal belief system is an active, optimistic, and creative outlook on life.

## B. Christian Personal Belief System

I have not seen any references on the Christian personal belief system. Therefore, the author has sought out a number of preachers, elders and religious leaders to gain a greater knowledge of the subject matter as follows:

- Christianity uses “love” as the principal doctrine. The vertical relationship refers to the association between God and human beings; the horizontal relationship refers to love as “self” love and “greater-than-self” love in the social environment. This relationship is represented by the Christian cross.
- According to the Christian Bible, God created human beings in his own image and likeness to provide stewardship of his creations. Therefore, the people will glorify Him for His wisdom and ability for creating the universe.
- To glorify God one must love yourself (body and mind), and treasure your reputation; to learn the Gospels and adhere to His teachings.
- Christians glorify God’s creation as love. Love yourself, love others, love society and love the environment. Love is above all.

The concept presented above about Christianity is an attitude of behavior (treating others) and guidance on how we do things. Therefore, this can be considered as a Christian personal belief system. I would like to encourage readers to read a book by Leo Buscaglia entitled “Love.” Some of the subjects include “Love is Learned,” “Love and to be Loved,” “To Love Others You Must Begin with Yourself,” “Love is a Responsibility,” “Love is a Basic Human Need,” “Love Makes You Strong,” etc. These examples will encourage people to buy this book. In the section entitled “Love is a Basic Human Need,” the author provided the following conclusion:

Love is to understand basic human needs and to understand the needs of physical and spiritual dimensions. Love can see through the human mind and be able to hear and understand the outpourings of human emotions. Love can comfort and can touch people’s physical and mental needs. Love is unconditional; love has its own way; love can understand and appreciates the unique; love needs no special recognition, if the effect of love has to be noticed, then that would not be true love.

In short, the Christian love and the Buddhist compassion both encompass the concepts of “self,” “greater-than-self” and “selfless” including both the physical and spiritual basic human needs. When these basic needs are satisfied, humans will be happy in life. The component that is special to the religious personal system is that the believer will emphasize the spiritual component to satisfy these needs in comparison to the non-believer.

Finally, I would like further express that among different religions there may be significant differences in the personal belief systems. Within a given religion there may also be some

differences in the personal belief system due to the variations in the interpretations of the role of God in their life.

### ***Truth-Compassion-Aesthetics Personal Belief System***

I, the author, once participated in a seminar on truth-compassion-aesthetics (T-C-A) at a university where I first heard about this subject matter. The seminar was presented in the late 1950's and, at the time, was a very modern and innovative concept which made a deep impression on me. Since that time, it has become my spiritual sustenance and guiding personal belief system. The concept of T-C-A addresses the relationship among science, religion and art. It also explores our attitude or point of view towards these three kinds of spiritual sustenance. Now, let me introduce the difference in this outlook of life which was not addressed in Maslow's hierarchy of needs.

In our modern human society, there are three important spiritual sustenance: science, religion and art. These three arenas have their own arena of persuasion: science seeks the "truth," religion pursues "compassion" and art seeks "aesthetics." In principle, each has its own jurisdiction and none are subordinated to the other. "Truth" does not mean or is not equal to "compassion," "compassion" does not mean "aesthetics," and "aesthetics" is not equal to "truth." For example, a picture which depicts real life (truth) or a painting that expresses compassion is not necessarily aesthetically pleasing; and a painting that is abstract (untrue) or of a horrific war scene can be aesthetically beautiful. If we pursue these concepts with more examples, we can conclude that these three arenas are mutually independent and none are subordinated to the others.

However, in practical applications, there will be intersections among the three arenas. In the following figure the three arenas will each be represented by a circle and within the circles there are areas of intersections as shown in Figure 3.



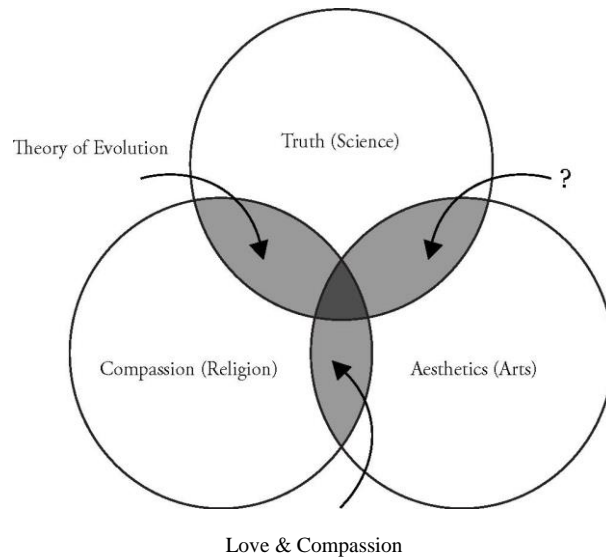


Figure 3. Truth- Compassion- Aesthetics Personal Belief System

In the intersection zone of any two arenas, there must be a consistent and unified interpretation of the common subject matter. Therefore, you cannot have a conflicting (different) interpretation for common subject matter in any intersecting zone. As an example, for discussion, let's look at the intersection of science and religion with respect to scientists' Theory of Evolution and creationists' beliefs as described in the Book of Genesis. All things in the universe including human origins can have only one true process, and we cannot believe in evolution and creationism at the same time because they both have a completely different process. Furthermore, the theory of evolution is based on the scientific evidence whereas the creationist's beliefs are not based on scientific facts and cannot be proven. This is the reason why evolution and not creationism is taught in American public schools. (*US National Academy of Science, 1998*).

In order to harmonize the differences in the two concepts of the origins of the universe, the Christian scientist Dr. Schroeder, in his book "The Science of God," quoted the Bible that in six days, God created the universe. His interpretation of a "day" is actually not the earth's calendar, it is a "day" of the universe. He applied his knowledge of astronomy, physics and mathematics to derive the six days of the creation timetable. Then he compared his derived schedule of creation with the Earth's known evolution of the universe, the earth and biological evolution process and found that there is a satisfactory correlation between the two timelines. Therefore, in this comparison, God's creation of the universe and the scientific world view is the same, and there is no contradiction or conflict. (see Appendix 4)

Both the religious documents and science textbooks claim the truth and encourage people to believe in their theory. Scientific truths must be proven by scientific evidence; however religious truths can only be supported by eyewitness accounts which cannot be considered as scientific proof of evidence. Therefore, we cannot use the same method and attitude to treat science and religion. In science, you must first prove the existence of the facts so that people will believe in science. However religion exists solely upon individual's belief in religion (faith). If a person demands scientific proof before he believes, then he is unlikely to become a religious believer. (see Appendices 3 and 4)

Now, let's look at the intersection of religion (compassion) and arts (aesthetics). Think about what things constitute the intersection of these two arenas. I believe that the intersection of these two arenas of religion and art embody the common traits of love, compassion and beauty. In this shared region, I do not believe that the readers will disagree with that interpretation because within this intersection there is no conflict or contradictions in the theory.

Finally, let's take a look at the intersection between science (truth) and arts (aesthetics). What best represents the intersection of these two arenas? If you can find one think about if there is any conflict of contradiction of theory from each arena. Please allow me to challenge the reader to imagine the possibilities of this answer. (\*see below for the authors hints)

In the common intersection of the three arenas, what does this represent? I believe that it represents a perfect spiritual personal belief system that is pure truth, flawless aesthetics, and ultimate compassion.

*\*Golden Ratio: In mathematics, two quantities are in the golden ratio if their ratio is the same as the ratio of their sum to the larger of the two quantities.*

*\*Einstein's Special Theory of Relativity:  $E = mc^2$*

*\*Fibonacci Numbers are Nature's numbering system. They appear everywhere in Nature, from the leaf arrangement in plants, to the pattern of the florets of a flower, the bracts of a pinecone, or the scales of a pineapple. The Fibonacci numbers are therefore applicable to the growth of every living thing, including a single cell, a grain of wheat, a hive of bees, and even all of mankind.*

### *Healthy Personal Belief System*

Assuming that the reader has read the book from the beginning, they would have learned author's theory and basis and framework of my so-called healthy personal belief system. However, I still encourage the reader to review these previous sections and then continue reading below.

Any outlook of life which is founded based on "natural philosophy" and "philosophy of life" would be a correct and healthy personal belief system.

From a natural philosophy perspective which searches for the basic nature of the universe, we can believe that our outlook of life should follow the same basic principles of the universe since humans are such a small part of the overall universe. It is advisable that we should believe in the natural philosophy which is the basic nature of the universe, as it is equally applicable to the philosophy of life since the human society is part of the overall universe. Therefore, if we follow the Golden Rule and the natural laws as a matter of fact and apply these rules to our human society, we should not have any fears in a changing world nor will we be in fear of uncertainty in the universe and our life and hence we should not fear even death. We will continuously search for and learn new knowledge so that we will not feel strange about new knowledge and experiences because we are unfamiliar with them. We will finally believe firmly that if you plant melon seeds you will grow melons; if you plant peas you will grow peas; and then you will strive forward to realize the result of the laws of nature.

In search of the value of life from the philosophy of life point of view, we may affirm the correctness of the following concepts:

#### A. Goal of Life

The pursuit of happiness is life's highest goal. The Dalai Lama and Cutler, co-author of "The Art of Happiness," stated in the first sentence of the first chapter that "the **pursuit** of happiness is the purpose of life." The book's authors referred to the satisfaction of spiritual needs as "happiness" however the materials satisfaction as "pleasure." Because the distinction between the two words is not easy to differentiate, we generally use the word "happiness" to cover both the short-term materialistic pleasure as well as the long-term spiritual happiness.

Referring to Maslow's five basic human needs of hierarchy as shown in Figure 1 in Chapter 1, the needs are divided into three realms, referred to as self, greater-than-self and selfless as shown

in Figure 2. We will feel happiness when we meet our basic needs and the higher the realm that is satisfied, the greater will be the resulting happiness.

Dr. Shigeo Haruyama stressed that modern medicine confirms that as individuals basic needs are met, this will naturally lead to the excretion of endorphins in the brain and the individual will feel happy. More importantly, the endorphins will create good health and longevity. Therefore, we can see that the pursuit of the satisfaction of basic human needs and access to happiness is in harmony with nature to meet the physical and psychological needs of life. This is the correct and healthy outlook on life.

#### B. The purpose of Living

The philosopher Jean-Francois Revel in his book, “The Monk and the Philosopher” has a dialogue with his son Mathieu Richard on the meaning of life. Revel believes that the purpose of living is to promote the welfare of both individuals and human society. Obviously, it covers the self and greater-than-self realms. If one was to address only the greater-than-self and selfless realms as to ignore the self realm, it would be totally unrealistic and, therefore, could not be considered a healthy personal belief system.

#### C. The Meaning of Life

The meaning of life is to sustain the survival and prosperity of the community/species and to work toward the satisfaction of the greater-than-self and selfless realms. This still has to be based on the pursuit and satisfaction of basic self needs.

### *Quotations on Life*

The author has, in his home, a plaque that describes many idioms on the views on life and a corresponding attitude and conduct toward these views on life. When we face the variety of life’s experiences, it is best to deal with a positive attitude. This plaque in many ways describes a healthy personal belief system. The author shares these in the following paragraph. The plaque unfortunately does not mention the author’s name, so I cannot give proper credit for these beautiful idioms.

## WHAT IS LIFE?

Life is a Love .....Love it.  
 Life is a Challenge .....Meet it.  
 Life is a Gift .....Accept it.  
 Life is an Adventure .....Dare it.  
 Life is a Sorrow .....Overcome it.  
 Life is a Tragedy ..... Face it.  
 Life is a Duty ..... Perform it.  
 Life is a Game .....Play it.  
 Life is a Mystery ..... Unfold it.  
 Life is a Song ..... Sing it.  
 Life is an Opportunity ..... Take it.  
 Life is a Journey ..... Complete it.  
 Life is a Promise ..... Fulfill it.  
 Life is a Beauty ..... Praise it.  
 Life is a Struggle ..... Fight it.  
 Life is a Goal ..... Achieve it.  
 Life is a Puzzle ..... Solve it.

## Theories of Destiny (命運論)

As already mentioned, the philosophy of life is a kind of thought, a belief, and a driving force. A certain philosophy on life will guide people toward a certain path. The path you travel is your destiny. Now, let's take a look at how many kinds of outlook on destiny there are.

At first, the author wants to differentiate between outlook on destiny and the theory of destiny. There are many different individual outlook on the destiny of life. It is unavoidable that there will be differences among individuals in their outlook on destiny, however if we systematize these beliefs and outlooks then we can create a theory of destiny. Therefore, the theory of destiny forms the basis for the outlook on destiny. One cannot persuade other people to believe in their outlook on destiny unless it is based on a theory of destiny.

The author has reviewed several books on fortune telling and could not find any classification on outlooks on destiny. Fortunately, Dr. Fung Yuan Dong, theologian and Pastor, in his article entitled “Criticism and Judgment on the Traditional Concepts on Destiny,” has categorized into three theories on destiny, namely predestination, self-created destiny and free will destiny. In addition to these three categories, the author will now add his category – science based theory of destiny as the fourth category. These four categories are briefly described below.

### ***Predestination***

The theory of predestination is a widely believed theory in the world and has considerable impact on people’s lives. This kind of outlook emphasizes that one’s destiny is predetermined by a higher/super power, and it cannot be changed by human beings. These people believe that their destiny is determined by several factors including the date and time of one’s birth, and also by one’s facial features or by reading one’s palm or by analyzing one’s handwriting or by examining one’s bone structure. Therefore, some people choose a profession to become an advisor such as fortune tellers, bone feeling specialists, date selection guides, or feng shui master to meet the needs of the believers in predestination. The theory of predestination is mysterious and difficult to understand and many people want to know the future of their destiny and so this belief remains prevalent even in today’s society.

### ***Self-created Destiny***

This is generally considered the Buddhist concept of destiny as accepted by the Hindu’s traditional belief in predestination that the fate of their own behavior (Karma) from a previous life, this life and the next life is connected by a cause and effect cycle referred to as reincarnation (Samsāra). Your past life determines your present life and the present life will determine the

future reincarnated life. Your current life's behavior (Karma) will create the life model and your fortune for your future life and destiny. Therefore, your destiny is self-determined through one's behavior (Karma) and, therefore, this differs by not believing that the destiny is determined by a super power. Buddhism is atheistic in nature. In areas of the world where Buddhism is practiced, when this self-created destiny outlook is practiced along with the predestination theory it is often difficult to distinguish the two practices. These people who believe in both theories may often seek advice on fortune telling, palm reading or observing feng shui (風水) and at the same time also strive to practice good charity and endeavor to behave morally hoping to provide for an ideal destiny for the next life.

### ***Free Will Destiny***

This is the Christian outlook on life because Christians believe that God created the environment for human beings, gave them “free will” and created humans in his own image. In doing so, human beings will be enriched with wisdom and will have the ability to be in communion with Him to work together to make the world sustainable. If human beings have destiny, then destiny, good or bad is solely determined by human's free will. On the tree of life, we have the choice to walk with God and to choose good, or choose the forbidden fruit of evil and not follow Him. Human nature will also be polluted by sin and will be driven out of the Garden of Eden and, hence, will fall forever. This free will destiny principle was derived from Genesis in the Bible (Chapters 1-3) which reveals that God is not a tyrant who decides one's destiny, rather God is a master who respects the free will of human beings.

### ***Science-based Destiny***

This is the theory of destiny concept of this author. It is by no means superstitious and it has nothing to do with religious beliefs. As it is science-based, ordinary people can understand it as it is believable and it is workable theory of destiny. I wrote this book for two main purposes, as I clearly stated in the beginning of Chapter 1, Introduction. The first purpose is to provide a new scientific definition for genetic fate, environmental chances, and your destiny and secondly, to hope that the readers will establish a healthy personal belief system of life in our journey of life to control and create your own destiny to the extent that you can.

Simply speaking, in this science-based theory of destiny, the author first of all provided a new definition for genetic fate (Ming) and environmental chances (Yuen). The author then explains the interaction of genetic fate (Ming) and environmental chances (Yuen) to result in the formation of one's destiny (Ming Yuen) in a scientific way.

Genetic fate is determined at the time of conception. From a scientific point of view, this is the heredity factor (genes) of each individual. Genes provide a base for an individual's intelligence, a tendency for one's personality, as well as one's physique and physical makeup (see Appendix 1). With the exception of the physical traits such as facial appearance, hair and skin characteristics which normally do not change, all of the other genetic inferences are subject to genetic plasticity and, therefore, can be modified by the environment. We should emphasize the importance of post-conception efforts to "nurture" as a positive direction to enhance our environmental chances.

Environmental chances is defined as the post-conception behavior interacting with the social and natural environment. This is the source of probability/chance in one's life. Environmental chances come and go in your lifetime. Many of these chances were created by your own choices and decisions; but many other chances were caused by other persons or by uncontrollable natural forces. The former chances are within your control so therefore can be changed by yourself; the latter chances are caused by other people or uncontrollable natural forces which cannot be changed by yourself. The post-conception efforts in education, training, physical conditioning, internal fortitude and self-cultivation are the mechanisms of nurturing that individuals can control. Therefore, prepare yourself and get ready to grasp the opportunities when they are available, and your destiny will be yours!

Your whole life is your destiny. It is the description and the records of your life. It is the result of the interaction among genetic fate, environmental chances, and individual's choices and decisions made along one's life. Therefore genetic fate, environmental chances and individual's choices and decisions are causes, and destiny is the result thereof.

### Notes on the Theory of Destiny

The purpose of Pastor Dong's article entitled "Criticism and Judgment on the Traditional Concepts on Destiny" is designed through criticism and judgment to distinguish what is right or wrong and abandon the unhealthy traditional predestination theory of belief as superstitious. Dong states that the origins of the predestination theory is from the human experiences in ancient



cultures during the days of crisis living and living in times of great natural disasters, the ancient times experiences of success and failure in spite of one's efforts reinforced with the concept of predeterminism. Predestination is not a healthy theory of destiny. For one thing it portrays God as a tyrant controlling the destiny of human beings; secondly, it adversely affects the psychological health of human beings; thirdly, it constitutes a mental obstacle toward modern society and finally it tends to promote peoples (individuals) self-care and selfish attitudes. The author agrees completely with Dong's assessment and, I advise the readers to choose the right path and ignore superstitious beliefs.

## Chapter III Genetic Fate and Its Determinism

The last section of Chapter 2, when this “scientific-based theory of destiny” was introduced, this author referred to the basic framework for this book as follows:

1. Genetic Fate is the Initial Factor of destiny, determined at the time of conception, attributable to the genetic makeup of the individual.
2. Environmental chances is the Subsequent Factor of destiny, and is determined by the interaction of the individual with its environment, inherently influenced by chances (probability).
3. Your destiny represents your life’s journey. It is a description and record of your life. Both Genetic Fate and Environmental Chances are causes and your destiny is a result.

The above three topics are the primary content to be discussed and addressed in Chapters 3, 4 and 5 respectively. We will first discuss the roles of genes in one’s destiny.

Before we enter the main topic of discussion, the author would like to evaluate the pre-determinism theory of destiny as described by Dr. Dong, so that we may reveal the fallacy of the theory and learn the method to change or get rid of superstitions. The readers can better understand why this author uses these scientific terms to replace and redefine the traditional meanings of Ming, Yuen and Ming Yuen. Hereafter, schools may use these scientific definitions to teach and guide students and society towards a positive and correct theory of destiny.

### A Critique of Pre-determinism

We should try to first understand how many people believe in pre-determinism and superstition and to what extent these beliefs have a negative effect on individuals and society. Unfortunately, there is no statistical source to reveal this concern, therefore, we can only understand this from bits and pieces from a long period of observation. This author hopes as a result of this book that it will evoke some type of interest and action to investigate more data concerning the negative impacts of pre-determinism and to publish these statistics. This is the first step to reveal the fallacies of pre-determinism and superstitions, and to understand the science-based theory of destiny.

To achieve this will require a large project including time and lots of brave people to lead this task with cooperation of other concerned groups. If we can change the culture of pre-determinism and superstition and turn this into and transition these beliefs towards entertainment or recreational activities as opposed to a core belief system then this would be the right way. As I look in my book of reference, I found a book edited by Miss Youfang Tsao. Miss Tsao invited 60 domestic and foreign renowned authors, scholars, artists, as well as community leaders and astrologists. Miss Tsao hoped that through the statements by the life experienced masters, it will give the readers a chance to re-organize the gained knowledge and understanding by using the scientific view to achieve the new perspective and new understanding from a modern scientific point of view. This will lead to not only an understanding of the fallacy of superstitions but will also create a positive social norm based on scientific-based knowledge. This author's impression of these statements from these famous people is that most of them do not believe in superstition or fortune telling and that one's destiny is in one's own control to create one's destiny.

According to this book and statistics, it seems that there are not too many truly superstitious people. However, this author does not conclude the same because the socially elite group is not a good sample group. Generally, especially in rural areas, my observations would conclude a moderate level of superstitious beliefs. As to the extent of the damage caused by superstitious beliefs, this cannot be estimated. However, Pastor Dong in his book, "Criticism of the Traditional Outlook of Destiny," has made it clear that there are four impediments to the progress of society as previously stated in Chapter 2.

What do we do now? Pastor Dong hopes that Christians will follow his free will theory of destiny; however, what will non-Christians do? This author does not understand Miss Tsao's recommendation on the way to implement the changes in beliefs regarding superstitious beliefs versus scientific-based beliefs. My solution is to redefine Ming and Yuen and Ming Yuen and create a new scientific definition to replace the current definition as found in the Chinese dictionary, allowing the science-based theory of destiny and predestination to coexist in the dictionary so that the dictionary readers will have the opportunity to compare and examine both definitions. Through time and generations of discerning, these definitions will result in a greater and healthier understanding for society. At that time these superstitions such as fortune telling, palm reading, face reading, astrology and feng shui etc. if not disappear, will become less harmful to society and be used only for recreation or entertainment purposes.

Now, we return to the topic at hand and start to discuss the definition of Ming.

## **The New Definition of Ming (命) – Genetic Fate**

Before publishing this book, I frequently had opportunities to discuss destiny with many friends and relatives. I asked them what their understanding of Ming is. Of those that believe in Ming, most of them would initially pause and then, with a mystical smile, would state that in one's life there is a force that is controlling and managing your fortune. You have no control of it and it is inescapable. There are also people that do not believe in Ming and say that there is no such thing.

If you further ask those who believe in Ming about where those controls are originating, you will discover multiple answers. Some would say it originates from karma (from a previous life reincarnated), others would attribute to the will of God or an arrangement by God; still other people will simply state, "I do not know."

As so many people believe in Ming, and at the same time explanations of the origins are so vague and confusing, we cannot help but to consult the dictionary for a reference. Let us now compare the current definition of Ming and the "new" definition as proposed by this author.

### ***The Current Definition***

According to the most recent (2004) publication of the dictionary, there are several definitions of Ming (fate) however the one that is related to destiny is: "one's fortunes good or bad, gains or losses, rich or poor, easy life or hard life and they are all given by heaven above and cannot be changed by human forces." Regardless of whether we refer to "heaven" as the master of the universe (God), or for others, it may refer to natural forces, these are all within the realm of belief in the theory of predestination.

Many modern scholars and astrologists (Tien Yeo Wen, 1999; Gan Chao, 1997) would define Ming as the "Initial Factor" which originates at the time of birth. The scholars have been unable to provide evidence whether these factors are non-material (spiritual) or material and how or when these factors enter the life at the time of birth. Therefore, the assumption is still that these factors come from heaven above and cannot be influenced by human forces. These forces come from religious origins (God, karma) which cannot be proven scientifically. Furthermore, some

believers that have some doubts in these concepts may vacillate in their belief in the existence of Ming.

### ***The New Science-based Definition***

The author has been guided by the fact seeking science to find the truth. Many decades of the author's life have been devoted to searching and pondering with relatives, friends and coworkers to discuss the meaning of Ming and Yuen. I have also searched many scientific references on the subject. Finally, I discovered that the so-called "initial factor" that exists at the time of birth is indeed the inherent "inheritable factor" called genes, specifically referring to "genotype." As the "initial factor" consists of all inheritable agents, it includes recently discovered epigenetic agents that are inheritable. However, for the purpose of this publication, "gene" is used to represent all stable inheritable agents including epigenetic components.

I have now more clearly defined the previously vague and misleading definition of Ming and given it a realistically reliable and believable meaning. Therefore, from the point of view of destiny, the author gives the word Ming a new scientific definition as the initial factor of destiny which is determined at the time of conception and created by genes. In the following sections I will apply the scientific knowledge to illustrate genetic fate as well as its genetic plasticity.

### ***Epigenetics, Genotype and Phenotype***

Before we proceed further, I would like to present the definition, meaning and significance of the above three terms in genetics as I continue to present and discuss genes, environment and their interaction in the remaining of this chapter and the next chapter. For the readers' convenience I have chosen to quote the statements on these subjects from the Wikipedia encyclopedia (2015) as follows:

#### **Epigenetics**

The term epigenetics in its contemporary usage emerged in the 1990s, but for some years has been used in somewhat variable meanings. A consensus definition of the concept of epigenetic trait as "stably heritable phenotype resulting from changes in a chromosome without alterations in the DNA sequence" was formulated at a Cold Spring Harbor meeting in 2008.

Epigenetics is the study, in the field of genetics, of cellular and physiological phenotypic trait variations that are caused by external or environmental factors that switch genes on and off and affect how cells read genes instead of being caused by changes in the DNA sequence. Hence, epigenetic research seeks to describe dynamic alteration in the transcriptional potential of a cell. These alterations may or may not be heritable, although the use of the term “epigenetic” to describe processes that are not heritable is controversial. Unlike genetics based on changes to the DNA sequence (the genotype), the changes in gene expression or cellular phenotype of epigenetics have other causes, thus use of the prefix epi-.

### Genotype- Phenotype Distinction

The genotype-phenotype distinction is drawn in genetics. “Genotype” is an organism’s full hereditary information. “Phenotype” is an organism’s actual observed properties, such as morphology, development, or behavior. This distinction is fundamental in the study of inheritance of traits and their evolution.

It is the organism’s physical properties which directly determine its chances of survival and reproductive output, while the inheritance of physical properties occurs only as a secondary consequence of the inheritance of genes. Therefore, to properly understand the theory of evolution via natural selection, one must understand the genotype-phenotype distinction. The genes contribute to a trait, and the phenotype is the observable expression of the genes (and therefore the genotype that affects the trait).

## **Genes – Initial Factor of Destiny**

Within our body, all cells with the exception of the reproductive cells have 23 pairs 46 total chromosomes. Within each pair, one chromosome originates from the father and one from the mother. Sperm and eggs go through a process of cell division which is different from the other cells in the body. Each egg and sperm have only 23 chromosomes to contribute to a new human. At the moment of conception, the chromosomes will pair with its partner chromosomes and form 23 pairs. Therefore, life consists of one half each from the father and mother to produce a new life.

During the nine months after conception, the human embryo within the mother’s uterus environment starts to develop into a human baby in accordance with the blueprint prescribed by the DNA in the genes to create a new baby. Within this short nine month period, the original cell

divides to form an embryo and then a fetus. The shape of the fetus undergoes a transformation of the shape of a fish, then a salamander, a chicken, a pig, and then a monkey. These stages verify that hundreds of millions of years of evolution of vertebrates (animals with backbones). The theory of evolution tells us indirectly that the cells in the human body consists of many genes that are identical to many lower order animals. For example, within the genome of a human being, 98% of the genes are identical to the genes in a chimpanzee. Only 2% of the genes distinguish humans from chimpanzees.

As to the differences among human beings, individual differences in fact can be attributed to a difference in a very small amount of genomes. These differences that were created at the time of conception, will more or less affect the destiny of our life and, therefore, the author refers to our genes as the “initial factor” of destiny. Hence, initial factor is also known as “genetic fate” which includes not only the effect of genotype but also any inheritable epigenetic components.

## **Determinism of Genes**

On the question of the effects of genes on one’s destiny, we know that genes affect the individual’s appearance, thinking, ability, personality, behavior, etc., as phenotype (expression of genes). Hence it affects directly and indirectly one’s destiny. The question is: to what extent these genes affect those personal characteristics? Now, let’s examine these most important aspects of genes’ expression as follows.

### ***Sex and facial appearance***

Genes determine one’s sex and sexual orientation (e.g. homosexuality), as well as one’s facial appearance. Obviously, these are inherent at the moment of conception. Unless there is an environmental influence or genetic mutation during the development of the baby, the initial blueprint traits will occur as predicted. The distinct differences of traits between brothers and sisters such as the shape, color and appearance of the face, eyes, hair, skin, and shape of the nose etc. can be partially explained through the genetic dominance and recessive nature of genes at the moment of conception. Only identical twins look exactly the same because they share exactly the same identical genes.

### ***Physique, bodily constitution and disease***

Physique refers to the form or structure of a person’s body including height and shape and are greatly influenced by genes. Bodily constitution refers to the quality of the body. It refers to the

overall general effect of the impact of genes on the body. However, most people use a more narrow definition, for example the effect of bodily constitution on the vulnerability of contracting infections or illness (immune system), blood pressure, high cholesterol, ease or resistance to weight gain, a person's difference to adapting to environmental conditions such as hot or cold, food sensitivity such as allergies, and reaction to drugs. Therefore, genes result in differences in an individual's bodily constitution.

Disease is the worst enemy to health. Many diseases are caused by improper food and drink choices. A Chinese saying states that "all diseases enter through the mouth." Some diseases have genetic origin and still others are the results of the interaction of genetic and environmental factors. For a given inherited disease, a more virulent strength disease will show symptoms at birth and less virulent strength disease will show symptoms only under certain environmental conditions or may not even occur at all.

Everyone has one or more disease causing genes, however, most diseases will not appear during one's life. From a genetic point of view, the best assurance not to have inherited disease passed on is to avoid inbreeding. Aubrey Milunsky, MD in his book, "Your Genetic Destiny" provides a rich and valuable knowledge and information on health maintenance. He set out in detail many harmful genetic diseases, describing its symptoms and its affects and treatment and prevention methods. These harmful genetic diseases, including heart disease, high or low blood pressure (hypertension), diabetes, obesity, cancer, schizophrenia, depression, dementia, etc. This book is an authoritative guide to inherited diseases.

### ***Traits***

There are two components of personality, one that is determined by genes is called temperament. The other component that is influenced by the environment is called character. Therefore, one's personality is influenced by genes and environment, i.e. by temperament and character. Dean Hamer, in his book, "Living with Our Genes," describes in detail the relationship between genes and traits. He also emphasizes the plasticity of temperament and behavior through nurturing.

Hamer's book covers a wide range of cutting-edge research including thrill seeking (novelty seeking), worrying, (harm avoidance), anger (hostility), addictions, sexuality, other different characteristics between men and women, thinking skills, memory, intelligence and language proficiency, as well as the effects of genes on human physiques (i.e. obesity) and eating habits. All of these traits have a relationship with genes. Although some of the corresponding genes have not been identified, the statistical data has indicated a close association with personality traits.



Emotional Intelligence (EQ) is a recently introduced concept that is closely related to an individual's innate potential to understand one's own traits and other's traits. According to S. Hein (2007), "Emotional intelligence is the innate potential to feel, use, communicate, recognize, remember, describe, identify, learn from, manage, understand and explain emotions." Because the definition offered here is based on an innate potential, it makes a very important distinction between this inborn potential and what actually happens to that potential over a person's life. Some researchers believe that the innate characteristic of EQ is debatable, however, the author feels that at least to some degree that EQ is innate.

### ***Ability to reason***

The ability to reason comes from memory power, intelligence, as well as language aptitude. Hamer and Copeland mentioned that ability to reason has a relationship with genes. Matt Ridley, in his masterpiece publication, "Genome," provides a deep and interesting writing on the human ability to think and its connection to genes. Let me start with Ridley in Chapter 16. In the book, the ability to learn is strongly connected to the capacity for memory and both are connected to genes such as the CREB gene. The brain has trillions of brain cells, some of which make memory use. Brain nerve cells are where memory is stored. The brain's nervous system continues to grow from birth to adulthood, which also continues to be enhanced. Although there are some innate difference in the strength of one's personal memory, we must not ignore the acquired nurturing efforts such as training and education to enhance memory function.

Regarding intelligence, for nearly a century, scholars and experts continue to debate this question: Is intelligence innate (nature) or acquired after birth by education and learning (nurture)? The topic discussed by both Hamer and Ridley are lengthy, but both lead to the same conclusion. Nature and nurture both affect intelligence.

Regarding the innate portion of intelligence, Ridley provided evidential proof from a comprehensive large scale test during the 1980s. During these tests the following eight groups were compared on the results of IQ tests. The study involved conducting IQ tests for all participants and then analyzing the correlation of the IQ test results for each group to determine how closely matched the relative score was for each test group involved. The analysis showed that the closer the biological relationship of the group, the higher the correlation was for similar IQ test results. The eight groups and the correlation scores for each group are shown as follows:

1. Identical twins raised together ..... 86%
2. Identical twins raised separately.....76%
3. Fraternal twins raised separately.....55%
4. Biological siblings.....47%
5. Parents of children living together.....40%
6. Parents of children living apart .....31%

- 7. Adopted children living together.....0%
- 8. Unrelated people living apart.....0%

As can be seen from the correlation scores above, identical twins raised together had the highest likelihood (86%) of similar IQ tests results whereas unrelated people living apart had no correlation with IQ test scores (0%). This proves a genetic relationship to intelligence.

Finally, we will discuss language aptitude. Although other animals also have language, the human language is the most complicated and advanced amongst all species. Human language is so marvelous and expressive. There are so many different languages spoken throughout the world. Amazingly, a child born in one area and then relocates to a different area of the world, will learn the new language in time. We can observe that people have language aptitude. Some are faster learners than others, and some learn more slowly, so we will inevitably ask whether human language aptitude is innate. Scientists, to date, have not found a corresponding gene related to language aptitude. However, researchers in England in 2001 identified a mutation of the FOXP2 gene located on chromosome 7 that causes a severe speech and language disorder. This may suggest that human language aptitude is genetically related within chromosome 7.

## **“Good” Genes or “Bad” Genes**

According to the current traditional Oriental concepts, if a person’s past destiny has been smooth, stable, with more happiness and good fortune and less tragedy, we generally refer to this person as having good Ming. In contrast, if a person’s life is more tragedy and few good fortunes then we generally refer to this person as having bad Ming. According to the author’s new scientific definition, this above referenced concept would be completely changed. Because Ming is now defined as genetic fate, we will consider instead the relevance of “good” genes or “bad” genes as opposed to good Ming or bad Ming.

Is there a standard differentiating good genes from bad genes? Actually not, but people seem to perceive what constitutes good genes from bad genes. Therefore, let us discuss these good and bad genes in relationship to the four previous aspects of genes expression as presented under the heading of Determinism of Genes.

### ***Sex and facial appearance***

Whether you are born as a girl or a boy, there is no distinction as either good or bad. However, other traits such as the shape, color and appearance of the face, eyes, hair, skin, and shape of the nose etc. can be perceived as good or bad by people of different cultures and perceptions may even change over time.

### ***Physique, bodily constitution and disease***

Whether you are tall or short, full figured or slim may be perceived as good or bad genes by different people. If you have a strong immune system, good blood pressure, normal cholesterol, an aversion to weight gain, and no allergies, all of these may be considered “good” genes. Any genetic diseases are generally considered as bad genes.

### ***Traits***

The thrill seeking personality trait can be good or bad. Over aggressiveness, crime, and violence are considered socially unacceptable. Addiction to substances such as drugs, alcohol and tobacco are also considered bad and are the result of bad genes.

### ***Ability to reason***

Having a good memory, a good ability to learn, high intelligence, and an aptitude for language, all these traits are good innate abilities from good genes.

All of these innate or inherent genetic traits, regardless of being considered good or bad, cannot be changed by our modern scientific advances; therefore, we must accept these personal characteristics as described above. According to this new definition of Ming (gene), we may consider this “genetic fate.” The meaning of genetic fate should not be synonymous for giving up or surrendering to these genetic conditions. Accepting is not the same as surrendering. In our modern scientific age, if a person understands one’s own genetic deficiency or tendency for certain genetic traits, then one must understand that there is a certain genetic plasticity. Accordingly, one can alter or modify oneself to mitigate these deficiencies and become a master of one’s destiny towards one’s dreams, goals and objectives. Just because you may possess some bad genes, you are not resolved or doomed to bad genetic destiny, yet the potential to thrive is a high possibility.

## Plasticity of Genes

From the previous section entitled Determinism of Genes, we now know that genes nearly completely determine one's sex and facial appearance. In addition, genes partially affect the other aspects such as physique, bodily constitution, traits and reasoning ability. The different characteristics among people can be partially explained by the different influence by genes. The remaining factors are due to acquired (learned) behaviors and other environmental influences after conception. These environmental factors are the areas in which one can initiate changes and improvements (nurture) by introducing positive programmatic interactions between genes and the environment to change and enhance the expression of one's genes. This will be further discussed in Chapter 4.

Using IQ as an example, Ridley (1999), concluded that the correlation between IQ scores and genetic relationships changed (drop) from 86% for identical twins to 31% for the group of parents and children who do not live together. However, the correlation of 47% for a biological sibling relationship could be considered as a normal parent-child relationship. In a separate study by Hamer (1999) comparing the results of worldwide IQ tests, the correlation between IQ scores and the genetic relationship of all IQ tests from all study groups results in an average correlation of around 50 percent. This implies that the relative relationship between nature and nurture is roughly 50/50. The term for this nurture portion of the influence is referred to as "genetic plasticity."

Amongst the other personal characteristics such as bodily constitution, traits and genetic disease, the contribution of nature versus nurture is not so clearly determined and the percentage of influence is difficult to quantify. An old Chinese proverb says, "It is easier to move a mountain or change the course of a river than it is to change one's temperament." Therefore, the nature aspect (temperament) will overpower the nurture aspect (character) in forming the resulting personality. On the contrary, many inherited diseases may never express symptoms in an individual's lifetime. One can effectively control the expression of inherited diseases through the interaction of personal actions and behavior with the environment. One should never underestimate one's ability and power to control the effects of influencing the environment over the genetic influences of diseases. The power of Environmental Chances and its Enhancement is the subject of the next chapter.

## **Chapter IV Environmental Chances and Its Enhancement**

In life, both Ming (genetic fate) and Yuen (environmental chances) affect one's Ming-Yuen (destiny). In the previous chapter, we discussed the effect of genetic fate. In this chapter, we will discuss the effect of environmental chances on our destiny. After we have a complete understanding of these two major factors, we can formulate a more complete understanding of our destiny.

### **Environmental Chances**

#### **Definition of Yuen (運) -- Environmental Chances**

##### ***The Current Definition***

In the modern Chinese dictionary 2004, there are four definitions for Yuen (chances). The definition that relates to destiny states that it is defined as pre-destined encounters in one's life. More recently, scholars and numerology experts (fortune tellers) began to define Yuen as a man-made "subsequent factor." This definition is closer to the new scientific-based definition which is not based on pre-destiny or superstition-based definitions.

##### ***The New Scientific Definition***

The author attributes all of the causal factors of destiny, other than genetic factor (initial factor), to subsequent factor which is environmental factor. Therefore, a new scientific definition of Yuen is the effect of the interaction between post-conception individuals and its social and natural environment. Such interactions are subject to the occurrence of various levels of probability and uncertainty. Therefore, we can now refer to Yuen as "environmental chances." Environmental chances is the source of probability in one's destiny.

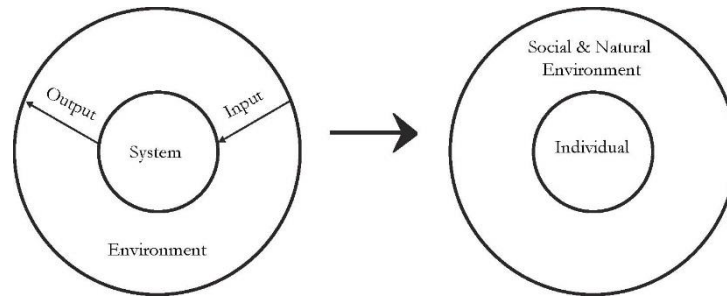


Figure 4. System Engineering Concept to Illustrate Environmental Chances

## A System Engineering Perspective

In system engineering science, broadly speaking, the concept of environment and system must be considered together. We must treat the subject of the study as a system, then all of the factors that affect the system will be referred to as the environment, as illustrated in the left side of Figure 4. The output from a system will be called the input to the environment. Similarly, the output from environment will become the input or feedback to the system. This is a basic relationship between the system and the environment as shown on the left side of Figure 4.

On the right side of Figure 4, the author uses this system engineering concept to relate an individual's interactions with its environment. The individual can be considered as a "system" and the social and natural environment in relation to the individual is considered as the "environment." The person's behavior (output) becomes input to (and also affects) the social and natural environment. Conversely, the environmental output becomes input to the person and affects the individual. Therefore, the so-called subsequent factor is the interaction of individual's behavior with its social and natural environment as shown on the right side of Figure 4.

## Environmental Chances – Subsequent Factor

The initial factor (genes) of destiny was determined at the moment of conception. Thereafter, all of the external factors of this new life including gene therapy in utero are all referred to as the "subsequent factor" of destiny. These subsequent (environmental) factors persist and continue to interact with the initial factor (genes), affecting the individual's gene expression (phenotype) throughout his/her lifetime.

From the moment of conception, we may classify one's life into the following five stages according to the distinct external environment encountered by the individual: prenatal stage, early childhood stage, youth stage, prime stage, and senior stage. Let's examine how the environment affects the individual through the gene (G)-environment (E) interaction (GxE) in each of these five stages.

### ***Prenatal Stage***

During the growth and development in the mother's body for nine months, the baby's growth environment is the mother itself. During this period, the fetus develops and depends entirely on the maternal supply of all necessary nutrients for growth. Therefore, the fetus at this stage is not an independent individual. The mother's physical and mental health choices, such as smoking tobacco and the use of alcohol and drugs, and stresses will affect normal fetal development and health. During this stage, the behavior of the fetus will have minimal effect on its environment (mother). However, the mother's behavior will have a great effect on the fetus. This represents a special exception to the typical system engineering model of system and environment, as the baby is entirely dependent on its mother. This dependence continues until the birth of the baby and is completed upon the cutting of the umbilical cord.

### ***Early Childhood Stage***

From birth to the age of six or seven before starting elementary school, the child has a special living environment. Traditionally, the mother is the child's primary caregiver, and the child relies heavily and often for this care. The father or other caregivers may also provide care during this period as well as extended family and/or day care providers. During the latter half of this stage, children may experience preschool which is the first formal education for many children. During this period, the social interactions are fairly limited in scope. This period is marked by degrees of early behavioral learning. During early childhood, the relationships formed by the child are also bonded by a common destiny that is characterized by a great amount of dependence on the primary caregivers and yet the child is learning many independent behaviors.

Dr. Steven P. Shelov, editor of the book entitled, "Caring for Your Baby and Young Child - - Birth to Age 5" emphasizes the importance of this early childhood stage and especially the first three years of development. In the book, at the section called Early Brain Development (page 154), he states:

“Research shows that during the first three years of a baby’s life, the brain grows and develops significantly and patterns of thinking and responding are established. What does this mean for you as a parent? It means that you have a very special opportunity to help your baby develop appropriately and thrive socially, physically, and cognitively throughout his/her life. The first years last forever.....While genetics does play a role in determining your child’s skills and abilities, new research highlights the equally significant role that environment plays. Recently, neuroscientists realized that the experiences that fill a baby’s first days, months and years have a great impact on how the brain develops. Both nature and nurture work hand in hand in the development of young children.”

This book, a collaborative effort by many experts in the field and edited by Dr. Shelov, is an excellent, complete and authoritative guide for raising young children.

### ***Youth Stage***

The period from approximately age seven to age twenty five can be described as the youth stage. This stage focuses on learning, exercise, self-development and preparing to enter into society for achievement of your destiny. From elementary school through high school and college, the human relationships gradually become more complex. During this stage, the impact of family may gradually lessen and the relationships with classmates, teachers and friends increases. Throughout the youth stage as knowledge and skills expand, there is a maturation of relationships as well as an increase in independence and self-reliance. The youth stage is marked with a growth in responsibility for one’s behavior. During this period, as a result of increased contacts with the natural environment (compared to the previous stage) results in an increase of the effects of the environment on the individual. As the protection by parents and family decreases during this stage, the youth stage experiences involve more self-reliance in interacting with the environment. In this stage, any situation that is within one’s control would transition from the reliance on parents and family to one’s own self-control. As a result of this maturation process, individuals begin to develop the ability to recognize and seize the opportunities for the Enhancement of Environmental Chances as presented later in this chapter.

To be successful in one’s life, according to Daniel Goleman, author of “Emotional Intelligence,” one’s high emotional intelligence is at least as important as high IQ. The first opportunity for shaping the ingredients of emotional intelligence is in the earliest years, though these capacities continue to form throughout the school years. Goleman made the following statements under Chapter 12, “The Family Crucible”:



“Family life is our first school for emotional learning; in this intimate cauldron, we learn how to feel about ourselves and how others will react to our feelings; how to think about these feelings and what choices we have in reacting; how to read and express hopes and fears. This emotional schooling operates not just through the things that parents say and do directly to children, but also in the models they offer for handling their own feelings and those that pass between husband and wife. Nurturing begins at childhood and in the family.”

Obviously, emotional nurturing must start at the early childhood stage mentioned above and continue throughout this youth stage.

### ***Prime Stage***

The period from about twenty five years of age to sixty five years of age is the prime stage of life and the period that one can exercise the ability to control the part of the environment that can be within our control. During this stage, all individuals are independent and self-reliant. Every individual forms his or her own philosophy of life or personal belief system. During this period individuals are fully participating in society and are contributing fully to the society. A great majority of individuals will have their own family and participate in various social activities. However, most time spent during this stage is on their own chosen profession or role including raising a family and applying their previously gained knowledge and skills to successfully accomplish their duties in their work. This stage is a large timeline and can include many periods of transition within the stage. In this stage, personal activity and behavior, social and human relationships, as well as individual interrelationships with nature have reached the highest level. In this stage, how to manage the controllable environment and how to respond to those factors that are out of our control become the most important subject in our daily life. This is the primary subject of the remainder of this chapter.

Due to the duration of this stage over many years of life, most of life's most important choices and decisions occur during this stage. We make numerous choices and decisions in our daily life, however, some of these decisions during this stage are critically important and may ultimately change our destiny. This subject will be discussed in detail in Chapter 5.

### ***Senior Stage***

About 65 years of age normally marks the end of your life's career work and transition to retirement. Individuals are at the height of maturity (social and intellectual) and this period is often characterized by free time and lots of choices in life. During this period, there is greater

disassociation from coworkers, and there may also be reduced social contact. The senior stage transitions towards relationships with relatives and close friends. Seniors are often concerned about declining physical and mental health and may devote themselves to various hobbies and perhaps increase the devotion towards activities and personal interests that perhaps they did not have time for before. Many seniors choose to take advantage of this period to travel to scenic and cultural destinations. Some seniors choose to contribute to society by volunteering at various capacities with a variety of organizations. For those seniors that are less fortunate, they may have to continue to work for a living continue to earn a wage. Others that have declining health issues may have a reduced circle of contacts with society and the environment. The severely declined in health may require full or partial care by health care providers and / or relatives. Therefore, in this situation, what is under our control may become limited or at worst be eliminated.

These five stages, described above, focus on the “subsequent factor” (environmental chances) of destiny. The stages are mutually interconnected. The choices and decisions made in the prior stage usually leads to the reduced number of choices in the next stage. For example, if you choose to study literature in college, it is unlikely or chances are reduced that you will become a medical doctor. The human journey of life is often full of bends and forks, however, you can only choose one route to proceed at a time. What would happen if you took the road not chosen? In fact, because this path was not chosen, you will never know. It is best not to think about the path not chosen since it serves no use. Dear readers, remember any situations when you have the ability to make a choice or a decision then you have control of the situation and hence you have the opportunity to control your destiny by controlling this part of the environment.

In summary, human destiny of the five stages is the result of interactions between genetic fate and environmental chances. The destiny in the early stages (prenatal and early childhood) of life is mostly out of your control. During the senior stage, there is a good possibility of limited control as well. Therefore, the youth and prime stages and perhaps significant parts of the senior stage are the most important stages when one can exercise control over the environment and create your own destiny. We must seize these time periods and take full advantage to enhance our lives by controlling our destiny to the extent that we can.

## **Essence of Environmental Chances**

We need to understand the fundamental nature of environmental chances to understand what is predictable and what is not predictable. After that, we can discuss what is under our control and what is not under our control.

### ***Nature of Environmental Chances***

To begin with, environmental chances are dynamic. It is understood that all living things on earth have a dynamic nature. However, even nonliving things although they may appear immobile, also possess a certain relative dynamics the least of which is contained within the movement of the earth around the sun. Everything has dynamics. Nevertheless, living and nonliving things alike all change with time; the only difference is the speed of change. It has been said that change is the only constant in the universe.

Next, the environmental chances is a result of interaction between individuals and its environment. From the statements above, the input/output relationship between the system and the environment, we understand that the more elements contained in the system, the more complicated the outcome becomes. The more complex it becomes, the more difficult it is to understand, and the more difficult it is to predict. The interaction between the individual and its environment is very difficult to study. Only under very simplified and restricted conditions, the relationships between individuals and environment become simplified (e.g. a criminal while confined in a jail cell) and, therefore, the individual's environmental chance is easier to understand and easier to predict.

### ***Good Luck or Bad Luck***

The environmental chances is the source of probability. The nature of probability is "neutral" without the connotation of being "good" or "bad." The nature of good luck or bad luck depends on the thoughts and judgments of the individual. Generally speaking, when the results of an event happening exceeds an individual's expectations in a positive way it is called "good luck"; however, if it falls short of an individual's expectations it is deemed "bad luck." If an event with an original low probability of success eventually succeeds it is then considered good luck. A car accident that is fatal and the passenger only suffers minor injuries is considered good luck, or even called a miracle. Gambling that results in a big win is considered good luck, and gambling that results in a large loss is considered bad luck.

From the viewpoint of probability, all of the events described above has the likelihood of occurring, therefore, it is more proper to treat good luck and bad luck as a matter of course of probability and all of the possible outcomes are really just probability or coincidence. For example, the probability of occurrence of a hundred year flood is 1 percent in any given year. If the hundred year flood occurred in recent few years that is considered bad luck. If the flood has not happen in more than a hundred years that is considered good luck.

### ***Can Environmental Chances be Predicted?***

Environmental chances (subsequent factor) is a very complex matter. However, it is not completely incomprehensible or unpredictable. Basically, there are two prediction processes: Deterministic Process and Stochastic/Probabilistic Process. Due to scientific progress, now we can predict the future or the results of an event for that part of the environment that is under our control. For the part of the environment that is not under our control, we can predict at best its occurrence in a probabilistic manner. This author will now use the simplest way to illustrate these two different processes and explain the meaning of the results predicted by these processes.

(See Appendix 3 – Scientific Method for details)

#### **A. Deterministic Process**

Again, using system engineering concepts, if we take the subject of a study as a system and give the system one input and through the transformation of the system it results in a single output; this is called a deterministic process. Therefore, this is a one cause - one result system. Many physics formulas, such as Newton's laws of motion, are an example of this process.

The resulting output will have nothing to do with the resulting length of the lead time. As you apply this deterministic process for predictions, the accuracy of the predictions would not decrease based on the length of time. In other words, output is fixed, independent of time.

#### **B. Stochastic/Probabilistic Process**

A process that is caused by a random variable is called a pure probabilistic process. A random variable is defined as a variable for which neither the timing nor location of its occurrence is predictable. If a random variable is related to its preceding events, then it is referred to as a stochastic process, while a probabilistic process is unrelated to its proceeding events.

Usually the statistical analysis is used to analyze this probabilistic process. Although the uncertainty of the results of the analysis still exists, and we cannot determine the causal relationship in this process, nevertheless we at least can conclude the degree of the possibility of its occurrence to calculate the level of risks involved (calculated risk).

### C. Process of Environmental Chances

Before discussing the process of environmental chances, the author would like to use his own experiences to demonstrate as a catalyst for the reader to create a better understanding of the concepts of probability as it applies to our lives.

- When writing this book, I would often go down to the kitchen from the second floor study room to get a cup of hot tea. I repeated this trip countless times and every time I have nearly complete self-confidence that I would succeed again. This author concluded that this is a deterministic process, meaning that I thought there was a 100 percent chance of success every time. However, as a matter of fact, the uncertainty of success does exist. Because it is so small, the author treated the probability of failure as zero percent. In reality the outcome has been 100 percent with no accidents so far. If this author would have a problem with vision or walking, then the probability of failure certainly would increase, and it would be necessary to take more precautions when ascending or descending the stair to prevent failure from happening.
- My second example will stretch the distance of travel. Since retirement, the author has visited the Washington DC area for meetings on several occasions. It takes about forty minutes by car, however, the author always likes to start a little early to avoid being late due to traffic or accidents. The occurrence of traffic or accidents is an unpredictable event. Compared with the previous example, we know that both the distance and the time of travel has been extended, which introduces into the environment additional variables such as weather conditions, traffic congestion and accidents. This has increased the probability of failure for meeting on time.
- The author recalls well in the fifth and sixth grade an essay contest entitled, “What I want to be when I grow up.” The author wrote that he wanted to become a flood control engineer to benefit society. It could be my genetic tendency or possibly due to the influence of my father and brother who both worked for the Water Conservancy Association. This influence has been since childhood. Six or seven years later, I made a choice through a college entrance exam and was admitted to the civil engineering department of Cheng Kung University which was my first choice. After graduating, I practiced hydraulic engineering for several years successfully. During the course of my life, changes and difficulty and many unknowns lie ahead of me. With confidence, perseverance and determination I successfully reached my calling and destiny.
- During my college years most of the engineering textbooks were written in English by authors with doctorate degrees in engineering. I told myself that, someday, I would like to write a book myself, and I established a goal to achieve a doctorate degree. This was a new goal for me. The road to the goal appeared to be quite difficult and uncertain. After

graduating from Cheng Kung University and serving one year of mandatory military service, I then worked for the Water Conservancy Bureau for two years. Afterwards, I applied for a scholarship to graduate study at the University of Iowa. After completion of my Master's degree, I got married and then worked for four years at the Pennsylvania State government and during this time I had two children. I then brought my family to Penn State University to complete my doctorate degree and finally earned my long awaited PhD. This period in the U.S. took almost nine years. Now, looking back to the road traveled, my path appears to be clear in my mind. However as a young man in Taiwan looking forward, the road was full of uncertainties. This road of life traveled was achieved with devoted effort towards my personal goals with persistent, unwavering commitment and good planning and perseverance to overcome many difficulties and obstacles in the path of life. Therefore, I believe that I have been trying hard to create my own destiny of circumstances within my control, without relying on the influence and arrangements of others.

A person's behavior always has a goal and a purpose. The attainable goal or purpose could be nearby or far away, or it could be in the near future or far into the future. The greater the distance or the longer the expected timeline is to achieve the goal, then the more blurred your vision becomes, and hence, the ability to predict the future lessens. As the uncertainty and unpredictability of events increases, then the probability of success (confidence level) in achieving the goals and purposes naturally decreases.

Regardless of whether you are still formulating the cause of action for your future or whether you are ready to carry out your actions, you will have your own estimate or assessment of your probability of success. You may say "I will succeed" or "I am confident that I should succeed" or you may think "I am not confident and I may fail" or you may say "I have no confidence and I will fail." The first level and the last level saying that "I definitely will succeed or fail" are estimates through the deterministic process. The other two middle levels are the estimates through a probabilistic process. Because the deterministic process is, in fact, only a special case in the spectrum of the probabilistic process, therefore, we conclude that "environmental chances" are indeed the source of probability in our lives.

The scope of environmental chances is broad and its process complex. There are many factors of uncertainty that exists during the process which affects the outcome (destiny) of the environmental chances. The author has depicted two separate concentric circles (Figure 5) with the inner circle representing genetic fate and the outer circle representing environmental chances. This reiterates the relationship as presented in Figure 4 which depicts the relationship between the individual and its environment. From the top of the inner circle, we draw a counterclockwise direction spiral curve ending at the top of the outer circle bisecting the area between the inner and outer circles into two components (sub areas). The two components are controllable environmental chances shown on the inside and uncontrollable environmental chances shown on

the outside as depicted in Figure 5. The controllable components may vary in their degree of control by the individual depending on the circumstances. By drawing from the perimeter of the inner circle to the perimeter of the outer circle, we may draw an infinite number of radius lines (e.g. lines A, B, C, D and E in Figure 6) assuming that each of these lines may represent an action or behavior of an individual during their lifetime. We can imagine that for each action or behavior there would be more or less controllable environmental chances and more or less uncontrollable environmental chances throughout the lifetime.

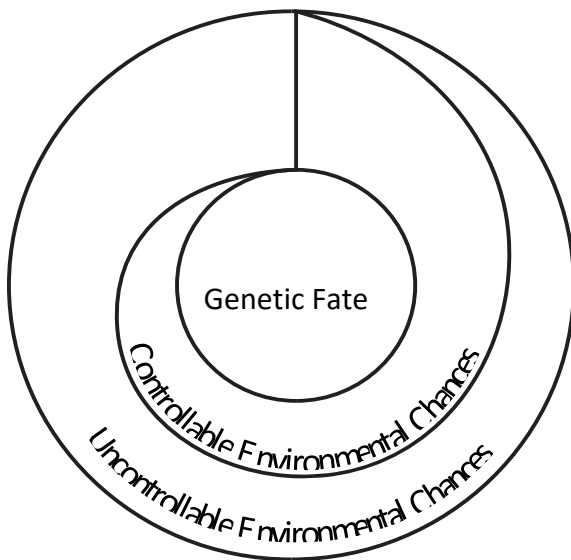


Figure 5. Controllable and uncontrollable environmental chances

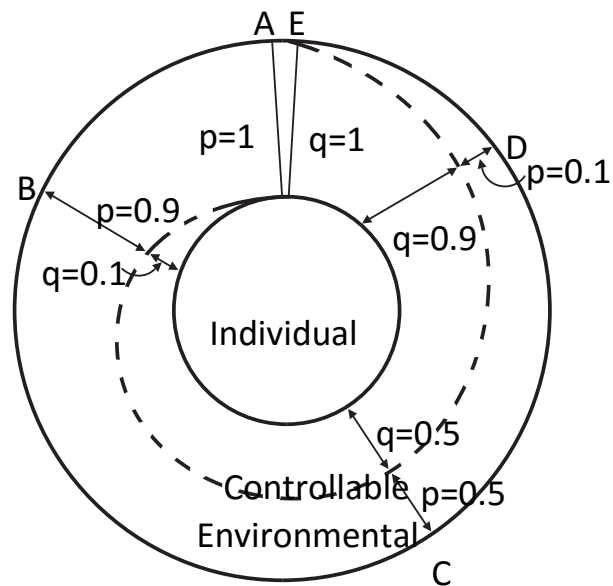


Figure 6. Probability of success and probability of failure

It is understood that there is a probability of success for both the controllable and uncontrollable environmental chances, however, the level of self-confidence or success or control can only come from the controllable environmental chances area so let's concentrate our attention on the controllable environmental chances only. Let us imagine that the entire area between the inner and outer circles is now occupied with controllable environmental chances only, as the occurrence of the uncontrollable component is basically out of your control and unpredictable. Now let us replace genetic fate (inner circle in Figure 5) with an Individual (inner circle in Figure 6) and let us replace the two components of environmental chances with a single controllable environmental chance. The spiral curve now separates the controllable environmental chances into probability of success area and the probability of failure area.

Then let us draw numerous radius lines from the perimeter of the inner circle such as lines A, B, C, D and E to the outer perimeter of the outer circle to represent the probability of success or failure; each radius line represents an action or behavior in one's life. Let's call the probability of success as  $p$  and the probability of failure as  $q$  and let  $p + q = 1$  (100%). Then line A represents  $p = 1.0$  and  $q = 0$ ; line B represents  $p = 0.9$  and  $q = 0.1$ ; line C represents  $p = 0.5$  and  $q = 0.5$ ; line D represents  $p = 0.1$  and  $q = 0.9$ . Line E which is immediately to right side of line A represents  $p = 0$  and  $q = 1.0$ . Therefore, the probability of success and the probability of failure of any action or behavior can be represented by  $p$  and  $q$  on different sides of the spiral curve.

When we are assessing whether we can succeed, we often use the word “confidence” or “sure” to express the degree of probability of success. If we want to quantify this success, we may use a percentage to express it. Such as, I am 100 percent confident that I will succeed or I am only ten percent certain of success. We must understand that these are estimated numbers by one self. The more scientific estimate that you use the more reliable and accurate the number will be.

If you want to achieve your goal or purpose more often in your life's journey, then you must increase  $p$  and reduce  $q$  in each actionable behavior, then the level of confidence of the probability of success will naturally increase. As to how we can increase  $p$  and reduce  $q$ , the readers are referred to the following section on Enhancement of Environmental Chances to understand its scope and essence.

## **Enhancement of Environmental Chances (EEC, 改運)**

First of all, I would like to invite the readers to remove any existing superstitious beliefs to allow for the consideration of science-based concepts in order to understand the true meaning of Enhancement of Environmental Chances (EEC). Use your current situation as a starting point and visualizing your short and long term goals and then assess what self constant improvement, such as education / learning, training, exercising and corrections or refinements, in order to improve your physical and mental conditions which will increase your rates of success and self-confidence in reaching your goals and dreams. This is the purpose of and means to achieve EEC in your lifetime.

In his book entitled “The Genius in All of Us,” (2010), Davis Shenk writes, “We now realize that everything that we do – everything that we eat or smoke -- can affect our gene expression and



that of future generations. Epigenetics introduces the concept of free will into our idea of genetics.” Shenk declares that this is big, big stuff – perhaps the most important discovery in the science of heredity since the gene.

The author will not discuss the EEC as it relates to the prenatal stage or the early childhood stage because, during these two stages and the first half of the youth stage, the child’s environment is mostly dominated and controlled by the parents or primary caregiver. To the child, this is nearly or entirely the uncontrollable environmental chances. During this rather long childhood period, children and their parents including adoptive or foster parents indeed belong to a common destiny due to the closeness of the relationship and decision making totally under the primary caregivers.

What is the real effect of EEC? Some EEC will find its immediate result and others will require an accumulation of effort to a certain extent to see the results. Still others, when you are well prepared and opportunity is available then you can take advantage of the opportunity to succeed. In a rare situation, you will find it’s applications in a short moment after a long time of preparation. Therefore we must have goals, vision, patience and perseverance to carry out the EEC.

### *A New Concept for EEC*

Whenever or wherever we have opportunity to make a choice or a decision, it is a controllable, environmental chance. Our long term behavioral change on the controllable environmental chances is then called EEC. If the behavioral changes and EEC are both positive and proactive then it will certainly change and enhance our genetic expression (phenotype) and, hence, increase the probability of success in reaching one’s life goals and objectives. Here are several examples to illustrate these desirable outcome:

- A person who was addicted to alcohol or drugs may have to serve some prison time and may have some difficulties in social environments. This individual, after rehabilitation treatment with physicians and counseling has become a better citizen who can then live in harmony with his environment. This person has changed himself positively through the enhancement of environmental chances.
- A young person would like to make some money and initially borrows money to buy stocks and to buy real estate but then experiences a great financial loss. Later, a good friend teaches him with knowledgeable advice about the economy and he also learns about business. After a period of training, he was able to invest more wisely due to his increased knowledge and even though he experienced some gains and losses he is

profitable. Therefore, he has raised his probability of success as a result of enhancing his environmental chances.

- A person in Taiwan who majored in geography came to the United States to make a living. It was very difficult to establish a career in geography, and he then changed his major to computer science. A few years later, he received a Master's degree in computer science. He was then able to find a good job in a computer software company and has worked for over 20 years in a very rewarding career. This person changed his career goals in the prime stage of his life. Due to his extraordinary efforts of increasing his knowledge and skills, he was able to enhance his environmental chances. So we can see that this person has talent and a strong determination to change his major to become successful in a new career.

These three examples will resonate with readers to show the effectiveness of learning, education, training and self-improvement to achieve EEC. The mechanism of these positive changes can be referred to as “proactive” EEC.

Mr. Xin Chao in the section titled “Destiny” in his book “Fortune Telling and Life Choices,” he talked about environmental chances and destiny. Because Mr. Chao has not defined destiny, this author assumes it is the traditional Chinese definition of destiny (predeterminism) and does not differentiate environmental chances from destiny. According to his book, environmental changes such as changes in one's diet, changes in one's habits, or changes in one's life courses cannot change one's destiny. In his mind, there is no foundation for EEC. However, according to this author and the new concept of EEC, if all of these changes mentioned by Mr. Chao are consistently followed, it will definitely increase the possibility of success in reaching one's personal goals (e.g. health). Therefore, this author firmly believes that positive proactive change of one's environment leads to enhancement of environmental chances (EEC) and one's destiny.

In Chapter 2 of this book in the section referring to “Personal Belief System,” I recommended several worthwhile books to read, all of them having something to do with “change,” For example: change the way you learn and you will change your life; change the way you think and this will lead to changing your destiny; changing your attitude will allow you to get out of the woods (trouble); if you change yourself around, then you will change the situation around. Even a book entitled “Good Habits Leads to Good Fortune” has a connotation of positive change in habits. In conclusion, all of these books affirm that positive proactive changes leads to enhancement of environmental chances (EEC).

## ***Proactive EEC***

Within the realm of what we have control of (controllable) we may strive to enhance our environmental chances. The author would refer to this as “proactive EEC.” Proactive EEC is positive, anticipative and self-initiated changes. Regardless of whether we are pursuing a long term goal or a short term purpose, this proactive EEC will increase the probability of success for our action (behavior) and enhance or aid the persons anticipated results.

In the last section of Chapter 3, as the author discussed the plasticity of genes, the author has stated that genes nearly completely determine one’s sex and facial appearance. With the exception of these, all other genetic characteristics including bodily constitution, physique and disease; traits, as well as the ability to reason, are only partially influenced by genes. The portion that is not influence by genes is influenced by environmental factors. These environmentally influenced characteristics are in the realm of “nurture” as opposed to “nature” (genes). In the following sections, let us examine the opportunity available in learning, self-improvement, education, training and self enhancement.

### ***A. Sex and Facial Appearance***

All persons would agree that sex (male or female) is a given, with only a few exceptions. These rare exceptions may choose to change their sex with medical assistance. This decision would be an example of proactive EEC. As to facial appearance, if one has birth defects or if one is not satisfied with your born looks, the individual may alter his/her facial appearance using modern plastic surgery or other corrective surgery techniques. This is also proactive EEC.

### ***B. Physique, Bodily Constitution and Disease***

Physique (body height and shape) is greatly influenced by genes as stated in Chapter 3. However, physique can be modified by diet and exercise and/or through the use of surgical techniques. Genes also affect bodily constitution to some extent. Professor Guan Chang Lin stated in his book, “Detoxing the Body to Eliminate Worry,” that one can change or improve one’s bodily constitution by changing diet, lifestyle habits and improving emotional stability so as to maintain or to regain one’s physical and mental health. This is a definitive example of proactive EEC. For those who have inherited disease caused by genetic mutation, one can perform timely preventive or corrective medical treatments so that one may avoid the suffering and pain, debilitation, or loss of life. This is also an example of proactive EEC. Regardless of whether the disease is genetic or non-genetic in origin, one should have regular or periodic physical exams,

undergo treatments (e.g. taking prescribed medications or undergoing any recommended surgery), perform exercise, and follow a proper diet; all of these are also proactive EEC.

### ***C. Traits***

If the innate (born) nature of one's temperament or behavior is not as acceptable by society norms, or if one discovers that a certain temperament or behavior has become an obstacles to one's success in work or business situations, then we can still make positive changes through nurturing or training. Furthermore, the earlier in life that one initiates the positive changes the easier it is to succeed as it is more difficult to changes as one becomes older.

### ***D. Ability to Reason***

Dean Hammer (1999) believes that genes affect memory power, intelligence and language aptitude. However, it requires nurturing and training to achieve its potential. The innate ability (instinct) is completely determined by genes. Conversely, learning is a result of modified behavior through experiences which is distinctly different from instinct. All animals that possess the ability to learn, who use the knowledge and skill acquired through learning, not only make up for any shortcoming in innate abilities but will also enhance the survival of the species. Matt Ridley stated that instinct ultimately gives way to learning, therefore making true the old proverbs, "nature gives way to habit" and "old horse knows the road." When learning reaches that stage, it becomes indistinguishable from instinct.

Bruce Lipton (2005) in his book, "The Biology of Belief," has an excellent explanation of the relationship among instinct, subconscious and conscious. The subconscious is a result of instinct and learning, and derived from a habit that develops from one's childhood. It can trigger the "reflective" behavior from the subconscious. Conscious is a positive driving force for reasoning and independent judgment, although it is different from the subconscious it has its interactive relationships. When the conscious is not functioning the subconscious takes over in this role. For example, when you are driving on the road that is very familiar, the subconscious often leads you to the intended destination. However, the conscious possesses the power to control or replace the subconscious at any time. The good habits always create benefits for our lives however bad habits are detrimental to one's life. Therefore, it behooves us to exercise one's conscious in order to rid oneself of these bad habits.

### ***E. Crucial Impact of Education on EEC***

During early childhood and youth stage is a growth period for our human body as well as the brain neurons. Therefore it is the most critical time for developing intelligence, body agility, cultivating positive personality and developing one's potential. School, family and society are the most important avenue for this education and training. Think about it, from first grade to college, there are about 16 long years. The individual, family, society and country must invest quite a bit during this period, so we may ask what is the real purpose of education? The educator, Dr. Tien De Lin in 1993 stated, "The meaning and the value of education is to guide and assist an individual to develop his or her potential ability, so that the individual can fit and adapt in society, and to contribute and serve society to the greatest extent to improve the living environment." Therefore, we can see that education has a crucial role in EEC that is in line with a healthy philosophy of life.

Through experiences, we know that education should develop a person's natural ability to its full potential in accordance with the person's aspirations and interests. One can then accomplish one's goal with greatest efficiency. The essence of learning and education is not only to comprehend the material presented, but also to understand the underlying fundamental principles of the subject matter being learned. Most importantly, one should learn how to integrate a variety of different subject matter and synthesize this knowledge to reach a level of enlightenment. The key to success is to apply the knowledge gained through years of education and apply this knowledge in a practical way in society. At this juncture the author recalls fondly that on his college graduation ceremony as he anticipated his entrance into society, that Dr. Shih Hu gave a speech to present a gift to all of the graduates for their lifetime benefit. The gift consisted of three "prescriptions" for all of the graduates, namely the "questioning" pill, the "passion" powder and "confidence" soup. Since the author feels deeply appreciative about the usefulness of these three prescriptions throughout his life, I am using the opportunity to share these gifts with the readers.

After more than a decade of education, one is then prepared to enter and start to contribute to society through job opportunities. We all understand that a job opportunity is offered and not something within your control. The chance of job opportunities comes and goes, but these opportunities are usually captured by the person who is best prepared. A person can capture a job opportunity as a result of the long-term pursuit of EEC. In 2005, I noticed a large poster at a job fair in Taiwan that read, "Opportunity determines your destiny," which exemplifies the importance of being prepared to seize a job opportunity.

Proactive EEC not only benefits "self," it can also benefit or contribute to the "greater than self" society. Even though serving or contributing to society are under the realm of "greater than self"

there are different levels of impact. The higher level EEC has a great long term contribution to the human society. Examples such as cars, trains, airplanes, electric lights, telephone, telecommunications, television, computer advances and development, all kinds of medicine, medical technology, biochemistry and even government welfare measures, consolidation of national defense, freedom and democracy, benefit the society at large. The success of all of these above mentioned contributions rely on the great effort of the society (greater than self EEC) as a whole and not a result of one individual effort. So, if you are living or born in a good environment with these benefits, then consider yourself lucky; however, these benefits are part of the environment that you are living under and are not your individual's contribution.

### ***Reactive EEC***

Those environmental factors that are outside of one's control are created by other individuals or groups or the natural environmental conditions. If the results of those conditions are beneficial to you, then you are lucky. However if these conditions are detrimental to you, then it is unfortunate. People are happy when they feel fortunate. If we are in an unfortunate situation we can only remedy the aftermath in order to reduce the long-term damage. We also can strive to learn from these unfortunate events and hope to manage the outcome to minimize the damage in the future. This is what is called "reactive EEC."

Those events (environments) that we have no control over are usually ones that are unknown (what), and are often unpredictable in the timing (when) and unpredictable in its location (where). This may include such things as: accidents, traffic incidents, fires, pandemic viruses, earthquakes, tsunamis, typhoons, floods, droughts, land subsidence, mudslides, landslides, power outages, and even riots, terrorist attacks, war, and other natural or man-made disasters.

The development of modern science, though still cannot accurately predict the occurrence of these disasters but the application of monitoring technology can be used for very short term forecasts to issue warnings or pre-evacuation of the areas to be affected to reduce casualties and property damage. Typhoon, torrential rain, floods, tornadoes and drought warnings are examples of the application of this monitoring technology.

All of the above mentioned reactive EECs that help to reduce loss of life and property often require a large number of personnel to implement therefore is considered a "group effort" from the society. As to the individual efforts to reduce one's losses due to uncontrollable events, there are a myriad of insurance options such as auto insurance, fire insurance and flood insurance that

we can avail ourselves to. Some insurance is required by law, however, the individual involved still has choices as to the issuer of the insurance. So even though the requirement to have insurance is out of your control, you still have choices within the insurance companies. That is why this is still considered reactive EEC.

Another example of reactive EEC “group effort” comes from the relationship between individuals and their country. A country’s political and economic institutions and its long term policies are beyond an individual’s control. However, everyone within the country will be limited or affected by these institutions. Under this situation, the reactive EEC must rely on the strength of the large-scale group effort of the country. In a democratic society, the ruling party may be changed by voting citizens to represent the will of the people. In totalitarian countries, its citizens often must endure these institutions in silence, however, at times citizens can collectively demand reform and even ignite a revolution.

## Chapter V Your Destiny

In the previous chapters, I have explained and discussed the “value of life” and the “philosophy of life”; “genetic fate and its determinism” as well as genetic plasticity, and “environmental chances and its enhancement.” I also discussed “goals and purpose” of human behaviors and the “individual’s judgment, choices and decisions,” and the role these factors take in our journey of life. In this chapter, I want to comprehensively and systematically explain the effect of the above mentioned factors and the relationship with one’s destiny. The hope is that the reader will, at the conclusion of chapters 1 through 5, have a clear and correct concept of the formation of destiny and, hence, be rid of superstitious and pre-destination beliefs.

### Definition of Destiny

Perhaps you would say that destiny is destiny, everybody knows what it means so why do we need to define it? Let me explain. If you think destiny is the road you travel in life, then I agree and there is no need for it to be redefined. However, in our society there are many people who interchange the word “fate” (Ming) with “destiny” (Ming Yuen) as if they have the same meaning. Even in chapter 1, the Chinese dictionary defines the word fate and destiny as the same indistinguishable meaning that have been stated as predestination. So far I have provided the new scientific definition for “fate” and “chances” (Yuen). “Fate” has been more narrowly defined as “genetic fate” which has been scientifically defined in chapter 3 and “chances” has been scientifically defined as “environmental chances” in chapter 4. Now it is time to give a new scientific definition to destiny (Ming Yuen). This will give clear and distinct definitions for genetic fate, environmental chances and your destiny. The most important concept to remember is that genetic fate is the “initial factor” and environmental chances are the “subsequent factor”; both factors affect one’s destiny. Destiny is the result of the interaction of the initial and subsequent factors coupled with a person’s exercising of judgment, choices and decisions.

### *The Current Chinese Definition*

The current definition of destiny as described in the Chinese dictionary (2004) is:

1. Fate and fortune; it denotes life’s encounters with respect to life and death, rich or poor, luck or bad fortune.
2. The second definition refers to the tendencies of development and changes in a person or things.



The first definition is obviously referring to pre-determinism and the second definition although is not completely defined to the extent of pre-determinism, however, it still lacks a greater sense of personally controllable elements in its definition and in one's life journey. Interestingly, one of the editors of the dictionary seemed to feel compelled to actually distinguish between destiny and predestination by footnoting the word destiny with an example saying, "every person's destiny is in his own hands." In addition, that author commented further that we must not easily believe in destiny as defined in this dictionary and that in every life encounter one must always strive to do one's best and never fall victim to the pre-determinism concept.

### ***The New Scientific Definition***

The author's new definition of destiny is "the descriptions and records of one's life which is the result of the interaction of genetic fate and environmental chances." Therefore, genetic fate and environmental chances are all causes and destiny is the result. Destiny is indeed the journey of life.

In one's journey of life, if you look back, this represents the road that you have traveled and there is only one road; however, if you look forward you are viewing the future as projected and the roads are potentially many and varied. The future may be uncertain, and the farther into the future, it becomes even more uncertain.

If we would add this new definition to the dictionary or even replace the current definition we would not be bothered by the current definition of destiny (predestination). This author wants the readers to distinguish between destiny and predestination and this is the reason to create the new definition for "destiny."

### **Your Life Journey**

Destiny is the road that you have travelled or will travel. It consists of many daily and short-term behaviors in order to satisfy your physical needs and also includes the pursuit of medium and long term goals. Destiny is the integration of all these activities. In a few decades of our lives, where do we consider the beginning of our destiny? What is the purpose or goal that we are pursuing in our lifetime? We must also ask, within the three stages of life (youth, prime and

senior) how does genetic fate and environmental chances interact to form the foundation of your destiny?

Figure 7 simplifies the complicated journey of life to explain destiny. Figure 7 illustrates that your journey has a starting point and an end point with one's ultimate goals and dreams. Within one's journey there will be medium and long term goals while satisfying one's daily and short-term physical needs. The path of one's life journey has many twists and turns with numerous intersections with other people on their life's journey and also many forks in the road. At every fork one must exercise a judgment, choice and decision. The results of the choice and decision will change and affect the direction of the path and ultimately change and affect one's destiny. In the following sections, the author will explain more fully those key elements of your life journey as illustrated in Figure 7.

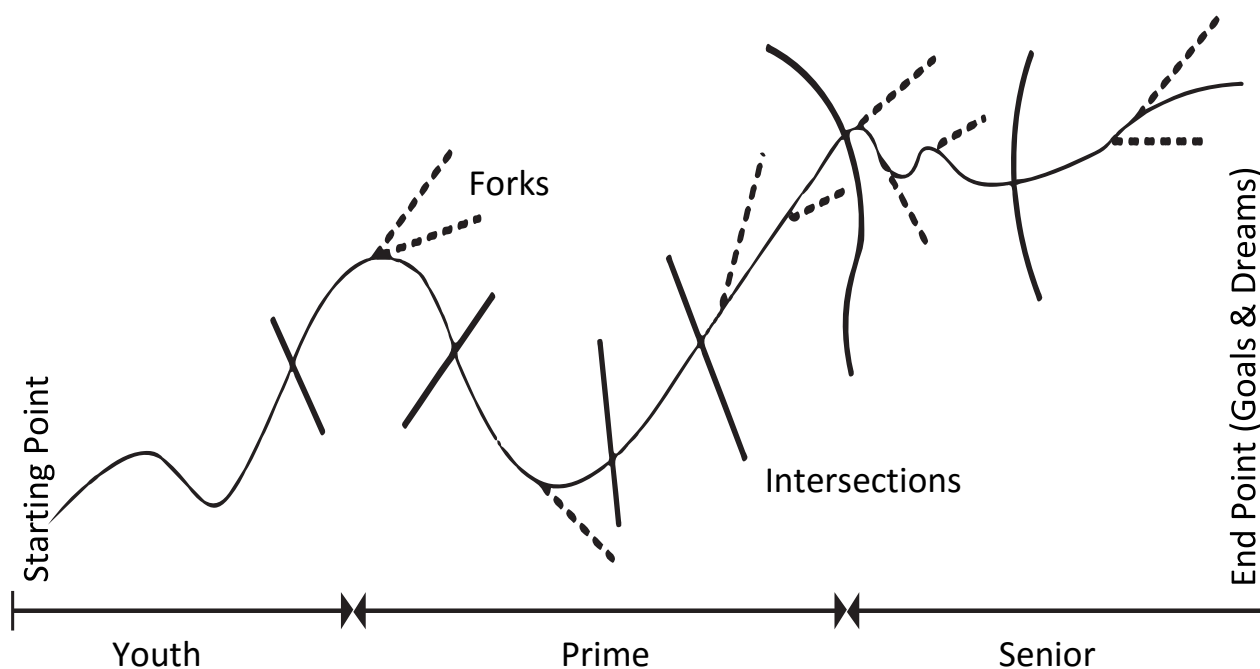


Figure 7. Your Life Journey

### *The Starting Point*

How do we determine the start of one's destiny? Some would say that it is when we are born. Others may say that it starts at the point of conception. However, I have stated in Chapter 4, during the prenatal stage although the environment starts to affect life from the point of

conception, it is totally dependent on the mother for all of its needs; there is neither independent life nor destiny. During the early childhood stage although the child is an independent individual, it is nearly or totally dependent on its mother or other primary caretaker for the majority of its needs. Therefore, the child is very much part of a “common” or “shared” destiny of the primary caretaker so this stage cannot be considered a starting point of “your destiny” either.

The author believes that the starting point of one’s destiny should be when the individual starts to gain independence and oversight of areas of his or her life that are controllable. This starting point is variable with respect to one’s environment; however, it usually occurs somewhere within the early or mid-point of the youth stage. As we determine the proper starting point for each person’s destiny, it will eliminate the myth that one is born with a certain destiny and establishes a baseline for achievements on one’s journey. From that point of view, we should measure an individual’s achievements using “value added” accounting to oneself or to society as a whole. This is a very reasonable and equitable measure that most people would agree.

### ***Goal and Purpose***

In Chapter 2 in the section entitled, “healthy personal belief system,” there are two important conclusions:

- The pursuit of happiness is the highest goal of life. Once we satisfy our needs we will feel happy. Those needs could be short-term material needs or long-term spiritual needs.
- “Purpose of living” is to satisfy materialistic “self” needs at a basic level and then progress towards “greater-than-self” satisfaction of needs. Ultimately, this will lead toward “selfless” conscious needs. That is to say, all human behaviors and activities are purpose and goal oriented.

The “goal” and the “purpose” is not easy to distinguish. We may consider the spiritual and long-term needs satisfaction as worthy “goals” to pursue, however satisfaction of short-term materialistic activity is to be the “purpose” achieved. Therefore, when we are hungry we eat, when we are tired we sleep, this is to satisfy a purpose to achieve meeting one’s basic physiological needs. Suppose you want to be a writer or an artist, or become a nurse, an engineer or technician to serve the needs of the greater-than-self society, then the public service one provides is considered to satisfy your goal. Some people have great ambition or great talent and can pursue multiple goals at the same time. Once the purpose and goal are achieved, a happy feeling results from this satisfaction.

Happiness is the highest goal of pursuit by everyone. You must reflect yourself through self-examination to determine what fulfills your happiness. We can strive then to capture what is

most desirable to achieve and prioritize these pursuits as objectives in your life. If we pursue those listed objectives in accordance with your interests, personality and innate talents, your chance of success will increase and you will feel happy pursuing these objectives. In contrast, even if you may achieve a high paying employment, if it is not in alignment with your talents and interests, you may not be fulfilling the pursuit of happiness as your highest goal.

The establishment of objectives is important and the earlier these objectives are established the sooner the success. There are many high school graduates and college freshmen who do not have any clear career path at this point in their lives. Others may have goals in mind, however they may change their goals and may waste a lot of time and effort during this process. A number of people under the constraints of their conditions (e.g. financial) may have to find alternative paths to pursue their goals and dreams. Some examples of individuals achieving their objectives are as follow: a Chinese born astronaut Dr. Lee Chong Chiao determined to be an astronaut as early as eight years old; Billionaire Zen Chung Huang determined to be a rich man at the age of 27 and worked very hard to make money since then; this author dreamed of becoming a water conservancy engineer since fifth grade, and, when he was a second year college student, he was determined to earn a PhD degree; the author had several classmates in junior high who due to family financial constraints chose to attend normal (teaching) school with paid tuition, room and board and after the mandatory elementary school teaching period they were able to attend the university level through an entrance exam. These classmates had to work very hard to create their own destiny through these efforts.

Perhaps some people cannot or do not want to actively seek happiness and would be satisfied with a minimal peace and security. Dr. Tian De Lin (1993) advised strongly that we do not just try to pursue a minimal amount of peace and security but should pursue full happiness. He simply uses a definition of happiness as “getting what you want” as opposed to “peace and security” which he defined as “you do not get what you don’t want.” Therefore only when a person is in pursuit of happiness will that person achieve full satisfaction. If a person reaches only a level of peace and security, that person will ultimately experience some regret or remorse. In conclusion, happiness will lead to a truly happy and healthy life.

What will bring us true happiness? Social psychologist Dr. David Myers, in reviewing many books and articles on happiness, wrote a book called “The Pursuit of Happiness.” In his book, he presents a comprehensive analysis of all data and statistics and he debunked many perceived truths and misconceptions about happiness and stated new findings about happiness. For instance, he found that there are many happy people in the world; money does not necessarily buy happiness, and youth and elderly are not necessarily unhappy. Dr. Meyer concluded in his book what really makes people happy, and provided a list of roots of happiness below. Carefully examine this list, and it may help you develop your own objectives in your pursuit of happiness.

- Good Health
- Realistic Goals and Expectations
- Positive Self-esteem
- Feeling a Sense of Control
- Optimism
- Outgoing with a Positive and Open Mind
- Compassionate Friendships
- Equitable and Intimate Marriage
- Challenging Work Punctuated by Adequate Rest and Retreat
- A Faith or Belief with Purpose, Hope and Communal Support

Finally we cannot help talk about the relationship between “fortune” and “happiness.” How can you say money does not necessarily make you happy seeing that everyone in society wants to make money and the more money the better? Meyer (2002) concluded from many questionnaires and research that money does give people some degree of happiness. However, after meeting the basic everyday needs of food, clothing, housing, transportation, education and recreation, extra money will not necessarily buy more happiness. Billionaire tycoons will tell you that the source of their true happiness comes from the success of the process of building a successful company and the respect they received from contributing to society (greater-than-self). In 2006, Bill Gates, founder of Microsoft, Warren Buffet, fund manager, Hong Kong tycoon Chia Cheng Lee and British entrepreneur Richard Branson have all contributed great fortunes to charity and have felt a high degree of happiness as a result. It can be said that all of those people have achieved the highest level of self-actualization also known as self-less realm.

### ***Choices and Decisions***

First, let us sort out the definition of the terms. According to the dictionary, choice consists of the mental process of judging the merits of multiple options and selecting one of them. Decision is the act or process of deciding and is a determination arrived at after consideration. Therefore, to pick “B” from options “A”, “B” and “C” is a choice. With respect to anything your determination to participate or not to participate, to decide if something is good or bad, to stop or not to stop, or a determination to proceed with step “A” and then step “B,” all of these are examples of decision making. In a test, we have multiple choices, and we have true and false questions. True and false questions are actually a decision, however, if you treat true and false as a two-part choice then the choice is a decision. However, if we took the two sides as a decision, then the decision becomes the choice. Therefore, although similarity exists between the two

words, choice and decision, there are differences. Because these two words have comingled meanings, we will use both words indiscriminately in the following discussions.

In our daily life we are making choices and decisions every hour, sometimes every minute. There are many choices and decisions that do not affect our lives significantly, and often these choices and decisions are made without much thought. However, there are other choices and decisions that affect our lives in the short term, and other decisions and choices that affect our long-term goals and even our destiny. There are other choices and decisions that once we make will affect the subsequent choices and decisions to follow. In Chapter 4, we have discussed the long-term positive changes or the so-called proactive enhancement of environmental chances (EEC) and all of these were based on the individual's critical choice and decision making which require a perseverance and persistence to succeed.

When thinking about this subject of choices and decisions, I am reminded of a book by the author Wilbur Cross called "Choices with Clout." Wilbur Cross devoted his book to the importance of the role of choices and decisions played in one's journey of life. This is also the core issue of this section of this chapter. In his book, Cross used the concept and experiences of Richard DeVos and Jay Van Andel, who are the founders of direct sales, as examples to write this inspirational book full of encouraging philosophies of life. The following points are the most important concepts from his book highlighting how choices and decisions affect one's destiny:

- You make choices all the time. Although some choices are vitally important, and some are trivial or inconsequential, nevertheless you must make a choice.
- Most people have three very important assets: the power to make a choice, the ability to choose and the right to make a choice.
- Choice is the most important factor in life, and is of key importance to success, happiness and personal achievement.
- It is inevitable that people hesitate when faced with a choice. But as long as you decisively make your choice, even if it is not always a wise choice, it also is a sign of personal growth.
- Do not be afraid of making a wrong choice. The worst option is to make no choice; then, other people will help you decide and the result may be worse than if you choose the wrong choice. Do not give up your right to choose.
- There is no shortcut to success, but you must be able to grasp the opportunity. Ready yourself to grasp the opportunity rather than waiting to see if the external environment is appropriate.

Cross, in the appendix of his book, lists the seven pillars of choice and wants you to think whether your actions consist of the following seven vital elements that can work in your favor.

- C**     *Concerns* that are important and have necessitated choices in the first place
- H**     *Hopes* that inspire you to aim higher and upgrade your stature in life
- O**     *Opportunities* that have been revealed and can be seized if you make the right choices
- I**     *Independence* to strive for a goal on your own and reach the place where you want to be
- C**     *Capabilities* that have lain fallow and can be energized by positive decisions
- E**     *Ethics* whose nature and extent keep you on course when you might otherwise stray
- S**     *Sources* of new strength that are available when you decide which route to follow

Choices and decisions also play a central role in a democracy and free market economy. In a political arena, we may use our vote to choose among several candidates. In a free market economy, you may use your money to purchase your preferred merchandise from various competitive suppliers of goods and services. This is an example of the value of democracy and freedom which honors your choices and decisions and provides you opportunities to exercise choice and decision.

Finally, I want to repeat a statement made in Chapter 4 under the section on Enhancement of Environmental Chances (EEC). It says that whenever or wherever we have the opportunity to make a choice or decision it is an Environmental Chance for which we have control. Remember this!

Before proceeding further to discuss the destiny in each of the following three stages of our lives and real life examples of destiny, I would like to reiterate the statements put forth to illustrate the meaning of the book cover design. “On the base of a Road is a Ball of Destiny which consists of two basic components: Genes (G) and Environment (E). They interact throughout one’s life-time from birth (point of conception) to death much like Yin and Yang in the classic Chinese philosophy of Taoism. Behind the ball is a person, regardless of age or gender, pushing and directing one’s destiny toward its goals and dreams. In the pursuit of one’s happiness, one must constantly and unavoidably make numerous Choices (C) and Decisions (D) along the way. One’s destiny is the result of this complex dynamic process which can be expressed as a simple mathematical formula i.e.  $\text{Destiny} = (G \times E) \times (C \& D).$ ”

### *The Destiny of Youth Stage*

The reader may note as previously discussed that during the prenatal and early childhood stages, the individual is nearly totally dependent on his or her primary caretaker, and therefore, its destiny is at best in common or shared with the primary caretaker. The individual's destiny generally begins in the youth stage.

During this stage, all youth have a common destiny and given mission/duty that is to study and learn. This period is devoted to establish a foundation for a destiny yet to come. From elementary school until graduation from college, we have spent a total of 16 years in this learning stage. Of course, according to the differences in nationality, and individual's goals, objectives and interests, as well as an individual's family situation, this period may last only a few years for some but may last as long as 20 years for some others.

During this period, the nature-nurture interaction is very strong. Based on one's given genetic makeup (nature), everyone will nurture oneself through learning, training, exercise, improvement and conversion. Our potential in knowledge and skills can be developed through this education and training effort; thus we can turn our innate abilities into developed abilities. Through proper exercise we can strengthen our agility. We can also shape or mold our innate nature (e.g. temperament) to adapt to the social and cultural needs so that our character and personality will work to our advantage in the society. All these are the so called proactive enhancement of environmental chances discussed in Chapter 4.

Asian cultures have exhibited a high degree of emphasis on education and academic advancement. Most parents yearn to have their children attend good schools and universities. Often, parents are over concerned about their reputation, poor family income or their children's future career even as to ignoring their children's own dreams, interests, talents and goals. The worst situation is to force their children to a destiny contrary to their interests, goals and dreams.

Young people should become the master of their own destiny as early in life as possible. This requires the cooperation of parents and teachers to encourage and confirm the children's dreams, interests, talents and goals. This author further believes that starting in the fifth or sixth grade through high school, students should be taught a series of classes emphasizing the importance of social science dealing with social interactions and establishment of a healthy personal belief system.



Experience tells us that school age students and teachers and friends create deep friendships and mutual understanding and trust. Therefore, after their education ends, if you either work for others or are self-employed in the community, these relationships continue. Classmates and friends may become coworkers or business partners. DeVos and Van Andel, the founders of Amway Corporation which is a direct marketing company, is a good example. They met on a school bus and attended school and later became one of the largest and successful business partnerships.

Lastly, I would like to bring up an important point made by Malcolm Gladwell in his book titled, “Outliers” (2008). A genius, in a way, is an outlier by itself. The outliers Gladwell talked about are not only geniuses, but they also have spent an inordinate amount of time (over 10,000 hours) in preparation for their futures. Gladwell strongly emphasizes the critical importance of family upbringing to their great success and the learning of interactive social skills which can be at least equally attributable to anyone’s success in the modern world. He compared the career of Chris Langan and Robert Oppenheimer, both geniuses living at the same time period. Gladwell attributes Oppenheimer’s greater success over Langan’s to the former’s much higher learned social skills. He concluded that a high general analytical intelligence (IQ) and practical intelligence (learned social skills) will guarantee a great success in the world. Daniel Goleman, in his groundbreaking book, “Emotional Intelligence,” describes the difference between IQ and EQ (emotional intelligence) that measures one’s ability to succeed in the social context.

### ***The Destiny of Prime of Life Stage***

This stage represents a time period when a person must put forth the maximum efforts to contribute to society. This period is often called the “prime of life.” During this period, everyone should have been pursuing his/her goals and objectives already established, guided by one’s philosophy of life. Each person would be responsible within one’s own role through prior training and education during the youth stage, to improve one’s own (self) and family’s well-being as well as the society’s ( i.e. greater-than-self) welfare.

Each person’s ability, personality and physical attributes are basic elements of success in one’s endeavors. Your ability is based on your innate (born) intelligence and memory, and nurtured through training and education to realize this potential. Personality is a product of one’s innate temperament in combination with nurtured character. Physical attributes are influenced by your genetic makeup and developed through training and exercise. Your current conditions are a result of your genetic make-up components in combination with all of your effort in

enhancement of environmental chances (EEC). Genetically speaking, your current state of physical condition and mind is the manifestation of past interactions between your genotype and your environment!

According to surveys, most people want to do challenging work in order to create a sense of accomplishment. To rise to the new challenges, everyone will inevitably have to keep learning and training to improve and enhance their knowledge and skills. For those people who want to be leaders or organizational unit managers, it is necessary to learn and acquire training in human relationships and may need to transform or improve their own personality. Therefore, depending on the dynamics of the nature of the work and the personnel in the work place, everyone must continue to learn and change positively. At every major fork junction or turning point in our career, be sure to make careful and thoughtful choices and decisions, trying to grasp the areas of our lives that we have control of. For those areas of our lives that we have no control over, we should learn from experiences so that we can better cope with similar circumstances in the future.

Society is like a battlefield; there are successes and failures. However, this is not a zero sum game of life and death place. In a free and democratic system, it will create a flourishing society, allowing all individuals to do the best and become the best in their field or profession. Everyone should be able to determine one's role and niche in the society. Most importantly, make sure that your work or business is suitable for your interest, personality and talent and thus this will result in not only performing your jobs with ease but also feeling happy in performing them.

Some people are employed by corporations or companies, and others run their own business. Any kind of route is alright as long as it fulfills your personal goals. All roads lead to Rome. However, we should know that whatever path we choose, there are uncertainties and risks. The businesses that have low risk may have a low rate of return and correspondingly those investments with high risk may have a higher rate of return. For example, the most secure money deposits in the bank earns interest only but interest rates are low; in the stock market, there is higher risk but the return may be high. The rate of return for mutual fund investments tends to be in between the low and high return rates. The risk is associated with uncertainty of the event which is the basic principle for the probability process.

### *The Destiny of Golden Years Stage*

The author defines the “golden years” as retirement age which begins around the age of sixty five years old. If a person retired from one job at age 65 and started another career and now is, let’s say, 75 years old, this person would not be considered as yet living in the golden year’s stage.

The highest goal in this stage as well as the other two stages, is the pursuit of happiness. However, the objective to achieve this goal could be quite different as compared to the youth and prime stages. During your youth stage, there may be planning and goal setting for the prime stage because the former stage lays the foundation for the latter stage. But it is rare to plan for old age during the youth stage. Typically the planning for retirement is accomplished during the prime of life stage. In the society there are people who are nearing the age of retirement but are hesitant, apprehensive or even fearful of entering the retirement stage because they are afraid of too little or nothing to do with all their new found time. Therefore, before you retire it is critical to have pre-retirement planning to carefully consider the quality of your retirement life to make you happy.

The author has been retired over 11 years as of 2015. Prior to my retirement, my son gave me a book entitled, “101 Secrets for A Great Retirement,” written by Mary Helen and Shuford Smith. There are eight parts with a total of 101 sections in the book. The authors of this book use a very concise style of writing that is very easy to understand and is well written. The book lays out 101 secrets on how to enjoy the retirement life, based on their and many others’ real experiences. In Section One of Part One, the book has a few pithy words which I have paraphrased as follow:

- Undoubtedly, the satisfaction of retirement depends on our individual choices and decisions. We make thousands of choices and decisions every day; and these choices and decisions determine the future course of one’s journey which determines our happiness.
- During our youth stage, parents, teachers and even classmates share our power to control our destiny. In our prime of life stage, our spouse, children, boss, neighbor, and friends demand our limited time. Once retired, we can control our own destiny.
- Some people often blame others for their own failures or discontent. Once retired, in order to create self-satisfaction and happiness, we must change. Stop blaming others, stop complaining and take control of your own destiny. Retirement is the time at which you should change yourself.

- Upon retirement, find time to enjoy some relaxation at the beach or mountains to allow time to think and for self-reflection and to inspire our inner thoughts and intuition to guide us so that we may make clear choices and decisions to steer our destiny.

Although people may differ in their goals and objectives for retirement life, there are common issues that must be fully addressed by all during the prime of life stage. Among them, sufficient retirement funds and maintaining both physical and mental health are two of the most basic and important issues. The wealth accumulated from the prime of life stage must be managed carefully and conservatively during the retirement stage so as not to adversely affect the quality of your retirement life. Your health at retirement is a carryover from the prime of life stage and should be carefully maintained and even improved during the retirement stage. Remember, when you lose your health you lose everything!

Beside these two aforementioned objectives, the other objectives of retirement may include: to choose and enrich your daily activities, to cultivate relationships with family and friends, to continue to accumulate wisdom and emotional stability to handle difficult circumstances with maturity, to create a quality living space, to enjoy lifelong learning (you are never too old to learn), and lastly to discover potential new interests that may be to your liking.

In summary, establish and prioritize your goals and objectives to walk through your life journey with confidence and perseverance so that you can fulfill your choices and decisions. If you want to make retirement life the most comfortable and happiest period of your life, it will exclusively depend on your choices and decisions.

## **Real Life Examples of Destiny**

The journey of life is destiny. Our destiny is formed through the connection of all the points of daily life throughout our life journey. If you want to assure a happy life, we must focus on satisfying our daily needs to make us happy. Do not rush and concentrate on accomplishing every small unimportant thing. Prioritize your attention on the greatest and most important things instead to make you happy. Adhere to the practice of “living in the moment” and you will be consistent with a healthy philosophy of life.

In the following stories the focus is not on an individual's or a group's destiny, instead it is only to share a relevant part of their lives to illustrate (1) The interaction between genetic fate and its environmental chances and (2) How a person's goal and purpose as well as a person's choices and decisions affects one's destiny.

### ***Gambling and Playing the Stock Market***

These two parallel activities have been experienced by many people. I have lived in the United States for over a half century and have visited Las Vegas and other casinos a number of times. Toward the late period of my prime of life stage, I played the stock market for a while, mainly out of curiosity. I would like to talk about the destiny in playing these games. Let us talk about gambling first.

What is the purpose of gambling? Some people want to make money, some just for entertainment, and some may want both! We must recognize that economically speaking, gambling activity produces no goods and provides no services. Indeed it is a kind of win/lose proposition - - a zero sum game. That is why in many states it is a prohibited activity. Certain exceptions are allowed such as Las Vegas and Reno, Nevada, Atlantic City, and many locations on Indian Reservation lands. Some gambling is conducted as underground illegal activities.

Some people like to gamble and some people do not like gambling. This is an innate tendency closely related to individual genes. Those people who are risky, more aggressive and competitive in nature and opportunists tend to like to gamble. Those people who value security or are grounded, practical, and conservative tend not to like to gamble. Of course, the environment affects the behavior, too. Those people who closely associate with gamblers may become a gambler. Still others use gambling to make a "quick buck"; these people are a desperate or impulse type gambler.

As previously mentioned, gambling is a probabilistic process, therefore, it is an environmental chance that you have no control of. However, it is an environmental chance that you have the ability to make choices and decisions, which is what you have control over. Therefore, gambling activity is a combination of controllable and uncontrollable experiments.

If you gamble just for entertainment, you may set an upper limit of your loss beyond which you will definitely stop playing. This requires timely assistance of your strong will and

determination and reasoning ability to make choices and decisions. This way you still have destiny remaining under your control.

If your goal is to make money, then you need to know when to stop betting. Suppose you are in a lucky streak of winning and you keep on playing, it is possible to not just get even but to lose money as you continue. Therefore, you must make timely decisions when to stop as you are winning. The problem with winning streaks is that you want to win more and potentially bet more. As a matter of fact, casinos always design their game machines with a 2-3% rate of return for the owners. If you play for a long time on the same machine, you will certainly end up with a loss. Therefore, if you miss the timely decision to stop, you have lost the opportunity to steer your destiny.

Let's now turn to playing the stock market. The purpose of playing the stock market is to make money. However, we know that many people lose money in the stock market. The rise and fall of stock prices is the key to making or losing money in the market. The actual gain or loss is only realized at the point of the sale of the stock. It is very difficult to determine the rise or fall of the stock market. To the general public, the fluctuations of the stock market are part of the environmental chance that you have no control of. Only very few "experts" with in-depth knowledge may feel a little control on this environmental chance. This feeling of control can be the result of gathering the most accurate information about a company. Of course, experiences also impact the level of success.

Even though the stock market rises and falls unpredictably, we still have control over a few important choices in the stock market. We may decide not to play at all. If we do decide to play, we may choose companies that we want to invest in and we can decide the timing of when to buy or sell and decide the amount of our investment. We all know the theory of "buy low and sell high". However, it is very difficult to time the markets to determine the optimum time. Those who cannot manage the market fluctuations to realize a financial gain are not destined for this type of skill. If you decide that the stock market is not for you, you can decide not to participate. This is a proactive measure of enhancement of environmental chance (EEC) discussed in Chapter 4.

If you rely on a stock broker or financial manager to advise you in the stock market, then your control is now diminished further. When you do not maintain any control at all, the stock market game then becomes the environmental chance for which you have no control. In this case, you are lucky if you make money. If you lose money or just break even, this may be considered normal. In all cases, the stock broker always makes money whether you win or lose.

### ***John F. Kennedy Jr. Plane Crash***

The accident occurred on July 16, 1999. John Kennedy Jr. and his wife as well as his wife's sister tragically died together in this plane crash.

JFK Jr. was at his prime age of 38 years old. His accident was definitely not predetermined or predestined by God. Three people died together in this plane crash marking the end of their destiny; however, the interactions among the three people and with their environmental chances were rather complicated. Let us look back and analyze these interactive processes to find out the causes and probability questions that lead to this tragedy.

Let's first talk about the destiny of the lifeless airplane. When the airplane was new from the factory the "genetic fate" of the plane was determined.

At that time the configuration, design, structure, color as well as the function and performance of the plane had been decided. After this, everything else is subject to environmental chances. The environmental chance for the airplane is totally under the control of its users and the environment under which it is being operated. The airplane has no ability to control its own environmental chances.

If the accident of the airplane was due to a mechanical failure, then the destiny of these three people is determined by the airplane. The only survival opportunity will depend upon the knowledge and skill of the pilot as well as the environmental conditions such as the weather. If the accident occurred due to pilot (JFK Jr.) error, then the fate of the passengers (wife and sister-in-law) would be totally controlled by JFK Jr. The turning point of the destiny of the sister-in-law was her decision to join the couple in the flight on that particular day. As to JFK Jr.'s wife, her destiny has traceable sources as well. Since the time that she was married to JFK Jr., they were bounded together as husband and wife in their life. It was natural and quite certain that they would travel together in this case. For the sister-in-law and the married couple, their environmental chances are separate and different because the three people did not live together. But on this event their life's journey crossed at this juncture. Even though this intersection of their lives was short, their destiny was bounded together by the fate of this airplane trip which resulted in their tragic deaths. This was caused by the process of environmental chances; not predestination.

Genetically speaking, JFK Jr. was prone to risk-taking and adventure. This nature reportedly encouraged him to pursue a pilot's license. This ultimately affected his destiny. His "genetic fate" determined this risk-taking tendency. However, his death was caused by even more complicated environmental chances of risk. JFK Jr. had only 300 hours of piloting experience. The weather at the time was very bad. If he could have restrained himself not to pilot his plane that day, it is likely he would still be alive today. Of course, if a close relative was not getting married that day, he would not have chosen to fly the plane that day. Furthermore, if his sister-in-law could have left earlier that day, the choice to fly at night could have been avoided. In short, JFK Jr.'s environmental chances were influenced by many people surrounding him and JFK Jr.'s environmental chances became in control of those of the other two individuals.

From the above illustration, some people may criticize that this is a 20/20 hindsight analysis. What purpose does it serve? This author intends to use the story to make four important points: (1) one's destiny results from the interaction of one's "genetic fate" and "environmental chances" (2) good judgment will help make proper choices and decisions (3) good judgment should be based on reliable information and knowledge (4) right choices and decisions can enhance one's environmental chances for success. Based on these four factors, we may conclude that there were certain poor judgments and choices made in the final decision to fly that night.

### ***Students' Travel Accident***

This accident occurred on August 11, 1999, involving a group of students traveling in a rented bus while on college break. A total of ten students, all from Taiwan, who decided to rent a bus to visit Yellowstone National Park during summer break. During the long trip, the rental bus was driven by a student on the road to the park. The bus overturned causing the death of four students and injury to six. In comparison to the previous plane crash accident in which all three people died, this accident resulted in some deaths and some injuries. There were differences in circumstances between the two cases which is understandable. In the bus, the students were positioned in different areas of the bus and not all of the students were wearing their seatbelts. This was a single vehicle accident. However, the fate of the passengers were not the same. The different outcomes of fate can only be explained by small differences in the environment. It cannot be explained by pre-determinism or by any act of a superpower.

The ten students, by chance, arrived at the same crossroad in life and in the same bus. When they boarded the bus, their environmental chances became bounded together by the bus. After all of the passengers were on board, the environmental chances of all passengers were mechanically controlled by the bus and operationally controlled by the student bus driver. Since



the bus was mechanically sound, the environmental chance of every passenger in the bus was solely in the hand of the driver. The destiny of the bus depends on the behavior of the driver interacting with the environment along the route on which the bus was travelling. As illustrated in Figure 5 of Chapter 4, there is one component which the driver has control over the environment and there is another component that is uncontrollable. In order to reach the destination safely, it will totally depend on whether the driver can successfully use all his skills, knowledge and efforts to increase the probability of success in reaching the destination safely.

According to the original accident report, the cause of the overturned vehicle was in response to a situation to avoid hitting a squirrel. This might lead the readers to think that the squirrel determined the destiny of the bus. This thinking is incorrect. After all, the squirrel is very small unlike a large deer or a bear that may have the power to influence the trajectory of a vehicle. Obviously, the driver could have decided to collide with the squirrel with little or no impact to the bus; nor would this cause a safety problem for the driver. The question, then, is why the driver decided to drastically alter the course of the bus to avoid the squirrel. Is there any reason for this decision? A subsequent accident report revealed that the bus was speeding while the driver was sleepy. Regardless of the cause of the accident, the driver was in control of the destiny of all of the passengers in the bus.

It was the consensus of each student to elect to travel together in the same bus, and, of course, nobody would expect or anticipate the disaster to come. All nine passengers had a total lack of power to control their own destiny. For these students who survived the accident, with injuries, they can only learn from the experience as a “Reactive EEC” discussed in Chapter 4. As to the driver who had nine passengers’ destiny in his hands, he must recognize the critical importance of his duty and responsibility as a driver and will be determined to change and improve himself to avoid a similar mistake from happening again in the future.

### ***9 / 11 Terrorist Attack***

The terrorist attacks on September 11, 2001, shocked the entire world. In New York City, a United and a Pan Am Airlines airplane each struck the North and South twin towers Trade Center within a span of 21 minutes. Shortly after that, there was another airplane flight that crashed into the Pentagon in Washington D.C. A fourth airplane crashed in a field in Pennsylvania after passengers tried to take control of the plane. Within a period of two hours, nearly 3,000 deaths and over 2,300 people were injured by the terrorist attacks. The casualties included 343 firefighters and 60 police officers in New York City.

This sophisticated terrorist assault was completely unexpected and was totally out of the control of the US Government; let alone an individual's control. Although the CIA had knowledge of a potential attack, the method of the attacks, the targets and timing of the attacks were completely unknown and hence without warning.

After the incident, the US Government identified a terrorist group known as Al-Qaeda led by Osama Bin Laden and soon after launched military forces in Afghanistan to attack the terrorist organization. Finally, Bin Laden was killed by American military forces on May 1, 2011. The psychological effects on Americans have caused an increased awareness of the potential for terrorist attacks. In addition, this event drastically altered security measures and procedures in the United States and around the world including increased airport security. The events also initiated the creation of a Federal Department of Homeland Security to better address incidents like these.

This large-scale terrorist attack directly affected New York City and its residents, however its impact was felt nationwide and throughout the world. From a society point of view, it is an uncontrollable environmental chance. After we experience an event like this, we can only hope to establish preventive measures to avoid or mitigate such disasters in the future. Measures such as increased airport security and creation of the Department of Homeland Security are examples of "Proactive EEC" for the society. The recovery effort in the aftermath of such an event is to reduce the magnitude of the damage. This is an example of "Reactive EEC" for the community / society.

### ***South Asia Tsunami Disaster***

A huge natural disaster occurred in the north western corner of Sumatra located in Indonesia on December 26, of 2004. A strong earthquake created a rift of 1200 kilometers on the seabed under the ocean. The sudden drop of the sea floor created a tsunami of up to 30 meters high. The geographic impact influenced the coast of more than ten countries, particularly in Indonesia, Thailand, Sri Lanka and India. The extent of this natural disaster was the worst ever recorded in history. Two hundred and thirty thousand people died, and more than two million people were left homeless. The total property damage reached tens of billions of dollars.

A natural disaster is totally out of our control, the so called "uncontrollable environmental chance." Although most of the significant plate tectonics have been studied and mapped, the shifts in these plates as to the location, depth, intensity and timing of this earthquake cannot be

predicted. It took some time for the earthquake induced tsunami to reach the coastal cities. Therefore, if scientists could detect the earthquake, we may be able to alert the coastal cities of a possible tsunami and hence reduce the death toll. Unfortunately, there was no such warning system in place. According to the report of the USGS of the Department of the Interior, there has been no earthquake detection system installed in the Indian Ocean earthquake zone. Therefore a potential tsunami could not be predicted and nothing could be done to reduce the human toll.

Under this kind of occurrence that was a sudden and unpredictable natural disaster, nearly no people had an opportunity to escape. Only a very few who used quick judgment and wise choice combined with luck could have survived this type of natural disaster. Those who escaped the jaw of death were indeed “good luck” people.

During the disaster relief period following the tsunami, two former presidents, Bill Clinton and George H.W. Bush, appeared together on television to petition people to donate money for the disaster relief. Bush said “We cannot change what has happened,” then Clinton followed “...but, we can have a positive impact on the suffering of these people.” This is exactly what we call a “Reactive EEC” as a group or a community/societal effort. Through this experience, if we installed an earthquake detection system in the Indian Ocean to provide warning to nearby countries, this could significantly reduce the death and injury in the future. This type of action perhaps may be called “Proactive EEC” group or community effort, although we cannot prevent a tsunami from happening.

## Chapter VI Conclusion

As a concluding chapter of this book, the author would like to summarize the most important elements of Chapters I-V, and after that the author will provide some translated lyrics from a Taiwanese folk song entitled “Trilogy of Destiny.” Upon reading this poem, it is hoped that it will resonate with readers as they progress on their journey of life.

### In Summary

This book serves two major purposes. The first is to provide a new scientific definition for the age-old Chinese traditional belief in Ming (命), Yuen (運) and Ming-Yuen (命運), which are now redefined as “genetic fate,” “environmental chances” and “your destiny,” respectively. The text illustrates what is genetic fate and what we mean by environmental chance and how we create our own destiny. The second purpose is to urge the reader to follow a healthy personal belief system (philosophy of life), to steer and create your destiny to the extent that you can and to become the master of your own destiny and avoid superstition and the belief in predeterminism.

A healthy personal belief system should be based on the correct understanding of the “Purpose of Living” and the “Meaning of Life.” The Purpose of Living is to satisfy the most basic materialistic human “self” needs and to strive towards the “greater-than-self” awareness levels, ultimately striving for the highest level of “selfless.” The Meaning of Life is to sustain the survival and prosperity of community/species by working towards the satisfaction of “greater-than-self” and “selfless” realms. Yet, the most basic human needs must continue to be satisfied at all times.

Genetic Fate, also considered the “initial factor” of Destiny, is determined at the time of conception and reflects the effect of genes. Although genes completely determine a person’s sex and facial appearance, genes can only partially influence one’s bodily constitution, physique and genetic diseases, as well as one’s personality, and the ability to reason (a combined effect of memory, intelligence and language aptitude). The genetic components of these partially influenced factors are often referred to as “tendencies.” The fundamental nature of genes consists of its determinism as well as its plasticity. It is this genetic plasticity that allows for the enhancement of environmental chances to increase the probability of success in reaching your goals in your life’s journey.

In this world, you are the one who understands yourself the best. You most likely will receive valuable advice about yourself through your family, friends, teachers, mentors and others who care about you. This will then help you to strengthen your understanding of your interests, behaviors and innate abilities and you will truly know more about yourself. Therefore, you will become the most accurate “fortune teller” for yourself. Eventually, in the future, when the gene and DNA decoding reaches a more complete level, the genome will be the most complete and accurate “fortune telling” book in the world.

Environmental Chances, also called the “subsequent factor” of destiny, is the interaction between post-birth (from the moment of conception onward) individuals and its social and natural environment. This interaction is subject to the occurrence of various levels of uncertainty and probability. In the human environment, each individual’s behaviors or actions will consist of a self controllable component and an uncontrollable component of various proportions. Both components are indeed sources of uncertainty and probability.

Whenever we have an opportunity to make a choice or decision, this is indeed a self-controllable environmental chance. Within the scope of self-controllable environmental chances, all personal long term changes are called “Enhancement of Environmental Chances” (EEC/改運). EEC definitely can increase the probability of success in reaching one’s purposes, goals and dreams. Each individual, based on their own genetic make-up, through their efforts of learning, training, exercising, corrections or refinements will not only help you to reach your potential but will also improve and gradually increase your ability and skills in dealing with personal and business relationships and therefore increase your probability of success and self confidence to reach your goals. Hence, one has to depend on one’s self for enhancement of environmental chances. Remember, you are the best person to change your destiny, not by a “fortune teller/changer.”

Destiny is a portrayal and record of one’s life. In a mathematical depiction it is the “locus” (a collection of points that share a property) of your life, which is the result of interactions between Genetic Fate and Environmental Chances. Hence, both genetic fate and environmental chances are causes, and destiny is the result.

Destiny is the road that you travel through life, based on your own choices and decisions. Destiny is formed by a series of daily actions and behaviors that will satisfy an individual’s materialistic needs and the continuous activity in pursuit to reach one’s short and long term goals to further satisfy various levels of spiritual needs. Life’s journey can be bumpy along the way with numerous crossroads and many forks in the road. During the journey, one must continuously make good judgments, choices and decisions. Choices and decisions that are made will definitely affect one’s journey and will either change or create a different destiny.

## **Is Life just like the Theater?**

Let us look at life from a different perspective. There is no doubt that life is like a play; there is comedy and there is tragedy, and more likely a mixture of both happiness and sadness. Every day we are acting out different scenes of our lives from the opening curtain to the closing curtain, the story begins and the story ends.

Let it be understood that in our life stages you, of course, are the lead actor. However you have many supporting actors and those supporting actors change often throughout your life. In addition, there are audiences watching you and countless unrelated people surrounding you on a daily basis.

On the stage we have the scenery, props, sound system, lighting system, and other environmental effects. The stage “environment” although artificial is compared to our environment in our daily lives. The stage environment can affect the outcome of the play in the same way as our environment can impact our lives. During the play, there are certain parts that you have control of such as your speech, voice and acting. There are also parts of the play that you have no control of, such as the speech, voice and acting of your supporting actors as well as the lighting and sound systems. Therefore, all of these factors will affect the degree of success of your performance and could even decide the success or failure of the play.

It ought to be furthermore understood that in our theater of life you are the lead actor as well as the director. Most of the time in life’s situations you are the self directed lead actor. However, in your early childhood, during times of severe sickness, and during times when you are elderly and possibly sick, you may rely on substantial assistance from close relatives or friends (supporting actors) during these times in your life and may be even totally dependent on others. At these times you may not feel like a “leading actor” or like a director. In this situation, you may feel that you have totally lost your own stage.

In a real theater, there is a lead actor, supporting actors, and a director. The actors must follow the instructions of the director to act out the roles. In this case, it is unlike our life where we play the self-directed leading actor. In this theatric play, the actors have given up their free will and are under the control of the director. If we want to compare life with theater, we must remember that in our life we must assume the role of the lead actor and must further be self-directed in order to fulfill our independence and self-mastery. Role playing in real life can be meaningful only if one can have control of yourself and your behaviors/action, which in turn creates success with dignity.

## **Trilogy of Destiny**

Finally, I invite all readers to join in reading a light and lively poem entitled Trilogy of Destiny. This poem summarizes the last three stages of the five stages of life presented in chapter five. This poem describes the Youth Stage which is devoted to the great efforts of learning and training to prepare oneself for the upcoming service to society; the Prime Stage which endeavors to engage in a work career trying to achieve the goals and dreams of their life and be able to control and enhance their environmental chances; and the Golden Years Stage which is characterized by the enjoyment of retirement life and also the privilege of providing good advice and the expression of a healthy concept of destiny.

This poem was originally written in the form of a song with Taiwanese lyrics written by the author and composed by a retired choir conductor, Mr. Huanbi Zheng. The original Taiwanese song melody could not be matched to a corresponding English melody translation of the lyrics and so only the translated English lyrics are presented. The original Taiwanese song lyrics have been translated by the author’s friend Mr. Dennis Murphy. The author would like to express great appreciation for the contributions of Mr. Huanbi Zheng and Mr. Dennis Murphy.

## Trilogy of Destiny

### Youth Stage

*Our Family is our Cradle.*

*School is our Fortress of Knowledge and Skills.*

*Should you excel in your studies, everyone will praise you.*

*Should you not do so well, do not be discouraged.*

*Being born smart does not guarantee success.*

*Nor do bad genes condemn you to an unhappy destiny.*

*Ready yourself by establishing a sound foundation, so your heart and mind can be at peace.*

*Then you march into and engage society, able to work hard and fight the good fight.*

### Prime of Life Stage

*Life in this world is much like being in a battlefield.*

*No one knows if you will win or lose.*

*Should you win, don't be too proud. Should you lose, don't pass the blame.*

*The road of life is fraught with many forks and curves and mountains to cross.*

*We must fix our sights on goals and objectives and continue to implement righteously the plan for success.*

*If your struggle is successful, then once you retire from life's burdens you may enjoy the fruits of your endeavor, enjoy the fruits of your endeavor!*

Golden Years Stage

*Rekindle the true love of one's family.*

*Treasure your life's partner.*

*Travel and enjoy the views and scenery. They are truly beautiful to behold.*

*Hold your grandchildren and tell them the old stories of your life. Savor every moment.*

*Take care of yourself. Be content while you can eat and sleep well. Laugh all the way, laugh all the time.*

*This is the time to be free of worry and do enjoy and be happy every moment of your life.*

*Hey Friend! Beware the guidance of fortune tellers, for they may lead you astray. It is of no use, it is of no use!*

*What really matters is your own efforts to enhance your environmental chances and capture the opportunities as they are passing by.*



## Appendix 1

### Role of Genes

Equating Genes with Ming (Chinese 命) is the basic foundation for my theory on Ming. Therefore, it is appropriate that in this appendix, I summarize the latest scientific findings of genes that are relevant to Ming as I have newly defined. By reading this appendix, readers will gain a better understanding as to how much and/or to what extent genes can affect a person's life. Precisely, it is based on this new scientific knowledge that I bring up this fresh new definition of Ming (命), giving this ancient traditional Chinese term (命) a brand new scientific meaning.

Genes are basic elements that you inherited from your parents. Genes determine the uniqueness of expression of each individual. This unique expression is determined at the time of conception; and therefore is called Ming (命). It is the "initial factor" of your destiny. The interaction of individuals with the environment is called the "subsequent factor" of destiny and is called Yuen (Chinese 運).

Information sources for this appendix were gathered from many recent scientific publications including books, newspapers, magazines, television programs and CD/DVDs. Among these, the most relevant references are books by Bruce Lipton (2005), Matt Ridley (1999), Dean Hamer and Peter Copeland (1999), Aubrey Milunsky (2001) John Sulston & Georgina Ferry (2003), and Hwa A. Lim & H.J. Chao (2003). In this appendix, readers may find, at times, that the author has expressed his own opinions on a subject. I sincerely hope that readers not only find the discussions interesting but also feel confident about my theory equating Genes with Ming (命).

#### **A New Way of Looking at Ming (命)**

Destiny is no more than a cumulative trace of points and lines as you travel through thought, behavior and activity. In other words, "destiny" is the road you have travelled, are travelling and will travel. We certainly would like to know the answer to this question: what roles do genes play in your destiny?

Among all animals in the world, only human-beings are able to question, study and try to understand themselves. In order to achieve that, scientists investigate the human-being in two parallel approaches:

on one hand, they study the structure and behavior of the human body in macro scale; on the other hand, they analyze the basic constituents/elements in micro scale; attempting to find out the causal relationship between the two. Finally, from the basic element of life: cells, chromosomes, genes and DNA, scientists discovered “The Common Thread” of life (John Sulston & Georgina Ferry, 2003). After all, within these genes and DNA contained in the 23 pairs of human chromosomes lies the source of the “initial factor” of our destiny, the so-called Ming (命).

#### A. Human Cells

Our living body consists of cells which are indeed the basic element of life. From birth till death, every thing a person does is attributable to the activity of cells. Movements are caused by the activity of muscle cells, while thinking is triggered by the activity of brain cells.

There are approximately 50 to 100 trillion cells in a human body, among which more than 1 trillion are brain cells. A cell consists of membrane, cytoplasm and a nucleus. Cell membrane is its “skin” serving as a door keeper for the cell.

Cell biologist professor Bruce Lipton (2005) found that the cell membrane actually is the brain of a single-cell animal. When in contact with the environment, the membrane of the cell decides whether the cell would move toward a food source or move away from danger, all by reflection. The membrane of a single-cell animal possesses not only such ability to survive itself, but also the capability to communicate with neighboring cells to trigger group actions. In contrast, highly developed animals require specialized cells to form a brain to perform complex tasks of coordination and analyses, making decision and giving orders.

At the moment of inception, the corresponding single chromosomes from the sperm and egg form 23 pairs of new chromosome, resulting in the birth of a new life with half of the genes from each of the two parents. This is the origin of Ming, (命) and, as the life being developed in the womb, the influence of its environment, to be called Yuen (運), also starts operating.

The fertilized egg is a new cell which will divide. Within 4 – 5 days through several rounds of division, the number of new cells increases to more than one hundred called blastocyst. While the outside of the blastocyst become the placenta supplying nutrients from the mother, all cells inside are pluripotent stem cells. These cells further develop into specialized cells through gene expression and form more than 250 kinds of cells in various parts of a human body.

Stem-cell research is one of the hottest topics in the world. The role of stem cells is pertinent to therapeutic cloning in biotechnology at this time. Please refer to “Genetically Yours,” (悠遊基因世界) authored by Dr. Hwa A. Lim and Ms. H.J. Chao for interesting and informative details on stem-cell research.

## B. Chromosomes and Genes

With the exception of reproduction cells (sperm, egg) which have 23 chromosomes, each of the body cells contains 23 pairs (46 in total) of chromosomes. Within each pair, one chromosome comes from father and the other from mother. Upon fertilization of the egg, the 23 chromosomes pair to form 23 pairs again in the development of the human body.

Within each chromosome, there are hundreds and thousands of hereditary elements called genes. The number of genes in a cell has been estimated at various levels. Before the year 2001, it was estimated at about 80,000. In 2001, the number dropped down to between 30,000 and 40,000. In 2004, it further decreased to less than 25,000. This recent figure counts only these genes that are responsible for making all proteins for human body. The older figures included many duplicated copy of genes that no longer have real function. Furthermore, some genes were counted twice because two parts of a gene were identified as separate genes. As those mistakes were corrected, the number of gene in a cell decreased accordingly.

Gene experts pointed out that the complex nature of the human body is not due to the high number of genes. For example, although the number of genes in a human cell is much greater than that in a thread worm or a fruit fly, it is only about half of the amount in a wheat cell. Nevertheless, in terms of the number of DNA in a cell, the human DNA ranks the highest among all biota.

Hereditability was discovered by Gregor Mendel in the mid 19 century. However, for a long time after the discovery, there was no obvious advancement in its application. Not until 1953, when James Watson and Francis Crick made a great discovery of the structure of DNA, practical applications of genetics progressed by leaps and bounds.

Modern application of genetics began with agriculture in the areas of seed with quality improvement, disease and insect resistance, as well as tolerance to salinity and drought. Its application to human society extends from a deeper understanding of the gene-disease relationship, to the invention of new medicines and gene therapy, and is advancing at a rapid pace. Furthermore, through analysis of genes we are now able to determine parent-child relations and to trace whether two different animals belong to the same species. In mediums nowadays, we learn about how DNA analysis of a suspect leads to a clear judgment of conviction or innocent. It serves to provide a social justice in many crime cases.

Genes that are passed from parents to offspring determine the unique individuality of the offspring. Scientists have found many genes that affect one's life, however new discoveries continue at an ever fast speed. In the near future, we may expect that Gene and DNA - - The Secret of Life (Chinese 天書), will turn out to be the most accurate text for fortune-telling (相命)!

### C. Deoxyribonucleic Acid (DNA)

Every species of plant and animal within the biologic world has its own genomes. Recently completed (2000), the mapping of the human genome marks a giant leap forward on our achievement in modern science.

Each pair of human chromosomes consists of hundreds or thousands of genes, and each gene is made of a stretch of DNA that carries the instructions for making proteins. Human DNA is a linear molecule made of chemical letters A, T, C and G, called nucleotides. The nucleotides are paired, forming rungs of a ladder and the entire structure is twisted into a spiral - the double helix. DNA is now known as the basic element of heredity material in the chromosome. Matt Ridley (1999) suggested that one may take the entire human genome as a book of life. This book consists of 23 chapters (chromosomes); each chapter describes thousands of story (genes); and each story is made of words that are spelled with the four letters: A, C, G and T. There are about 3.2 billion pairs of nucleotides (letter codes) in each human cell.

DNA is indeed the sole instructional mechanism to form a living body, and in the formulating process brings about the special characteristics of each individual. DNA can replicate itself and provide the instruction to produce proteins needed to perform various functions of the human body. Proteins are the most important one among the four kinds of matter within a cell; a human body requires hundreds to a thousand kinds of protein in order to maintain life and perform activities. For a better understanding between DNA and the protein it produces, readers are referred to a fine book, "Biology of Belief," authored by Bruce Lipton (2005) for more details.

The close relationship between genomes and human life is certainly beyond doubt. Genomes not only fully determine an individual's sex, skin and hair, as well as facial features and physique, but also give the person's born tendency in physical and health attributes, temperament, interest and talents. As a result of modern scientific studies, we have learned the degree of influence genomes impose upon these various born characteristics. Knowing the strength as well as the short comings of these born characteristics (initial factor), which are what I call Ming (命), will enable us to enhance, improve or

change them for the better in conducting social behavior and in the pursuit of happiness, through numerous choices and decisions that every one must make throughout their lifetime.

The following paragraphs describes the extent (or degree) of influence of genomes on the various characteristics of human life.

### **Sex and Appearance**

Genes solely determine one's sex, sexual orientation, appearance (facial features), hair and skin. Obviously one is born with all these unique features which are determined at the moment of conception. Unless affected by a genetic mutation during the prenatal period, the newborn should retain these intrinsic characteristics as determined at the time of conception. These genetic effects will last the whole lifetime.

Parents and family members are anxious to know the sex of the baby yet to be born. However, by the time the doctor finds out the baby's sex, we know that the "rice is cooked already." As a matter of fact, the sex of the baby would have been determined by the father at the moment of conception. We all know that the father carries XY chromosomes while the mother carries XX chromosomes. Among the millions of sperm ejected, half of them carry X and the other half carry Y. As the sperm with X meets the egg, it will develop into a girl. But if a sperm with a Y meets the egg, it will become a boy. Because the chance of occurrence of an X and Y in sperm is 50 percent each, it is technically impossible to predict a boy or a girl in an individual case. However, in a large population, we can predict that the numbers of men and women would be about equal. This is the same theory as flipping of a coin. With a limited number of flips, the number of "heads" would not be equal to the number of "tails"; however both numbers will approach equal as the number of flips is largely increased.

Some parents may have a preference in the sex of their next baby. They may employ certain sub-scientific methods or even superstitious ways to achieve their objective. For example, parents may be told to use food intake (vegetable versus meat) to manipulate the conception. Other parents may be advised to adjust their bed-time to enhance the probability of getting the preferred sex of their expected baby. Regardless, the reliability of the method used by the parents to achieve their objective, it still does not change the fact that the sex of the baby is determined at the moment of conception.

Let us now switch to the subject of facial features, hair and skin. One may look at a person and find that the person looks more like the father or the mother, or a mixture of both parents. Other persons may resemble his/her uncle or aunt. Why is that? Let us find the reasons from the following two biological factors:

### A. Dominant versus Recessive Character

According to Japanese scholar 小璫周曹, all heredities of parents are included in their chromosomes. Strong heredity expresses easily and is called dominant allele; while weak heredity is suppressed in expression is called recessive allele. As the dominant meets the recessive, the dominant prevails; however, if both are recessive, the recessive is expressed. The following table identifies the heredity character that is dominant or recessive with respect to hair, skin or facial features:

Hair, Skin & Facial Feature	Dominant Allele	Recessive Allele
Color of Hair	black	red, blond
Hair Nature	curly	straight
Skin Color	dark	light
Color of Eye	brown	blue/green
Eyelid	double	single
Earwax	wet	dry
Shape of Nose	high, slim	low, broad

### B. Probability in Heredity

A child's father shares 50 percent of common heredity with his brothers, and the child's mother likewise shares 50 percent of common heredity with her sisters. The father and mother further share 50 percent of common heredity with their children. Therefore, the children share 25 percent of common heredity with their uncles or aunts. The probability of resemblance between the child and uncle/aunt is rather high.

## Physique, Bodily Constitution and Disease

Physique refers to the form or structure of a person's body including height and shape which are greatly influenced by genes. Environmental factors such as diet and nutrition also play a role in determining one's physique.

Bodily constitution is a term used by Chinese doctors and many Orientals without a standard definition. It generally means the physical quality of our body. In the broad sense, it means the total effect of genes on the body. However, the most commonly used definition more strictly refers to such things as body's immune system, tendency towards high blood pressure or cholesterol, susceptibility to gaining weight, allergic reactions to food and drugs as well as an individual's general adaptability to the environment. Genes indeed can cause differences in an individual's physical make-up.

Disease is an enemy to our health. Many diseases find their way by entering the mouth; some diseases are genetically caused, and still others are the result of the interaction between genes and the environment. While dominant hereditary disease shows up at birth, recessive hereditary disease could appear under certain environmental or physical conditions. Some recessive diseases may never show up during the entire life. Every body carries one or more hereditary diseases, nevertheless, most people live through their life without encountering genetic diseases. From a genetic stand point, avoiding marriage between close relatives is the best assurance against the occurrence of genetic diseases.

It has been estimated that among the roughly 25,000 human genes, there are over 5,000 possibly associated with genetic diseases. In his publication titled, "Your Genetic Destiny," genetic expert Dr. Aubrey Milunsky stated that, to date, scientists had found more than 8,500 genetic diseases or inherited physical or biochemical traits caused by single defective genes. These diseases and conditions account for 25 to 30 percent of admissions to the major children's hospitals in the United States and Canada. Dr. Milunsky strongly urged people to study family medical history for a genetic analysis and undergo DNA-based predictive or presymptomatic testing as early as possible in order to secure your own and your family's health. It could even save your life!

Dr. Milunsky provided a wealth of useful knowledge that an ordinary person must learn. He started with a primer on basics in chromosomes, genes and DNA and then listed many harmful genetic diseases/disorders, described their symptoms and consequences, as well as prevention and treatment. The lists included commonly known diseases such as heart disease, high/low blood pressure, diabetes, obesity, cancer, schizophrenia, depression and Alzheimer's disease. This is indeed an authentic, comprehensive and useful guide on genetic related diseases/disorders.

## Traits

Personality consists of born element called temperament and another element called character acquired from one's living environment. Therefore, personality is the product of genetic and environmental factors, or simply Temperament + Character = Personality. In his publication, "Living with Our Genes" (1999), Dr. Dean Hamer of the US National Cancer Institute devoted his research effort to find the relationship between genes and personality/behavior. In his endeavor, he not only found the extent of gene's effect on personality/behavior, but also emphasized the plasticity of such genetic effect that can be nurtured through environmental conditioning. For a long while, there were debates on Nature versus Nurture. Today, we may speak with confidence that it is Nature and Nurture! Dr. Hamer stressed that nurturing must begin as early as possible in childhood, since changes/modifications become much more difficult to make as we grow older.

Dr. Hamer found the following traits are, more or less, affected by genes. Although certain influencing genes had not been clearly identified, the relationship between heredity and traits/personality had been statistically established in various studies.

A. Thrills -- Thrill seeking refers to the individual's novelty seeking trait. The level of novelty seeking ranging from high to low and can be partially explained by the length of the D4DR gene with a high novelty-seeking score being associated with a long gene. People who score high are curious, impulsive, extravagant, enthusiastic and disorderly. Low scorers tend to be indifferent, reflective, frugal, orderly and regimented.

B. Harm Avoidance (worry) – As stated by Hamer, harm avoidance is one of the most fundamental, diverse, and persistent dimensions of human psychology. It is a blanket trait that includes anxiety, fear, inhibition, shyness, depression, tiredness and hostility. He found the relation between harm avoidance and the serotonin system (including serotonin receptor and transporter) produced by specific gene(s) which affect the brain functions. In conclusion, he stated "And, of course, genes are not everything. The behavioral genetics studies show that environment – meaning everything that isn't inherited – is at least equally important in harm avoidance. Exactly what the environmental factors are, however, isn't clear."

C. Anger – Aggression and hostility lead to violence or even crime which is not an acceptable social behavior. The aggressive behavior has been known to be caused by the high level of testosterone. So far, a mutation gene in the X chromosome has been found to be related to the criminal behavior which runs in families. But, the social environmental effects can not be ignored. Hamer and Copeland emphasized "Predisposition is not predestination. Genes, neurotransmitters and hormones may tip the scales, but people are not robots programmed by genes. There is plenty of room for free will and conscience in how we behave and how we judge the behavior of others." In addition, Dr. Hammer



stated “All research shows that anger and hostility – and their visible outcomes such as crime and violence – are caused neither solely by the environment nor by biology.....in no other domain of human behavior are nature and nurture so thoroughly intertwined.”

D. Addiction – Addiction refers to abuse of alcohol, illegal drugs, cigarettes and other substances. Hamer said that genes don’t control addiction; rather they control animal’s reaction to a substance, how much the animal can tolerate and how strong an influence it has on behavior. Twin studies and family history studies were used to establish a likelihood of relationship between genetic effect and addiction. However, the gene(s) that affect the individual addiction to alcohol or nicotine has not been identified.

E. Men and Women – Most people notice and agree the difference in behaviors between men and women as described in a popular book “Women are from Venus, Men are from Mars.” The question has been whether the difference is hardwired in the genes or the product of culture and socialization. Hamer stated that the difference between men and women come from a single genetic switch in a single gene called TDF for testis-determining factor. The TDF in the Y chromosome is turned on about eight weeks after conception, and the differences begin to appear. Without this switch, it would be a female by default. As to the apparent difference in thinking and behaviors between men and women, Hamer concluded that although not hardwired in the genes, being male or female is part of the foundation of personality.

### **Capability in Memory, Intelligence and Language**

As pointed out by Hamer in “Living with Our Genes,” and by Matt Ridley in “Genome,” genes affect the individual’s born tendency and potential capability in memory, intelligence and language. However, the potentiality can be realized or achieved only through a persistent nurturing effort after birth.

#### **A. Memory and Learning**

In Chapter 16 of his book, “Memory,” Ridley made connections between the ability to learn with the memory capability; both are affected by genes such as the CREB gene. There are trillions of cells in our brain and some of these cells are used for memory. Medical doctor Gary Small, author of, “The Memory Bible” differentiated memory into three levels: temporary, short-term and long-term memory. The number of memory cells decreases with each level accordingly, with the third level number being only a few percent of the first level. However, John Medina in his recent book, “Bain Rules,” classified memory into only two levels: short-term and long-term. The short-term memory, also called the working memory, is actually a collection of temporary memory capacities. Each capacity specializes in processing a specific type of information. Repeated learning on what is important information to the individual will convert the working memory into long-term memory.

Both Ridley and Medina believe that the process of managing and converting the memory into long-term memory are executed by our brain in the evening while we sleep. Realizing this, we must take seriously the importance of having enough sleep each day. In the Chapter titled, “Sleep well, think well,” Medina emphasized that loss of sleep hurts attention, executive function, working memory, mood, quantitative skills, logical reasoning, and even motor dexterity.

Human instinct in the motion/behaviors is totally controlled by genes. In contrast, learning is the behavior acquired through nurturing and experiences. All conscious animals have the ability to learn in their environment and the learned ability will not only enhance the individual’s skill and ability, but also increase the survival ability of the species. Ultimately, learning gradually gives way to instinct.

## B. Intelligence – Rational and Emotional

With close observations one can easily spot a person who is smart or more intelligent (rational and emotional) than others. It is generally understood that people are born with different levels of intelligence; however, the real cause of the differences has not been found. Even with the advance in gene and DNA research and development, scientists have not yet identified the gene(s) that affect a person’s intelligence. During the past near a century, scientists and experts have been debating whether intelligence is an innate ability or is the result of learning and experience, the so-called “nature vs. nurture” debate. Modern scientists such as Hamer (1999), Ridley (1999), Schroeder (1997) and Goleman (1995), all have strong agreement that both genes and environment matter, that is to say, both “nature and nurture” affect the individual’s intelligence.

Quite some time back, when scholars started their research in the area of rational intelligence, there was no agreement in the choice of tools for measuring the level of intelligence. After a long period of evolution and improvement, they have arrived at the method called the IQ Test which became the modern methodology being used in the intelligence test today. However, after decades of tests, the conclusions were polarizing: those who believed entirely in innate ability and those who believed entirely in the environmental effect.

Not until the 1980s, was there a large-scale comprehensive test aimed to resolve this issue in the United States. According to Ridley, the test involved eight groups of people: (1) identical twins reared together, (2) identical twins reared apart, (3) fraternal twins reared together, (4) biological siblings, (5) parent and children living together, (6) parent and children living apart, (7) adopted children living together, (8) unrelated people living apart.

The investigator performed the IQ test on these eight groups of people, and then did the statistical correlation between the score of children in each group. The percentage correlations for each of the eight groups were found to be 86, 76, 51, 47, 40, 31, 0, 0 respectively. The results clearly show a decrease in correlation as the genetic connection decreases; and finally become zero for groups (7) and (8). For comparison with the first group, another group with unrelated individuals was tested twice. The correlation of each individual's scores was found to be 87% which is only 1% higher than the group with identical twins reared together. This test proved that genes affect a person's rational intelligence.

Hamer also pointed out in his book that as a person grows older, the genetic plasticity decreases. Therefore, the earlier the improvement effort is placed, the stronger will be the success of nurturing. However, he was silent on the prenatal education as to whether it is too early to be effective.

Emotional intelligence is defined as the ability to identify, assess, and control the emotions of oneself, of others, and of groups. Daniel Goleman (1995), in his book entitled, "Emotional Intelligence," emphasized the importance of emotional intelligence in conjunction with IQ in the pursuit of success in life.

In the final three paragraphs in Chapter 2, Goleman succinctly captures the essence of emotional intelligence as follows:

"The emotions, then matter for rationality. In the dance of feelings and thought, the emotional faculty guides our moment-to-moment decisions, working hand-in-hand with the rational mind, enabling – or disabling – thought itself. Likewise, the think brain plays an executive role in our emotions – except in those moments when emotions surge out of control and the emotional brain runs rampant.

In a sense we have two brains, two minds – and two different kinds of intelligence: rational and emotional. How we do in life is determined by both – it is not just IQ, but *emotional* intelligence that matters. Indeed, intellect cannot work at its best without emotional intelligence. Ordinarily the complementarity of limbic system and neocortex, amygdala and prefrontal lobes, means each is a full partner in mental life. When these partners interact well, emotional intelligence rises --- as does intellectual ability.

This turns the old understanding of the tension between reason and feeling on its head: it is not what we want to do away with emotion and put reason in its place, as Erasmus had it, but instead find the intelligent balance of the two. The old paradigm held an ideal of reason freed of the pull of emotion. The new paradigm urges us to harmonize head and heart. To do that well in our lives means we must first understand more exactly what it means to use emotion intelligently."

It is obvious that rational and emotional intelligence are complementary to one another to create success in our daily lives.

### C. Language

Among all animals in the world, the human being ranks far in advance of all animals, not only in the reasoning ability but also language ability to express its thinking. Although other advanced animals also have their own languages, we are amazed by our human languages as to their advancement, variety, complexity and superiority. One can not help asking whether there are genomes responsible for making language possible.

Different languages exist in different places of the world. If a person born in place A is moved to, and brought up in, place B, this person will be able to master the language used at place B. One can easily spot a person with talent in language; some people learn language quickly, others rather slowly. One must question whether the language ability is indeed innate. In 2001, researchers in England identified the first gene called FOXP2 on chromosome 7, through studies of a severe speech and language disorder that affected almost half of the members of a large family. Researchers suggested that our human urge to babble and chat is innate and that our linguistic abilities are at least partially hardwired. Scientists believe that there are multiple genes involved in the language ability but they have not been identified.

There is another way we can find out whether the language ability is genetically related. It involves the study of persons with dyslexia by first observing their current family members, then studying their family history and finally trying to find the genes which may have caused the reading problem. During the last decade, scientists have identified at least the following susceptibility genes for dyslexia: ROBO1 on chromosome 3, DCDC2 and KIAA0319 on chromosome 6 and DYX1C1 on chromosome 15. Search for all genes associated with the language ability continues.

## Appendix 2

### Soul / Consciousness and Reincarnation

#### Soul or Consciousness

##### A. Religion

Let's briefly analyze the concept of soul from a religious point of view with respect to both Buddhism and Christianity.

At first, this author wants to make it clear that there is a subtle difference between Buddhism and Christianity. Strictly speaking, Christianity is a religion and Buddhism is a philosophy. However in its practice, Buddhism exhibits to some extent religious rituals and, therefore, is also called a religion. Christianity presumes the existence of God; whereas Buddhism is atheism, believing that every person is capable of becoming a Buddha. In addition, it should be understood that while Christianity believes in the eternal existence of a soul, Buddhism believes in the eternal existence of consciousness instead. Hereby, I find a common ground between the two religions: the so-called eighth consciousness in Mahayana of Buddhism is equivalent to the soul held in Christianity. Both religions claim that upon the death of a human being (body), the spirit in the form of consciousness or soul would separate from the body and return to its eternal home. Therefore, in the religious sense, Consciousness = Soul.

Although there is such a commonality as stated above between Christianity and Buddhism, the destinations or disposition of soul/consciousness differ substantially. Christianity holds that, after death, the human soul, through judgment by God, will either ascend to heaven to be with God or descend to hell as penalty; a two-way split in the final disposition - - the so-called one-life theory. Whereas, Buddhism theorizes that upon the death of a human being, depending upon the karma (actions) in the present life, may be reborn as a human being, or a heaven-dweller, some kind of animal, a ghost, or a hell-dweller in consecutive lives - - the so called multi-life theory. Without a judgment, the cumulative karma stored in the eighth consciousness will automatically direct the being to the next life as it is qualified. This is Buddhism's reincarnation theory or Samsara (the wheel of transmigration).

The existence of soul/consciousness begs many questions that are impossible to answer rationally. Why does it exist? When and where does it enter the human body? Where does it reside in the human body? When and how does it exit the body? Does soul/consciousness exist when a person is in a

vegetative state? In addition, a frequently asked question is whether the total number of souls in the world is constant or unlimited in the case of Christianity; or how can the number of souls and the number of lives keep their dynamic balance in the reincarnation process? Suppose the total number of souls is constant, where would the souls of the world's ever increasing number of newborns come from?

With respect to the last question above, Christian theologians believe that God creates a soul for each newborn. This appears to answer the question, and, therefore, the number of souls should be considered unlimited in the case of Christianity. However, according to the Bible, God created Adam and Eve only and all descendants like you and I were born biologically, not created by God. Therefore, the theologian's explanation in the creation of all souls is not convincing. According to Buddhism, all animals from a primitive creature to the most advanced human being possess consciousness. Considering the incalculable number of animals involved and the huge difference in life spans among the various species, one can not imagine as to how the numbers of lives and souls ever achieve a balance in the reincarnation process.

By comparing the dramatic differences in the disposition/destiny of souls between Christianity and Buddhism and their own explanations on the question of balance in the numbers of souls, one can easily conclude that they can't both be right. Inevitably, from a scientific point of view, the existence of soul remains as an assumption at best.

Gary Zukav is a learned scholar and philosopher in Buddhism. In 1990, he published a bestseller titled, "The Seat of the Soul," in which he culminated a new perspective in the concept of soul. In the Introduction chapter, under the subject of Evolution, Zukav expressed his view that we have been, until now, five-sensory "personality" human beings in our evolutionary path. In this present competitive world, all of our social, economic and political institutions reflect our understanding of power as external; and one person's gain of external power is perceived as another person's loss. The result of viewing power as external is violence and destruction.

Fortunately, Zukav believes that human beings are evolving from the five-sensory personality toward what he calls the multisensory personality using the so-called "authentic power." Authentic empowerment is the goal of our evolutionary process and the purpose of our being. The authentic power, an emerging force, using sensors beyond and above the five-sensor personality, is indeed the source of love, compassion and wisdom and the strength of our awareness and consciousness - - and thus is the seat of the soul. When we align our thoughts, emotions and actions with the highest part of ourselves, we are filled with enthusiasm, purpose, and meaning; and life is rich and full, said Zukav. Zukav's view is similar to that of Chopra (2003) emphasizing the vertical uplifting of our lower body and mind to our soul and spirit.

## B. Science

Let's now turn our attention to modern science focusing on the subject of soul and consciousness. I will discuss the views of three prominent scientists and a well-known religious leader who is also versed in modern science.

David Darling is a physicist, an astronomer and a science writer. In his book, "Equations of Eternity" (1993), he analyzed the evolution of animals' brains from the perspective of archaeology and evolution; discussing the gradual change from the simple brain of fish, to a snake brain, to a more complicated brain in a bird, and then a dog and finally to the most complex human brain. During the past billions of years, while animals evolved from the most primitive one with no brain (only reflex) and without sensors, to the highest level human being with the most advanced brain and self-consciousness, the brain evolved from the basic brain stem and cerebellum then evolving a limbic system in the middle and lastly adding the cerebrum on the top. In other words, in a sense, a dog brain (and a human brain) has a fish brain deep inside it. It helps us understand our basic human nature if we keep in mind that deep down in our brain there exists the brain of a lower-level animal.

We all learned in biology about the processes that vertebrates evolved out of invertebrates: warm-blooded animals evolved from the cold-blooded animals, and viviparous animals come after oviparous (egg-laying) animals. All of these processes were started with numerous genetic mutations, and those that survived a long test of feasibility in their environment succeeded and continued to thrive. This theory counters the concept of creation or intelligent design that has been ruled out of biology text books and is no longer taught in public schools. It is the probability, rather than determinism that plays a vital role in the evolutionary process. Nature follows no grand design.

By the same token, the evolutionary process from primitive non-sensor animals to five-sensor high level animals also follows the same principles of chance mutations and natural selection. Evolution toward more sophisticated physical conditions probably was a necessity for survival in the gradually competitive world. Evolution of animal's eyes is a good example of the result of such a process. Certain animals, mainly nocturnal animals, chose to look for food at night in order to avoid severe competition in the day time. Whales, originally land-based mammals chose to return to the ocean a long time ago and became sea-based animals again and continue to evolve in that environment.

At the same time that animal sensors were being evolved, sensed information relied on a nerve system to transmit them to the brain; then actions were taken by the brain either through automatic reflex or the brain power of analysis in the cerebrum, or both. Therefore, it is necessary that in a human brain there are trillions of nerve cells. Establishment of such a complex nerve system follows the natural law of least resistance but is not a pre-design.

Modern quantum physics has revealed that within an atomic nucleus, there are divisible subatomic particles. These particles exhibit characteristics of “uncertainty principle” caused by the wave-particle duality nature of the subatomic particles, when an observer is involved. Scientist Darling reasoned and conjectured that our awareness and consciousness have its basis on the uncertainty principle and we are on the verge of an “explosion of mind.”

The speed of light represents an inviolate upper limit to the rate at which we can ever hope to travel conventionally through space. Darling, based on the modern theories of Big Bang, Black Holes and Wormholes, made projections that in a very remote future, the human being through artificial modification of Wormholes to form a space-time tunnel, may be able to travel through them at a speed far in excess of the speed of light. Using these cosmic short cuts, the human being will be able to travel into the vast universe to learn the most powerful communal awareness and consciousness of the universe (cosmic mind). At that stage, “The circle will be closed, the universe complete; and the equations of eternity solved for all time,” said Darling at the end of his book.

It should be noted that Darling had never mentioned the word “soul” in reference to “consciousness.” Instead, he stated “Even though our personal consciousness may dissolve at the point when our brains die, we shall inevitably be involved in the cosmic consciousness that is to come. Everything that we ever were, throughout our human lives, will gradually be reincorporated into spreading awareness of the universe. Every particle that is part of you now, or was ever part of you, will eventually be reconstituted within this extraordinary, growing cosmic mind.” From a spiritual point of view, Darling’s consciousness at least resembles the concept of soul.

A physicist and philosopher, Fred A. Wolf, presented a new concept of soul, in his book titled, “The Spiritual Universe” (1999). He discussed in some detail the subjects of heaven, hell, eternity, reincarnation and karma through analyses and comparison of various ancient philosophies, quotations of Einstein’s theory of relativity and evidence from cosmology and computer science. According to his reasoning, there is only one unique soul in the universe. It begins at the time when space, time and matter of the universe are created and ends when all of them return to zero.

Dr. Wolf believes that the “uncertainty principle” is the soul of the universe. It keeps a very close relationship and communicates with each of the countless individuals in the world. Even though an individual will disappear at the moment of death, the soul continues to exist. Since there is only one unique soul, the problem of dynamic balance in numbers between living bodies and souls in the world as previously discussed, would not exist.



Dr. Wolf arrived at a concept, the same as that of Buddhism, that both self and self-benefits are just an illusion, in spite of their appearance of great importance to any individual. Only that unique soul can be considered as being real, eternal and every-where in the universe.

Thus, here comes a question which is even more basic than the existence of the soul. We may now ask: what is “soul” after all. Unfortunately, so far there has been no standard definition. Nevertheless regardless of the definition of soul, for practical purpose for now, we probably can equate “soul” with “consciousness”.

The renowned scientist Dr. Carl Sagan was a great achiever in astronomy, aerospace and biology. He died of myelodysplasia in 1997. His achievements included not only numerous articles and books, but also television and movie programs, CD and DVD production, and lectures. His in-depth knowledge and experiences in aerospace research and investigation was most profound and outstanding.

Sagan’s publications and productions were written or narrated with popular and interesting language that can be easily understood and appreciated. For example in his book titled, “Billions and Billions” (1998), in order for an ordinary person to appreciate how big the number one billion really is, he explained that if you count a number per second nonstop from one to a billion, it will take you a total of 32 years of your life!

In the last chapter of this book, “In the Valley of the Shadow,” Dr. Sagan told readers about his six near death experiences and his bravery fighting against the disease. During these difficult times, countless relatives and friends and numerous science colleagues sent him letters and wishing well cards. There were thousands of religious people and leaders all over the world praying and wishing for his recovery.

While Sagan was grateful and deeply appreciated their love as expressed through prayers, he said “I do not think that, if there is a God, his plan for me will be altered by prayers.” Dr. Sagan deeply believed in the evolution of the universe and did not believe in its creation by God. He did not believe in the existence of a soul, not to mention the possibility of reincarnation. In his whole life, he had great passion and belief in the sciences, enjoying his endeavors in scientific research, proof and discoveries. As to the question of life after death, it had never been a problem for him.

Let’s now turn to a current spiritual leader, philosopher and science lover, Dalai Lama, the longtime leader of the exiled Tibetan government. In his recent book, “The Universe in A Single Atom” (2005) with a subtitle, “The convergence of Science and Spirituality,” he presents the content of his science-based consciousness. He devotes three of this nine-chapter book on consciousness: the question of consciousness, toward a science of consciousness and the spectrum of consciousness. He has great respect for science and admires the enormous contribution science has made to the human society.

However, he does not think that science can provide the answers to esthetic questions in art, ethic questions in goodness, the phenomenon of consciousness and the meaning and value of life. He sincerely hopes that, in a moral ground, science and technology should continue to advance and flourish in cooperation with spiritual institutions such as Buddhism to promote the happiness of human society.

Dalai Lama believes that thoughts and emotions are the source of consciousness. He affirms the accomplishment in the studies of the brain in recent years, contributing to a greater understanding of the basic nature of consciousness. He also admires the great advancement of medical instruments such as the EEG and fMRI that improve the precision and accuracy of medical measurements.

In Chapter 8 of his book, Dalai Lama stated, in regards to the study of consciousness and investigation of the mind, "Cognitive science addresses this study primarily on the basis of neurobiological structures and the biochemical functions of the brain, while Buddhist investigation of consciousness operates primarily from what could be called a first-person perspective. A dialogue between the two could open up a new way of investigating consciousness." The fundamental concern of Buddhist psychology is to overcome suffering, especially psychological and emotional afflictions and to clear those afflictions.

A popular approach to overcome and clear suffering is "meditation." Through the meditation process, one can cultivate one's own insight toward positive emotions like love, compassion and empathy or substantially reduce negative emotions like fear, anger, hate and hostility. If this is an effective method, practicing meditation would be very beneficial to both individuals and the whole society.

### C. Function of the Brain

Modern scientists have made surprising discoveries in the study of the human brain. Those scientists and doctors have proven that consciousness, mind or spirituality is indeed the function of the brain, thus disproving the argument that consciousness/soul is separable from the brain itself. That is to say once the brain is dead, the body is dead and both consciousness and spirituality cease to exist. A person in a vegetative state may look alive, yet the person's brain is no longer conscious. A serious Alzheimer's patient may reach a point of losing self-awareness and self-consciousness. I will now summarize the essential findings on the function of the brain as presented by the following three renowned publications.

The first book, "Mapping the Mind" (1997), was written by Joe Davis who summarized the findings resulting from the Human Brain Project in the USA.

In 1989, the US congress declared the 1990s to be the Decade of the Brain. During this period and immediately before it, scores of doctors and researchers devoted their effort in the research and study of the human brain. Davis as a scientist and writer consolidated the findings of the latest dozen or so of research scientists in his book.

Earlier studies in brain were done by dissecting the brain of a dead person. With rapid advancement in light research, electron-magnetic based new instruments such as CT, MRI, PET, SPECT and together with the older EEG and X-ray technologies, researchers are now able to study the activities of a living human brain. In the last two to three decades, many scientists have used these new instruments to measure, image and investigate directly the brain activities under various conditions. Results of the analysis of data acquired from these studies have revealed a wealth of new knowledge and our insight understanding of the mind-boggling brain-mind relationship.

These studies were quite encompassing including: the maturing process of a fetus' brain, delineation of the relationship between the brain structure and separate parts of the body, detailed further study on the relationships between language and the brain, body motion and the brain, sensors and the brain, thinking and the brain, emotion, consciousness and the brain. In particular, the study report explains in a simple and easy-to-understand fashion how a person expresses emotion through both verbal language and facial/body languages with the help of the memory system. Take the function of seeing and hearing as an example. One has to be able to hear, to understand the meaning of what has been heard, and immediately recall related memories. These alone will require mobilization of a few parts of the brain. At the same time, if the same person is able to see something, the person has to make sense of what is perceived, recollects a related phenomenon from pieces of a past episode which triggers a certain emotion. Therefore, seeing and hearing something that leads to an emotional reaction would require activating simultaneously many parts of the brain.

Although each part of the brain is responsible for a particular ability and function, all parts interact rapidly and automatically in close cooperation and coordination, in the effort to achieve a purpose. Our right brain and left brain are separate yet interconnected; they communicate constantly and complement each other in functions to achieve a united full function of the brain. Our cognition and consciousness are the result of this full function. They are not two independent half brains.

Human beings are richest in emotion among all animals. Emotions may be aroused from external senses of vision and/or hearing, smelling, tasting, touching or even from internal memories or day-dreaming. These feelings including acceptance, anger, anticipation, disgust, fear, grief, happiness, joy, sadness, surprise, etc. will activate different locations in our living brain. Although scientists differ in their interpretation of their observations and the mechanisms involved are not yet all clear, the causal relationship between the emotions and the function of the brain can not be denied.

In the last chapter of the book, "The Territory of the Mind," the author made the following notable and credible conclusions:

- (1)The mind and the body are one; the mind is a product of the brain's activity, or perhaps it is the brain's activity. It is not, most brain scientists are convinced, some nonmaterial entity that has some kind of existence independent of the brain.
- (2)The mind is the repository of the personality. Our mind is the master/captain of our "soul."
- (3)The mind is equivalent to consciousness and awareness.
- (4)The relationship between the mind and the brain can be described as the relationship between the dance and the dancer. The dance is the product of the dancer. When the dancer finishes, the dance ceases to exist. The two are indeed one.

The second book, "A General Theory of Love" was co-authored by three modern medical doctors (Lewis et al, 2000). The authors devoted great effort in addressing the subjects of emotions and love. Drawing on new scientific discoveries and seventy years of collective clinical experience, three psychiatrist's unraveled life's most elemental mystery: the nature of love. The book builds the theoretical foundation on which Zukav's (1990) "authentic power," Buddhism's "compassion," as well as Christianity's "love" will stand. Love is the highest level of emotion and could be the most important strength on which human society would rely for its forever existence. It should be noted that Maslow had identified "love" as one of the hierarchy of needs above the basic physical and security needs for human survival.

Before 1990, psychiatrists who studied "emotion" in general and "love" in particular, used the tool of observation, patients' reaction to the prescribed medicines and intuitive judgment to conclude their studies. The world's renowned scholars, such as Freud and Maslow, established their theories this way. Modern scientists have been using the most advanced scientific instruments to observe and measure the activities of a living brain. This approach has made great forward progress in the study of human emotion. However, the new method also has its own shortcomings. The authors took a position that currently the best approach for the study of human "love" is a delicate mixture of scientific evidence and intuition. To slip between the twin dangers of empty reductionism and baseless credulity, one must balance a respect for proof with a fondness for the unproven and the un-provable.

"A General Theory of Love" compares, from the evolutionary view, the brain of animals from fish, birds, dogs and monkeys with that of human beings. Starting from a basic brain stem in fish (with reflex function only) within a reptilian brain complex (with little emotion), the evolution of the brain was an add-on approach. The emotional center called the limbic system was then developed on top of the brain stem with the arrival of mammals. This system includes the hypothalamus, the hippocampus, the amygdala and several nearby areas such as the cingulate gyrus and basal ganglia; all contained under

the paleocortex. The outermost layer called the neocortex was finally developed with the appearance of primates. This human triune brain model was first presented by Paul MacLean in 1952.

From recent behavior studies and comparative anatomical evidence, the triune brain model is now considered out-of-date because of its oversimplification. However, the model continues to hold interest for some psychologists and members of the general public because of its focus on the recognizable differences between most reptiles, early mammals and late mammals; the three major evolutionary periods in the development of the brain. The human triune brain (three in one) refers to the reptilian brain, the mammalian brain and the primate brain.

There are over 50 billion brain cells (neurons) that transmit messages, store and retrieve information in memories, and perform these functions at such an incredibly high speed. The authors devoted a great deal of effort with details to explain the function of neurons as well as the mechanisms involved in performing these functions. They indicated that memory is the seat of the soul and consciousness. Memory, like emotion and language, is a nonmaterial product of our brain. Memory is a small word that contains entire worlds. It defines, creates and holds a person's mental world together. A scientific theory of memory is, therefore, a map of the soul.

As implied by the title of the book, this publication is devoted totally to the subject of LOVE. Love is an innate ability of mammals clearly demonstrated in every mother-child relationship. Laboratory tests had proved that a baby monkey separated from its mother would first protest and then become despaired when it failed to gain an attachment bond. The baby monkey would then stop its back-and-forth pacing, stop whimpering, and curl up in a despondent lump. The baby monkey would drink little and show no interest in food and finally it may just die. In the human mother-child relationship, interactions in the form of stroking and cooing, caring and playing, loving, protecting and nurturing are of great importance to the child's emotional health as they grow up. An emotionally un-healthy person will have difficulty or even be impossible to fit into society.

The authors further pointed out that through the past hundreds of thousands of years of evolution in the human society with ever increasing close relationship among human being there now exists a limbic Attractor in the human brain. This emotional Attractor produces mutual influence among people through the effect of the Limbic Resonance, which will result in Limbic Revision. Limbic Revision in which one mind revises another, is the power to remodel the emotional parts of the people we love. The authors concluded "who we are and who we become depends, in part, on whom we love." It is clear that "love" and "human relationship" are part of the function of the brain.

In closing, the authors declared that no matter what humanity's future holds, we will never shed our heritage as neural organisms, mammals and primates. Because we are emotional beings, pain is inevitable and grief will come; because the world is neither equitable nor fair, the suffering will not be

distributed evenly. A person who intuitively understands the ways of the heart stands a better chance of living well. They re-emphasized that we demand too much if we expect single-handed empiricism to define and lay bare the human soul. Only in concert with art does science become so precise.

The third book titled, "A Great Revolution in the Brain World," authored by Japanese doctor Shigeo Haruyama in 1995, was a great book that has been translated into several languages. In the book, he used a scientific approach to explain the mind-body relationship that has puzzled physicians, psychiatrists and psychologists for a long time.

Dr. Haruyama emphasized that secretion of brain morphine greatly determines the health of an individual. When a person is engaged in positive thinking, feeling successful, or helping others (i.e. giving to charity organizations), the brain will secrete beta endorphin hormones which creates a feeling of happiness and is particularly beneficial to the health and longevity of the person. On the contrary, when a person feels tense, angry, fear or a lack of confidence, the brain will secrete noradrenalin hormone which is harmful to the person's health.

Dr. Haruyama encouraged people to think positively under all circumstances, maintain a happy and pleasant mood, have confidence of self, and care for and be helpful to others. This way, both the individual and the society will benefit from it. Brain hormones can determine one's life and destiny.

Brain hormones not only can affect internal consciousness, but can also affect one's physical being. The author pointed out that brain hormones are chemicals that directly influence both the mind and the body. Here is a clear proof that consciousness is indeed a function of the brain.

On a theoretical and practical point of view, as illustrated in the three books presented above, we now may further understand the relationship between the consciousness/soul and the function of the brain. Buddhism lists the five senses from the five human sensors (eye, ear, nose, tongue and skin) together with the brain as the "sixth sense" of the human body. All of the five sensors are nothing but information gathering tools for a person. It is correct to treat the five sensors as mere tools for sensing stimuli from our environment. However, all stimulations must be transmitted through the nervous system to the brain where they can be felt, cognized and stored as memories, and at the same time they are synthesized, analyzed and compared, a decision is made and orders are sent to the respective organs and muscles for a response. With the exception of reflexive and subconscious responses, all other responses follow this process. They are called conscious decisions made in our neocortex. All actions and responses are executed by the brain and the brain alone. The brain is the origin of our spiritual consciousness and the seat of the soul.

The question and debate about the existence/nonexistence of the soul has been an old and vexing issue. Believers often use personal experience as witness to prove its existence, whereas non-believers cannot prove its nonexistence. However, personal witness through experience is not scientific proof. As a result, believers continue to believe and nonbelievers continue to not believe, even though there are some who switch their view in their lifetime. During the past two decades or so, scientific research of the human brain has been able to prove that consciousness or soul is, indeed, a function of the brain. I do believe that in the near future, scientists will be able to reveal the mechanism by which functions of the brain result in the formation of consciousness.

Initially we discussed the question of whether soul can exist without the body. It then led to the question of “what is soul, after all.” Here is the conclusion that I can make with the current findings: Soul (spirit) = Consciousness = Function of the Brain.

## **Reincarnation**

One must firmly believe in the existence of soul independent of the body as a prerequisite to explore further the question of reincarnation. Christians believe in the independent existence of soul without reincarnation. Therefore, the body-soul travels on a one-way street. On the other hand, Buddhists believe in reincarnation with a multi-life theory.

According to the principle of Buddhism, all animals must follow the law of causation. In the case of a human being, the cause of the previous life leads to the result in the current life, and the cause of the current life leads to the result in the next life. Where there is a cause, there is a result; and vice versa. The theory of consciousness in Buddhism proclaims that the eighth consciousness serves as the depository of one’s karma. Karma is dynamic in nature, recording all positive and negative actions of the person much like a bank account with running incomes and expenses. The resulting consciousness from the power of karma automatically determines one’s next life in the reincarnation.

On the reincarnation of Buddhism, French monk Matthieu Richard, in his book coauthored with his father, Jean- Francois, titled, “The Monk and the Philosopher,” brought up his personal experience witnessing the reincarnation of a llama in Tibet. In this case, he witnessed the reincarnation of his teacher, Chincheren Poche who died 15 years before. This reincarnated 2-1/2 year old boy was discovered by another teacher of Matthieu. At a birthday party of the latter teacher, several friends of Matthieu, who were all students of Matthieu’s former teacher Chintseren Poche, were present in the celebration. During the party, the child on his own initiative, presented tokens of blessing to all Matthieu’s friends whom the child had just met the day before, yet the child was able call the name of each guest correctly.

Richard's father admired the unusually good memory of this little child. On the same day of the celebration, the child also recognized an old house-worker of the deceased Chintseren Poche among the many visitors who traveled by foot for three days from Bhutan. The child also presented him a token of blessing. At this juncture, it may be appropriate to quote the Dalai Lama's recent comment on reincarnation. "There had been many mistakes made in the past in the search of the reincarnated lama in Tibet," he said. It is prudent to remember again that a personal-experience witness is not a scientific proof.

We would be remiss on the subject of soul/consciousness and reincarnation, if we did not mention the well-known and productive author Sylvia Browne. This world-famous psychic has published numerous books among which I had the pleasure to read "THE OTHER SIDE AND BACK, A Psychic's Guide to our World and Beyond," coauthored with Lindsay Harrison in 1999. Her Catholic-Judaic-Lutheran-Episcopalian upbringing inadvertently laid the groundwork for her belief in reincarnation. "I know with absolute certainty that we live many lifetimes on this earth," she said.

Being a special psychic she often saw the existence of souls. She believes that while we live in the three dimensional space, the soul lives in the fourth dimension of the universe. Therefore, we cannot see the soul. Although the soul can see us, it cannot communicate with us. That is why we need a psychic like her to assist in the communication.

Ms. Browne believes in human reincarnation. According to her reasoning, each soul will choose its own residence in the next life through reincarnation in order to enhance its life and gradually achieve the perfection in its eternal life. She recognizes the validity of genetics, but thinks that it is only one of the conditions the soul considers in choosing the next residence in reincarnation.

Even a psychic can make mistakes, she admits. She thinks that being psychic is the gift of God and the psychic person must use this special ability to help others in a positive way, rather than for any evil purpose. Misuse of this God given ability will lead to the loss of that ability. Ms. Browne has been a kind person, often helping others in psychological healing or even detective work without any compensation.

Many readers perhaps have read "Many Lives, Many Masters" (1988), written by Dr. Brain L. Weiss. He is a world-famous psychiatrist who does not believe in God or ghost, and would never believe anything that cannot be proven with traditional scientific evidence. He had a wealth of publications in psychiatry before he met his young patient, Catherine. Catherine had recurring nightmares, anxiety and panic attacks.



Through traditional psychotherapy, Dr. Weiss was astonished to find Catherine recalling past-life traumas. Under hypnosis, she departed from her present life, recollecting in vivid detail events from past lives ranging from the prehistoric times and ancient Egypt to the 20<sup>th</sup> Century. Dr. Weiss who was once firmly entrenched in a clinical approach to psychiatry, found himself reluctantly drawn into past-life therapy, yet with success!

Upon the lengthy surprising experiences with Catherine, Dr. Weiss, with some hesitation and courage, decided to publish this fascinating reincarnation story. It took him four years to complete this book. With this book, he sincerely wanted that readers could be helped to reduce the fear of death; and through the implication of the reincarnation story, better understand the meaning of life. His hope is to allow the reader to manage their own life to the greatest fulfillment in serenity while extending his/her helping hands to fellow human beings. He made it clear that there had been no intent to prove the existence of reincarnation.

After all of these discussions, readers may want to know my own view on reincarnation. In my current state of mind, I would say that I do believe it if “reincarnation” means the recycling of matter and energy upon the death of a person, or any other life on earth. This belief is consistent with the law of nature called law of conservation of mass (matter) and energy. However, present discussion pertains to the reincarnation of the traditional spiritual entity called the human soul. As I have concluded from the discussions in this appendix that soul = consciousness = function of the brain, soul cannot exist independent of the body simply because the brain ceases to function when the brain (body) dies. Therefore, I do not believe in reincarnation of any sort based on the scientific reasoning.

## Appendix 3

### Scientific Method

#### Believe in Truth

Both science and religion beg people's belief in them as being the truth. However, there is an indisputable difference in the rationale between them. Science becomes believable only after proving the existence of facts. On the other hand, religion or god comes to exist when one believes in it. The latter kind of belief is called "faith." Faith requires no proof of existence of phenomenon or facts. Occasionally, religion uses miracles or eye-witnesses to make people believe in the power of the almighty. Nevertheless, eye-witness accounts are not scientific proof; and a miracle is a very rare occurrence with causes not under an absolute known control.

Religion started long before the age of science. As science advances, it is establishing its general theories within the realm of the universe which is very different from those of religion. Both science and religion claim they are the truth seekers and that their findings are the real truth. The author is of the opinion that the science seeks the truth of things and phenomenon in the universe, while religion seeks the golden rules in human spiritual pursuit and behaviors. The latter may be called the truth for good human relationships. Science and religion, each belongs to separate and theoretically independent arenas; science seeks physical truth whereas religion seeks virtue. Readers are referred to Appendix 4 for further discussion of the relation between Science and Religion.

#### Early Science

The early science used a classification method based on the human perception of things through observing, tasting, smelling, listening and touching; plus our reasoning and analyzing ability leading to a systematic classification of things. Biological classification is the best example of such a science. As early as four centuries BC, a Greek philosopher classified plants into four categories. During the Ming dynasty in China, a medicine bible called Basic Outline and Detail, classified Chinese medicine sources from biota into grass, grain, vegetable, fruit, tree, insect, scale, shelled aquatic animal, domestic animal, wild animal and human being. During the eighteenth century, Carolus Linnaeus in his great publication, Natural System, used five ranks: class, order, genus, species and variety as the system for classification. Thereafter, in the horizontal direction, at the practically highest level, the biological kingdom was increased from the original two (animal and plant) to six kingdoms in 2004; while in the vertical direction

the classes were extended to domain, kingdom, phylum, class, order, genus and species. However, so far scientists do not have total agreement on the use of the top level called domain.

Modern biological classification is rather sophisticated and is under the guidance and control of Nomenclature Codes being used worldwide. Taxonomy, a subdivision of systematics, is the science of biological classification. Taxonomic systems used by biologists are hierarchical, that is, each higher group contains all the groups below it. Most classification systems group units into successively larger ones. The number of features shared by members of the larger units is fewer than the number shared by members of the smaller units. As “similarity” and “difference” among the organisms is the basic concept/criterion for grouping, this concept is still being applied to studies of human being within the species. For example, scientists are studying common features of biota while identifying the differences, and trying to determine the reasons for such differences. In short, classification systems are an aid to memory, greatly improving our predictive power, improving our ability to explain relationships among things; and taxonomic systems and providing relatively stable, unique, and unequivocal names for organisms.

#### Intrinsic Nature of Science

One thing that scientists believe in that is similar to the religious faith is that the universe is neither created nor designed, but is not completely chaotic as well. Therefore, scientists apply scientific methods trying to find facts of all things and the cause and effect relations of all phenomena in order to find order and rules involved which are the truths of all things.

Science does not rely on superpowers such as God to explain the world phenomena. Science is credited with its open attitude; and its discoveries are always subject to amendment, correction or replacement upon new findings. Scientists emphasize objectivity and eliminate or minimize to the best they can, the subjectivity. Therefore the field of science is always open to the public with freedom of expression for scientific ideas. In science, Darwin’s “natural selection and survival of the fittest” principles also apply to the “human selection” of scientific ideas so that scientific truths ultimately survive. In the author’s opinion, the survivor of real scientific truths is subject to human selection over a long period of time.

Scientific method starts with recognition and definition of the problem, followed by collection of related data and information, then makes an assumption for a solution model and finally performs repeated tests and investigation based on reasoning. The result of the studies is used to verify if the initial assumption is correct; otherwise, the cycle is repeated with a different solution model. Once a correct model is established, anybody can apply the model with a test to get the same result. Therefore, school students must perform physics, chemistry and biological laboratory studies in order to verify the correctness and believability of what was taught in text books with respect to principle, law, formula, equation and model.

## System Analysis

If we treat the subject of investigation as a “system,” all factors affecting the system are called the “environment.” All stimuli from outside of the system are called “input” to the system. The stimulus creates change in the system and generates a response which is the “output” from the system, and in turn becomes the input to the environment. The input is the cause, and the output is the effect.

If a system is designed by people or can be entirely observable by people, the system is a transparent one. A completely enclosed unknown and nontransparent system is called a “black box.” If it is in between the two, the system may be called a “grey box.” Some systems such as computer software may be transparent to the software designer, yet is a black box to users.

In spite of whether it is a transparent box, black box or grey box, we all want to figure out the relationship between input and output by giving a stimulus and observing its response. However, when faced with a black box, we can only observe and calculate the correlation, rather than establish the causal relationship between the input and output. At times, we would like to know the possible structure of a black or grey box, making the system a little more transparent. In that case, we would construct a simplified model to guess the system structure which is called a modeling process. To do that one would first make assumptions about a probable model, then use sample inputs and outputs to test the model. The best fit model can be used for prediction purposes. Nevertheless, the real structure of the system may never be known. The following example illustrates the scientific approach used in a class room to formulate possible structures of a black box system that is close to the actual one.

This teaching example is adopted from a National Academy of Sciences publication (1998) titled “Teaching About Evolution and the Nature of Science”:

The teacher places a nontransparent cardboard tube with four ends (A, B, C, D) of ropes, on the table as shown in Figure 1. Figure 2 shows the structure of two rope connections that are invisible to the students. The teacher then pull a rope end a few times, one rope end at a time and lets the two students observe the movement of the other three ends. Pulling is the input (stimulus) to the black box and the responses from all other ends is the output. Both students are sure that pulling end A will cause end B to move and vice versa, but for the other cases the connection is less certain.

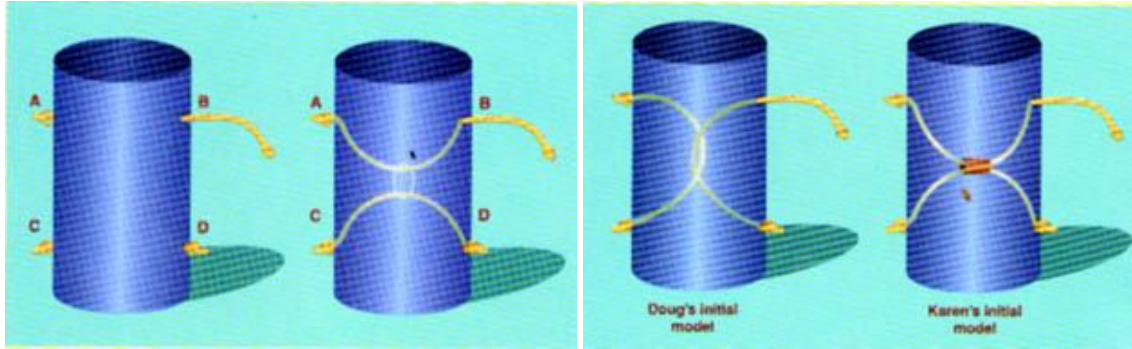


Figure 1

Figure 2

Figure 3

Figure 4

After that, the teacher asks the students to sketch the structure of the ropes inside the cardboard tubes from their own observation and to show each other the sketches. Upon a comparison of the sketches, the teacher finds a substantial difference between them. Following a discussion with the students, the teacher gives each student ropes and cardboard tubes identical to the one that is being demonstrated and asks them to construct their own model. Figure 3 and Figure 4 show the configuration of ropes as constructed by the two students. Although they are different both are fairly similar to the one constructed by the teacher (Figure 2). Now the black box (Figure 1) has become much clearer.

The above example is a construction of the so-called physical model. If mathematical equations are used, it is called a mathematical model. Sometimes, a mixture of both models is used.

### Mathematical Model

As we know it, a mathematical model can be deterministic or probabilistic (stochastic). A deterministic model is one in which every set of variable states is uniquely determined by parameters in the model and by sets of previous states of these variables. Therefore, deterministic models perform the same way for a given set of initial conditions. Conversely, in a stochastic model, randomness is present, and variable states are described by probability distribution rather by unique values.

Both deterministic model and probabilistic model have been used for centuries. Both models apply to simple or simplified systems. In order to cope with much more complicated systems such as biological or social systems, a new discipline of science called “cybernetics” was developed in the second half of the 20<sup>th</sup> century.

Cybernetics was defined in 1948 by Norbert Wiener as “the science of control and communication in the animal and machine,” the interdisciplinary study of the structure of regulatory systems. According to Wikipedia, cybernetics is a broad field of study, but the essential goal of cybernetics is to understand and define the functions and processes of systems that have goals and that participate in circular, causal chains that move from action to sensing to comparison with desired goals, and again to action. Cybernetics provides a means for examining the design and function of any system. The most recent definition has been proposed by Louis Kauffman, President of the American Society of Cybernetics that “cybernetics” is the study of systems and processes that interact with themselves and produce themselves from themselves.

In 1961, W. Ross Ashby in his book, “An Introduction to Cybernetics,” provided a unified concept addressing both deterministic and probabilistic models. He introduced the concept of “difference” as being the most fundamental in cybernetics; either that two things are recognizably different or that one thing has changed with time. As a thing or system changes from one state to the other, the process is called transformation. From the stand point of the nature of transformation, we may divide the transformation process into deterministic and probabilistic as follows:

#### A. Deterministic Process

By giving an input to a system, one gets a single-value output through transformation in the system. This one-to-one transformation is called deterministic process.

A solid body motion is a deterministic process describable by Newton’s second law of motion,  $f = ma$ , where  $m$  is mass of the body (system) and with a force  $f$  (input) applied to the body, it will produce a single-value acceleration  $a$  (output) in accordance with the equation. This example and the previous cardboard tube-ropes experiment are all deterministic process; one input (cause) produces one output (result).

Forecasting phenomenon for the future is an importance task of great interest to human society. As to forecasting technique, please refer to a fine book, Cybernetics and Forecasting Techniques co-authored by A. G. Ivakhnenko and V. G. Lapa (1967). It should be understood that the result as well as its accuracy produced from a deterministic process is not affected by the length of lead time.

#### B. Stochastic / Probabilistic Process

By giving an input to a system, one may get two or more output values through transformation in the system. This one-to-many transformation is called stochastic/probability process. One input (cause)

produces more than one output (results). The sum of the probabilities from all possible outputs must be equal to 1.0.

The probabilistic process is caused by random variable(s) in the system. According to Wikipedia, a random variable is a variable whose value is not known. Its possible value might represent the possible outcome of a yet-to-be-performed experiment, or the potential values of a quantity whose already-existing value is uncertain (e.g., as a result of incomplete information or imprecise measurement). Intuitively, a random variable can be thought of as a quantity whose value is not fixed, but which can take on different values; a probability distribution is used to describe the probabilities of different values occurring.

If the value of a random variable depends upon the previous events, it is then called the stochastic process. In the simplest case (discrete time), a stochastic process amounts to a sequence of random variable known as a time series, such as the so called Markov chain.

If the nature of a random variable in the system changes with time, it is called non-stationary probabilistic process. Predicting the future in such a process, the accuracy of the prediction will decrease with length of the lead time. However, in a stationary process, the accuracy of the prediction will not be affected by the lead time. Therefore, whenever the properties of random variable change little during the lead time, the system can be treated as a stationary process.

With stochastic or probabilistic process, one cannot predict the output value with certainty as in the case of the deterministic process. However, we can predict the probability of its occurrence, which is much better than a complete unknown.

Let us use hydrological events as an example to illustrate the application of a probabilistic process. We will consider a watershed as a system. We can not calculate the magnitude of a 100-year flood (output) from a 100-year rainfall (input) event, because of the changing and variable conditions of the watershed such as antecedent precipitation, soil-cover condition and temperature. Therefore, this is a system with one input that produces more than one output - a probabilistic process. In order to establish the relationship between the flood frequency and its magnitude, we perform the frequency analysis of the historical annual floods for the watershed. The magnitude of the 100-year flood can then be determined from the flood frequency curve.

It must be noted that the 100-year flood as determined above means a long term average occurred once in 100 years. It does not literally mean one occurrence every 100 years. Instead it means each year, there is a 1 percent chance of occurrence of flood of that magnitude: and it can happen in any year. Do not be surprised if two 100-year floods actually appear only 10 or even 5 years apart.

Gambling is a fairly common social experience and can be easily understood as an activity subjected to a probabilistic process. There are wins and there are losses in gambling. As you can recall, a play on a slot machine can result in a total loss, break even or wins of various magnitudes. One input into the system (machine) produces many outputs. You will also notice that the bigger the win, the smaller the chance of its occurrence. In order to allow a fixed profit for the casino owner, the expected value of a given play is always slightly less than the value of the play. In Las Vegas, the slot machines are designed so that the rate of return for gamblers is about 97 to 98 percent, meaning that the casino owner's profit margin is 3 to 2 percent by design. In the short term, a gambler may have a win or loss, but in the long run the gambler always loses.

### C. Mixed Process

In a complex or semi-transparent system, there could be components for which deterministic process can be used, while others would require use of the probabilistic process. The best way to model this system is to employ the deterministic process for its major components and supplement them with probabilistic process in the minor components. The accuracy of projection from the system can be greatly improved if the deterministic components can be expanded over the probabilistic components. The following two examples are adopted from Ivakhnenko and Lapa (1967) to illustrate the application of the mixed process in a complex system.

The first subject is to determine the elevation of high and low tides at a given location on a given day. We may divide the process into the deterministic, probabilistic and purely random parts because all three parts exist in this process. The deterministic part is due to the moon, and to a small extent to the sun, and can be accurately calculated by Laplace's theory. In addition, there is a random part due to wind, variation of the composition and density of water, temperature, and numerous other causes; some of which are unknown. By observing the result of these factors for a long period of time, we can determine the probability of deviations from the accurate calculation, such as a wind correction for the location on the ocean shore. The combination of the deterministic and probabilistic parts represents the best prediction of the elevation of tides. Comparing this best forecast with the actual tides enables us to determine the element of unpredictable or pure randomness. Errors in the measuring instruments usually make up a considerable part of this pure randomness which can be reduced through improvements in measuring techniques. Beyond that, the pure randomness, like flipping a coin, is in theory unpredictable.

The second subject pertains to weather forecasting. The method for short-term weather forecasting can range from a simple observation of animal (mosquitoes, frog, bees and birds) behavior, to clouds and wind, to the most modern computer applications requiring collection of great amounts of weather data. To forecast weather for only three days, it is necessary to use more than 20,000 points of initial



data. Processing such a large amount of information is impossible without the use of high-speed computers with memories of considerable size. Computers make it possible to continuously memorize weather information arriving from many (tens of thousands) of meteorological stations, to process it, and to forecast weather both by direct solutions of aerodynamic equations and by calculating probabilities (the deterministic and probabilistic methods). Thus, weather forecasting presents a typical multi-dimensional problem, since it requires information on the variation of temperature, pressure and other quantities not only in time but also over the surface of the planet. The resulting forecast in term of temperature, wind and precipitation is probabilistic in nature, because a mixed process of deterministic and probabilistic models is utilized in the forecast.

### On the Journey of Life

Readers may wonder whether the scientific method described above bears any relation with our journey of life. The answer to this question is: yes. Let's consider the following analogies.

A. The human body is a system, a complex living system with emotion and consciousness at the highest level among the animal kingdom. Within this living system, there are many subsystems with delicate components; each of them is dedicated to a unique function. However, these interconnected and interdependent subsystems must closely coordinate and cooperate in parallel and in sequence precisely, in order to keep the body alive and functioning properly. To study the internal functions of various organs and the exterior behaviors of the body, we must employ scientific method and process in search of the truth as described above.

B. Our life's journey is even more complicated than our body, traveling throughout our life time. At any time, this body (individual) interacts with its social and natural environment. In the essence of this book, this means a continuous interaction between our genes and our environment. With conscious choice and decisions the individual makes along the journey, we have made our destiny with irretrievable, irreversible and inerasable foot prints.

C. At the first glance, you would feel that your destiny is very complicated, and difficult to understand and nearly impossible to grasp. However, upon careful observations, and detailed consideration and analyses and recollection of your own and others' life experiences, you would find that there were deterministic (causal) processes intertwined with probabilistic processes plus a pure random element - - a truly mixed process - - going on in our life. Thus, it gives us a feeling that life is mysterious and puzzling. But, let's use a guided vacation tour as an example to look into the outcome of this part of your destiny. Joining in a guided tour is a decision under your control, yet to have the tour come out as planned requires a joint success of many other factors beyond your control and involving uncertainty / probability. Although the outcome is probabilistic in nature, our experiences have proved that we have a lot of success in planned tours as if it is a deterministic process! So, as with a properly planned tour

guide, to quite some extent, we do have control of our destiny. Never give up pursuit of your dreams or long-term goals, because they can be achieved with planning and devoted efforts in spite of many uncertainties ahead in your journey of life. Life is not mysterious, but can be interesting, pleasant and enjoyable.

- C. As a good opportunity arrives during one's journey of life, the well prepared one tends to be the lucky person who intercepts the opportunity. By the same token, a well prepared person can reduce and minimize the loss or damage during an episode of bad luck. Therefore, it behooves us to understand and believe in the power of scientific method, and use data and information resulting from scientific research as the basis for consideration and making choices and decisions in our journey of life. To the extent we can, we must control and steer our thinking and course of actions towards dream and goals; believe not in superstition or predestination.

## Appendix 4

### Science and Religion

Rapid advances in science have revealed many secrets associated with religion, especially the conflict between Creationism in religion and Evolutionism in science. Public schools in the U.S. are teaching evolution but not creation in biology. The U.S. National Academy of Science published in 1998 a book titled, "Teaching about Evolution and the Nature of Science" providing a scientific method for teachers in teaching about Evolution. Recently, there were scholars from Christianity and Buddhism devoting their effort to reinterpret their bibles considering the relevant scientific evidence.

#### **State of Relation between Science and Religion**

The current world renowned leader in science and religion, Ian G. Barbour, in his book, "When Science Meets Religion," classified the relationship between science and religion (limited to Christianity, Judaism and Muslim) into four categories: conflict, independent, dialog and unification. Within each category, he objectively analyzed and compared them from the theory and view point of quantum physics, evolution and eternal creation, neuron science and basic human nature as well as God vs. Nature.

#### **Category 1: Mutually in Conflict**

Within this category, science-based evolution is considered in conflict with God's creation. If you believe in evolution, you would never believe in God's creation. There is no room for compromise for both.

#### **Category 2: Mutually Independent**

In this category, science and religion are considered a separate and independent arena. They are like strangers to each other. They can coexist in peace without conflict.

#### **Category 3: Dialog**

There would be discussions and dialog between the two sectors to create mutual recognition of the fundamental differences in theories between science and religion and to establish common grounds from all of the differences. As examples: the orderly universe appears to be scientific as well as a god's creation; or as some scientists believe, God plays the decision maker role in the "Uncertainty Principle" of quantum mechanics.

#### Category 4: Unification

In comparison with Category 3 scholars, people in this category believe that scientists and religious scholars should together devote their effort to find a broad and systematic cooperative relationship between science and religion. For example, the traditional Theology of Nature has found by association of ideas, the existence of God through their search effort in nature; and some modern scientists in astronomy praise the beauty of constants in physics in the universe which looks as if it was designed.

In his book, Professor Barbour did express his own views on each of the above four categories. He inclined toward the last two categories of thinking. In particular, he favors the Theology of Nature by carefully applying Process Philosophy. This book, "When Science Meets Religion," is a great publication worthy of careful study by those who are interested in or have questions on science and religion.

#### Science and Philosophy

In addition, "Le Moine et le Philosophe," authored by Jean-Francois Revel and his son Matthieu Ricard, is another great book on the subjects of science, philosophy and religion. The book recorded the dialog between a philosopher (the father) and a monk (a scientist and the son). The dialog covered a broad range of subjects from religion, philosophy, science, politics, human society and philosophy of life to soul, ghost, wisdom, psychology, faith, biotechnology, evolution, etc. In-depth yet interesting discussions are provided in each of these subjects.

Revel is a world renowned philosopher and political commentator and also a member of the French Academy of Sciences. Ricard, under the direction of Nobel laureate professor François Jacob, earned a Ph. D degree in molecular genetics with honors in 1972. At the time of a near breakthrough in biology in his career, he decided to abandon everything, shaved his hair and become a monk. He went all the way to Tibet to pursue a non-substitutive spiritual satisfaction in life. He lived in the Himalayas studying with Kangyur Rinpoche and became the close student and attendant of the great teacher, Dilgo Khyentse Rinpoche, until Rinpoche's death in 1991.

Ricard has deeply dedicated his life to Buddhism and believes in eternity of the river of consciousness as well as the concept of reincarnation. He firmly believes that the meaning of life should be predicated on the spiritual living. Wisdom, satisfaction and serenity can be reached through accomplishments in knowledge and spirit. The spiritual achievement is a continuum and endless, therefore, there is no break due to birth or death.

Revel, on the other hand, does not believe in the eternity of soul or consciousness. He firmly believes that the purpose of living is to improve the well-being of both the individual and the community. The complete answer to the meaning of life cannot be found in such a super religious realm (i.e. the continuum and endless of birth and death).

On the subject of science, philosophy and religion, it would be remiss without mentioning the great Chinese philosopher, Shih Hu (1891-1962). According to Dr. Sung-Peng Hsu's article on "Hu Shih" in the college text book, Dr. Shih Hu was the most important philosopher in modern China. He was a strong advocate of democracy and science in China. As a philosopher, he believed that both the value of life and the personal philosophy can be approached scientifically.

On the issue of personal philosophy, Dr. Hu took up his own challenge and formulated his philosophy of life on the foundation of available scientific knowledge. He proposed it as a grand hypothesis and called it "the naturalistic conception of life and the universe." He developed a ten-point list of hypothesis, among which the 10<sup>th</sup> point, considered as the most important one, is presented as follows:

"On the basis of biological, sociological and historical knowledge, we should recognize that the individual Self is subject to death and decay, but the sum total of individual achievement, for better or for worse, lives on in the immortality of the Larger Self; that to live for the sake of the species and posterity is religion of the highest kind; and that those religions which seek a future life either in Heaven or in the Pure Land, are selfish religion."

## **Bible and Science**

Dr. Gerald Schroeder is a physicist and an applied religionist. In his book, "The Science of God," he stated that, through the misinterpretation of some past religious leaders, certain parts of the Bible are in conflict with scientific view points and certain parts are inconsistent or in conflict within the Bible itself. He firmly believes that religions must be based on both Faith and Belief, and the latter (Belief) requires knowledge and must be based on knowledge. It is evident that Dr. Schroeder's motive has been to work toward unification between science and religion.

Schroeder used many examples to demonstrate the often surprising parallels between a variety of biblical teachings and the findings of biochemists, paleontologists, astrophysicists, and quantum physicists. Furthermore, he thought the biological mutation and probability/randomness play rather important roles in the evolutionary process of the universe.

With careful reading of the Bible, one will find that sciences and the bible can be complimentary and mutually beneficial. Through dialog between science and religion, it is possible to achieve unification.

In his book, Dr. Schroeder not only pointed out several fallacies in the Bible and gave them new interpretation, but he also went further with great effort to derive a mathematical model to re-interpret the six days of Genesis in the bible from creation of the universe to formation of day and night, ocean and land on earth, culminating in the creation of plants and animals in the seas and then on land.

Schroeder said that the biblical calendar is divided into two sections: the first six days of Genesis and all the time thereafter. Those six days are not, and never have been, included in the calendar of the years which follow Adam and Eve. While the biblical calendar, after Adam and Eve, must have been Earth-based, the six days of Genesis are a cosmic clock based calendar. He also pointed out that only in the first day of Genesis it was created into being from nothing. During the remaining five days, the Bible used the words such as missions accomplished (making) or certain matters appeared, rather than being created.

Schroeder considered that the Big Bang marked the first day of the Creation. Soon after the Big Bang the energy level, as indicated by the ambient temperature, fell below the minimum value that would allow energy to change into matter in accordance with Einstein's equation relating the energy to matter as we know it. Since that moment, the universe (space) has expanded a million-million times, and the cosmic background radiation, CBR, indicated that the universe has been expanding for some 15 billion years in our earth calendar. The million-million times of the expansion of the CBR and corresponding stretching of light waves as the universe expanded, would reduce the 15 billion years to six days in the universal calendar. He concluded that Genesis and science are both correct.

The Big Bang also marked the beginning of time. After that, space continued to expand and is still expanding. There might be a time that the universe may stop expanding and begin to contract and eventually go back to the original point of nothing before the Big Bang. Another Big Bang may start the cycle again (Sagan, 2000, Wolf, 1999). Dr. Schroeder used a very technical mathematical derivation applying the exponential spiral function to see how well the six-day-creation universal calendar fits into the 15 billion years of our earth calendar as has been estimated theoretically from the rate of expansion of the universe since the Big Bang. For each of the six universal calendar days, he calculated the corresponding earth calendar time

period and presented the main events occurred during each period from both the Bible's points of view and the findings of sciences as shown in the following original table.

### The Six Days of Genesis

Day number	Start of day (years B.P.)	End of day (years B.P.)	Main event(s) of the day	
			<i>Bible's description</i>	<i>Scientific description</i>
One	15,750,000,000	7,750,000,000	The creation of the universe; light separates from dark (Gen. 1:1-5)	The big bang marks the creation of the universe; light literally breaks free as electrons bond to atomic nuclei; galaxies start to form
Two	7,750,000,000	3,750,000,000	The heavenly firmament forms (Gen. 1:6-8)	Disk of Milky Way forms; Sun, a main sequence star, forms
Three	3,750,000,000	1,750,000,000	Oceans and dry land appear; the first life, plants, appear (Gen. 1: 9-13); kabbalah states this marked only the start of plant life, which then developed during the following days	The earth has cooled and liquid water appears 3.8 billion years ago followed almost immediately by the first forms of life: bacteria and photosynthetic algae
Four	1,750,000,000	750,000,000	Sun, Moon, and stars become visible in heavens (Talmud Hagigah 12a) (Gen. 1: 14-19)	Earth's atmosphere becomes transparent; photosynthesis produces oxygen-rich atmosphere
Five	750,000,000	250,000,000	First animal life swarms abundantly in waters; followed by reptiles and winged animals (Gen. 1: 20-23)	First multicellular animals; waters swarm with animal life having the basic body plans of all future animals; winged insects appear
Six	250,000,000	approx. 6,000	Land animals; mammals; humankind (Gen. 1:24-31)	Massive extinction destroys over 90% of life. Land is repopulated: hominids and then humans

By comparing the Bible's description with the scientific description for each of the six days of Genesis, from the creation of the universe when light separates from dark, through formation of heaven, oceans and dry land, appearance of Sun, Moon and Stars, to appearance of animals in waters and then winged animals, and finally land animals, mammals and humankind, Dr. Schroeder was surprised and rather satisfied with the broad consistency between the Bible and

science presented in his finding as shown in the table. This is an example of a big step toward unification of religion and science.

According to the Bible, God created Adam and Eve some six thousand years ago at the end of the sixth day of Genesis. Schroeder, after a careful study in the Hebrew original text concluded that there is a subtle difference between “making” and “create.” Things are “created” from nothing (now known as the Big Bang); and once created, things are progressing to completion and “made.”

According to this definition, then how do we interpret that about six thousand years ago God “creates” Adam and Eve? Schroeder admits that scientifically speaking, human beings existed long before six thousand years ago as evident from the discovery of old pottery left by human beings much longer than six thousand years ago. Thus, he believes that about six thousand years ago, God creates a spiritual soul in human beings. The human physical body had been in existence long before that. Therefore, the ancestors of Adam and Eve actually existed. He added that when animals appeared on the earth, all animals including human beings possessed a spiritual soul. About six thousand years ago, God brought into human beings a higher level of spiritual soul which is different from those of all other animals. This appears to provide a more reasonable time frame in which human beings developed the neo-cortex and its superior brain power, reasoning ability and human love (Lewis et al., 2000).

People are much puzzled by the statements in Genesis that human beings sexually matured very late and lived a very long life (over one hundred). Dr. Schroeder, after comparing the pre and post Noah human ages with the corresponding difference in the environment guessed that the shorter life span in post Noah time may have actually given human beings a competitive edge in its survival. At this point, I feel that Dr. Schroeder stretched too far and I cordially disagree. From a historical perspective, there has been an old Chinese saying that very few people get to live over 70 years in ancient times. Archaeologists in Egypt have never found any evidence that ancient Egyptians lived a longer life than their modern counterparts. The theory is not believable even if Dr. Schroeder’s assumption is reversed.

Toward the end of the book, Dr. Schroeder discussed human genes, the inheriting factor, and the God given “free will” with respect to their effect on human life. He said that although some genes completely determine our appearance, most of our genes determine only the tendency and do not totally dictate our thinking and behavior. As God gives us free will, we can make choices and decisions anytime and anywhere. Our choices and decisions certainly will affect our future, i.e. our destiny!



Additionally, I would like to bring up a writer worthwhile of our attention. Ching–Hue Hshih is a former elder of a Presbyterian church in Houston, Texas. He published a series of three articles on Christianity and science in 2002 in the Taiwan Tribune. The titles are: “Bible and Religious Sects,” “Soul and Heredity” and “Miracles and Science.”

In the first article, “Bible and Religious Sects,” Hshih states that Judaism, Catholicism, Greek Orthodox, Christianity and Mormonism worship the same God. However, each has its own taboo, traditional ceremony and service rite. He criticizes that the circular arguments regarding the origin of God and the origin of the Bible are self-serving; therefore, are not scientifically logical.

In the second article, “Soul and Heredity,” the elder discusses in detail to denounce the claims by the Church that among all animals, only human beings possess a soul and that sins are inheritable. He uses scientific evolution theory and modern scientific findings in genes and DNA to disapprove the reasonableness of the claims. He quotes proofs that souls do exist in lower level animals; and religious authorities do not believe that there exists the gene of sin among human genes. Even if it exists, it has not been found so far.

In the third article, “Miracles and Science,” Hshih presented the scientific findings in modern astronomy and physics to refute the absurd miracle written in the Bible. It said that, in order to let Jewish people win the war God, let the sun stay up in the sky above Gibeon in the valley of Ajalon. Following that, he refuted the statement in the Bible that Jesus was born by a virgin, which cannot be supported at all by modern science.

From these articles, Hshih made the following two conclusions: (1) all religious claims about the existence of heaven or paradise deserves your doubt, and (2) more readings in history, literature and natural science would enhance your reasoning method and ability by broadly gathering information and knowledge from various domains; it is neither enough nor correct to just learn from the Bible or mythical books.

### **Buddhism and Science**

In recent years, there have been a few Buddhist scriptures interpreted in scientific terms. As early as 1987 Peng Peng published a two-volume book containing over 500 pages titled,

“Matching the Nuclear Physics with the Buddhist Scriptures,” written in Chinese. The author is a devout Buddhist and a writer. He is not only well versed in Buddhism but also believes in science. Ever since he was a youngster, his mother had been encouraging him to study broadly and deeply particularly on the intersection of Buddhism, science and philosophy to find out the common truths among them.

Readers may better understand Peng Peng’s motives in writing this book by examining the headings of the first two sections of Chapter 1 titled, “When the Frontiers of Western Science Meets the Concept of Emptiness of Eastern Buddhism.” The heading of the first section is “From Relativity and Quantum Mechanics to Appearance and Emptiness.” The heading of the second section is “From Neutrino and Particle to Origin of the Universe and Indiscrimination between Appearance and Emptiness.” Although there are some misunderstandings and printing mistakes in the book, readers can appreciate the breadth and depth of his knowledge.

Peng Peng touched the subject of “conscious soul” from the view point of several scientists as well as his own. He believes in the existence of the conscious soul and the transmission of consciousness-message exceeds the speed of light, in defiance of Einstein’s theory that the speed of light is the limit of traveling for anything in the universe. He also claims the validity of reincarnation from a scientific point of view. He used the law of conservation of matter and the law of conservation of mass-energy, as well as the circular principle of “formation, dwelling, decay, and emptiness” to support his claim.

Let me now present the last two paragraphs of his preface in the book to conclude my brief introduction of Peng Peng’s book: “Buddhist study of scripture is not equal to science; neither a scientific discovery is equal to a Buddhist study. However, science can make it easier to understand the principles and scriptures of Buddhism. There are common denominators that are truth for both, which can be used to confirm Buddhist study. This way both science and Buddhist studies share the benefit. I have been the beneficiary of such studies.”

“Buddhism, science and philosophy all devote their effort to find the truth in the universe. The result of their findings would be mutually beneficial to all. There is no reason to honor one and discredit the other(s); let alone to hold on to one at the expense of the other(s).”

Peng Peng quoted Einstein’s famous statement on the cover page that “science without religion is lame; religion without science is blind.” It is obvious that Peng Peng echoes the view of Ian Barbour mentioned earlier. That is to say: science and religion should start with dialog to reach a mutual cooperation in a broad and systematic manner.

Ming-Te Huang and Jian-Mien Chen in their book titled, “Buddhist Doctrines and Sciences,” made philosophical comparisons between Buddhist scriptures and science. Their presentation focused on “Functionless Energy and Nature of Emptiness” and “Correct Awareness and Superstition.” Both were Buddhists and scientists, yet they had certain criticism of science. Although they affirm the beneficial contribution of science to human society, they made it clear that there are differences between Buddhist doctrine and science.

In the review of the relationship between religion (Buddhism) and science, we must not overlook a recent publication titled “The Universe in A Single Atom,” authored by Nobel Peace Prize winner, Dalai Lama. The primary content of the book is indicated in the subtitle of the book namely, “The Convergence of Science and Spirituality.” He admitted that he is not a scientist but has been deeply interested in science and technology since his childhood. In 1949, he started reading scientific books, magazines and newspapers in collaboration with Western scientists. Starting in 1979, he has been studying the discoveries in modern science and technology; and frequently had opportunity to learn from and discuss topics with world renowned scientists.

Dalai Lama’s scope of search, study and understanding in science have been broad and in depth, ranging from Darwin’s evolution theory to modern discoveries in genes and DNA, as well as biochemical technology; from Newton’s discovery of gravity and classic physics to Einstein’s relativity and uncertainty principle in quantum mechanics. In the religious arena, he is highly versed in Buddhism of both India and Tibet. In addition, Dalai Lama is a profound learner in philosophy. All these combined have made him the authority and leader to address the subject of “The Relationship between Buddhism and Science.”

Dalai Lama made it clear that he does not intend to unite science and Buddhist doctrine because science cannot answer and solve the question of goodness which is under the realm of pure religion. Neither can science answer and solve the question of value and meaning of the human life. However, it is true that science had made great contributions to the welfare of human society, corrected certain errors in Buddhist scriptures, and verified some profound Buddhist doctrines. All these have helped readers to understand and believe in Buddhist doctrines. On the other hand, some Buddhist doctrines such as the circular doctrine of “formation-dwelling-decay- emptiness,” the concept of emptiness, and the Buddhist approach to studying the human consciousness from a first-person perspective, have all been helpful for scientific research and investigation.

I would like to share with readers the following salient points brought up in the book:

- So far, science has discovered 92 chemical elements in nature. Such discovery has overthrown the four basic substances namely: earth, water, fire and air mentioned in the Buddhist scripture.
- Both Einstein's theory of relativity and the "uncertainty principle" established in modern quantum physics have fundamentally changed human's perception of the universe. There is a point of coincidence in relativity of time in Buddhist cosmology. Both the "uncertainty principle" and the well-established law of conservation of matter and energy are, in reality, just as real as "appearance" and "emptiness" is in one of the Buddhist doctrines. Science and Buddhist doctrine can eventually reach a unification stage through continuing dialog.
- As to the beginning of the universe, Dalai Lama said that Buddhists have been silent in answering this question. He examined several different explanations for the formation of the universe as viewed by a few ancient Indian thinkers; but none of them appeared to be reasonable and believable. Instead, he inclined to believe the Big Bang theory that was derived scientifically from mathematics and physics. However, he does not believe that the Big Bang is the absolute beginning of the universe. Rather, he is in favor of the Buddhist doctrine namely, the circular doctrine of "formation-dwelling-decay- emptiness" to explain the course of evolution of the universe. After lengthy discussions, he seriously asked these questions: What existed before the Big Bang? What caused it? Why has our planet evolved to support life? What is the relationship between the cosmos and the beings that have evolved within it?
- "Consciousness" is an area of intersection between science and Buddhism which is an issue to be addressed by both. Dalai Lama devoted three chapters within the total of nine chapters in his book to explore and discuss this deep subject. I strongly recommend readers to study these three chapters and then read Appendix 2 of this book, all on the subject of Consciousness.

In conclusion, Dalai Lama admits that science has contributed significantly to human society, but it has also done certain harm by mistake and negligence. Therefore, he appealed to scientists to pay much attention to human spiritual value, overcome the conflict between Buddhism and science and based on cooperative attitude and effort to meet the physical and spiritual needs of human beings. Both science and spirituality are the source of knowledge and happiness; and both are destined to reduce human suffering and to enhance human happiness.

## **My View on the Subject**

Let us use a circle to represent the arena of science and another circle of the same size to represent the arena of religion. If both circles overlap completely, but each subject area (arena) administers independently, there would be conflicts, of course. If the two circles are completely separate, the two arenas are mutually independent and they can coexist without conflict. However, in reality, the two circles overlap to some extent and that is where the conflict may occur.

Nearly every religion has established its own theory or concepts of the universe as well as the soul or consciousness. These theories or concepts within the area of the intersection of the two circles tend to be the source of issues or conflicts with science. These issues or conflicts can be resolved only through dialog among authorities in science and religion. The areas outside the intersection belong to each independent arena in which there is no conflict between the two arenas.

The theory or concept of the universe is the foundation for the establishment of a healthy philosophy of life or personal belief system. And, both the concept of universe and the personal belief system are the framework of religions. Naturally, many religious transcripts start with the concept of the universe. It is conceivable that the Bible and Buddhist scriptures were written and modified by wise and talented religious followers in ancient time when science did not exist. Furthermore, there was no other proven dissent opinion or observation to challenge their concepts of the universe.

Only until the recent few centuries, challenges to and conflict with religion started because of initiation and rapid advancement in science. Starting with the huge break through from the discovery that the earth is round and is revolving around the sun which coincided with the period of advancement in mathematics, physics and astronomy to the discoveries of gravity, evolution and many modern scientific and technological developments such as biochemistry, photon-magnetic-electrical technology, gene & DNA, theory of relativity and quantum physics, all of these gradually intensified the conflict of viewpoints between science and religion. The past century marked the start of a gradual effort made in dialog between science and religion with a hope toward unification in their relationship. Both books, "The Science of God" and "The Universe in A Single Atom," mentioned previously are good examples of such effort in this dialog.

The conceptual universe in religious transcripts had been metaphorically “wrapped” with several layers of thick overcoats. Progress in science in the last few centuries has stripped away the overcoats one after the other.

After all, the universe is abstruse and complex, yet it appears to have order and had been designed. Therefore, there are scientists who believe in God’s creation of the universe. I believe that science will continue to strip off more overcoats down to the basically true nature of religion. Until then, religion may serve as a lodge/storage room for the unknown, under the custody of religion.

Remember, in spite of further progress in the future, science cannot meet the spiritual needs of human beings, cannot address the question of goodness and cannot fully answer the question of “the meaning of life and the value of life.” This always is under religion’s arena and cannot be replaced by science or art. However, the future of religion may take various forms and styles with or without religious rites. I would like to conclude this Appendix with three book titles, “Why God Won’t Go Away” (2001), “Why We Believe What We Believe” (2006), and “How God Changes Your Brain” (2009), all authored by Dr. Andrew Newberg, et al.

## Appendix 5

### A Scientific Method to Estimate Life Expectancy

Everybody wants and wishes to live a long life, even a poor or a sick person. Suicides for one reason or another are very rare and should be considered as an exception.

Some people have lived a satisfactory life and really want to know how much longer they can expect to live. It just so happens that nearly everywhere in the world, one can find fortune-tellers using many different methods to tell your fortune including your life expectancy. Let's ask some questions: Is it possible that one's life expectancy is given at birth (predestination)? Is it possible that one's life expectancy can be read from one's face or palm? Is it believable that one's fortune or life expectancy can be predicted by one's birth date and time? All of these methods are unfounded and cannot be proven. They are superstitions. But if you are curious to hear from a fortune-teller, you may spend some money and just have fun.

A few years ago, I ran into a copy of AARP's magazine called "Modern Maturity" in which I, fortunately, found an article on a scientific approach to estimate your life expectancy. By answering "yes" or "no" to a given question, you will get a score for each question. After you have answered a total of 20 scientific questions, you will get a total score which is then converted to an age-equivalence adjustment above or below the long-term average life span for a man or a woman. This is indeed a scientific and reasonable method of estimate.

The following questionnaires were developed by Harvard Medical School researchers, Thomas Perl, M.D., and Margery Hutter Silver, Ed.D., after completing a study of 150 centenarians. These questionnaires reflect the effects of born genetic factors and subsequent environmental chances. One's life expectancy can be affected by one's choices and decisions made during a life time. This is the power of EEC mentioned in Chapter 4 of this book.

#### Score Method

Step 1: Add the negative and positive scores together. Example:  $-45$  plus  $+30 = -15$ . Divide the preceding score by 5 ( $-15$  divided by 5 =  $-3$ ).

Step 2: Add the negative or positive number to age 84 if you are a man or age 88 if you are a woman (example:  $-3 + 88 = 85$ ) to get your estimated life span.

# LONGEVITY QUIZ

Score

- 1 Do you smoke or chew tobacco, or are you around a lot of secondhand smoke? Yes (-20) No (0)
- 2 Do you cook your fish, poultry, or meat until it is charred? Yes (-2) No (0)
- 3 Do you avoid butter, cream, pastries, and other saturated fats as well as fried foods (e.g., French fries)? Yes (+3) No (-7)
- 4 Do you minimize meat in your diet, preferably making a point to eat plenty of fruits, vegetables, and bran instead? Yes (+5) No (-4)
- 5 Do you consume more than two drinks of beer, wine, and/or liquor a day? (A standard drink is one 12-ounce bottle of beer, one wine cooler, one five-ounce glass of wine, or one and a half ounces of 80-proof distilled spirits.) Yes (-10) No (0)
- 6 Do you drink beer, wine, and/or liquor in moderate amounts (one or two drinks/day)? Yes (+3) No (0)
- 7 Do air pollution warnings occur where you live? Yes (-4) No (+1)
- 8 a Do you drink more than 16 ounces of coffee a day? Yes (-3) No (0) b Do you drink tea daily? Yes (+3) No (0)
- 9 Do you take an aspirin a day? Yes (+4) No (0)
- 10 Do you floss your teeth every day? Yes (+2) No (-4)
- 11 Do you have a bowel movement less frequently than once every two days? Yes (-4) No (0)
- 12 Have you had a stroke or heart attack? Yes (-10) No (0)
- 13 Do you try to get a suntan? Yes (-4) No (+3)
- 14 Are you more than 20 pounds overweight? Yes (-10) No (0)
- 15 Do you live near enough other family members (other than your spouse and dependent children) that you can and want to drop by spontaneously? Yes (+5) No (-4)
- 16 Which statement applies to you? a "Stress eats away at me. I can't seem to shake it off." Yes (-7) b "I can shed stress." This might be by praying, exercising, meditating, finding humor in everyday life, or other means. Yes (+7)
- 17 Did both of your parents either die before age 75 of nonaccidental causes or require daily assistance by the time they reached age 75? Yes (-10) No (0) Don't know (0)
- 18 Did more than one of the following relatives live to at least age 90 in excellent health: parents, aunts/uncles, grandparents? Yes (+24) No (0) Don't know (0)
- 19 a Are you a couch potato (do no regular aerobic or resistance exercise)? Yes (-7) b Do you exercise at least three times a week? Yes (+7)
- 20 Do you take vitamin E (400-800 IU) and selenium (100-200 mcg) every day? Yes (+5) No (-3)



### Comments on Questionnaires

I did my quiz and got subtotals of (+31) and (-15). The total is +16.  $(+16) / 5 = 3.2$ , say +3. My life span as a man therefore is  $84 + 3 = 87$ . I am satisfied with this result, even though I felt the man's base of 84 may be a little bit high.

There are scientific bases for all these questionnaires and the corresponding scores, but they are not presented here. Interested persons are encouraged to refer to the bi-monthly publication of "Modern Maturity," Oct – Nov, 1999. However, a few research results should be familiar to our readers. For examples: scientific research has proven that smoking will cause disease and reduce the smoker's life span; alcoholics will cause damage to their livers, but moderate and proper amounts of drink can be beneficial to one's health; and, routine exercise will make you healthier and live longer.

A special comment is in order here. Both questions 17 and 18 are tied to genetics which is the initial cause of destiny, the genetic fate that cannot be altered. Other questions such as No. 5 and 6 on alcohol consumption, No.12 on a person's history of stroke and heart attack, and No. 16 on one's ability to cope with stress have something to do with a person's genetic makeup, however, they all can be changed and improved. The remaining questions all pertain to the environmental chances which can be enhanced by either following your determination or making changes to increase your life span. We must make effort in EEC in that part of our environmental chance of which we have control.

Previously in Chapter V, I have used the accidental death of John Kennedy Jr. to illustrate his destiny. His death at the age of 38 was not his real life span as we discussed herein. His destiny and life was ended by that part of the environmental chance outside his control.

### Conclusion

Life (span) is the basic foundation of one's destiny. As the curtain of life falls down, the act of destiny ends. As part of one's destiny, the life expectancy is the result of the interaction between genetic fate (命) and environmental chances (運).

Both the life expectancy and the overall destiny of an individual can be changed through his/her own efforts to improve one's shortcomings. If you take these questionnaires while you are relatively young, you will have time make the effort to change and improve these shortcomings

in the area of environmental chance, resulting in a longer life expectancy. However, if you are fairly old when you find out these shortcomings, you have lost the time and opportunity to enhance your environmental chance (改運) for longevity.

I sincerely hope that through the exercise and discussion in this Appendix 5, readers will be able to see through and comprehend the relationship between life expectancy and one's overall destiny. By establishing and following a healthy personal belief system and making good choices and decisions along your way, you can expect to live a healthy and happy life in the pursuit to reach your goals and dreams.

## References

### Publications in English:

- Ashby, W. Ross, 1961, *An Introduction to Cybernetics*. London: Chapman & Hill LTD
- Browne, Sylvia and Lindsay Harrison, 1999, *The Other Side and Back: A psychic's guide to our word and beyond*. New York: New American Library.
- Chopra, Deepak, 2003, *Seven Spiritual Law of Success*, tapped lectures.
- Darling, David, 1993, *The Equation of Eternity*, New York: Hyperion.
- Davis, Joel, 1997, *Mapping the Mind: The secrets of human brain & how it works*. USA: Carol Publishing Group.
- Gladwell, Malcolm, 2008, *Theory of Outliers: The Story of Success*. Little, Brown and Company, Hachette Book Group.
- Goleman, Daniel, 1995, *Emotional Intelligence: Why it can matter more than IQ*. A Bantam Book.
- Goleman, Daniel, 2006, *Social Intelligence: Beyond IQ, Beyond Emotional Intelligence*. A Bantam Book.
- Hamer, Dean H., 2004, *The GOD Gene: How Faith is Hardwired into Our Genes*. Doubleday, a division of Random House, Inc.
- Hamer, Dean H., and Peter Copeland, 1999, *Living with Our Genes: The groundbreaking book about the science of personality, behavior and genetic destiny*. New York: Anchor Books.
- Hawking, Stephen W. et. al., 2002, *The Future of Spacetime*. New York: W. W. Norton & Company.
- Hawking, Stephen W., 2002, *The Theory of Everything: The Origin and Fate of the Universe*. California: New Millennium Press.
- Helen, Mary and Shuford Smith, 2000, *101 Secretes for a GREAT RETIREMENT*. Lowell House, a division of NTC/Contemporary Publishing Group, Inc.
- Hobson, Allan, 1988, *The Dreaming Brain*. New York: Basic Books.
- Ivakhnenko, A.G. and V. G. Lapa, 1967, *Cybernetics and Forecasting Techniques Modern Analytic and Computational Method in Science and Mathematics*. New York: American Elsevier Publishing Company, Inc.

Lama, Dalai, 2005, *The Universe in a Single Atom: The Convergence of Science and Spirituality*, Morgan Road Books of Random House, Inc.

Lama, Dalai, and Howard C. Cutler, 1998, *The Art of Happiness: A handbook for living*. New York: Riverhead Books.

Lewis, Thomas, Fari Amini, and Richard Lannon, 2000, *A General Theory of Love*. New York and Toronto: Random House, Inc.

Lipton, Bruce, 2005, *The Biology of Belief: unleashing the power of consciousness, matter & miracles*, Mountain of Love / Elite Books, Santa Rosa, CA.

Murray, Edward J., 1964, *Motivation and Emotion*. New Jersey: Prentice-Hall, Inc.

Myers, David G. 2002[1993], *The Pursuit of Happiness: Discovering the pathway to Fulfillment, Wellbeing and Enduring Personal Joy*. HarperCollins Publishers Inc.

Milunsky, Aubrey, 2001, *Your Genetic Destiny: Know your genes, secure your health, save your life*. Massachusetts: Perseus Publishing.

Newberg, Andrew, Eugene D'aquili, and Vince Rause, 2001, *Why God Won't Go Away*. A Ballantine Book.

Newberg, Andrew, and Mark Robert Waldman, 2006, *Why We Believe What We Believe: Uncovering Our Biological Need for Meaning, Spirituality, and Truth*. Free Press.

Peck, Scott M., 1978, *The Roadless Traveled: A new psychology of love, traditional values and spiritual growth*. New York: Simon & Schuster, Inc.

Ridley, Matt, 1999, *Genome: The autobiography of a species in 23 chapters*, HarperCollins Publishers.

Sagan, Carl, 1998, *Billions & Billions: Thoughts on Life and Death at Brink of Millennium*. New York: Ballantine Books.

Sagan, Carl, 2000, *COSMOS*, 13 Episodes of DVD. California: Cosmos Studio, Inc. Studio City.

Schroeder, Gerald L., 1997, *The Science of God: The convergence of scientific and biblical wisdom*. New York: Broadway Books.

Shelov, Steven P., 2009, *Caring For Your Baby and Young Child*. Bantam Books.

Shenk, David, 2010, *The Genius in All of Us: Why Everything You've Been Told about Genetics, Talent and IQ is Wrong*. Doubleday.

Small, Gary, 2002, *The Memory Bible*. New York: Hyperion.

U.S. National Academy of Science, 1998, *Teaching about Evolution and the Nature of Science*. National Academy Press.

Wilson, Edward O., 2002, *The Future of Life*. New York: Alfred A Knopf, Publisher.

Zukav, Gary, 1990, *Seat of the Soul*. USA: Fireside Book Published by Simon & Schuster.

### **Publications/ Translations in Chinese:**

林天德 (Tien De Lin) , 1993 , [台灣人 , 別再隨緣認命---走出你的活路來] 。台北: 遠流出版社。

傅佩榮 (Pei -Jung Fu) , 1990, [ 我看哲學---心靈世界的開拓] , 第七版。台北: 業強出版社。

林華安 (Hua A Lin)、趙慧娟 (Hui Juen Chau) , 2003 , [悠遊基因世界] 。台北: 瀛舟出版。

馮馮 (Peng Peng) , 1987, [太空科學核子物理學與佛理的印證] 。台北: 天華。

台灣台南淨宗學會 , 1997 , [佛學十四講] 。台南: 台灣台南淨宗學會。

黃明德(Ming-Te Huang)、陳健民(Jian Mien Chen) , 1984 , [佛法與科學] 。美國: 大覺蓮社。

李洪志(Hung Chu Lee) , 1998 , [轉法輪] 。台北: 益群書店。

淨空法師 , 2004 , [改造命運 , 心想事成] 。台北: 華藏淨宗學會。

董芳苑(Fung Yuan Dong) , 1985 , [傳統命運觀之批判] 。台灣公論報。

董芳苑(Fung Yuan Dong) , 1998 , [相遇與對話] 。台北: 長青文化。

文天佑(Tien Yeo Wen) , 1999 , [一命二運三風水] 。九龍: 也文堂。

趙鑫(Xin Chao) , 1997 , [命理與人生選擇] 。台北: 聯經。

周腓力(Hue Li Chou)、飛雲山人等 1989 , [名家談命] 。台北: 方智。

李震(Tzsen Lee) , 1970 , [宇宙論] 。台北: 商務印書館。

于凌波(Ling Bo Yu) , 1962 , [向智識分子介紹佛教] 。平陽印刷。

林光常(Guang Chang Lin) , 2002 , [無毒一身輕---21 天改造體質]。台北: 世茂 出版社。

姜西淋(Sie Ling Chiang) , 1999 , [談「命」論「運」說「命運」]。台灣公論報 , No.1795 , 11 月 13 日。

謝慶輝(Ching-Hue Hshih) , 2002 , [聖經與教派]、[靈魂與遺傳]、[神蹟與科 學]。台灣公論報 , 2002 年 5、8、10 月。

[聖經。創世紀] , 1975。聯合聖經公會。

薩爾斯頓、費莉(Sulston, John and Georgina Ferry) 著 , 潘震澤、杜默譯 , 2003 年 , [生命的線索]。台北: 時報。

伊安。巴伯(Barbour, Ian G.) 著 , 章明儀譯 , 2001 年, [當科學遇到宗教]。台 北: 商周。

法蘭西斯。福山(Fukuyama, Francis) 著 , 杜默譯, [後人類未來---基因工程的 人性浩劫]。台北: 時報。

春山茂雄(Shigeo Haruyama)著 , 魏珠恩譯 , 1996 , [腦內革命]。台北: 創意力。

沃爾夫(Wolf, Fred Alan) 著 , 呂捷譯 , 1999 , [靈魂與物理]。台北: 商務。

里奧。巴斯卡力(Buscaglia, Leo) 著 , 顧茜茜譯 , 1984, [愛] (LOVE)。台北: 宇 宙光。

維爾柏。克洛斯(Cross, Wilbur) 著 , 李金容譯 , 2000, [預約成功] (Choices with Clout)。台 北: 商流。

布萊恩。魏斯(Weiss, Brian) 著 , 譚智華譯 , 1992, [前世今生---生命輪迴的前 世療法]。台 北: 張老師出版社。

露薏絲。海(Hay Louis) , 1998 , [生命的重建]。高雄: 高雄淨宗學會。

尚。方斯華。何維爾、馬修。李卡德(Ravel, Lean-Francois and Matthieu Ricard) 著 , 賴聲川 譯 , 1999, [僧侶與哲學家]。台北: 先覺