

Perspective

How the US Could Keep Its Decline at Bay Longer

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ABSTRACT

All great cultures eventually decline and the United States cannot be an exception to this natural law. In the context of recent turmoil around the country, the question is, has the decline of this great nation already begun, and even if it has not, is it prudent to stand on the sidelines helplessly witnessing the evidence of decline appear right in front of our eyes, or to intervene? This paper suggests that the answer is the latter and that a scientific framework for external and internal excellence is the pathway for intervention to keep the decline at bay longer. The ideas and concepts may appear US-centric but they apply to all nations in various stages of rise and decline.

Keywords: United States, decline, external excellence, internal excellence, scientific framework.

BACKGROUND

The first author first arrived from India in 1963 enrolling as an undergraduate student in Chemical Engineering at the University of Alabama. An African-American student had just been admitted to the University for the first time and the then Governor, the late Mr. George C. Wallace had stood in the door of the President's mansion to prevent the entry of the student from enrolling. The then Attorney General, the late Mr. Robert F. Kennedy had sent in Federal Marshalls to remove the Governor from the premises. The Manager of Northrop Space Laboratories in Huntsville, Alabama, where the first author worked for a year after finishing his Master's work in 1967, wrote a formal letter to the Governor in 1963 telling him that racial issues were making it difficult to attract top talent to their company.

Fast forward to 2017 and the first African-American President had just finished serving his second term and the next President had been in office for several months. Then came the events of August 14, 2017 in Charlottesville, Virginia. What to make of this and several similar situations this country is facing of late? All great cultures eventually decline and the United States of America cannot be an exception, but the question is, has the US decline already begun, and even if it has not, could its inevitable eventual decline be kept at bay longer? Relatedly, do

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we stay on the sidelines helplessly witnessing Charlottesville-like things happen right front of our eyes, or do we intervene? This paper explains that it is possible to intervene with a scientific framework for internal and external excellence to keep the decline of this nation at bay longer.

Unfortunately, the “peace-loving people” themselves are partly to blame by their inaction for why the nation is not more peaceful. To explain, societal response to hatred, bigotry, intolerance, and violence takes on many forms which include new laws and regulations, nonviolent protests, counseling, punitive actions, etc. These efforts are well-intentioned and necessary but they are not sufficient. For progress, the good folks will have to change themselves from within. The process of changing themselves from within can be configured to have a positive effect on the larger section of the society which is not even participating in the exercise and that intern will make the entire society more peaceful and in turn, keep the decline of the nation at bay longer. The performance of the exercise is auditable.

That said, there are obstacles to progress: (1) Open-mindedness. Humanity has become increasingly rational-minded since the days of Copernicus perhaps stung by Aristotle’s false claims of our Earth-centric existence and that is a good thing, but unfortunately, many have become tunnel-visioned. A scientific framework for progress is essential which we now have, and (2) nothing extraordinary can happen without a burning desire. Everyone has been gifted with the capacity to learn or change and the necessary skills can be taught and learned but the desire to change is a choice. If a strong enough desire to change from within can be inculcated, the nation can become much more peaceful in short order.

Strange as it may sound, to solve this problem, it is necessary to understand how the universe came into existence, how human life evolved, why nations rise and decline, and how we may improve ourselves and the society we live in for a more peaceful nation.

HOW IT ALL BEGAN

In 1929, American astronomer, Edwin Hubble discovered that the universe was expanding. Physicists have discovered of late that it still is, and at an accelerated pace. Clearly, going backwards in time, the universe would get smaller and smaller until a point of singularity is reached. Beyond this point, everything would disappear leaving behind absolutely nothing, just an infinite void, same and uniform everywhere.

In 1995, rebellious teenager Amanda Gefer set out on a quest to understand ultimate reality and the meaning of nothing with the help of her father, Warren Gefer, MD, Division Chief and Cardio-thoracic Imaging Professor of Radiology at the University of Pennsylvania hospital. In this context, Ultimate reality is understood to be something that is omnipresent, uniform everywhere, and the same for all observers and all perspectives. During the pursuit that lasted more than a decade, she interacted with dozens of renowned physicists including the late John

Archibald Wheeler, a colleague of Albert Einstein at Princeton, and the famed Stephen Hawking, finally concluding that ultimately, nothing (observable) is real, meaning that the ultimate reality is the nothingness of the void. She released her findings in the path-breaking book, “Trespassing on Einstein’s Lawn” [1]. In the book, she concludes that it all starts out with nothing but for some inexplicable reason, the nothingness gives birth to an incredibly hot and an unbelievably dense energy phase, about the size of 10^{-33} cm in diameter which goes by the name Planck length. The complex analysis involved relativity theory, quantum mechanics, inflationary cosmology, and particle physics.

So, a questions arises, how can something, the universe, come out of nothing (Shunya), the void, and why should it? At the Science and Ultimate Reality Conference in Princeton in 2002, Wheeler told the Gefters that the universe was a self-excited circuit, meaning that no creator was required for its creation. The process of creation is automatic, just as a huge tree comes out of the tininess of a hollow seed, but this leaves us with the unanswered chicken-and-the-egg question: where does the seed come from? Inspired by the non-dual concepts of Shankara and Nisargadatta, the second author expanded on Gefter’s findings: True, there was nothing (observable) left at the start since the four fundamental forces of nature (electromagnetism, gravity, strong nuclear force, and weak nuclear force) had all vanished as they had not yet been energized in an accelerated frame of reference, but, something must have come through from the other side, something nonphysical that can only be identified as the individual (Atmanic) consciousness of the observer that in some mysterious way arises at a point of view from what can best be called the undifferentiated (Brahmanic) consciousness of the void [2].

In other words, conscious intention of the void as expressed in the accelerated reference frame of an observer is what led to the Big Bang which created the universe, while a freely falling reference frame implies the disappearance of the universe. This scenario only makes sense if in some sense, every observer has its own observable world which can appear to come into existence (in an accelerated reference frame) or disappear from existence (in a freely falling reference frame), but always from the observer's own point of view.

So, we have two hypotheses to scrutinize. One, the universe is a self-excited circuit. This is a dead-end since there is no way to test it. The second is that intention of the undifferentiated consciousness created the universe. This hypothesis can be tested since we all have consciousness, let’s call ours, differentiated consciousness to distinguish it from the undifferentiated consciousness of the void. The question then is, is our individual (differentiated) consciousness a microcosm of the undifferentiated consciousness? The answer is yes, and it may be explained thus: Everything was connected to everything else at the moment of the Big Bang when the universe was about the size of Planck’s length (10^{-33} cm in diameter).

How could it not be? The question is, is it still so connected? Western scientists have conducted numerous experiments to demonstrate that we remain connected at some level although not physically linked [3]. This implies that our differentiated consciousness is a microcosm of the undifferentiated consciousness of the void. This connectivity will be helpful in what we are trying to achieve as we will see.

HOW WE GOT HERE

At the moment of the Big Bang there was only an intense energy phase present. The universe has been inflating in size from its initial size of about the Planck's length some 13.8 billion years ago to its current size because dark energy has been burning away. As dark energy burns away, heat is radiated away in the form of photons of electromagnetic radiation. These very high-energy photons can transform into particle/anti-particle pairs, like electron/positron pairs and proton/anti-proton pairs. The proton is a composite particle of quarks, while the anti-proton is a composite particle of anti-quarks. The transformation occurs according to the standard model of particle physics. The conversion of energy into mass gives birth to galaxies, stars, planets, and other matter, but for this to occur, there has to be more matter than anti-matter. The explanation of why there is more matter than anti-matter in the universe is provided by something called the parity violation, which is a kind of symmetry breaking. The weak nuclear force breaks the symmetry called parity. Parity is the symmetry under mirror reflection, and it turns out that the mirror reflection of a neutrino is not the same neutrino, but is much more massive. The result of parity violation is that anti-protons decay into electrons and so there is predominately matter in the universe rather than equal parts matter and anti-matter. This kind of parity violation can only occur due to the very high energies present shortly after the big bang event. As the universe inflates in size and cools, protons become stable and so we are left predominantly with matter. Currently, the observable universe is estimated to comprise of 5% matter, 27% dark matter, and 68% dark energy.

With galaxies, planets, stars, and other matter in place, the next thing to focus on is our planet. In the evolutionary scheme of how life evolved here on planet Earth, among what is required first is habitable temperature and liquid water to make life as we know it, possible. Anthropological evidence suggests that life on Earth began in the form of single-cell organisms. Single-cell organisms evolved over time giving birth to multi-cell organisms, to Chimpanzees, and finally to early humans in our current form, some earlier than others. Eventually, humans settle in various geographical areas which today go by the name, nations.

INTERNAL EXCELLENCE EXPLAINED

To understand why nation rise and decline, it is necessary to understand the notion of internal excellence. Each of the 7 billion human inhabitants of Earth have three components of the mindset S, R, and T explained in Table I. The definition of the three components is such that everyone is expected to possess a certain minimum amount of each. The possibility of perfection (pure S) is thus precluded. The specific proportion of these components determines the level of internal excellence of an individual. These ideas lead to a scale of internal excellence depicted in Figure 1(a).

Table I: Mindset Components and Human Emotions

Mindset Component	Attribute of the Mindset Component
S	Truthfulness, honesty, equanimity, steadfastness
R	Attachment, bravery, ego, ambition, greed, desire to live
T	Lying, cheating, causing injury in words or deed, sleep
Emotions	Attribute of Emotion
Positive Emotions	Unconditional love, kindness, empathy, compassion
Negative Emotions	Anger, hatred, hostility, resentment, frustration, jealousy, fear, sorrow, etc.

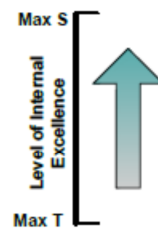


Figure 1(a) Scale of Internal Excellence



Figure 1(b) Scale of Emotional Excellence

Now, human beings are endowed with two types of emotions: positive emotions and negative emotions, also explained in Table I. Positive emotions strongly and positively correlate with a high S component while negative emotions strongly and positively correlate with excessive values of R and T components. This realization leads to a scale of emotional excellence depicted in Figure 1(b). The two scales are entirely equivalent. The noble ones among us are toward the

top of these scales while the wicked ones towards the bottom, and the rest of us somewhere in between. The goal of life should be to rise on these scales of excellence. All Incarnations and prophets of every religion have spent their lifetimes to prod humanity to rise on the scale of internal excellence. The core message of ancient Indian scriptures including the Vedas, Upanishads, Bhagvad Geeta, Mahadev, etc., etc., can be summed up in a few words: Rise on the scale of internal excellence.

Actually, everyone is trying to rise, but in ignorance, we are either searching for the wrong thing or we are going about it the wrong way. Everyone wants to be happy, but when we speak of happiness, we really mean something slightly different. This is because virtually every human emotion comes packaged as a pair of opposites. For example, if there is happiness, sadness and despair are also possibilities. So, when we say we want to be happy, we are really referring to a subtler form of happiness; *blissfulness*, the term which, by definition, is devoid of the opposite. So, unknowingly everyone is searching for blissfulness. In Sanskrit, blissfulness goes by the name, *Sat Chit Ananda*.

A subjective measure of internal/emotional excellence is the capacity to remain centered in the presence of extenuating circumstances that are part of life. This state is taken to be toward the top-end of the scales of excellence where an individual is able to transcend the three components (and be in the state of bliss) and yet remain engaged in mundane activities of life. Yogis refer to this state as *Turya Avastha*. Dramatic examples of internal excellence and lack thereof may be found in [4, 5].

Blissfulness has been taken to be an essential characteristic of the undifferentiated consciousness for millennia. The fact that everyone is searching for blissfulness is a strong indication that human consciousness is a microcosm of the undifferentiated consciousness. Guruji Paranjothiar's favorite expression is *Santhosam*, while the Hindi-speaking Baba Shivanand Ji says, *Har Haal Me Khushi* (happiness under all circumstances). Confidence in this hypothesis also comes from the experiments of Western scientists showing that we remain connected at some level although not physically linked, just as everything was at the moment of the Big Bang when the size of the universe was about the size of Planck's length. Furthermore, through the process of connecting, creation has been demonstrated (*Aham Brahmasmi*) [6, 7]. The work of the mathematical genius, S. Ramanujan, provides a stunning example. Barely a high school graduate, Ramanujan would write down complex mathematical theorems and their proofs without knowing the steps in between. Asked by his mentor at Cambridge, Prof. G. S. Hardy, he is reported to have replied, *The Goddess speaks to me*. It is clear, he must have connected. Ramanujan was the first Indian to be elected a Fellow of the Royal Society.

MEASUREMENT OF INTERNAL/EMOTIONAL EXCELLENCE

The first step in any scientific pursuit of enhancing internal/emotional excellence is to find a way to measure emotions. Computer Science and Electrical Engineering researchers at MIT recently developed a wireless device they call EQ Radio with funding from the National Science Foundation and the US Airforce with additional support from major US corporations [8, 9]. The

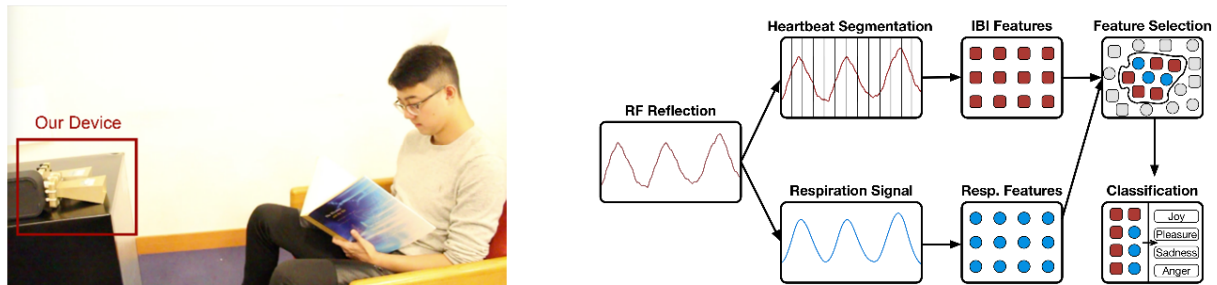


Figure 2. MIT's EQ Radio

wireless device sends RF signals to the subject and captures and analyzes the reflected signals (see Figure 2) with a machine learning algorithm to determine the heart rate, heart rate variability (HRV), and respiration rate from which the subject's emotions are estimated, the researchers say at an accuracy of 87%. Other researchers had already known about the influence of these outputs on the emotional state.

Now, the photonic signature (light-energy) is the primary attribute of humans of which heart rate, HRV, and respiration rates are subsets and therefore it is the method of choice in this paper. To elaborate, human beings have trillions of cells. If we break down the cells further into even smaller parts, we find that they are made up of atoms. Atoms are not solid objects, they have protons and neutrons in their nuclei and electrons orbiting them. So, a question arises: what characteristic of an atom gives the specific character to matter?

For example, why is Gold, Gold? Or, why is Iron, Iron? The answer is, vibrational characteristics of the specific atomic configuration (number of protons and neutrons in their nuclei and the electrons orbiting them). Similarly, since cells are made up of atoms, the vibrational characteristics of the specific cellular configuration is what determines the cellular structure, which in turn determines if a cell is normal or not. The specific vibrational characteristics of the cells in our body determine our physiological and psychoemotional state. Vibrations can be thought of as light, not necessarily visible light, with unknown frequencies along the entire electromagnetic spectrum and hence the name, aura (light-energy). Thus, the aura really is our photonic signature and it is unique for everyone. The photonic signature (light-energy, aura)

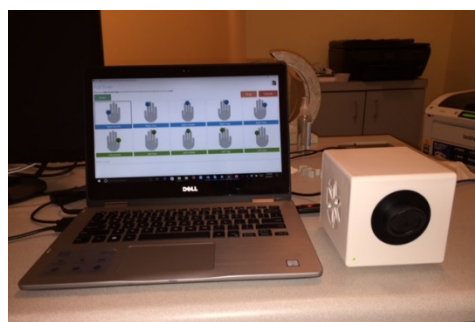


Figure 3. GDV Device Setup

cannot be measured directly. It must be inferred from secondary measurements. Over fifteen

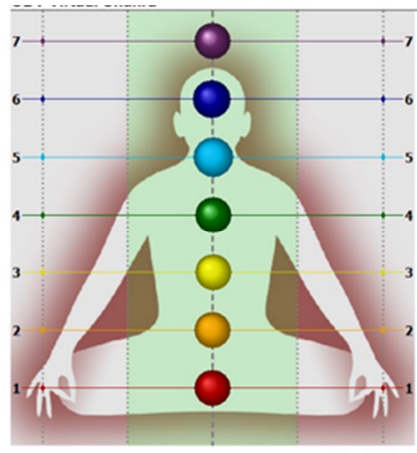


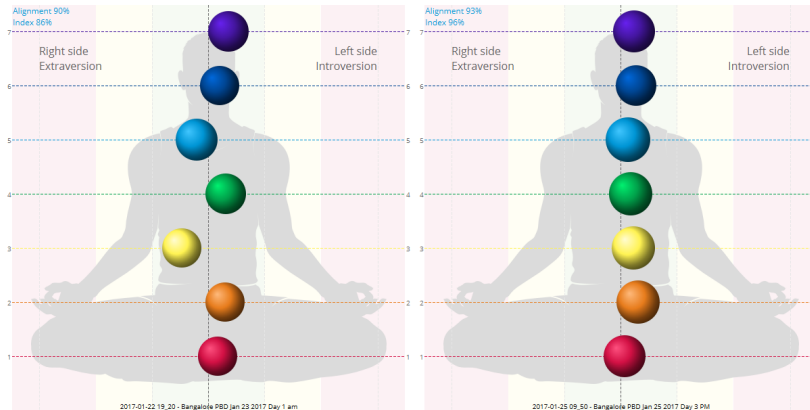
Figure 4. Chakra System of a Yogi

years ago, a Russian scientist developed a device to estimate the photonic signature of humans using the principle of gas discharge visualization (GDV) [10]. Here, a harmless electrical signal is applied to the fingers of both hands (one at a time), placed on the glass plate of the GDV device connected to a digital computer with a USB cable as shown in Figure 3. The finger's response to this stimulus is a burst of photons that are captured by the software. The light-energy characteristics of the photonic discharge (pixels - intensity, area) so captured are compared with the data for tens of thousands of subjects to estimate the physiological and psychoemotional state of the subject at a high confidence level. The measurement is painless, noninvasive, and takes only a couple of minutes to complete. The GDV device was approved by the Russian Health Ministry for use as a routine medical diagnostic device in Russian hospitals and doctor's offices over fifteen years ago. The GDV results are presented in several tabs: (1) Overall energy in Joules, (2) Emotional stress level, Joules (3) Energy of the seven chakras, Joules and the chakra alignment along the central vertical line, (4) Health status, Joules, and (5) Energy reserve, Joules. The bioenergy measurements not only provide an estimate of the physiological health but also psychoemotional state which is reflective of internal/emotional excellence. As an example, Figure 4 depicts the chakra system of a self-realized yogi.

HOW TO RAISE INTERNAL EXCELLENCE OF INDIVIDUALS

With the measurement system on hand, the next step is to identify a process with which to raise internal excellence/emotional excellence. A thirty-day self-assessment will offer convincing evidence that consciously watching over the S, R, T components to make sure the S component nudges higher and R and T components nudge lower, delivers limited success. It is essential to

change ourselves from within and there is only one way to accomplish this goal, and it is meditation. A good physical body is supportive of meditation practices and therefore, Asanas and Pranayam are very important. A companion paper, Six Sigma Unravels Science of Meditation explains how meditation is thought to work [11]. Figure 5 depicts the progress of the



first author pursuant to a three-day meditation program offered by Baba Shivanand Ji in Bangalore not long ago.

Figure 5. Chakra System Before-and-After Three-day Meditation Program

RISE AND DECLINE OF NATIONS

In the context of the definition of S, R, T components, just as individuals have a level of internal excellence, so do societies, but when it comes to societies, we speak of an average level of internal excellence. As the average S component of the society rises, the society rises, but the S component cannot rise indefinitely and when it reaches its peak, the T component takes over and the society begins to decline. The T component cannot increase indefinitely either and so, when it reaches its peak, the S component gains dominance and the society begins to rise again. The transformation of the mindset induces repeated rise and decline of societies as illustrated in Figure 6. This has been true for thousands of years and it will continue to remain so for the foreseeable future. The fundamentals of why such a transformation should take place is not well understood, but it is certain that it does. There is ample historical evidence of rise and decline of societies but in the early nineties, we set out to find additional corroborative evidence which we found in the Encyclopedia Britannica. Encyclopedia Britannica being a Western source of reference, we decided to first focus on Greece. Figure 7(a) depicts the rise and decline of Greece over two thousand years ago. It denotes the number of persons from Greece listed in all twenty-three volumes of the Encyclopedia Britannica over time. The data clearly depicts the rise and decline of Greece. Then, we tabulated similar data for England, Germany, and the United States. These data are shown in Figures 7(b) – (d) [12].

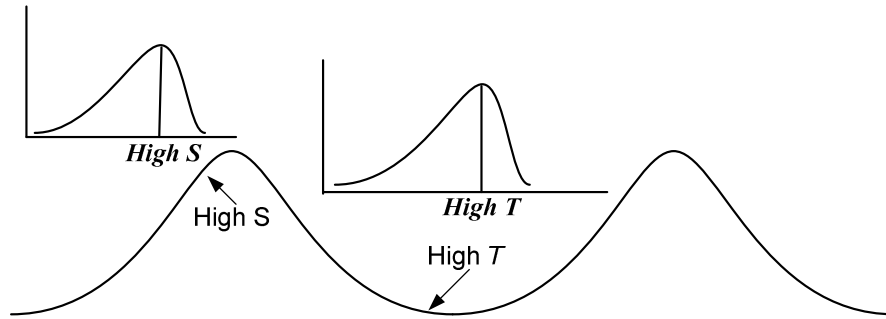


Figure 6. Rise and Decline of Societies due to Mindset Transformations

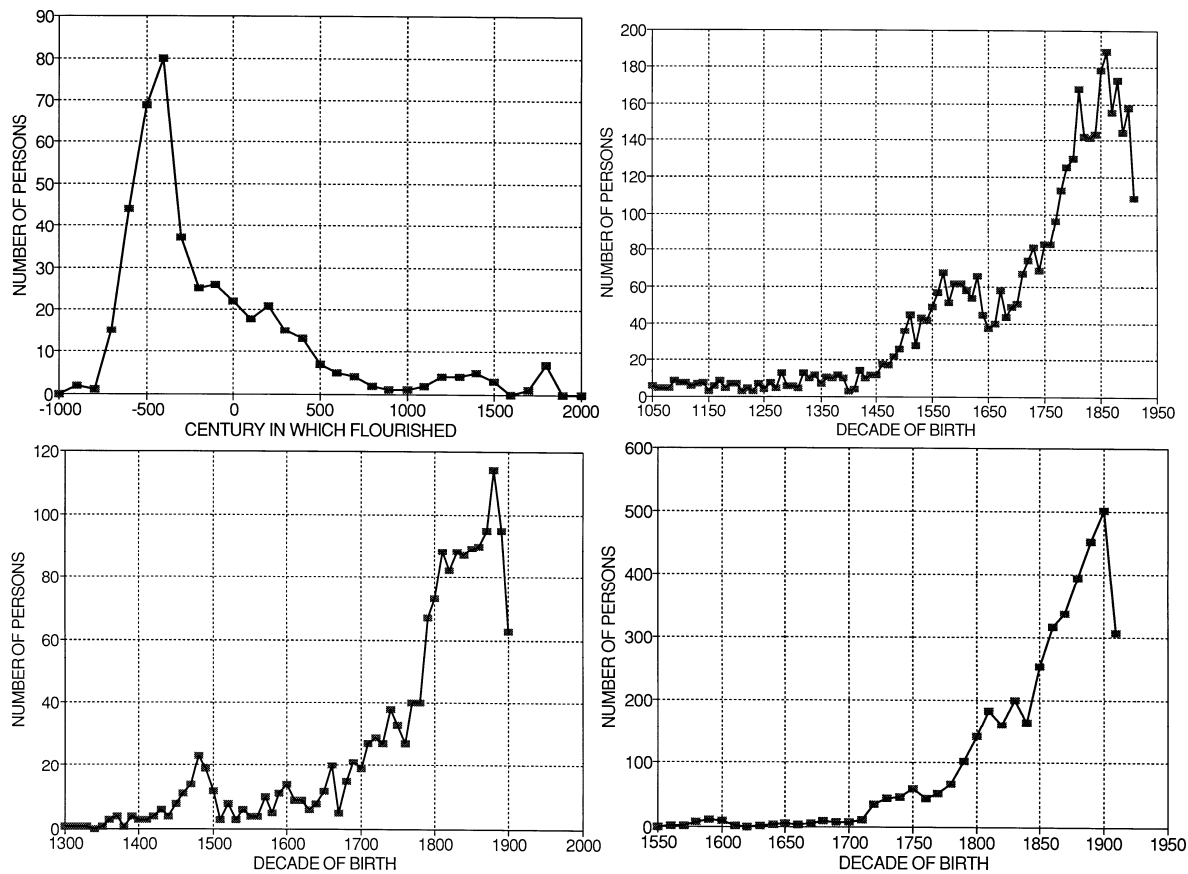


Figure 7(a – d). Rise and Decline of Greece (A: Top Left) and Data for England (B. Top Right), Germany (C. Bottom Left) and the United States (D. Bottom Right)

HOW TO RAISE INTERNAL EXCELLENCE OF A NATION: TOWARDS A MORE PEACEFUL NATION

The route to raise the internal excellence of societies is also meditation but it is not practical to expect all 360 million inhabitants of the United States to meditate every day, regularly. Here, the notion of collective consciousness comes to the rescue. Earlier in the paper we explained that we

remain connected at some level although not physically linked. By way of additional corroborative evidence, the Late Lewis Thomas, (MD, Harvard) reported in his book *The Lives of a Cell* [13] that a single termite with 50,000 neurons in its brain could hardly be expected to do anything much less think. But when they are in a colony of tens of thousands of termites, however, they succeed in building structures having beautiful arches and symmetrical columns.

Now, let us take an example of collective human consciousness. It involves an experiment called Global Consciousness Project that Professor Roger Nelson of Princeton and his team of direct [14]. Under the auspices of this project, over one hundred electronic random number generators (RNGs) have been installed in different parts of the world of which fifty to sixty are operational at any given time. Under normal circumstances the RNG network produces a completely unpredictable sequences of zeros and ones but when the collective human consciousness becomes coherent/synchronizes because of a great event, good or bad, natural or man-made, the network of RNGs outputs becomes structured, i. e., it becomes less random. The researchers peg the probability that the observed effect being due to chance at one in a billion. Figure 8 depicts the RNG output at the time of the September 11, 2001 terrorist attacks on the World Trade Center in New York. Notice that the changes in the RNG output at the time of the attacks are rather large. An even more intriguing observation is that the changes in RNG Output occurred

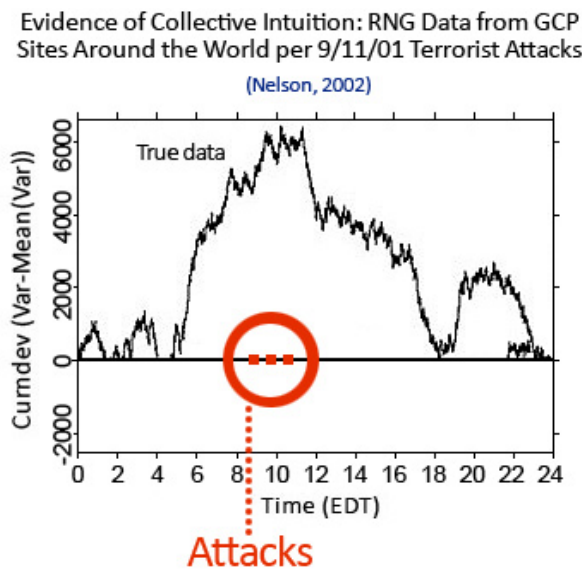


Figure 8. RNG data became less random at the time of 9/11 attacks

several hours before the attacks as though human consciousness knew things that it was not consciously aware of.

The Global Consciousness Project merely records the correlates of global consciousness and significant global events but the obvious extension is to direct global consciousness to make humanity more peaceful. As in the case of individual transformation, the route here is also through meditation, however, it is not practical to expect 7 billion inhabitants of Earth to

meditate twice daily, not only for themselves but also for humanity at large. Fortunately, there is a way out and this is where the work of the late Maharishi Mahesh Yogi and his associates assumes significance. The Late Maharishi Mahesh Yogi put forward an idea several decades ago which has come to be known as the Maharishi effect. The Maharishi effect states that global peace requires a mere $\sqrt{1\%}$ of the people meditating on a continuing basis. Many outstanding scientists are subscribers to Maharishi's transcendental meditation program and there is a university in Fairfield, Iowa that bears his name.

A team of scientists affiliated with the Maharishi organization carried out an experiment in the Middle East in the eighties to assess the efficacy of the Maharishi effect in Lebanon and Israel. Orme-Johnson and David Leffler conducted an experiment during the peak of the Israel-Lebanon war in the 1980s and found that the larger the number of meditators, the more marked was the reduced level of conflict. They also found improvement in crime, auto accidents, fires, national mood, etc. [15].

John Hagelin and his associates conducted another experiment to demonstrate the benefit of group meditation. In this experiment up to 4,000 meditators meditated daily for a period of eight weeks during June 7 - July 30, 1993 to increase coherence and reduce stress in Washington DC with the intention to bring down the violent crime rate in the District of Columbia [16]. The authors reported that a twenty-seven-member Review Board consisting of sociologists and criminologists from leading universities, representatives from the police department and the Government of the District of Columbia, together with civic leaders, approved the research protocol for the project in advance and monitored progress. The outcome selected for assessment was the Weekly Crime Rate as measured by the Uniform Crime Report program of the Federal

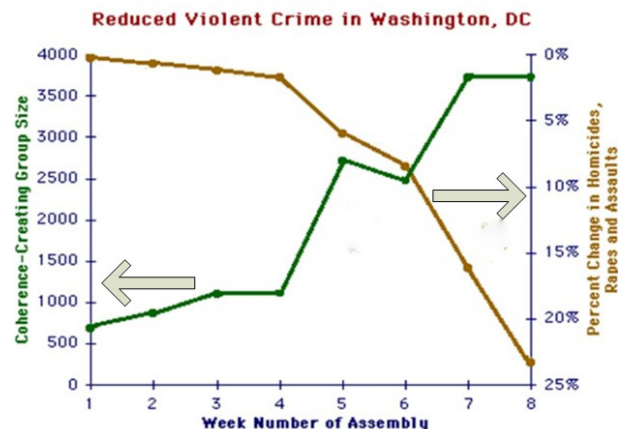


Figure 9. Efficacy of TM Siddhi™ Program in Washington, DC (With Permission from Dr. John Hagelin)

Bureau of Investigation. The results of this experiment are shown in Figure 9.

PATH FORWARD FOR THE UNITED STATES

The S, R, T components of societies undergo transformation over time due to reasons that we do not fully comprehend. As a consequence of this transformation, societies sustain repeated rise and decline. Since our specie does not appear to have evolved into humans at the same time, there are societies in the various stages of rise and decline present on the scene at any given time.

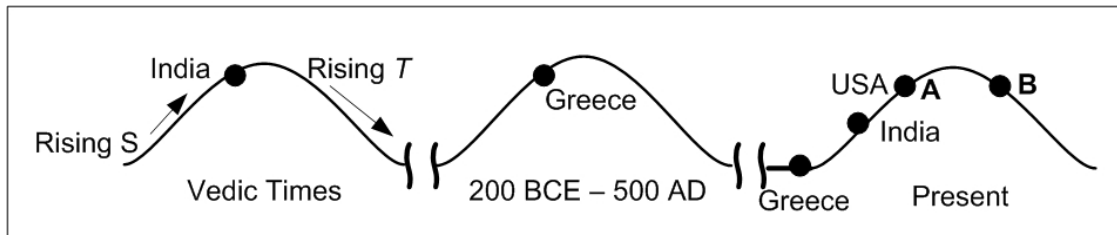


Figure 10. Scientific framework can accelerate rise of India, change the direction of Greece, and keep the decline of the United States at bay longer.

Consequently, global peace ad infinitum is not possible. However, by adopting the scientific framework of excellence, emerging nations such as India can rise faster, nations in decline such as Greece can change direction, and developed nations such as the United States can keep their inevitable, eventual decline at bay longer and that will make the world more peaceful. This is the best possible scenario. These ideas are depicted in Figure 10.

Figure 10 depicts the United States at this time by two points A and B. Only in hindsight will we come to know if this nation was at point A or point B at the present time. If the US is at point A, well and good for this means, there is more scope to rise. But, if it is at point B, then, the decline of the nation has had already begun. In either case, the adoption of the scientific framework of internal and external excellence is the clarion call for action.

TOWARDS A BETTER AND MORE PEACEFUL NATION

The scientific framework for internal excellence can make the nation more peaceful [17]. Add to that the scientific framework for external excellence, and the nation can be better (in the sense of defects in products and services) and more peaceful. The text Six Sigma for Karma Capitalism details the framework for external excellence [18].

Ancient Indian wisdom is both vast and profound but due to the paucity of measurements in ancient times, it had been difficult to validate it. The availability of scientific measurements and a structured and data-driven methodology such as six sigma make this task easier. The authors are neither experts in Indian scriptures nor in Sanskrit although the first author has read the English commentaries on the Geeta many times and the second author has understood the wisdom of Adi Shankara and Nisarga Datta from a Modern Physics perspective. Appendices at the end of the paper present additional information that the readers may find interesting.

A scientific perspective of national transformation towards a better and more peaceful nation is presented. The scientific underpinnings for national transformation are well understood. Embracing and diligently pursuing the framework is the pathway to keep the decline if this great nation at bay longer.

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APPENDIX A. SOME USEFUL FUNDAMENTALS

1. All scientific theories are provisional in that as more and more data that conforms to the predictions of the theory arrives, our confidence in the theory rises, but if a single data materializes that contradicts the theory, then that theory must be abandoned in favor a new or modified theory (Stephen Hawking in *A Brief History of Time*).
2. In the absence of measurements, a scientific theory is but a conjecture.
3. Inferential measurements are appropriate for things that cannot be directly measured.
4. Science demands that the results of experiments are repeatable and reproducible regardless who conducts the experiments, where, and when and that is the way it should be. Six Sigma recognizes that all outcomes exhibit a certain amount of variation due to causes that are unknown and uncontrollable. Thus, zero defects ad infinitum is not in the plan of nature.
5. Everyone has the capacity to change; the ability to change can be taught or learned, but the desire to change is a choice.
6. Progress requires a change of perspective from how much we know to how little we know.
7. Mysticism is science not yet discovered but take care, mysticism and superstition are close cousins and so, always validate observations with six sigma principles.
8. No one invents anything. All the data, information, and facts are already there waiting to be downloaded by connecting.
9. Be an inquirer, not a skeptic.
10. Trust but verify regardless of the source.

APPENDIX B. WHEN TO USE SCIENCE

1. Science is the appropriate branch of knowledge to use when the fundamentals of the system under scrutiny are well understood.
2. Six sigma is the appropriate methodology to use when the fundamentals of the system are not well understood, as is often the case with complex processes, in which case a systemic methodology like six sigma must be used for problem-solving based on input-output data.
3. When measurement systems are unavailable or when there are uncertainty issues with the measurements, then, steps 1 and 2 will cease to be useful. Then, direct perception, as with meditation, or another way of increasing our focus of attention, is the only route to new discoveries.

Take care, discoveries made through direct perception must meet the rigor of logical consistency.

APPENDIX C. DEMOCRACY AND INTERNAL EXCELLENCE

There is a widespread admiration for democracy as the preferred form of Government. This fondness arises from the expectation that certain expectations will be fulfilled with this form of Government. These ideas are depicted in Figure C-1. As this Appendix explains, there is much the world needs to understand about when democracy will deliver the intended outcomes.



Figure C-1. Democracy as an Input-Out system

Now, reflect on the prospects of success with democracy in the context of where on the rise and decline phase a given nation is. The prospects of success are much more likely in a society in Figure C-2 in which the average level of internal excellence is high enough but highly unlikely in Figure C-3 which depicts a society in decline.

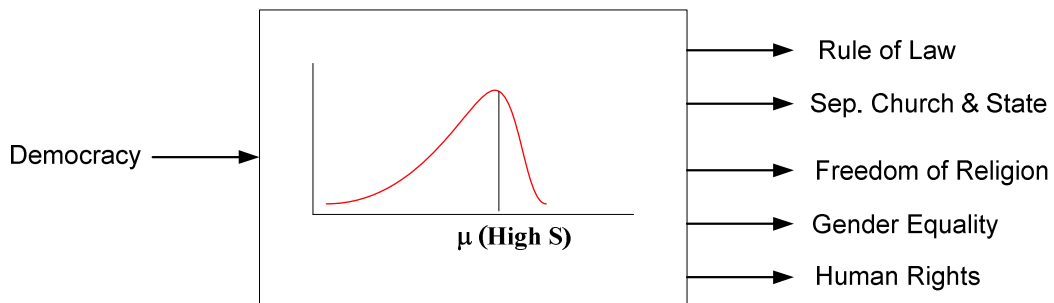


Figure C-2 Prospects of Success with democracy are High

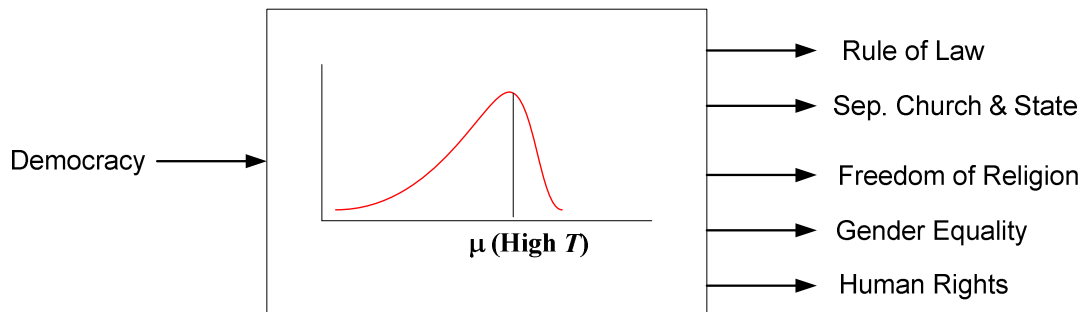


Figure C-3 Prospects of Success with democracy are Very Low