

Evolution, Genetics, Physics and Consciousness

Abstract

We live in extraordinary times. The Covid-19 pandemic has placed a bookmark in our genome and created a structural break in our human history. We have entered a post-biotech intervention world, but biotech medicine, based on edits of genome structure and closely connected processes, is arguably an evolutionary dead end which is leading us in the direction of species altering events.

Reductionist science wants to exclude subjectivity, but undeniably consciousness plays a central role in physical theory. The consideration of consciousness is the critical missing component in genetics. Limited understanding of genetics will persist as long as study of genetic structure remains artificially separated from its obvious connection with mind.

Ancient Vedic Science has been admired by the discoverers of quantum theory and points to a modern consciousness-based framework for evolutionary theory. In the search for a systematic approach to the development of consciousness, Maharishi Mahesh Yogi's elucidation and modern revival of Vedic Science offers a step by step approach. Multiple studies point to broad spectrum improvements in health and suggest a method of meditation as a safe and effective process which optimises genetic function.

The controversy surrounding the divergence between religious and scientific understandings of evolution is examined in the light of the latest evolution research findings. New findings which can answer the question—Is evolution through chance or design? New insights into Darwinian evolution and the origin of life are analysed from a science perspective.

Social Darwinism has had an enormous impact on popular culture and models of governance. It suggests competitive models of governance and economy which fail to take account of the largely cooperative natural biosystems. Cooperative homeostatic networks are everywhere in nature. They point to more efficient and equitable systems of management.

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Introduction

There are probably no scientific advances that have had more impact on the nature of civilisation than Darwin's theory of evolution. His insights have edited our perceptions of government, economics, social mores, individual morality, and religion. Darwin ranks among the giants of scientific history, he sits at the same head table as Newton and Einstein. The success of Darwin's approach in unravelling the rise and adaptation of organisms has been so spectacular, that it has radically altered our ideas about ourselves, our origins, our environment, and our place in the universe. It touches our ancestry, our future, our politics, the economy, and our conception of what is possible and even what is real. This success is so alluring that it has become tempting to assume that all individual and social progress is readily explained by appeals to evolutionary theories of competition, survival, mutation, and adaptation.

Yet the psychological, social, ethical, and popular ideas floated on the back of Darwin's success (often erroneously) do not generally match up to the accepted standards of science. Subtly, Darwin's ideas have degraded our notions of commercial practice, personal responsibility, justice, religion, government, and culpability. Darwin has even been wrongly cited to justify rampant nationalism, antisocial movements, eugenics programmes, and military conquest. There is no doubt the conceptions of evolution lodged in the popular imagination present a distorted picture of our world in which perversely *might is always right*. The more so because recent scientific advances based on our expanding knowledge of genetics allied with careful studies of species populations and archeological discoveries have overturned some key ideas that go to the core of our modern evolutionary worldview (61). The aftermath of the Covid-19 pandemic has amplified the resulting concerns.

Accordingly we will wade into one of the greatest controversies of our times—the origins of both the universe and our species and the future direction of the human race on planet earth. My original intention in writing my book *Discovering and Defending Your DNA Diet* (1) was to argue against proposed restrictions on natural medicine and food, yet the conclusions of extensive research led me to fallacies in popular conceptions of human evolution. In our modern times, our origins have become clouded in misconception. For the majority, the result is that the purpose of life is at best elusive, foreign, or ignored, and at worst misconstrued so completely as to lead us to the brink of biotechnology-driven self-destruction. There seem to be few safe sinecures in modern life, few places of refuge in the last resort, and few reassuring pictures painted by education. What John Donne said of the effect of the [Copernican revolution](#) on society, "*Tis all in pieces, all coherence gone*", could just as well be said of today's world views. Some fear that the sceptics, the naysayers, the fabricators, the self-promoters, the biotechnologists, the media-manipulators, the pretenders, and the apocalypsts have become the influential opinion makers of the modern era, yet more

importantly, alternative powerful positive views are beginning to re-emerge on the horizon of our world which are challenging pessimism and raising new hope for our future. We will explore these. Not the least is the growing understanding of the necessity to include *consciousness* in science, human development, and health. Its omission is the great mistake of biotechnology. Our mission here is to explore authentic views of consciousness and its role in evolution as a valid subject of study.

Since the West was first exposed to the collected metaphysics of ancient India, known as Veda, it has profoundly influenced scientific thinking. The greats of physics, quantum mechanics, and cosmology including Kelvin, Tesla, Einstein, Wheeler, Schrödinger, Bohr, Heisenberg, and Bohm [acknowledged their debt to Vedic texts](#) such as the Upanishads or the Bhagavad Gita. My own introduction to Vedic Science came after meeting Indian sage Maharishi Mahesh Yogi. He dramatically propelled the integrated Vedic understanding of life and consciousness onto the mass world stage. His revival and elucidation of ancient Vedic Science offered a coherent and complementary platform to aid the resolution of the enigmas and shortcomings of modern evolutionary theory and its interpretations. This approach includes subjective and objective techniques to research consciousness, along with logical structures robust enough to initiate a modern scientific understanding of human evolution and consciousness. In his lifetime (1917-2008), Maharishi met with leading physicists to discuss the Vedic understanding of consciousness. We will explore this.

Physics and Consciousness

Physics aims to become a theory of everything. Certainly, physical theory and experiment must underpin and mesh with theories of evolution. More than this, observation, as the modus operandi of experiment, places consciousness at the heart of science. There are six key ways in which consciousness entered into and occupied a central place in twentieth century physics.

Firstly in 1905, Einstein's seminal paper on Special Relativity (55) revealed that the speed of light is the same for all observers. Einstein highlighted the special relationship between the observer and with the physical world of space-time.

Secondly, the emergence of quantum mechanics revealed that *measurement* and hence the *observer* plays a key role in the evolution of physical states (51, 52) which can even extend to backwards causation in time (58).

Thirdly, quantum mechanical entanglements or *memories* of relationships between states ensure that new interactions between consciousness and matter can alter the state of distant matter in the universe (1, p.13, 819).

Fourthly, quantum cosmology explains the emergence of the universe itself as the result of the interplay between observer, observed, and observer-observed relationship

which can be quantified as information gathering and utilising systems described by the Wheeler-De Witt equation (56).

Fifthly, theories, which aim to provide a complete unified framework for physical theory such as String Theory, rely on non-abelian mathematics whose *self-referral* structure is a defining characteristic of consciousness (57).

Sixth, the laws of physics are symmetric as to the passage of time, yet a unidirectional arrow of time is our common experience. Thus discussion of this arrow of time and the second law of thermo dynamics often identifies orderly states with reference to an observer's preferences. This sixth entry of consciousness into physics makes the connection between physics and evolutionary theory. Living systems defy the second law of thermodynamics, increasing in order rather than disorder.

In sum, physics is incomplete without a theory of consciousness.

The intimacy of consciousness, physical theory and experiment essentially leads directly to an epistemological dilemma—*which is primary consciousness or material substance?* A close reading of the epistemological structure of scientific explanations reveals that the observer is without doubt the starting point of physics and indeed physicists. With this in mind it is remarkable that many physicists steer away from talk of consciousness as a fundamental reality. We will return to this topic later in this article, but for the moment note that the consciousness-matter interface remained a largely unexplored enigma in the field of modern science until Maharishi Mahesh Yogi started to teach a set of systematic procedures to explore this interface (23). His framework is both a matter of personal experience and grounded in the traditional knowledge of Vedic Science which inspired the pioneers of quantum mechanics including Schrödinger, Bohm, and Bohr. It is also accessible to methods of modern science (60).

As consciousness holds a primary place in physics, why is discussion of consciousness omitted from genetics except as an epiphenomenon? Why indeed? Our genome is so obviously intimately paired with consciousness. Mind and body are two sides of one coin.

Is there a consistent evolutionary view of consciousness?

Evidence for pre-historical evolution relies heavily on the fossil record. The conditions that create fossils are very rare indeed. Fossil evidence opens a microscopic window on billions of years of evolution. Available examples of truly ancient human remains can be counted on the fingers of two hands. Moreover the mental abilities and characteristics of fossil organisms remain mysteries subject to speculation. In 2000, conventional evolutionary wisdom based on limited genetic analysis and fossil remains suggested homo sapiens emerged between 30-50,000 years ago through a single

evolutionary step somewhere in Africa which is usually presumed to be the result of key genetic mutations. By 2016 this date had extended to 300-350,000 years ago as a result of evolutionary steps made throughout Africa.

David Reich's recent work at Harvard (61) analysing ancient DNA has completely dismantled this narrative. His work has established that the genes most associated with highly developed language skills and the use of tools are at least one million years old and possibly more than 5 million years old.

Evidence for the existence of advanced civilisations in India and the Middle East are far older than the earliest currently accepted date for the emergence of homo sapiens. Scientists working in Crete have found a hominid footprint that is 5.7 million years old (33), while scientists in Germany have found fossil teeth resembling those of hominids (34) that are 9.7 million years old (the previous oldest hominid remains were those of Lucy found in the Afar region of Ethiopia dated as 3.2 million years). Evidence for similarly ancient human evolution has now also been found in Israel. Taken together these findings cast doubt on prevalent conceptions of evolutionary timescales and possibly on the solely African geographic origins of humans¹.

At these timescales, it is not possible to cling to the idea that the unique characteristics of the human genus emerged more or less accidentally at specific points in time as a result of random evolutionary mutations and adaptive responses to circumstances. In fact, considerations of the origin of life from the perspective of modern physics, are suggestive of consciousness itself organising its own expression, precisely the perspective of Vedic Science that inspired physicists in the early 20th century.

The origin of life

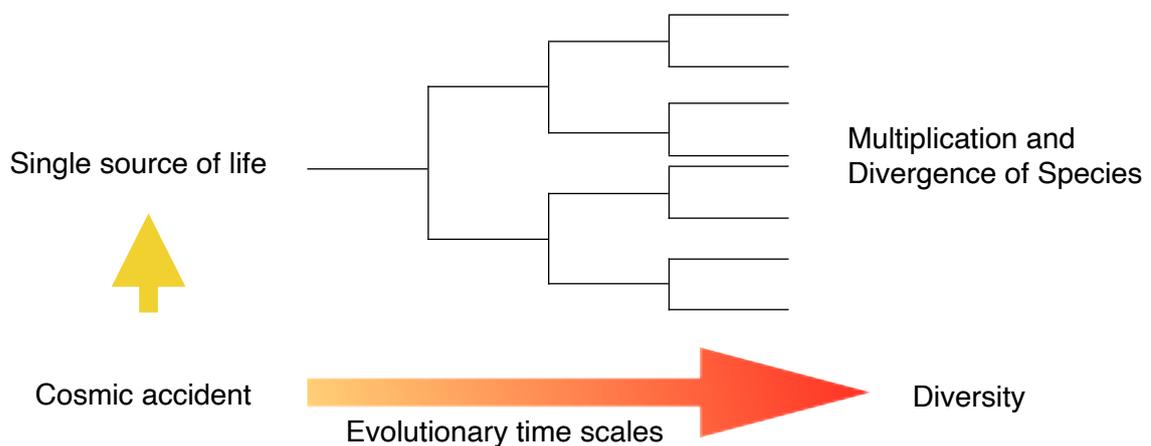
The laws of nature are both vertically and horizontally integrated (1, p. 58) ranging through the cosmic scales of time and space to the most minuscule distances and fleeting epochs which are grounded in their ultimate basis beyond the Planck scale of 10^{-33} cms where time and space dissolve into the unified level of Nature's intelligence. Therefore no consideration of evolution can be complete without considering the totality of the laws of nature at every time and distance scale. In particular, theoretical ideas suggest there are good reasons to suppose that life emerges sequentially from the

¹ The existence of individual examples of very early sophisticated technology occasionally found in unusual or widely dispersed locations no longer seem unusual. These have until now generally been ignored or dismissed without investigation possibly because of the difficulty of fitting them into the current paradigms of evolution. For example there is speculation that Raam's (or Adam's bridge as it is sometimes called) which connects the Indian mainland with Sri Lanka, was manmade 1.75 million years ago. The Ramayana epic records that two civilisations, one human and one ape-like coexisted at that time. It is possible that natural processes and catastrophes such as volcanic eruptions, climatic events, soil erosion and sediment accumulation, earthquakes, decay, etc., have all but covered the traces of such ancient civilisations in most places. In fact Reich (61) suggests that Adam and Eve events are far more common than previously thought.

structure of the underlying laws of nature understood by physics rather than, as many believe, from a cosmic accident in the earliest of times. Physicist Jeremy England (6) and others before him such as Nobel Laureate Ilya Prigogine (7) explain that life emerges not through accident but through the operation of the fundamental physical laws governing the flow of energy in open systems known as dissipative structures. England identifies three qualities whose presence ensures the evolution of life: *a process of flow* (dissipation), *a source of energy*, and *a material structure* (6) ². Thus by implication physics may be in the process of overturning one the greatest sources of existential disquiet—the thought that we might be the merest ephemeral accident, a temporary postscript to history.

This highlights what is the greatest unfinished agenda among Darwin’s original ideas. Despite the title of his later work—*Origin of the Species*, there is not yet a coherent understanding of how the structure of DNA *originally* emerged. There are speculations that fragments of proteins combined in the physical conditions available on the early earth, and that, fortuitously, a certain combination led to a series of events culminating in a prototype RNA whose evolution led to the creation of genetic structures, but these are guesses only, unsupported by sufficient evidence (44, 54). Moreover, no laboratory experiments have succeeded in recreating life. Initial simple phylogenetic diagrams of the following type (see chart Early Phylogenetic Idea of the Genesis of Life), have been widely printed and have lodged in the popular imagination, but they have proved to be over simplifications.

Early Phylogenetic Idea of the Genesis of Life—The Tree of Life

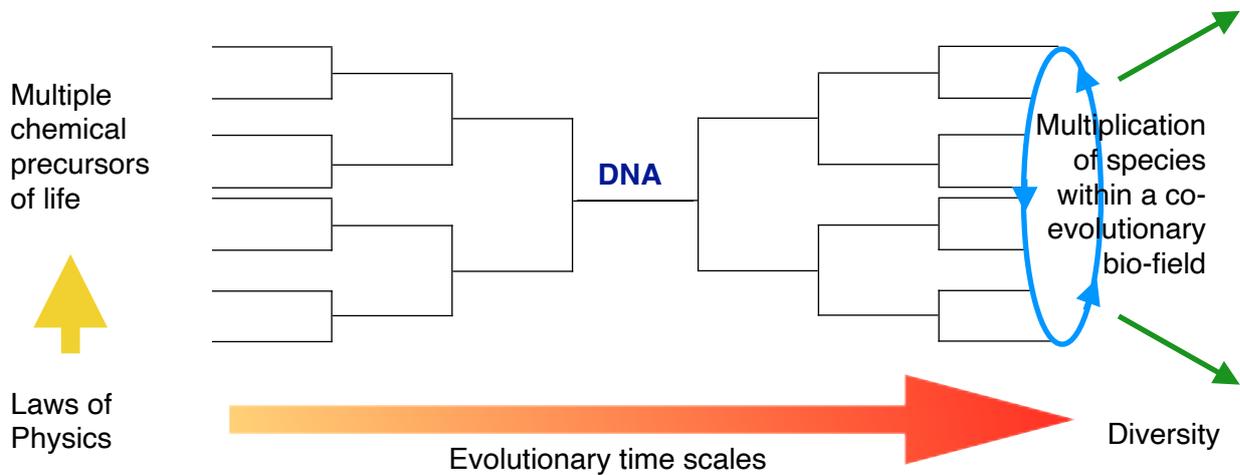


In fact, modern ideas of possible conditions that would lead to early life forms suggest that there must have been multiple precursors to life. These began as self-sustaining

² The oldest known system of healthcare—Ayurveda has already identified these three qualities as the essence of life naming them *Vata* (flow), *Pitta* (energy source), and *Kapha* (structure) referred to as *doshas*. Maharishi Ayurveda uses its analysis of these three qualities to construct its peerless system of maintaining and promoting health.

chemical reactions which then combined to create the conditions for the genetic structures of life to emerge (53).

Modern Idea of the Genesis of Life—The Mangrove of Life



In this vision of the emergence of life, different species are not isolated from one another, they interact and cross fertilise structure and function. This modern viewpoint known as the Mangrove of Life is compatible with the inevitable emergence of life from the underlying intelligence of natural law, whereas the early ‘single source’ ideas are not. In truth, the laws of modern physics, chemistry, and biology governing life and evolution are continuously rooted in the underlying unified structure of natural law.

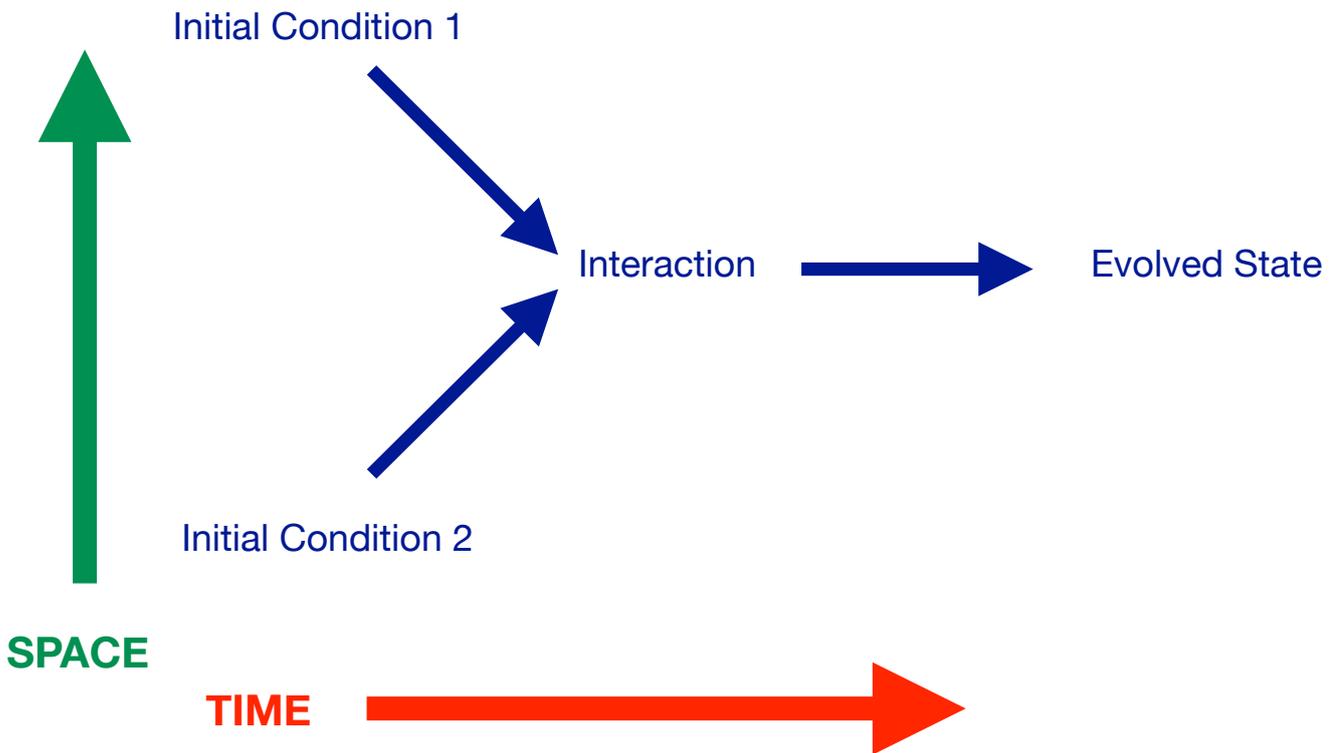
In fact explanations offered by evolutionary theory differ in a very fundamental way from explanations sought by fundamental physical theory. Roughly speaking we can say that evolutionary theory offers explanations that describe chains of events, whilst physical theory aims to uncover ultimate causal explanations (known as Cosmological explanations). Or put more simply, evolutionary theory explains ‘how’ life evolves through a series of events in time and space, whereas physical theory wants to uncover ‘why’ time and space exist (see Explanations charts). Thus evolutionary explanations always presume prior existing states in time and space, whereas ultimate cosmological explanations must stand alone—pre-geometry and pre-time.

Consciousness and evolution

It is the self-interacting, self-sufficient nature of the Unified Field that has led some physicists to equate it with consciousness (23). Although the so-called Mangrove of Life is a sophisticated interpretation of available biological evidence and theory, it ignores one important facet of modern science—we have seen that the laws of physics necessarily imply not only the existence, but also the involvement of consciousness (Bell’s theorem, which predicts this, is highly verified by experiment 1, 51, 52).

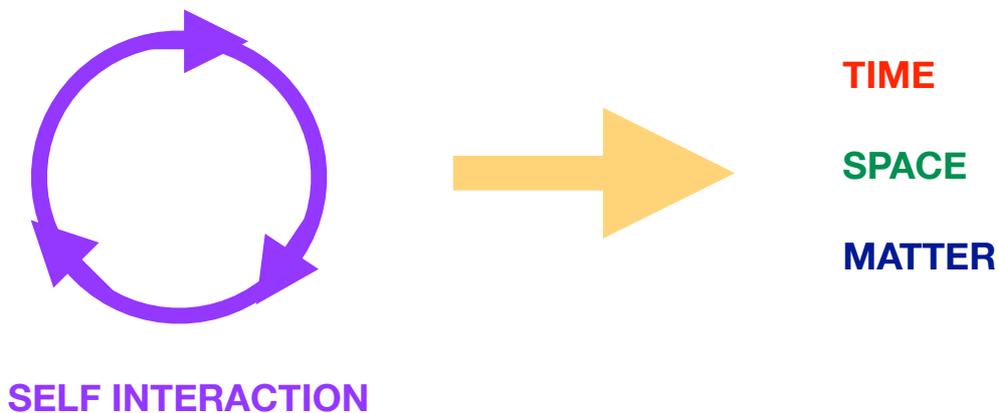
Consciousness was there right from the beginning of creation as the nature of the Unified Field which sequentially unfolds the universe. Thus a single diagram (1, p. 80)

Explanations Offered by Evolutionary Theory



Evolutionary theory shows how responses to external environmental factors and other organisms allow advantageous adaptations to survive through time

Explanations Sought By Fundamental Physics



The self interaction of the unified level of nature's functioning beyond time and space gives rise to the universe—the arena and cause of evolution

can correctly sandwich the emergence of life and the whole process of the evolution between universal and individual consciousness.

Humans view life from a sophisticated altruistic perspective. Evolutionary theorists recognise the interplay of social pressures and believe that there is a co-evolutionary relationship between the size of the brain and increasing sizes of human social groups (44). Larger brains were better able to keep track of the vast range of communication, perception, and even deception involved in large social groups. Yet theorists have struggled to take due account of the self-referral nature of human consciousness and its capacity to exercise choice, judgement, empathy, and ethics, and its philosophical and conceptual ability, all of which distinguish it from animal instinctual responses. Evolutionists tend to regard the difference between animal behaviour and human behaviour as a matter of degree only, rather than structurally different processes—one that is instinctive in animals, and the other in humans a reflection of universal self-referral consciousness that is seated in our physiology.

This brings us to the one important defect of evolutionary theory—*where is there a substantive discussion of the role of consciousness?* Despite mental processes being our everyday familiars, sociobiologists and evolutionary psychologists go to great lengths to exclude the mention of consciousness as such, preferring to assert that ‘*a large vocabulary of language*’, ‘*unique sexual characteristics*’, ‘*social group size*’, ‘*sophisticated use of tools*’, or ‘*the recognition that others have minds*’ define the human condition (see 44 & 62 for a summary of historical and modern evolutionary theory). The emergence of such factors are presumed to date the genesis of the homo (human) genus. This immediately highlights a deficiency in evolutionary theory—a sufficient and recognisably acceptable definition of human-ness is absent.

The exclusion of consciousness from science, the reductionist viewpoint and the basis of the now defunct theory of behaviourism, is essentially a luddite viewpoint discredited by experimental results (1, chap. 1).

Not just perception, but the interpretation of perception and the decision-making role of consciousness operate at the cutting edge of evolution, along with our memories that modulate experience (1, p. 40). Not only is our individual memory involved in our adaptive response, but also the memory of the evolution of our ancestors recorded in our DNA (46). Whilst many of our choices can be explained through unconscious preferences related to our need to survive, reproduce, and excel, these are certainly not the sole determinants of human behaviour. Such a view should be self-evident from our personal experience.

Our conscious reactions to experience, our choices, are the primary determining factors in the success or failure of our attempts to adapt to circumstances, challenges, and opportunities.

Just so with other species, yet homo sapiens are unique in their ability to *reflect* on experience and recount their reflection to themselves and verbally to others. In Vedic Science this is referred to as the result of the self-referral, self-interacting nature of consciousness.

There is no doubt that this specifically human capacity is supported not just by the neurological structure of the brain, but also by the genetic structure of the cell and the human genome. Beyond this, the coordinated operation of approximately 37 trillion cells, that make up the human physiology, contribute to an individual human identity. This points to a supra-cellular, supra-genetic network that suggests a biofield property of consciousness that coordinates genetic activity into a holistic command and control system. The mechanism for this remains unknown, but at the very least suggests the involvement of the underlying quantum mechanical laws of physics that include quantum entanglement. From this perspective we should be asking: does consciousness facilitate entanglement, and also how is genetic structure paired with consciousness? To answer this, we need to understand more about consciousness.

States of consciousness

Maharishi Mahesh Yogi offers a considerably expanded view of human consciousness and human evolution³. By implication this is also a very expanded view of possible biofield networks. From his Vedic perspective evolution is not just a gradual process of species adaptation occurring over long time spans, but also a highly individual process whereby the interaction between consciousness, physiology, sensory experience, and behaviour can lead to the development of styles of functioning which support higher consciousness. In other words more profound and intimate relationships with the world as a whole.

Meeting with many of the elite of the scientific world (59), Maharishi Mahesh Yogi was asked a very direct question. Ilya Prigogine, Nobel Laureate asked “What is the origin of the universe?” Maharishi’s answer to this question opens up an expanded framework for the investigation of consciousness and evolution. His answer integrated

³ I do not intend to recap all that has already been cogently argued about consciousness (1). It is remarkable and unique that Maharishi has examined consciousness through a deeply scientific process allied with a complete revival of ancient Vedic Science. What is more unique still is his methodology to explore this relationship through the experience of transcending. Something he has made available for all through his method of meditation. Maharishi has succeeded in elucidating a grand synthesis of science, ancient wisdom, and personal experience. He achieved this in the course of conversations with leading scientists from the entire spectrum of scientific endeavour and with learned representatives of the received wisdom of the many branches of Vedic tradition. Crucially he also brought the dignity and breadth of higher consciousness to light, something he himself gained at the feet of his teacher Swami Brahmananda Saraswati, Shankaracharya of Jyotir Math, a revered sage from the Himalayas. Maharishi has left a vast legacy of written work and spoken word in the hands of educational institutions. Maharishi’s work has implications for knowledge, health, well being, and society which deserve closer attention.

a scientific approach, verifiable personal experience, and the Vedic tradition—the ancient tradition of investigation into the nature of consciousness:—

*“What we have in this regard is **knowledge is structured in consciousness and then knowledge is different in different states of consciousness.***

*“There is a state of consciousness which sees all this change, identifies itself with change and then tries to locate from where the change began—how change began and where it is going. The whole source and course and goal of life—**[waking consciousness]**.*

*“There is another state of consciousness in which one remains unidentified with the field of change—**Transcendental Consciousness**, which is a state of consciousness definitely, just as sleep, dream, waking are. In Transcendental Consciousness that infinite unboundedness is all that there is to it, nothing else. In the **sleep state of consciousness** nothing exists, and in **dream** it could be something else. In Transcendental Consciousness, pure unboundedness, pure life, immortal eternal non-changing, is completely unassociated with change.*

*“In **Cosmic Consciousness** the change is there and the non-change is there, both are there, one is a witness to everything.*

*“Now in **Unity Consciousness** everything is in terms of myself and I am that immortal unbounded eternal. So the stories change, the realities change with changing values of consciousness.*

“So what we find in these evolutionary models of nature, on the level of evolution of consciousness values of evolution are different, completely different, and each level has its own philosophy and that philosophy is irrelevant on a different level, completely irrelevant. The reality of one level of consciousness belongs to that level of consciousness alone, and has nothing to do with any other level of consciousness. Like the reality of sleep, the objectivity and subjectivity of sleep, these values have nothing to do with the state of dream consciousness or waking state of consciousness, or Transcendental Consciousness or Cosmic Consciousness, or Unity Consciousness. All these values are completely different in different states of consciousness, with their specified values of principles and experiences, understanding and experiences.

*“...In **Unity Consciousness** one lives wholeness of life, the wholeness moves, everything in terms of myself, no fears because no differences, no ups or downs, evenness, wholeness. It’s a state of consciousness, and in that state unmanifest is unmanifest. It has never become anything, it has never changed. Like the sap [spoken holding a flower], even though it appears to be green, but when we look into the depth of green what we find is the grain of green is made of the*

colourless. On one level where the colourless sap is predominant, on that level, differences in the red and the green and the flat and the round, these differences don't exist.

“On another level, differences are very pronounced, and when the differences are very pronounced, then the philosophy or the principles, how they came about, how green sprang from the colourless, how red sprang from the colourless, the whole history comes along. In the field of differences, the origin is accounted for. In the field of differences, the origin of all differences is that non-differentiated state of life from which everything begins. Because the cause of difference can only be non-difference. The cause of diversity can only be unity. It's very very obvious, but all this philosophy of the origin of diversity from unity, this has no meaning in the state of Unity Consciousness where nothing happened ever. These things have no meaning in the sleep state of consciousness, nothing is there to it. In the dream state of consciousness anything could happen.”

Thus Maharishi's synthesis of consciousness and evolution is achieved within his highly developed understanding of distinct states of consciousness (5) that are available to the individual not just philosophically but as the reality of daily experience. These can be developed through a series of techniques to expand the range of experience available to the human mind which are supported by extensive scientific research (2, 3, 4, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19). These studies show that each state of consciousness has a distinct physiological signature.

In the Vedic analysis, the universal human evolutionary path unfolds the latent capacity of the mind to experience deeper aspects of reality and ultimately become as one with the unified structure of the Cosmos.

The detailed understanding of this evolutionary path is expounded in the Bhagavad Gita, an ancient text in the form of a conversation between Krishna and Arjuna on a battlefield, which contains the central message of the epic poem Mahabharata. Maharishi refers to the Bhagavad Gita as the pocket book of Vedic Literature and has written a comprehensive commentary to bring out its message for modern times (20).

The Bhagavad Gita defines key markers of higher consciousness, in each of which the nature of everyday experience changes. The unfoldment of these experiences of higher consciousness is supported at each stage by specific experiential instruction and intellectual understanding which enable each state of consciousness to be transformed into the next higher state until the individual realises and lives his identity with the Totality. Many of the world's great physicists found inspiration in this text.

Maharishi's commentary explains that there is a specific sequence to the process of the evolution of human consciousness which we briefly outline here. This understanding about evolution is not confined to any one philosophical outlook or religious tradition.

It describes an evolutionary journey of personal experience which has been experienced and described by poets, recluses, mystics, devotees, and others from virtually all cultures. Maharishi's unique contribution was to place meditation practice on a systematic footing which could be easily followed by people busy in the modern world irrespective of their religious or philosophical outlook.

The Bhagavad Gita starts with Arjuna, a highly developed leader of men, facing the ultimate moral and experiential tests of life in the waking state of consciousness, the third state of consciousness. The setting is a battlefield where armed conflict is about to commence.

Chapter 1 Verse 45 *Alas! We are resolved to commit great sin in that we are prepared to slay our kinsmen out of greed for the pleasures of a kingdom.* Arjuna is faced with war and all the enmity and suffering that it implies.

Chapter 2 Verse 6 *We do not know which is better for us: that we should conquer them or they should conquer us...If we killed them we should not wish to live.* Arjuna is faced with the ultimate among moral dilemmas.

Chapter 2 Verse 14 *Contacts of the senses with their objects give rise to the experience of cold and heat, pleasure and pain. Transient they come and go.* Life in **Waking Consciousness** is relative, composed of opposites. Later Lord Krishna explains how remaining confined to the field of sensory experience alone, devoid of transcendence, results in attachment, desire, anger, delusion, unsteadiness of memory, destruction of the intellect and eventually the destruction of life itself.

The solution to the dilemmas of **Waking Consciousness** are outlined in Chapter 2 Verse 45 *Be without the three gunas, freed from duality... possessed of the Self.* Since the gunas are qualities which guide the expressed universe, this defines the process of *transcending* thought which leads to the experience of Yoga or unity in **Transcendental Consciousness**, the fourth state of unbounded pure consciousness devoid of relativity or exterior perception.

Chapter 2 Verse 48 *Established in Yoga perform actions* Arjuna is assured that actions will become balanced once Yoga becomes established over time through daily experience of transcending alternated with activity, This state is known as **Cosmic Consciousness**, the fifth state of consciousness, which Maharishi describes as a permanent enlightened state devoid of suffering wherein outer perceptual experience coexists with inner unbounded bliss. Chapter 4 Verse 18 *He who in action sees inaction and in inaction sees action is wise among men.* Maharishi refers to this as living 200% of life.

As the intimacy with inner consciousness (Being) becomes more established, actions naturally become increasingly in harmony with universal law (which religious people

refer to as God's Will) and perception becomes refined enough to appreciate the connection of the relative changing world with the world of consciousness in **God Consciousness**⁴, the sixth state of consciousness. Chapter 5 Verse 10 *He who acts giving all actions over to the universal Being, abandoning attachment, is untouched by sin as a lotus leaf by water*, and Verse 12 *He who is united with the Divine.... attains to lasting peace*.

In time, the grand unity of the Totality, **Unity Consciousness**, or *Brahmi Chetana* the seventh state of consciousness, reveals itself. Chapter 6 Verse 20 *That (state) in which thought, settled through the practice of Yoga (Union with the Self), retires, in which seeing the Self by the Self alone, he finds contentment in the Self*, and Verse 27 *For supreme happiness comes to the yogi whose mind is deep in peace, in whom the spur to activity is stilled, who is without blemish and has become one with Brahman*.

As the practice of meditation advances, it enriches the experience of both **Deep Sleep Consciousness** and **Dreaming Consciousness**. These states are transformed as they are filled with light and inner awareness. Chapter 2 Verse 69 *That which is night for all beings, therein the self-controlled is awake*.

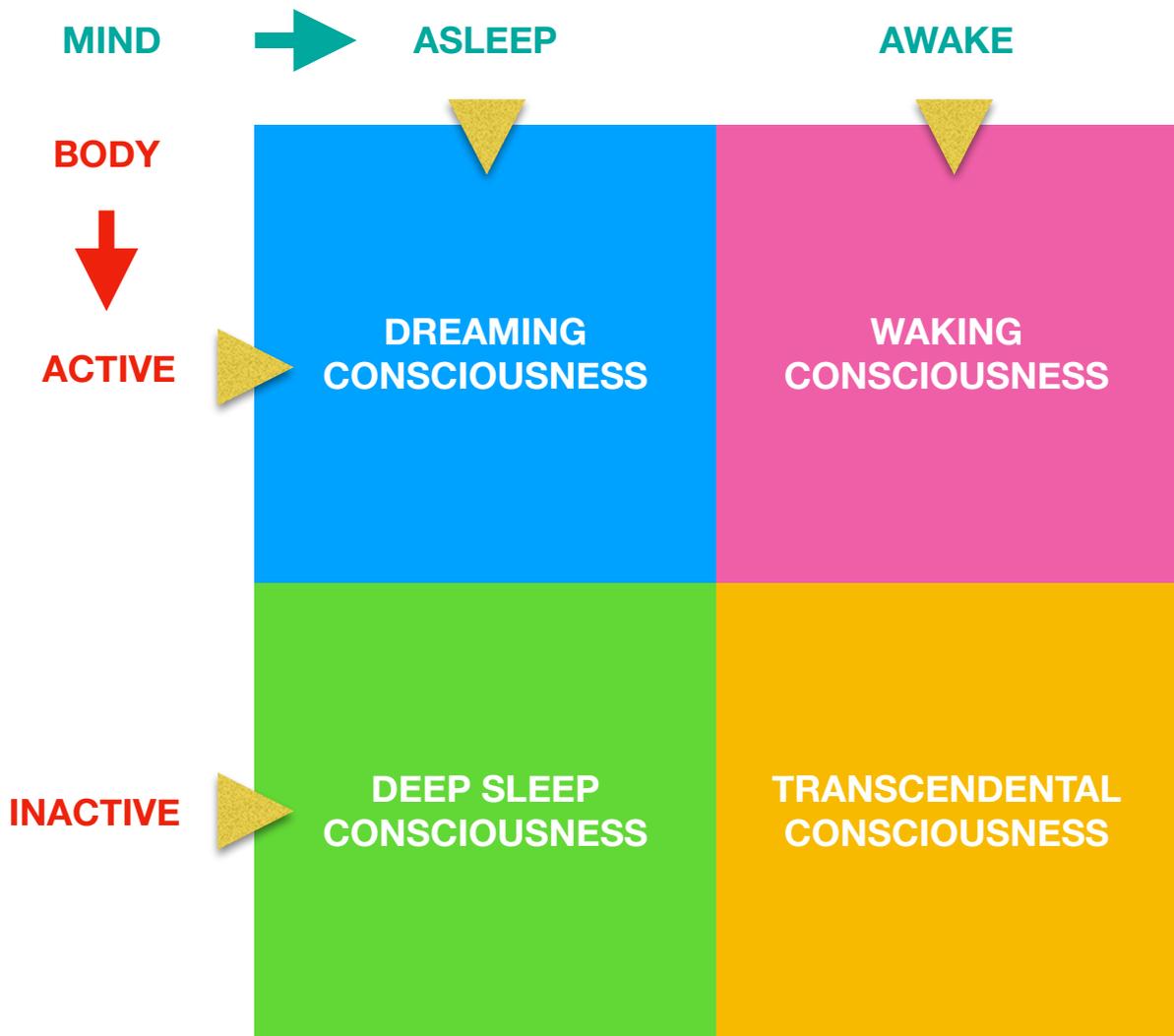
Maharishi explains (5, p.188) higher consciousness leads to “*functioning through the Principle of Least Action of physics; action will produce a maximum enriching effect on all levels—mind, intellect, ego—without straining the actor. This supreme level of performance is the basic requirement of any manager, or administrator.*”

Dr Dimitri Kanellakos working at Stanford Research Institute (21) suggested in the 1970s that life confined to the three ordinary states of consciousness, deprived of transcendental experience, inevitably gives rise to stress which retards achievement. Transcendental Consciousness gives the physiology access to a unique combination of simultaneous deep rest and high alertness which dissolves stress. This *restful alertness* is not available in the waking, dreaming and sleeping states (see chart Characteristics of Four States of Consciousness).

There is a word of caution here. The enumeration of seven states of consciousness might suggest that these imply steps to take, stages of a process, much like a set of instructions to acquire and perfect a skill, but consciousness is truly abstract in a way that no other *thing* is abstract. The Upanishads refer to consciousness as “*not this, not this*”. Consciousness is not a thing or an object. The Kena Upanishad says (22, Fourth Kanda, Verse 5) “*Now concerning the self: Brahman is that toward which the mind moves, as it were, that by which it is ever aware and that which forms its purpose*”. In

⁴ Maharishi's meditation is not a religion or a religious practice, It requires no belief. It is a scientific technique to culture the nervous system to maintain refined perception and higher consciousness. These experiences support appreciation and understanding of cultural traditions among people from all walks of life and all religions. Maharishi encouraged individuals to preserve their traditional cultural values and beliefs. These will have greater significance when consciousness is fully developed.

Characteristics of Four States of Consciousness



Transcendental Consciousness is a unique fourth state of consciousness – Restful Alertness – which dissolves stress in the physiology

this sense, it is the unseen mover in living things. It is behind the scenes, not to be confused with the objects of sense desire. The Bhagavad Gita says Chapter 5, Verse 21, “*He whose self is untouched by external contacts knows that happiness which is in the Self. His self joined in Union with Brahman, he enjoys eternal happiness.*” The technique of meditation Maharishi taught is such that the abstract, behind the scenes, and beyond the senses reality of consciousness comes to be experienced because the method is completely natural, simple, and effortless—it utilises the natural tendency of the mind to move towards happiness enabling an ultimate bliss to be lived in Unity Consciousness.

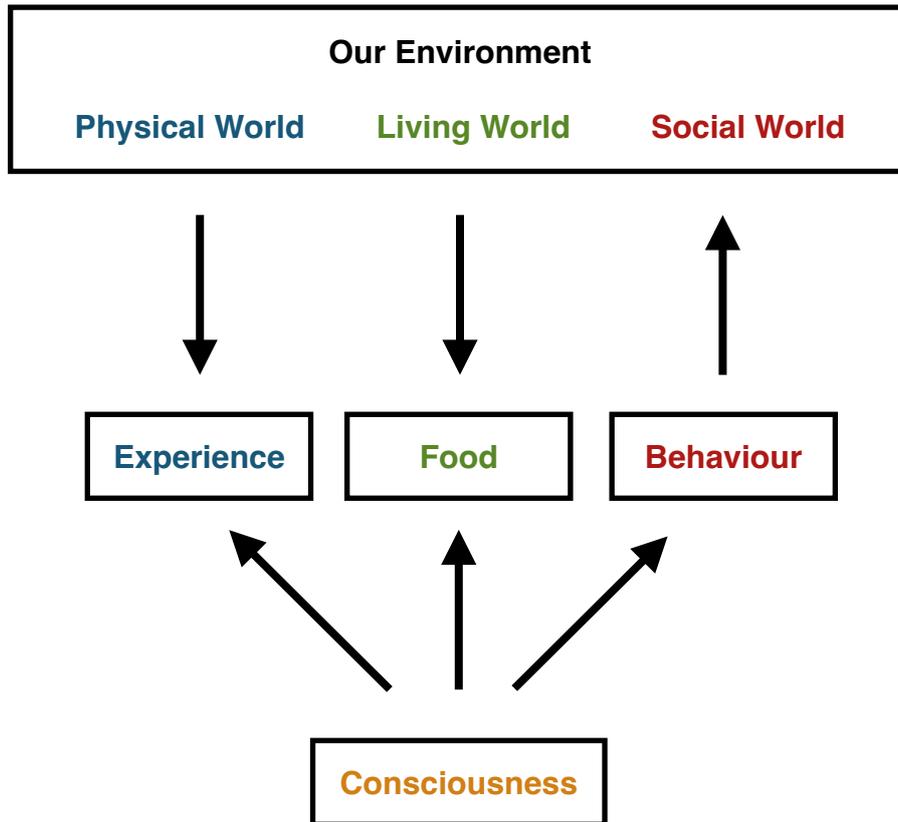
What are the principal constituents of individual life and how do they interact with consciousness?

The quality of our food is crucial for the preservation of health. Food based on DNA protects our life-giving relationship with our epigenetic environment (1, chaps. 3, 5). In Vedic Science, **food** is ultimately composed of five subtle elements or principles *prithivi, jala, agni, vayu, and akasha*, roughly translated into English as *earth, water, fire, air, and space* which correspond to fundamental qualities of the objective universe understood by physics, which emerge from the self-referral properties of the unified field identified with **consciousness**. Dr John Hagelin has placed these five subtle elements parallel to the five fundamental spin types which categorise all matter (23, p.76)⁵. Ayurveda (the ancient healthcare system of India) associates earth and water with *Kapha*, fire and water with *Pitta*, air and space with *Vata* (see 1, chaps. 1, 7 for an explanation of Maharishi Ayurveda). **Experience** is through the familiar five senses seated in the *tongue, ears, eyes, nose, and skin*; whilst **behaviour** is counted through five organs of action—the *mouth, hands, feet, anus, and genitals* which are for speech, dexterity, locomotion, elimination, and reproduction. The senses and organs of action (ten in number) in turn are controlled by the *mind* which thinks, the *intellect* which decides, and the *ego* which maintains individual identity. These thirteen elements of the individual are seated in **consciousness**, the same consciousness which gives rise to the objective universe and the wider environment (1, p. 147). It is the interaction of these thirteen aspects of the individual which Vedic Science explains is involved in the evolutionary process, which is referred to by science as the process of *adaptation*. All of these thirteen elements are ultimately seated in universal consciousness⁶. We can characterise the factors over which we have direct control in terms of four broader categories—*Experience, Food, Behaviour* and crucially underpinning these *Consciousness*, all four of which I discuss in detail in my book (1). These four factors interact with our environment through processes that are collectively referred to by

⁵ According to Dr. Hagelin, the spin zero Higgs, sleptons and squarks are parallel to *prithivi*, the spin half Higgsinos, leptons, quarks, and gauginos to *jala*, the spin one gauge bosons to *agni*, the spin one and a half gravitino to *vayu*, and the spin two graviton to *akasha*. Grouped together the matter superfields correspond to *Kapha*, the gauge superfields to *Pitta*, and the gravity superfield to *Vata*

⁶ Maharishi has explained the emergence of the material world from the unbounded field of consciousness as follows. Consciousness is inherently awake and by virtue of this has a 3 in 1 structure. Being awake it has a self-referral structure, it is aware of itself. It itself is the knower which knows itself. Therefore it is also the known—the object of knowledge. It turns it must also be the connection between the knower and known—the process of knowing. Yet being consciousness, it also remains undivided wholeness. This three in one structure of consciousness is known in Vedic Science as the *Samhita of Rishi, Devata, and Chhandas*—the *Togetherness of Knower, Process of Knowing, and Known*. Maharishi describes how these elements of undivided consciousness ‘interact’ with one another to sequentially give rise to the appearance of an objective universe. When Rishi looks to *Chhandas* it changes *Chhandas*, and in turn is changed itself. All the interactions of all three elements, sequentially give rise to layers of reality which condense into the material matter of the universe. Thus Vedic Science regards the material Universe as made up of interlocking relationships.

evolutionary theory as *adaptation*. Simply put: *experience* samples the physical world, *food* is drawn from the living world, and *behaviour* takes place in a social world.



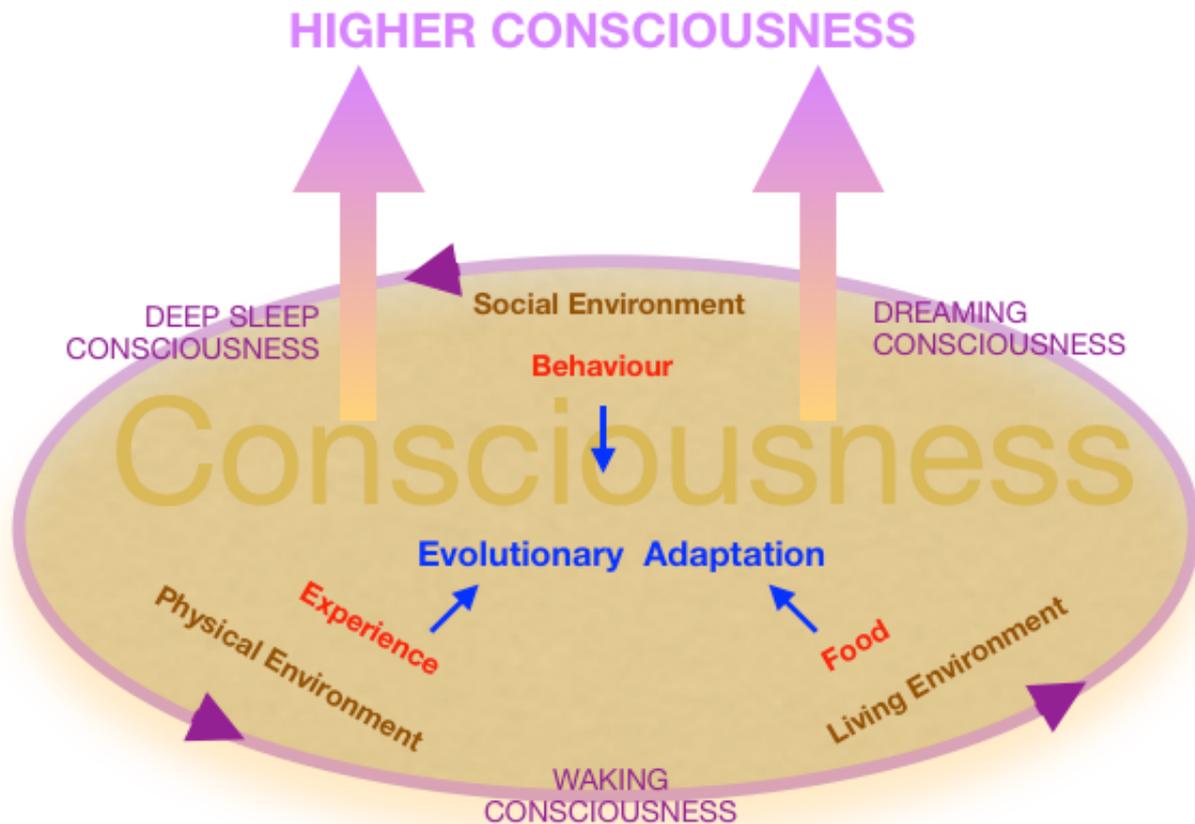
Experience, the brain, and consciousness

The preceding diagram appears to confer a simplicity to *adaptation*, when in fact human adaptation is richly complex. We have been schooled to believe that life is carried on in an objective world of four dimensions comprising time and the three dimensions of Newtonian space. In fact, perception of and our behavioural responses to our environment are multidimensional and occur on the ground of consciousness (see chart Human Evolution).

Four dimensions are a scientific construct we have imposed in an effort to make sense of the inanimate world which is of course not the social world we live in. There are other dimensions inherent in our experience, food, behaviour mediated by our self-referral consciousness, among these: whether something poses a threat or an opportunity, whether it is useful and in what context, whether it is animate or inanimate, whether it is food or poison, whether it is from the past or for the future or happening now, whether it is inferior or superior, whether it is beautiful or ugly, whether it is right or wrong, how does it look, taste, smell, feel, sound, is it suitable for procreation, is it fixed or moveable, is it real and can it be trusted, is it for my personal use alone or is it universal?

The human brain models this multi-dimensional world. Recent research (24) enables us to begin to understand the relationship between function and structure in neuronal

Human Evolution



Evolutionary adaptation currently understood by science occurs as a result of interactions with our physical, social, and genetic environment through the mediums of experience, behaviour, and food. Evolution occurs against the background of universal physical laws which are an expression of universal consciousness. We can represent individual consciousness as trapped in cycles of waking, dreaming and sleeping until it is liberated by transcendental experience. Regular experience of transcendence alternated with deep thought and dynamic action lifts life out of the web of mundane experience and sequentially unfolds higher consciousness until the human mind comprehends the totality of universal consciousness. Thus a balance between meditation and right action can free human life and enable evolution to unfold the pinnacle of fulfilment and achievement. This is a formula found in every cultural and spiritual tradition.

networks. The brain is estimated to contain as many as 80 billion neurons. Their connections may be more numerous than the number of atoms in the observable universe. Neural plasticity (25) ensures that the majority of these connections are being remodelled every day by experience. For example, daily practice of a skill such

as playing the violin causes the neural connections to multiply in the area of the brain associated with manual dexterity. In this sense, our life is remodelled daily ⁷.

Topological analysis of simulated brain structures reveals that the local networks that the brain builds, known as *cliques*, are very complex (24). They contain up to 11 topological dimensions, which indicates how the brain is able to model our rich and complex fields of experience. The analysis indicates how cliques participate in more global structures known as *cavities*. Research on Maharishi's system of meditation shows that the development of seamless global communication networks indicated by high EEG coherence across the brain is a signature of higher consciousness (26, 27, 28). So meditation stimulates the emergence of mathematically coherent structures that are expanded across a wide range of local structures in the brain.

How this process proceeds to unfold the evolution of the human individual is the subject matter of Vedic Science. We have seen that Maharishi outlined the seven distinct states of consciousness (1, p. 48, and 2, 3, 4, 5 ps. 178 and 187) which comprise a sequential path of personal evolution. Each state of consciousness is associated with a different style of physiological functioning and a distinctly different perceptual experience of the objective world, including its space, time, and events. Each state of consciousness has its own world of experience, so it is a very rich world that we perceive and aspire to model. In Deep Sleep the world of experience does not exist, nor are we conscious. In the Dreaming State, experience is illusory. In Waking Consciousness, the world is apparently solid and lawful, perceptual experiences define our sense of self. In Transcendental Consciousness, the self is unbounded and fully awake but there is no outer perceptual experience. In Cosmic Consciousness the unbounded inner self coexists with outer perceptual experience, nor is the experience of Self lost in dreaming or deep sleep. In God Consciousness, perception becomes so refined that the finest connection between consciousness and matter is perceived. In Unity Consciousness everything is perceived in terms of the Self, unbounded consciousness—Totality, Brahm.

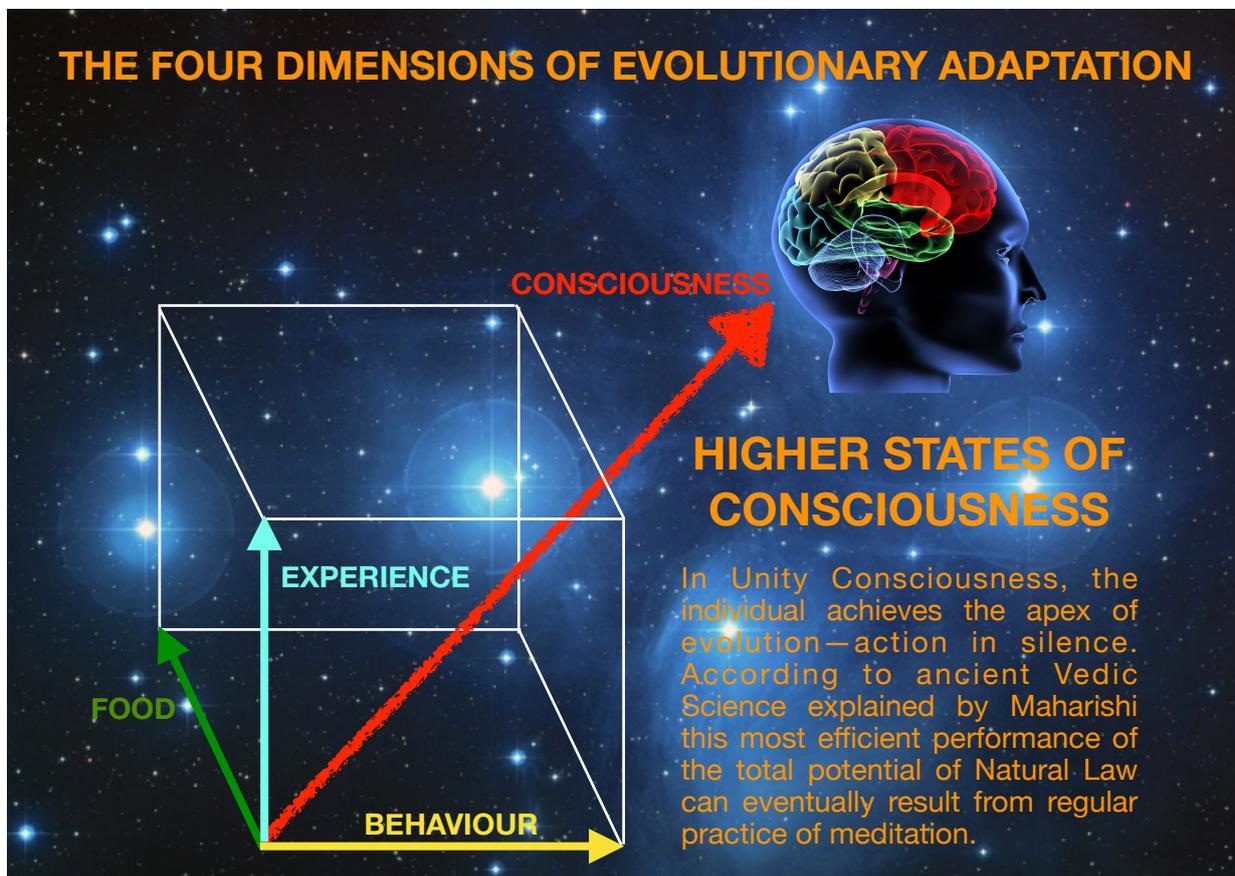
The transformation of the diversity of Waking Consciousness to its essential Unity is the process of personal evolution which turns out to be the result of simultaneous expansion and contraction. Consciousness does not contract, it expands to embrace the Totality, but this process is also the unification, or seeming contraction, of diversity. This is accompanied by the expansion of neural networks in the brain and reductions in stress responses (68).

⁷ It is perhaps a mistake of the intellect to imagine that we enjoy lifelong fixed relationships with the objective world. Thomas Kuhn (29) has pointed out that we tend to impose particular forms of order on our environment, where in many cases no such order exists. We do so in order to preserve a sense of self in the absence of actual experience of the Self—a lack that the experience of Transcending fulfils.

Consciousness and Adaptation

Vedic Science suggests the whole process of evolution is guided from the field of consciousness (see 1, p. 80). Maharishi explains in line with the Upanishads that the nature of consciousness is *bliss* and asserts that *the purpose of creation is the expansion of happiness* (30). This then is the key to understanding the ultimate origin of life. It begins with bliss and ends in bliss, mirroring the universal cycle of seed to tree to seed, but at each stage enriched by the journey and the expansion of happiness that it represents. Moreover we find in our own life that the motivation of our behaviour is the expansion of our happiness. Life naturally flows towards more and more. Meditation should harness this natural tendency of life which is the secret of its effortless practice.

As we journey through life, consciousness gives an evolutionary direction to change as it operates in the *gap* between sounds, between material events, and between thoughts (1, p. 80). Maharishi's description of this process is sophisticated and detailed. It has captured the imagination of physicists like Dr John Hagelin, Nobel Laureate Dr. Brian Josephson, and many others (23). More recently it has been found that the deepened experience of consciousness untainted by relative perception gained through Maharishi's system of meditation automatically affects the suppression and expression of genes in a way that is beneficial to health (1, p. 37). Thus development of consciousness is a direct stimulus to the whole process of evolution.



The experience of transcendence is the missing element of the evolutionary process. Throughout time transcendence has elevated evolution from the limited three adaptive dimensions of *food, behaviour, and experience* to four dimensions including the evolution of *consciousness*, thereby fulfilling a higher purpose of life by beginning and continuing to free life from limitations (see chart The Four Dimensions of Evolutionary Adaptation). We have now connected the simple diagram of four life factors, with which we began this section, into the web of evolution, opening the door to individual realisation of the cosmic scale and purpose of life.

In summary, we have seen that there are higher states of individual consciousness (1, p. 48 and 2, 3, 4, 31, 32). These are accessible through techniques and understandings contained in Vedic Science which have been rediscovered and made available by Maharishi and others. Human life can reach a pinnacle of evolution and understanding through a natural process of evolution of consciousness. Extensive research reveals that this is connected with measurable physiological changes (1, p. 50).

Thus human adaptation can now be seen primarily as the rise of consciousness which mandates physiological changes in excess of those mandated by the demands of the environment.

Is Darwinian Evolution a complete science?

In the light of time-honoured considerations of consciousness such as the above and widely reported experiences of higher consciousness⁸, is Darwinian evolution a complete science in the fully accepted notion of a science? It is extraordinary that evolutionary theory has largely omitted the consideration of consciousness. Why? This question requires a complete and deep answer.

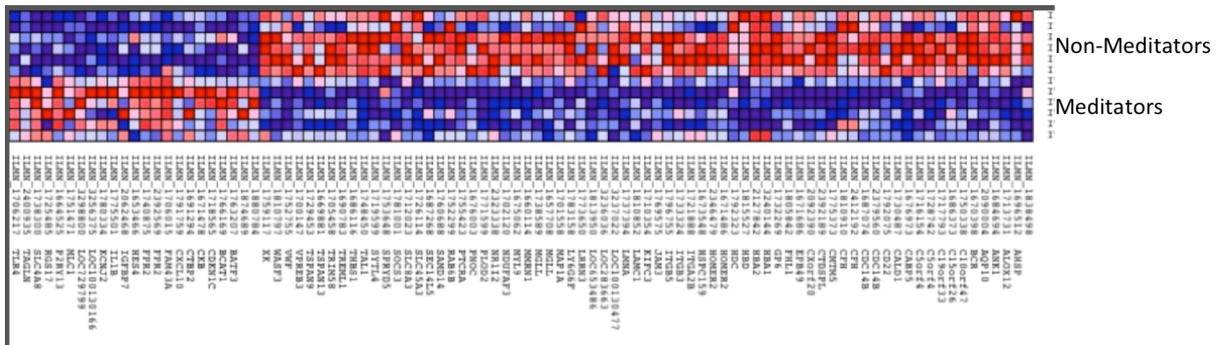
Science seeks to answer not just the *how* but also the *why* of well formulated questions and hypotheses. Evolution answers the *how* of adaptation through detailed descriptions of case studies in the animal and plant world and in many cases the *why* as well. It offers remarkable insights into the gradual adaptation of species. How and why do bacteria acquire antibiotic resistance? How do species acquire camouflage? What are the evolutionary advantages of a myriad of sexual behaviours? When, how, and under what circumstances did aquatic species migrate from sea to land, and how did whales migrate from land to sea? The extraordinary diversity within species is thus explained through the concept of evolutionary adaptation and necessity. Moreover with the rise of the understanding of DNA, evolution theory has acquired a sound basis in indisputable genetic fact. It is almost impossible not to be overwhelmed by the success and elegance of evolutionary biology.

⁸ Experiences of the breathless state, higher consciousness, and abilities known as Sidhis are reported in Paramhansa Yogananda's Autobiography of a Yogi. This is but one of numerous accounts published in modern times and recorded throughout history within the traditions of diverse cultures.

But, and it is a big but, there are *why* questions that remain largely unanswered in theories of evolution. Why do almost all species have two eyes and four limbs, why not six or sixteen? Why are there five senses and how did they arise? Why are there just two sexes and not just one or many? Crucially, how did DNA originate? How does DNA support consciousness?

It is at this point that we are going to have to turn our understanding of what drives evolution on its head. Rather than a largely physical process, at its heart evolution is driven by the mind. Extensive research on the physiological effects of meditation (1, p.50, Table 2) has shown that mechanisms previously thought to be under the more or less automatic control of physiological processes guided by genetic information, can in fact be optimised by regular practice of meditation. The incidence of a very wide range of disease types including respiratory illness, cancers, circulatory and cardiac disorders are greatly reduced (65, 66, 67) for example.

How does this happen? Fagan (1, p. 37) has found biomolecular changes consistent with the reported physiological, psychological and emotional benefits of regular practice of meditation. This provides insights into the biomolecular and genetic processes underlying previously observed effects.



In summary Fagan found:

- Reduced expression of genes involved in the **Stress Response**
- Reduced expression of genes linked to **Inflammation**—of importance in reduced incidence and/or severity of heart disease, arthritis, atherosclerosis.
- 19 genes linked to **Cardiovascular Disease** are altered in their regulation
- 2 **Tumour-Suppressor Genes** up-regulated

The significance of these results cannot be underestimated. A technology of consciousness interfaces with genetic processes. How far can this process be taken as a biotechnology? As we have seen if Vedic Science texts are examined, the potential benefits are far ranging. From this perspective, genetic structure is a highly refined repository or database of information that can be accessed via the mind. The corollary of this is startling, genetic editing of DNA through modern biotechnology is the

opposite of evolution. It risks degrading or corrupting the database of evolution and undermining the biomolecular basis of health. Worse it could undermine the capacity of human physiology to host a full expression of consciousness.

This is precisely the outcome of the pandemic that we are witnessing as I write—high rates of excess all-cause mortality, sudden death, cancer, and hospitalisation without an immediately apparent cause. Reducing longevity—the opposite of historical trends. Worldwide disruption of economic and management systems possibly indicative of reduced organisational capacity.

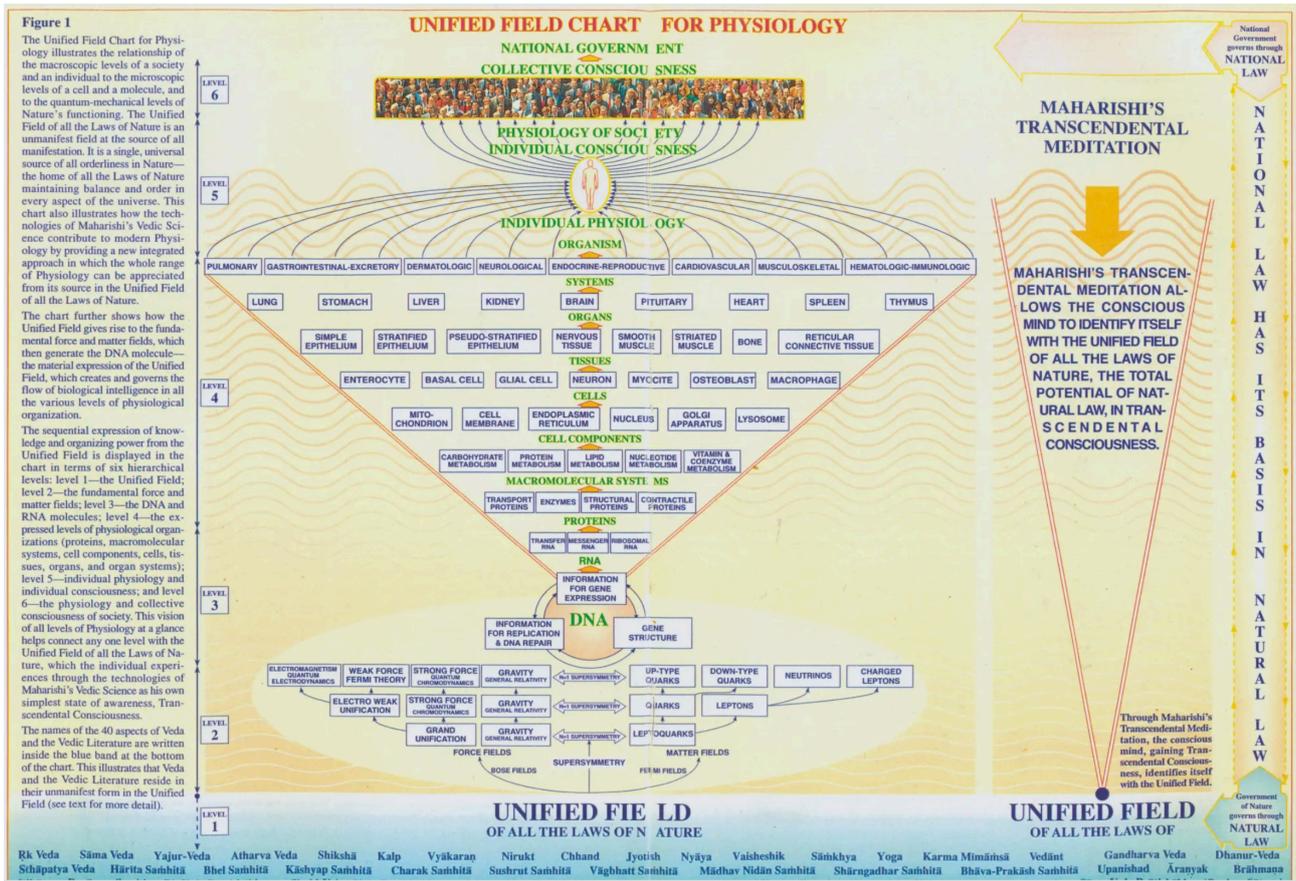
Both the Covid-19 virus and the mRNA vaccines are the result of gene editing which is inherently mutagenic and devolving. Together they are orchestrating a perfect storm of adverse effects.

Where does this lead us?

Perhaps as a result of their success in explaining the origin of the differences between and among species (diversity), evolution theorists tend to give less consideration to the similarities between species (known as homology) whose origin is perhaps more puzzling. For this reason and because of the stretch of evolutionary time and the paucity of historical evidence, evolution is not a science in the sense of physics with definite answers to questions; it includes room for a great deal of debate, dissenting and shifting opinion, and interpretation which is evident in the published literature.

How then should evolution theory evolve? We have covered the hidden dimension of the evolution of higher consciousness, and we have realised that consciousness and genetics are intimately connected. It is a short step from there to realising that the exploration of consciousness is the key to understanding evolution. Vedic Science suggests this is achieved not so much through an intellectual process, but through a subjective exploration of one's own consciousness—meditation.

In answering *why* questions, science traditionally examines finer time and distance scales and looks at the underlying laws of nature. These laws are more universal. When we travel from large time and distance sales to small time and distance scales, we are travelling from the specific to the universal. This is part of the accepted hierarchical structure of complete scientific explanations. Maharishi has ably explained the relationship between the process of scientific investigation and the process of meditation through a series of instructional charts. Working with a multidisciplinary team of scientists in the early 80s, he evolved a style of presenting the fundamental principles of each discipline that highlighted the self-referral nature of these principles and their parallels to the field of consciousness as explained in Vedic Science (5). These are known as Unified Field Charts.



This Unified Field Chart of Physiology illustrates the central role genetic information plays at every level of physiological organisation and amply illustrates that gene editing of DNA and its immediate expression, as happens with mRNA vaccines for example, is potentially damaging at every more expressed level. As you go up the chart you reach larger time and distance scales, as you go down smaller time and distance scales are described. The process of meditation is illustrated as connecting the surface level of thinking with more silent and universal experiences of consciousness which are intimately connected with more fundamental unified levels of physical organisation. Gene editing of DNA and its immediate expression in RNA potentially puts this valuable process of unification of awareness at risk because each more expressed level of organisation in the physiology including cellular function, organs and organ systems rely on the integrity of genetic structures.

The process of analysing the fundamentals of scientific disciplines inevitably leads to consciousness at the heart of physical reality, yet evolutionary theory skirts this, preferring the concept of *adaptation* alone in line with a reductionist view of science. Thus relying on the hope that *evolution is such a great theory that it must ultimately also explain the origin of life*. Yet the history of science is littered with discredited notions which in their day were unquestioned (29).

An analogy will make this more clear. There may be a situation in which water is seen rising and falling in a lake. Geological science can provide one kind of answer.

Underground forces and temperatures along with rainfall data readily explain *how* the phenomenon works, but this does not explain *what* water actually is. To understand water, you need to resort to chemistry to comprehend that it is made up of two molecules of hydrogen combined with one of oxygen. Further analysis at finer time and distance scales shows that these molecules are held together by quantum mechanical bonding. The existence of additional transient hydrogen bonding explains the unusual properties of water which are absolutely crucial to the emergence and support of life.

In the same way theoretical discussion and research findings have led us step by step to the understanding that consciousness has to be at the frontier of evolutionary theory. Technologies of consciousness are real biotechnologies. Physical gene editing is an evolutionary cul de sac and a potentially species ending pathway. Consciousness contains the holistic totality of natural law, its interventions are therefore safe.

Life—chance or design?

This brings us to one of the fundamental tenets of biotechnology which supposes that gene editing is safe because evolution is at heart the result of a series of random events. Are the roles of chemical and physical phenomena arbitrary, their properties linked by evolutionary chance and circumstances to the particular kinds of life which emerged through adaptive processes and continued to adapt through a series of fortuitous events? Or more simply put, **is life a matter of *chance* or *design*?**

An answer to this question, does actually have testable scientific content, and that testing has been recently completed. Zachary Blount, reporting in *American Scientist* in 2017 (35) states the proposition as “*if evolution is highly contingent [on chance events], then it is inherently unrepeatable*.” In fact, by studying thousands of generations of bacteria and by looking closely at related species of lizards on separate islands within an archipelago, Dr Blount and his colleagues have concluded that evolution is both repeatable and contingent on circumstances.

Or more simply it is a result of both design and circumstances. Evolutionists have coined the phrase *evolutionary potential*, to cover this phenomenon. Dr Blount concludes that there is a need to understand how chance and evolutionary potential interact—“*A better comprehension of evolutionary potential and its role in contingency will require a multidisciplinary effort involving not just evolutionary biologists, but also molecular biologists, geneticists, biophysicists, and systems biologists.*”

We can concur wholeheartedly with Dr Blount and add the need to reference this work to foundational physics and mathematics (the subject of much recent speculation). There are underlying universal laws of nature which are capable of supporting life in a particular form and have given rise to emergent properties of life. These laws of nature

have properties which are recognisably intelligent. They are self-referral, creative, and holistic. They can perceive, communicate, and interact. Living systems acquire and extend all these properties which are inherent in the design of natural law (see 1, chap. 1).

The effect of Darwin's ideas on religion

Darwin's evolution overruled much prevailing religious dogma, eventually extending the earth's history from 6000 years to 4.5 billion years. Inevitably this led science to question every tenet of religion. Darwin himself felt compelled to question and ultimately abandon his faith, yet there is nothing in his actual findings that precludes faith in God or spiritual insight. St Augustine for example rightly sought a synthesis of religion and physics. He believed that religion and science do not occupy separate spheres of understanding but should fit together smoothly.

Despite this, evolution theory has spawned a long running raging debate. On the one side—neo-Darwinists bolstered by their interpretation of one of the most explanatory scientific theories ever discovered and on the other—creationists bolstered by a deep faith in the divinity of man. The debate is charged with partisan perception and vitriol. Ironically the exclusion of God's Will is pursued with apparent religious zeal; in its more extreme form the already noted refusal to recognise consciousness is allied with an irrational refusal to countenance the innate *intelligence* of Nature and the design of its laws. In turn, the religiously motivated rejection of evolutionary timescales and processes is based on an apparently biblical dogma.

Yet there is in my opinion no conflict between the science of evolution and faith. Evolution in no way contradicts the understanding that there is a God or that nature is inherently intelligently designed. Nor should religion reject evolution. In fact many sensible people on both sides of the argument are prepared to live with one another whilst waiting for a killer argument or discovery to settle the debate.

Some disagree, Richard Dawkins for example goes to great lengths to not just reject creationism (the idea that God created the universe a few thousand years ago fully populated with a complete range of creatures), but also to find scientific arguments that he believes render any belief in God obsolete or unscientific. Delving into his understanding of the genetic code—DNA, Dawkins presents one argument for atheism based on *invariance*.

“Just as the vertebrate skeleton is invariant across all vertebrates...so the DNA code is invariant across all living creatures while the genes themselves vary...which shows more clearly than anything else that all living creatures are descended from a single ancestor.” (62, p 315)

Realising that proponents of both a Godless world and creationists will each interpret *invariance* as evidence for their ideas. Dawkins offers the additional idea that evolution is a strictly 'local' process.

“Embryology is all done by local rules, at various levels, but especially the level of the single cell. No choreographer. No conductor of the orchestra. No central planning. No architect. In the field of development, or manufacture, the equivalent of this kind of programming is self-assembly.” (62, p.220)

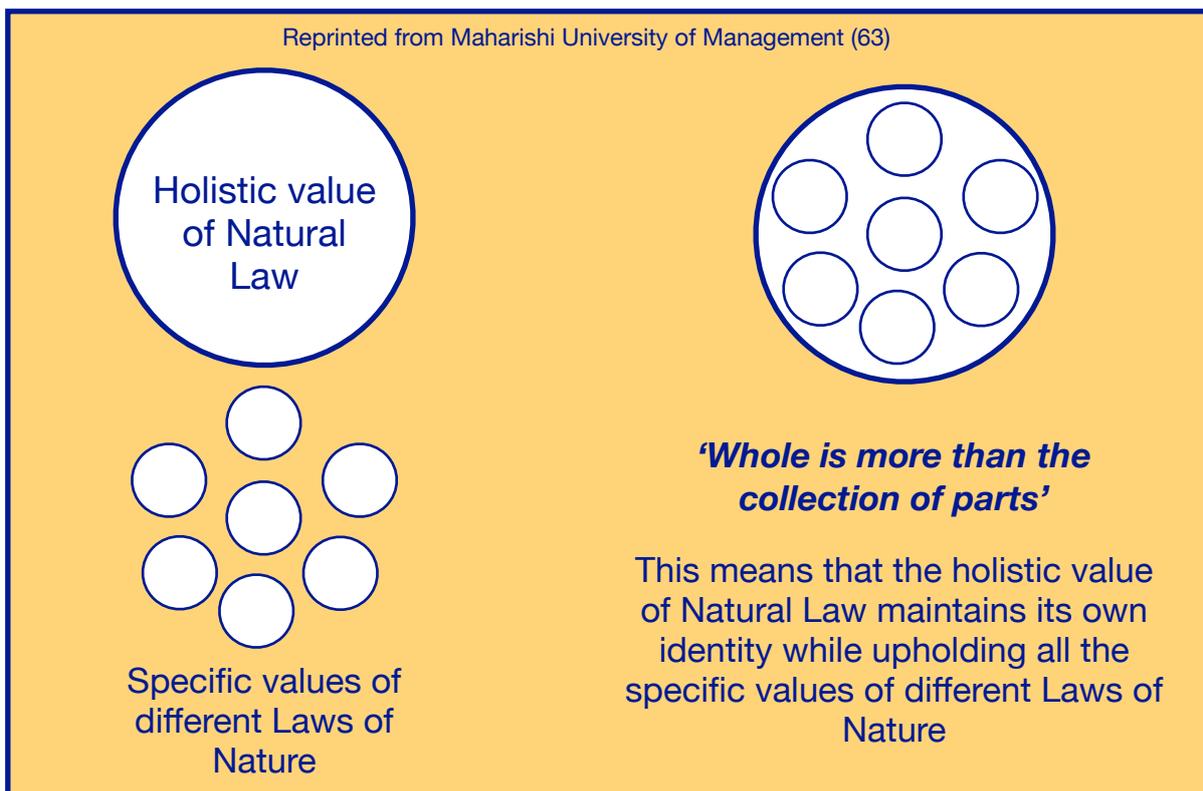
Dawkins, feeling the obvious lack of actual examples of processes that are not in practice *designed*, goes on to draw an analogy between embryology and an imagined but clearly non-existent art of self-folding origami. Immediately Dawkins places his interpretation of evolutionary theory in direct conflict with physics. If there is one thing we know for certain from the highly verified results of Quantum Mechanics and General Relativity, reality is non-local and must involve a holistic consciousness. To a physicist, the argument that evolution is entirely local is immediately suspect, the pervasive reality of fields, the emergence of local laws from universal laws is fundamental to modern physics. However it is not necessary to appeal to the physical unity of life to overturn Dawkins' arguments based on locality and the invariance of genetic code. There is a much deeper sense in which modern genetics has begun to overturn locality and also change our understanding of the genetic code.

Let us resort to some increasingly popular applications of genetic testing to illustrate this. For a few dollars, DNA testing companies will analyse your saliva and give you a breakdown of your ethnic make-up. Test results could identify the father's ancestry as English 48%, Celtic 25%, Scandinavian 22%, and Jewish 5%. The mother's results could be Celtic 58%, Scandinavian 38%, and Italian 4%. The daughter's however could be Scandinavian 50%, Celtic 32%, Spanish 14%, Italian 2%, Jewish 1%, Nigerian 1%. Any child's DNA is 50% made up of bits of the mother's and 50% of the father's DNA, yet in our example the father and mother have no Spanish and Nigerian, and the daughter has no English unlike the father. That's impossible right? Something must have gone wrong.

Almost everyone who has had genetic tests becomes puzzled by similar results, so much so that many people feel genetic testing is commercial hocus-pocus. In reality DNA test interpretation is a highly scientific process. Companies like Ancestry, MyHeritage, and 23 and Me have access to huge databases of genetic information extending to tens of millions of people. To sell their products in a competitive market they have had to refine their research methodologies and analysis. Have they got it right? Yes, they have. The rearrangement of genes throws up novel characteristics. The answer to this puzzle lies in understanding that the genetic code is in fact non-linear and non-local. Contrary to the popular conception that the genetic code is written in a linear sequence as a book is; in fact, the spatially separate (and therefore non-local)

arrangement of genetic information within the spiral helix is crucial to the way an individual's DNA expresses itself. The DNA molecule has non-local field-like properties.

At first sight, evolutionary processes look to be the result of a huge number of local interactions, but are they? Is there a model that would describe the same apparently local processes but with a captain at the helm? Vedic Science proposes that an omnipresent value of Wholeness guides evolution. Maharishi discusses the value of Wholeness with reference to Natural Law (63). Natural Law always has two values—holistic and specific. For example the growth of a crystal structure can be likened to the process of completing a jigsaw. Pieces must not only fit together, but also the local or specific interlocking process must conform to a global or holistic picture. Just as Dawkins describes evolution, crystal growth was formerly understood as a purely local or 'on-site' process where a limited number of shapes can only be joined in specific ways, these repeated patterns then generate the exterior crystal shape; but in 1974 physicist Roger Penrose (64) discovered a pseudo five-fold symmetry which was later found in an aluminium-manganese crystal alloy. This crystal has a non-repeating pattern which can only grow if the local pieces have a knowledge of a complex global structure as in the jigsaw. The specific rules governing the behaviour and orientation of incoming atomic groups in the crystal formation process have to be non-local or holistic. Penrose has since formulated a notion of space-time in which each local region has encoded or enfolded some aspect of a more general order. Experimental findings of quantum physicists indicate that such non-local or holistic laws are fundamental to all physical reality.



Maharishi draws upon Vedic Science to discuss these holistic and specific values as silence and dynamism (63). He explains their coexistence is universal in Nature from cycles of rest and activity to the need for a quiet level of administration to guide a dynamic organisation. On a more abstract level, in particle theory the global symmetry represented in the gauge field guarantees the uniform dynamical behaviour of local symmetry groups, but itself remains uninvolved (silent value) in the dynamic physical processes. In general, the coexistence of dynamism and silence within a unified Wholeness is a cornerstone of consistent unified field theories of physics. The implications of this section for evolutionary theory are clear—the notion that evolution is purely local is untenable.

Is it reasonable to assert that modern interpretations of evolution facts are in error? If they are how, did this come about within the modern scientific framework of discussion, publication, and criticism? Perhaps the answer lies in the compartmentalisation of knowledge and the specialisation of disciplines. Individual thinkers are mostly isolated by the segmented approach of modern education from ideas that would and should enrich their understanding. It is time for a grand synthesis of knowledge.

Social Darwinism

The social implications of some evolutionary interpretations are startling and influential. The absence of a God and any sense of a pervasive universal framework of law has the effect of divorcing life from moral purpose and higher goals. Our competitive and often aggressive modern society sits easily with such loose notions of Darwinian evolution often referred to as Social Darwinism. At the end of the 19th century Theodore Roosevelt was inspired by Social Darwinism to call for an expansionist, imperialist American foreign policy. Riding the popular wave of *might is right*, he lobbied for, and personally participated in, the Spanish American war that began 125 years of American involvement in global armed conflict and economic competition, allied with the desire for global democratic political reform.

Later President Franklin Delano Roosevelt instigated a program to develop nuclear weapons, President Truman authorised their use, and President Eisenhower set about developing them on a mass scale. All three were bolstered by moral arguments closely related to Social Darwinism. Oppenheimer, the father of the bomb beset by doubts, coined the idea that it was morally defensible to develop the bomb, because if the laws of science made it possible to achieve nuclear technology, it was inevitable that it would be done by someone and therefore it was better for America to do it first.

In the moral vacuum created by Social Darwinism, ideas of supremacy have taken on bizarre forms. As the hydrogen bomb was being created, nuclear scientists working in closed communities dubbed one version the *back yard bomb* because it was so

powerful that it could destroy the whole world and therefore it didn't matter where you set it off, even in your own back yard (36); thus turning survival of the fittest into annihilation of everyone.

We find the modern scientific equivalent in genetic engineering. Encouraged by the ubiquitous nature of evolution, some scientists believe that anything may be changed without endangering the fundamentals of life. They are prepared to alter all future generations of a species without regard to consequences (1, p. 39 and chap 5). In fact, *natural* evolution occurs within the constraints and safeguards of natural law, which include homeostatic mechanisms, elaborate check procedures, and feedback loops operating at every time and distance scale. DNA repair for example is carried out 70,000 times a day in each individual cell to ward off mutative processes including the effects of toxins, pathogens, radiation, etc. Whereas *man-made* genetic changes are made outside the safety net of these holistic laws—illustrating the time honoured proverb that *a little knowledge is a dangerous thing*.

The Covid-19 pandemic illustrates just how dangerous genetic editing can become. A man made virus which escaped from a lab combined with engineered vaccines are responsible for millions of worldwide deaths but the mechanisms and long term outcomes remain obscure. The pandemic has thus amply illustrated the mobility of genetic fragments and their mutagenic capacity. The safety implications are legion.

Unfortunately the dismissal of the sanctity of human life and indeed all life is one of the great losses imposed by faulty interpretations of evolutionary theory. It is a modern trend to casually dismiss discovered risks to safety and health, even if that involves a risk to children (1, p. 121). This tendency has found its full expression during the Covid-19 pandemic. Even though children are largely at not at any risk from serious Covid infection, they were encouraged, and even in some cases coerced or mandated, to vaccinate despite being at substantial risk from the resultant vaccine-induced myopericarditis. The logic used to justify this was the so-called shield argument. Adults thought that children might bring Covid home from school and therefore vaccination, whilst endangering children, would protect adults. In other words it is acceptable to endanger your children in order to protect yourself. This is indicative of a modern moral vacuum. Rendered submissive by the ideas of Social Darwinism, we are in danger of not just mutely accepting such risks but even promoting them, even though they are clearly based on immoral and erroneous precepts.

Importantly, we have seen that physical evolution occurs while life is continuously integrated with the underlying unity of all life. The dynamic and continuous process of evolution occurs at every level of life, ultimately guided by the holistic level of nature's intelligence contained in the unified level of natural law. Whether we call this the *Unified Field* as physicists do, *Consciousness* as meditators do, *Universal Truth* as

humanists might, or the *Will of God* as the followers of all religions believe, is really just a matter of preference.

The ontological distinction between these ideas is largely semantic only. Darwin's theory of evolution does not exclude the reality of an immanent God continuously involved in our life and all life. The fact that such a God's involvement proceeds according to *law* is not a reason to reject the whole notion of God. This is not different from conceptions of God's law found in the sacred books of all religions. The concept of *karma*—*as you sow so shall you reap*, or Newton's law that *every action has an equal and opposite reaction* could be construed as statements that express similar laws in completely different languages.

Our post-Darwin worldview.

All too often '*the end justifies any means*' allows financial gain and even fraud to trump all other considerations. Modern economies are centred on individual effort and *survival of the fittest*—a phrase Darwin never actually used. The moral and religious brakes to excess have been removed, behaviours such as price gouging or the exploitation of labour that should be abhorred have become commonplace and even tolerated or approved. Notions of the primacy of truth over falsehood have been rejected. Personal attacks and slander in politics, print, and social media are considered ordinary fare. Our social, ethnic and even religious relations are beset with selfish ideas of supremacy, inferiority, or nationalism often underpinned by crude ideas of intelligence or racial genetic superiority⁹. These ideas have allowed some to propose that destructive competitive struggle and social domination is inherently right. Reality TV shows have one winner only, the other contestants rendered losers, effectively downgrading the social values of sharing.

Darwinism has been used to justify the excesses of capitalism. Almost unconsciously it underpins our systems of government. It possibly inspired President Donald Trump in his call to US Governors on 1st June 2020 to say, in the face of public protests against racism and violence by the police against black minorities, "*You have to dominate. If you don't dominate, it's a waste of time*". In politics, our democratic organisations, with opposing parties set in perpetual competition whereby the opposition hounds and harries the government to ensure its failure and rejection, closely mirror the solely competitive vision of evolution that Darwin's ideas suggested to the popular imagination. It is now understood that mutualistic cooperation is in fact a better and faster evolutionary strategy (1 (p. 41), and 45). Nowhere is this more evident than in the evolution of homo sapiens—our own evolution. The defining essence of the

⁹ Evolution has been used as an excuse for the views of racial supremacists and their emphasis on elimination of the unfit. Hitler developed his misinformed racial ideas with reference to Houston Stewart Chamberlain who justified his eugenics by alluding to popular notions of Darwinism. For this we shouldn't blame Darwin, he has been misinterpreted and misrepresented.

growth of the size and complexity of society is cooperative behaviour, which we have already noted is acknowledged as driving the emergence of larger brains.

Our ecosystem is cooperative

In fact, Darwin was perhaps more insightful and cautious than many of his modern day commentators. Rather than *survival of the fittest*, the actual phrase first used by Darwin was *modification by descent*. The difference is not semantic. The first implies a constant battle for supremacy, the second a gradual process of adaptation through generations as less well adapted traits are bred out and new variations find their place, usually as a result of multiple circumstances and mutations. It is true that a battle for survival may ensue when resources are scarce or foreign invaders arrive, but this is not necessarily the norm, nor is it an appropriate model for government. The idea that scarce resources or human conflict are key drivers of evolution has not stood up to modern scrutiny (1, p. 207). Extreme circumstances tend to bring out less altruistic, personal survival behaviours, as a study of the holocaust sadly illustrates (38) ¹⁰.

The physical process of evolution is fundamentally carried on within an essentially cooperative, balanced, pervasive, and continuous bio-field (1). In fact, cooperative, mutually beneficial arrangements of many different types are the biological norm (45). Fungi enable tree roots to absorb nutrients, they also perform an intermediate role in [mutually supportive forest health networks](#). The human body contains trillions of bacteria, many of which play a vital role in digestion and other metabolic processes.

Even natural predators contribute a cooperative element to systems. The removal of wolves from Yellowstone Park in the early 1900s was an ecological disaster. The result was increased deer populations which over grazed vegetation causing erosion and loss of diversity. The reintroduction of wolves in 1995 actually revitalised the entire ecosystem of the park, despite the fact that wolves were traditionally perceived as a dominant destructive predator. In what is known as a trophic cascade, the reintroduction of a small number of wolves reduced the range and population of deer which allowed trees and ground cover to regenerate (47). This created the conditions for multiple species of flora and fauna to return or recover their numbers, simultaneously stabilising the land and rivers, illustrating the vital role of balanced diverse ecosystems

The idea of phylogenetic trees, like the *tree of life*, is highly misleading. It gives the impression that species should be considered in isolation from one another. The erroneous implication is that particular conditions led to a new species splitting off

¹⁰ Saul Friedlander's Pulitzer Prize winning work *Nazi Germany and the Jews—The Years of Extermination 1939-1945* tragically illustrates the effect of increasingly scarce resources on behaviour and morality among hitherto cohesive cultural groups. From his analysis it is clear that human competition for extremely scarce resources results in degeneration rather than evolution.

from an established genetic line at a particular point in time as a result of an identifiable event, circumstance, pressure, or mutation; subsequently evolving on a largely separate track. This is not the norm or even believed to be the common process of evolution.

Evolution is now known to be a continuous and ongoing process involving the wider epigenetic net made up by not just the environment and food sources, but also by all species interacting, each trying to maximise its reproduction, health, and well being (1, p. 61) ¹¹. The best way to do so is by exchange of mutual benefit, not by trying to restrict or monopolise the opportunities of others. There is an essential role in society for the higher caring instincts of human nature which can be guarantors of survival. These instincts can be developed and nourished through experiences of meditation (31, 39, 40, 41) and its group practice. Maharishi's elucidation of levels of collective consciousness and their integration with individual consciousness which has been highly verified (1, Chaps. 11 to 13) is instructive of the continuum of universal consciousness.

The process of globalisation has thrown up challenges to cooperative behaviour. Local processes tend to starkly illustrate the consequences of action, but global supply chains can hide them. Global systems are not necessarily beneficial to all individuals. There may be small cliques controlling which products end up in your local shops. When you find a bargain item of clothing and enjoy the rewarding primitive satisfaction of successful hunting and gathering, you may not realise that workers in a distant impoverished country are suffering and exploited as a result. You may have spent ten dollars, but the worker in a sweatshop may have only earned ten cents for that garment in hot and polluted conditions working 12 hours a day.

Moreover global cliques are seeking to control information. During the pandemic, cancellation of viewpoints and even scientific findings has become a norm. A close study of collective consciousness from a Vedic viewpoint, reveals that group practice of meditation stands in the similar beneficial relationship with society as individual meditation does with the physiology. This is too big a topic to fully develop in this article, but I have dealt with it elsewhere in depth (1, chaps 11 - 13)

The conclusion is that evolutionary theory will benefit from close study of consciousness. The techniques to accomplish this systematically and scientifically have been revived by Maharishi and others from ancient time-tested roots. They include intellectual and experiential tools with origins in the Vedic tradition. Whilst the adaptive understanding provided by evolutionary theory successfully explains species adaptation and evolution, an expanded paradigm of human evolution including the

¹¹ The exchange of mutual benefit is not just based on the material and behavioural levels of life, but also upon the exchange of genetic information. Genetic exchange is an essential part of the web of life, it is an intimate part of the process of nutrition—the gut is a hot spot for genetic transfer (42, 43).

understanding of higher states of consciousness will provide the foundation for a complete science of evolution.

The role of consciousness in science

Does Maharishi's perspective on the evolutionary process have wider implications for science? Truly revolutionary shifts in scientific understanding give rise to revolutionary technologies. Thus Newtonian science ultimately spawned the industrial revolution. Einstein opened the door to the atomic era, yet he was only catapulted to stellar fame, when his revolutionary ideas on relativity were exactly confirmed by an experiment in 1919 which measured the bending of light by the gravity of our sun. New science is only accepted as such when it is not only confirmed by experiment but also delivers a new interface to manipulate the world around us. Quantum theory and experiment revealed an intimate connection between matter and consciousness. Yet the failure of quantum theory to deliver a usable technology of consciousness, effectively sidelined the glimpse of consciousness that quantum mechanics had afforded.

In this context, we can ask what do today's physicists say about consciousness?¹² In the absence of a technology to exploit the interface between consciousness and matter, for more than 100 years the vast majority of working physicists have ignored any attempt to elucidate the nature of the observer. They have failed to include, and even sought to exclude, almost all investigation of the observer from the vast research

¹² Talking about so called decoherence theories which seek to minimise the import of the highly verified quantum measurement experiments. Physicist Brian Greene (58, p211) says:

"It's hard to imagine a more satisfying solution to the quantum measurement problem...Human consciousness, human experimenters, and human observations would no longer play a role since they (we!) would simply be elements of the environment, like air molecules and photons, which can interact with a given physical system."

It's hard to imagine a more impoverished view of human consciousness. It is even more curious that many physicists contend that the results of quantum mechanics are counter-intuitive and alien to our experience. These include the probabilistic nature of quantum reality which allows for all possible paths of a system to co-exist in an abstract non-material space until an observation collapses the wave function to single objective answer. For example, Greene (58, p.177) holds that such a reality goes against our experience, contending it is impossible to excise even momentarily the classical nature of all our experiences. Yet all of us, including every physicist, live our days weighing up alternative courses of action until at last deciding what action to take in the moment. In fact, the physical idea that we do not influence the world would not sit well with the evolutionist who sees experience as a stepping stone to a world of evolutionary change, in which humans sit in the driver's seat. Rather the quantum mechanical world chimes with the everyday world of our mind and the world of our personal experience. It is the mechanistic universe which is counter intuitive.

This situation has arisen in an educational setting that isolates the academic in his chosen specialty. The compartmentalisation of disciplines and hence knowledge has allowed conflicting views or paradigms to hold sway in spite of their incompatibility. It has allowed the theories of physics, evolution, psychology, and physiology to evolve on widely differing trajectories, whose paths, whilst often appearing to intersect, do not mesh seamlessly. In sum, it is easy for incompatible views to exist as simultaneous truths within today's academic world. A world in which the advocates of each discipline can comfortably enjoy a feeling that they hold the keys to reality, a world in which there is little pressure to look over your shoulder to other worlds.

enterprise that is modern physics. Instead, against compelling evidence, they have faithfully adhered to an out-dated worldview that was born with the advent of Newtonian mechanics—consciousness is a mere ghost in a machine. Reality is objective and not subjective.

Quietly Maharishi and others have now effectively remedied this lack of a technology of consciousness, with the development of his systematic, repeatable techniques to explore consciousness. Ground-breaking research on social indicators, the accuracy of whose results is reminiscent of key revolutionary experiments in the physical sciences, shows technologies of consciousness can potentially transform modern life¹³.

Maharishi's elucidation of ancient Vedic Science provides a technological interface between consciousness and matter capable of accelerating human evolution.

Conclusion—What does this mean for our world?

Despite significant global gains in material comfort, availability of information and communication, technology and artificial intelligence, and agricultural productivity, the world faces critical challenges in key areas: the preservation of genetic stability and inherited diversity, chronic illness and immune deficiency, climate change, regional conflict, systemic racism, arms proliferation including bioweapons, terrorism, geopolitical domination and censorship, healthcare, food and water security, refugee movements, and widespread environmental pollution.

There is still a very real fear that circumstances could go horribly wrong in a moment or even lead us back to repeat unthinkable past mistakes. The Covid-19 pandemic has reinforced this view and brought the entire human race to the brink. Yet there is determined resistance to the obvious lessons

The solution of these problems demands immediate vigorous and committed global cooperation which is sadly lacking among the family of nations. It is as if the organisation of society is held in place by a web of incoherent, limited or piecemeal relationships built up through a convoluted history of experiences and social interactions. These create a framework of social consciousness and fixed ideas, which hide the underlying field of unbounded consciousness.

In fact, models of global cooperation fail in the absence of the development of consciousness. Globalisation on its own can be repressive and divisive. Rather than acknowledging and protecting difference and diversity, it can seek to suppress it.

¹³ I do not intend to cover the extensive research on the Maharishi Effect in this article there are many books on the subject. For more information and references see my book *Your DNA Diet* (1).

Up until very recently there was a gradually growing underlying expectation of high standards in public life, a renewed sense of the sanctity of all life, a perception of the worthless nature of enmity and military adventure, a feeling for global citizenship, growth of interest in natural health and diet, care for the planet, its people, its flora and fauna, and its climate. The Covid-19 pandemic seems to have thrown up a global rejection of these values. There has been an apparent polarisation of ideas.

To reverse this trend, the basis for much needed cooperative behaviour lies in the field of consciousness. The highly verified *Maharishi Effect* explains how the evolution of individual consciousness can lead to the evolution of the collective consciousness of society and the world (1, chaps. 4, 11, 12, and 13). The Maharishi Effect—the group practice of meditation techniques—radiates such an intensity of coherence in the collective field of consciousness, even though created by small groups, that it overwhelms and resets the fundamental relationships, flexibility, and organisational structures of society. The essence of this approach to the management of society and the world is the automatic emergence of equitable cooperative behaviour, catalysed by the presence of coherence groups, which translates into faster social evolution and increased capacity to solve problems. The prospect this holds out for health, wealth, happiness, wise government, and peace has been examined elsewhere and verified by over 50 published studies (1 chaps 11-13, 48, 49, 50).

Maharishi held that the force of natural evolution has a direction towards "*all good everywhere and non-good nowhere*". Vedic literature promises that "*truth alone will triumph*". The Rig Veda explains that "*Knowledge is structured in consciousness*". We have discussed that higher consciousness is grounded in the deep silence of transcendence which is an organising power in the universe. Right now should we be seeing the emergence of knowledge purified by consciousness challenging power without pity? I have presented a hopeful vision, but progress will result if people utilise the available knowledge for good. There is always a choice.

At the present crossroads in our planet's survival, if we ignore the power of consciousness we are denying what life actually is.

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