Dagmar Eigner (ed.)

Consciousness: Cultural and Therapeutic Perspectives

Consciousness and Human Systems Vol. 2
Edited by Dagmar Eigner, Günther Fleck, Shulamith Kreitler and László Ropolyi

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Preface

The second volume in the series “Consciousness and Human Systems” that is devoted to the study of the human being in the broader psycho-bio-physical context focuses on cultural and therapeutic perspectives of consciousness. In recent years the study of consciousness has gained considerable impulse through inter-disciplinary approaches. Modulation and transformation of consciousness have been deployed for tens of thousands of years to obtain knowledge and to enhance wellbeing and health. In many societies, techniques based on non-ordinary states of consciousness have also been used to maintain ecological equilibrium.

The present volume deals with historic, social, linguistic, philosophical, psychological, biological, neurophysiological, aesthetic, and creative issues of consciousness research. According to the integrative endeavours of the authors a variety of methods have been applied and in most of the chapters not only etic but also emic perceptions have been considered. Thus, multi-disciplinarity can lead to a wider picture bringing together aspects that are usually separated by the boundaries between scientific disciplines.

The work of shamans, mediums, artists, psychotherapists, psychologists, and anthropologists constitute the main contents of this volume, exploring different techniques for the induction of altered states of consciousness and the benefits that can unfold through that.

Dagmar Eigner
Vienna, November 2011

Evolution and Consciousness: From Rocks to Musicians, Philosophers and Psychotherapists – A Long Journey

Michael M. DelMonte

Introduction

For billions of years the Earth was a barren assembly of inorganic rocks floating around in space with its "daughter" the Moon in orbit. Somehow life evolved, and later on so did consciousness. There are many "why" and "how" questions apropos the "causes" of this remarkable evolution. Whereas "how" questions are best addressed scientifically "why" questions merit metaphysical and philosophical considerations. We probably need to reflect on both the "how" and "why" of evolution.

This chapter briefly explores the phenomenon of evolution since the "Big Bang", and how evolution is relevant to psychotherapy today, especially in the Zeitgeist of a growing confidence in genetics, biochemistry and, by implication, in evolutionary psychology. Our long evolutionary journey out of inorganic matter poses many challenging questions. It is contended that Darwinian Theory can only offer a partial explanation of human behaviour and psychopathology, and that issues other than distal aetiological (i.e. bio-evolutionary) factors, namely proximate, existential, systemic, teleological and even cosmic considerations, must also inform our theorising. This contention is discussed in a very broad context by drawing on genetic, ethological, geo-physical, psychodynamic, constructivist, systemic, Western philosophical and traditional Eastern considerations.

In this chapter I begin by addressing our quest for understanding and meaning. I place this investigation in a spatio-temporal context. Then I go on

to compare proximate (or lifetime) temporal factors with distal (or evolutionary) temporal factors. This sets the stage for addressing the mind/matter debate in an evolutionary context, in which the issue of causality is central. Finally, the question of causality – both linear (dualistic) and circular (systemic) – is discussed in terms of its implications for psychotherapy practice.

Methods of Inquiry: The Search for Meaning

Scientists typically endeavour to uncover "the truth" by obliging nature to reveal her “hidden” secrets to us. This "internalist" method of inquiry (Langs & Badalamenti, 1996) in which we “dissect” the material objects of our world - be they mineral, vegetable or human matter - so that we come to understand them, has its undoubted merits, especially when dealing with the “how” questions posed by the objective world. However, this approach also has its limitations, particularly when it comes to understanding consciousness and the meaning of human subjective experience. Whilst with “how” (or scientific questions) we take objects apart in order to investigate their constitutive parts, with “why” questions we assemble our observations in order to construct meaning.

Distinctions have thus been made between the scientific, or Logical Positivist (Comte, 1855) method of inquiry typical of the natural sciences on the one hand, and those of the human sciences on the other (Oatley, 1992; Brewin & Andrews, 1997; DelMonte, 1997). Whereas the natural sciences deal with the (objective) mechanistic and non-intentional domain, i.e., the domain of “hard” facts, the human sciences are mainly concerned with (subjective) goals, plans and intentions (Brewin & Andrews, 1997). They also address meaning and the “why” domain. The search for meaning is a uniquely human endeavour which distinguishes us from other forms of life.

Comprehensive meaning is ultimately holistic and cannot simply be deduced reductively from just one perspective, e.g. solely from the biological domain. Meaning is more likely to be contextual, i.e. systemic. Systems

Theory (von Bertalanffy, 1968) and Dynamic Systems Theory (Clark, 1997; Gaussen, 2001) go beyond simple "internalism" to embrace context, and thus also take the extra-psychic and the inter-psychic domains into consideration when attempting to arrive at understandings of the human condition. A radical contextual approach should, ideally, endeavour to include all major domains of investigation in attempting to comprehend our experiences – that is encompass the inorganic, the biological, the psychological, the social and, for some, even the spiritual and cosmic domains.

Spatial and Temporal Contexts

However, it is plausible to argue that both spatial and temporal factors should also figure in any attempt to come to grips with the human condition. It has been postulated (Brown, 2002) that, with contextualism, causation should be seen as a relational process that can exist in the dimensions of both space and time. The recent upsurge of interest in evolutionary psychopathology is a welcomed attempt to extend chronologically the scope of our investigations into past influences on psychological disorders encountered today (Stevens & Price, 1996; Gilbert, 1998).

This evolutionary approach, which looks to the past to explain the present, is another valid aspect of aetiology. Thus we can discern two major branches of aetiology – one concerned with proximate (i.e. largely developmental) causes and the other with distal (i.e. evolutionary) causes. Proximate causes can be understood as ontogenetic, and distal causes as phylogenetic and evolutionary. Distal causes have been described as “ultimate” causes (McGuire & Troisi, 1998; Abed, 1998). Ontogeny is the development of an individual throughout his or her lifespan, i.e. from conception onwards. It implies an interaction between a given genotype and its changing environment, to produce an unfolding phenotype. Most psychological theorising, as in behaviourism, cognitive therapy and psychoanalysis, emphasises the importance of proximate aetiological factors in the ontogenetic,

or life-cycle, sense. Here psychopathology is seen to be due to life-events impacting on a developing phenotype with a particular genotype.

Evolutionary Psychopathology

Whilst most theorists accept the importance of such proximate (i.e. ontogenetic) causes to psychopathology, others have argued that evolutionary, that is distal, factors should not be overlooked (Stevens & Price, 1996; Gilbert, 1998a; Nesse, 1998). Darwinian Theory is applied to argue that, phylogenetically, many psychiatric and psychological disorders can be explained as evolving in past (often harsher) environments which at the time afforded them a selective advantage in certain contexts, e.g. with paranoia, anxiety and phobia where serious conflict and danger existed.

Research into, and direct observation of, animal behaviour is used to add a supportive ethological underpinning to these claims (Dixon, 1998). Many forms of psychopathology have been presented and analysed from a phylogenetic and/or ethological perspective. Thus, current maladaptive behaviours, attitudes and disorders may represent the activation of previous (i.e. paleo-ethological) adaptive strategies (Gilbert, 1998a). Many detailed examples have been given and these include depression (Price & Gardner, 1995; Gilbert, 1995; McGuire & Troisi, 1998; Nesse, 1998 Thwaites & Dagnan, 2004; Carey, 2005); manic-depressive or bi-polar mood disorders (Wilson, 1998; Price, 1998); eating disorders (Abed, 1998; Troop et al., 2003; Faer, et al., 2005), as well as a whole range of emotional states and disorders including shame, guilt, anxiety, panic, anger, social phobia, agoraphobia, hypochondriasis, acrophobia, paranoia, schizoid personality, dependent personality, sado-masochism, etc. (Stevens & Price, 1996; Gilbert,1997; Dixon, 1998; Nesse, 1998). Cognitive biases, cognitive distortions, social manipulation and psychological defences have also been described and analysed from the perspective of evolutionary bio-psychology, whereby their selective usefulness is highlighted (Dixon, 1998; Gilbert, 1998b; Gardner, 1998). For example, a depressive presentation may not only fend off further

attack when one feels socially demoted or defeated, but may also attract rehabilitative social support.

Moreover, the evolutionary perspective is not just confined to explaining current psychopathology; it is likewise used to describe the adaptive advantages of social co-operation and communication (Bailey & Wood, 1998; Gardner, 1998; Price, 1998; Gilbert, 1998b; Dixon, 1998; Cavalli-Sforza, 2000). It is claimed, for example, that submissive behaviour can be prompted by fear of harm to oneself, or by a concern for emotional harm to others (O'Connor, et al, 2000). In the context of group-living reciprocal altruism would facilitate survival. Inequity guilt, following one's own relative success, could trigger the kind of submissive behaviour that wards off envious attacks. However, evolutionary theory has been used to explain eating disorders from quite opposing, and thus contradictory, perspectives, namely as a sign of submissive behaviour (Troop et al., 2003) and as female competition for mates and status (Faer et al., 2003).

Consciousness and Ultimate Causes

Darwinian Theory has also been invoked to account for the emergence of conscious cognition, in that the evolution of consciousness in the direction of free will, as seen in humans, may have selective value (Lindahl, 1997; Arhem & Liljenstrom, 1997). Phylogenetic "learning" may lead to the type of knowledge that organisms use in unconscious cognitive processes as found in homeostasis, sleep, immune responses, body maintenance and repair. It probably has accumulated over numerous generations via natural selection. Phylogenetic learning is thus slow but relatively accurate in terms of environmental fit. On the other hand, ontogenetic learning, or developmental learning, is less accurate but relatively fast. Ontogenetic learning delivers the more conscious type of knowledge gathered over the life-time of an organism. Phylogenetic or long-term knowledge is akin to Immanuel Kant's "a priori knowledge", and life-time traditional learning (ontogenetic knowledge) is akin to Kant's "a posteriori knowledge" (Arhem & Liljenstrom, 1997). Basically,

phylogenetic knowledge (memory) can be seen to be based on Darwinian natural selection. This a priori knowledge dominates over the a posteriori knowledge acquired during our life cycles, and the whole organism is sculptured by phylogenetic learning. Popper (1990) claimed that 99% of our knowledge is a priori. It is all unconscious – and so is most of our a posteriori knowledge. Only a small part of our ontogenetically acquired a posteriori knowledge is conscious (Arhem & Liljenstrom, 1997). Thus, conscious knowledge, although impressive, is still only a very small fraction of total knowledge. For Schwartz (2000), only between 1% and 5% of mental functioning is conscious.

Darwinian Theory has, over the years, had great intellectual appeal, and has fed the imagination of many clinicians. For example, Sigmund Freud's "drive theory" and "seduction hypothesis", as well as John Bowlby's work on attachment behaviour, were ultimately inspired by Darwinian Theory (Mitchell, 1998). So was Freud's notion of "archaic vestiges" and Carl Jung's views on "archetypes". Socio-biology was also spawned in the Darwinian cradle. It can also safely be argued that B. F. Skinner's behaviour theory was, surprisingly, in the grasp of evolutionary theory. His book, "Beyond Freedom and Dignity", argued that between genetic determination and environmental conditioning there is no real free will (Skinner, 1971). One cannot dispute the impact of Darwinian Theory on psychological discourse and clinical practice (Plomin, 2001) – especially in its birthplace (class-stratified, mercantile, and worldwide colonial 19th century Great Britain) from whence it spread, especially to the (now) English-speaking parts of the world. Its explanatory power was, and still is, appealing and, for some, seductive. The view of the "survival of the fittest" was consistent with Western colonial domination and enthusiastically embraced by Nazi apologists. Apart from a period after the Second World War, confidence in Darwinian Theory grew and grew, so much so that phylogenetic (i.e. distal) factors are now being described as the "ultimate" cause of human behaviour and pathology (McGuire & Troisi, 1998; Abed, 1998), in that phylogeny helps explain ontogeny.

Is this a step too far? Can we really equate "ultimate" causes with natural selective forces operating in the past? I prefer the term "distal causes"

to “ultimate causes”. Darwinian Theory is increasingly being invoked to account, for all human behaviour, e.g. by Richard Dawkins (2006) who stated that the “natural selection” of genes “explains the whole of life” (p.116) – including consciousness. Like Birtchnell (1995), I would also prefer to exercise some caution when applying simple animal models to humans. Moreover, I would like to go further and question the hypothesis that evolutionary forces, in the strict Darwinian sense, are unquestionably the “ultimate” causes of all of our behaviour. In brief, I am questioning the view that “ultimate causes” are solely bio-aetiological. Why exclude teleological considerations? According to the Concise Oxford Dictionary “ultimate” implies “last, final, beyond which no other (cause) exists or is possible”. Ultimate causes (i.e. Aristotelian “Causes Finales”) cannot exclude teleology, which according to the same dictionary is the “doctrine of final causes, a view that developments are due to the purpose or design that is served by them”. In contrast to the British, European philosophers (with their “Continental” perspective) have tended to see evolution in Platonic idealist terms, rather than from the British “Adaptationist” (and “Analytic”) perspective (Kohn, 2004). The latter “Analytic” perspective has much in common with Comte’s (1855) Logical Positivist scientific position already referred to above. In so far as one assumes with Logical Positivism that the whole of reality can be understood solely from a scientific perspective, it can be described as a form of naïve realism.

Is Evolution Really Blind?

Clearly the phenomenon of evolution is not at all being disputed here, but only its “causes”. However, the abundance of geological, anatomical, genetic and fossil evidence supporting evolution does not necessarily imply that Darwinian Theory can account for all of it.

Is the evolution of life really “blind” as Dawkins (1976) has contended – heading nowhere in particular? Why have the inorganic atomic elements also evolved with increasing complexity in solar “furnaces” after the “Big Bang”?

Is it an innocent co-incidence that matter, like life, has also evolved in complexity – yet all of this is purportedly heading nowhere?

Evolution is multi-faceted. It is not just confined to life forms such as plants and animals, but also, prior to that, to physical matter and more recently to the realm of ideas. This "mental" evolution had to be preceded by the evolution of consciousness itself, and then by the production, selective survival and spread of useful mental concepts (also called "memes" by Dawkins). There also appear to be cultural, ethical, moral and spiritual components to evolution. Thus evolution can take place at various levels, from the inorganic concrete level up to higher levels of abstraction. Let us go back to the beginning. Why does anything exist at all?

The Primacy of Matter: A Fact?

With the "Big-Bang" circa 13.7 billion years ago four dimensional time and space as we know them, supposedly, started from point zero (Gribbin, 1999). Atomic matter also came into being ex-nihilo, probably from miniscule sub-atomic (quantum) particles. With this Big-Bang (there may have been prior ones) our universe began to evolve in complexity from (almost?) nothing, and, following the Laws of Physics, Chemistry, Mathematics, etc (i.e., The Laws of Nature), it began to take form, including our galaxy with its numerous solar systems - each with their own sun, planets and moons, and, with time, forms of life and even consciousness capable of reflecting upon the Big Bang itself emerged. When we talk about the origin of life we normally have in mind its biological beginnings and manifestations on Earth, although it has also been argued that primitive forms of life could have been "seeded" by asteroids, meteorites or comets falling onto Earth from extra-terrestrial sources. This suggestion is known as "panspermia" (Wickrama-Singh, 2001).

The public position held by many, if not most, scientists (e.g. Maynard Smith, 1966; Reville, 1996) is that life eventually emerged on Earth as the result of chemical evolution, i.e. inorganic chemicals increased in complexity and "somehow" became organic. There is little or no disagreement that

hydrogen, the first and simplest of elements, evolved into more complex elements via nuclear fusion. However, it is further argued that certain, essential to life, carbon compounds arose "by chance", and gradually developed or evolved into more complex chemicals capable of self-replication. But why should chemicals evolve in complexity by chance, or rather, from where did the laws of chemistry hail?

Just how the simpler inorganic elements evolved into more complex atoms and molecules, and then how ordinary inorganic matter became animated by a "life-force" that distinguishes living matter from inanimate chemical matter is largely unknown. Likewise, the question as to why this vital animation should have occurred at all leaves scientists guessing.

It can be argued that the biological manifestations of life as we know them could have evolved only under certain very narrowly defined physical, chemical and astronomical conditions (Matthews, 2005; Fleury, 2006; Reville, 2006; Bogdanov & Bogdanov, 2010). In other words, many complex laws of physics operated within extremely narrow parameters in order to produce and sustain our universe with its complex living matter. Even minute deviations in any one of these cosmic "Fundamental Constants" would have spelt disaster in the tentative and delicate evolution of our universe as a "home" to evolving life (Bogdanov & Bogdanov, 2010). The various physical conditions (temperature, acidity, gravity, electromagnetic field, electrostatic force, the position of the Moon relative to the Earth, etc) had to be so precise that one is left wondering if their co-existence could be "merely co-incidental". Even the relationship between these physical conditions (e.g. the ratio of the force of gravity to the force of electromagnetism), if slightly different, would lead to stars either burning out too quickly or to burn too dimly, so that in neither case life as we know it could be supported. Without the Earth's electromagnetic field solar winds would destroy life on Earth, and without volcanoes we would not have the necessary atmospheric conditions to support life. The observation that our universe in general, and the Earth in particular, appear to be so well suited and so finely tuned to support the emergence and sustenance of life has been called the "anthropic principle" (Barrow & Tipler, 1988; Matthews, 2005). It can be argued that the likelihood of all of these prerequisites coming

together simply “by chance”, and then going on to produce life “blindly”, is statistically highly improbable (Bogdanov & Bogdanov, 2010). One would have to postulate that our “special” universe is only one of millions (if not billions) of universes, in that by statistical chance all of the above criteria for the emergence of human life were met by our universe!

However, it may also be the case that the Earth’s manifestations of life represent just one range of environmental adaptation out of a much wider potential spectrum, which may exist elsewhere in our, or other, universes – as exemplified by the “extremophiles”, which exist in very inhospitable environments such as in boiling, acidic or super-saline water or in anoxic conditions.

If the origin of life itself were not problematic enough, how does Darwinian Theory account for the origin of genes, meiosis, cells, sexuality, photosynthesis and, ultimately, consciousness? For example, cells are chemically very complex. How and why did lifeless chemicals assemble themselves “spontaneously” into highly organised and functional living units – capable of sexual behaviour and of the very complex chain of chemical reactions required for photosynthesis, etc? Without photosynthesis there would be no oxygen on Earth, and without oxygen we could not exist. Moreover, how can non-conscious organic matter become conscious? From where did consciousness come or how was it actually “manufactured” by natural selection? Darwinian Theory can indeed help explain selective forces operating on existing life (e.g. darker skin-types near the equator), but cannot readily account for the emergence of life itself, nor for genes or consciousness.

From Rocks to Musicians and Philosophers: The Problem of Entropy

Evolutionary complexification operates against entropy, i.e. against the general tendency towards disorder (the Second Law of Thermo-dynamics). Organisms are described as “open systems” which can use an external source of energy (e.g. solar energy) to decrease their own entropy. Mind is seen by many scientists as only a secondary epi-phenomenon, spontaneously emergent out of

evolving biological matter as expressed by our operative brains (Pinker, 1994, 1997, 2002). In other words, for many neuro-biologists mind is the innocent by-product of the brain in action - which in turn was produced fortuitously against the forces of entropy, i.e. against the general tendency towards breakdown, death and decay (Thanatos). So with this view, life (Eros) arose casually as a purely chemical and biological phenomenon; and subsequently mind somehow became immanent from complex biological matter in just as mysterious a manner as life previously came to animate inorganic matter.

We can thus summarise the dominant view on the origins of life as follows: Despite the force of entropy inorganic matter became more complex via nuclear fusion, and somehow evolved into simple living matter (vitalisation) capable of self-reproduction (sexual behaviour); i.e. genes somehow assembled themselves, and the genetic material of one organism somehow began to undergo the complex process of meiosis to prepare sperm and ova for fusion with the gametes of another organism: And simple living matter somehow evolved into more complex forms, including those with consciousness (mentalisation), culminating in humans capable of playing music, self-reflection, inquiry into meaning, philosophising and increasingly exercising control over biological evolution via genetic engineering. But why has all this been unfolding, and why does evolution appear to move mainly in one direction, namely that of increased complexity and not also “backwards” towards increased simplicity (given that some simple forms of life are highly fecund, i.e. “successful”, in the Darwinian sense)? Is there a problem with this “Mind emergent from Matter” model?

The Primacy of Mind Over Matter?

Some authors, especially Pierre Teilhard de Chardin (1965), and Sri Aurobindo (1973) and, in his own way, Carl Jung (1958), have envisaged the above relationship the other way around; namely, that “universal mind” or “unmanifest mind” (akin to the “collective unconscious à la Jung) exists independently of matter, i.e. is transcendent, and, for de Chardin, shapes

evolution, insofar as the evolutionary process and the resultant biological diversity and sophistication reflect “universal mind”, in that life evolved to adapt to it. From this perspective, unmanifest universal or “transcendental mind” is part of a greater metaphysical reality, and is said to express itself in the evolution of life by becoming manifest to varying degrees of awareness in embodied consciousness, that is, in “personal mind”. The latter, with its individual consciousness, is also referred to as the psyche. This is another way of saying that matter is "bathed" in universal (or transpersonal) mind - rather than mind being solely confined to living (brain) matter. This is a “top – down” or “collective to personal” explanation consistent with Jungian psychology, and with the cosmic causality of the ancient Greeks who postulated a form of divine design to their Cosmos.

Sheldrake (1988) with his “extended mind” hypothesis offers a similar view to that of transpersonal mind. He postulates the existence of “morphic fields” around the brain, i.e., mind beyond the brain, as well as mind between brains, and explains the latter phenomenon by means of Quantum Physics by using the analogy of the continuing quantum “entanglement” of systemically related sub-atomic particles even after they have been separated. Sheldrake also sees “morphogenetic” (form giving) fields as being primary to both energy and matter, and thus such fields act like “blueprints” in the expression of matter – including biological matter.

With the above perspectives one can argue that structural and neurological differences between units of evolved and organised matter (i.e. between organisms) reflect their level of ability to access aspects of this “universal” mind. Van Lommel (2010) uses the concept “non-local” consciousness in this context, which is an extension from Quantum Physics of the construct “quantum non-locality”, to explain influence between separated objects over distance. Just as radios and televisions do not actually create words, music and images but rather, when tuned into them, can capture and relay them, likewise organisms may differ neurologically in their ability to tune into the “mental sea” in which they are bathed, and relay (express) different aspects of it, including art, classical music, mathematical formulae and philosophical concepts such as eternity and infinity. Bio-neurological

evolution from this perspective would thus be characterised by increases in attunement with both the physical environment and the "mental sea" (largely unconscious) in which life is evolving. With this model humans are seen to excel in this attunement to, and personalisation of, "non-local mind" compared with simpler life-forms.

Another way of expressing the above is to consider "non-local consciousness" as an important part of our non-physical environment. Adaptation to this mental environment via the evolution of personal consciousness would be advantageous. Developing the neurological sophistication to do so would thus be beneficial. Hence, the wide range of psycho-neurological complexities in species that we witness today could be explained, in part, as an evolutionary adaptation to the unmanifest mental environment, by gradually rendering it more conscious. Whereas simpler forms of life are primarily adapted to their physical niches, social animals in general, and humans in particular, also show evidence of adaptation to the "mental sea", with its social and (for humans) aesthetic and spiritual domains. Once we humans evolved the prerequisite neurological structures we were able to "tune into" the truths of mathematics, physics, chemistry, music and so forth. Our sophisticated sense of aesthetics and morality sets us apart from other forms of life. We may not be the only beings in our universe to have achieved this.

From Matter to Culture: A Complex Journey

However, when we look at life solely through the lenses of mainstream evolutionary theory then diverse cultural phenomena such as music, painting, philosophy, poetry, literature, mathematics, architecture, etc., are just envisaged as by-products of the complex workings of human brains which, as already mentioned, purportedly developed via "blind evolution" (Dawkins, 1976). Put differently, human life and all its cultural manifestations are an "accident" of bio-chemical evolution and have no a priori meaning per se. With this radical materialist model there is an implied primacy of matter over

mind, i.e. mind is matter-made - with our “man-made” mind being its ultimate expression – not penultimate to any transpersonal reality. Moreover, from Dawkins’s neo-Darwinian perspective spiritual values are just social meme-correlates, and like all other cultural memes, are purely functional and are thus devoid of any intrinsic value as such (Hogan, 2008).

Theories of biological evolution are based on the environmental selection of the fittest genes. Such selection is not seen to be influenced by any ulterior purpose. Dawkins's (1976) view of the “selfish gene” popularises this approach. Genes survive only for the sake of survival – via sexual and natural selection. But why do “selfish” genes “need” or “want” to survive? Moreover, it is not just individual genes but whole genotypes, or rather phenotypes (i.e. complex systems), which are selected or perish. Fitness at the level of a family or group (social cohesion) can also be subjected to selective pressure (O’Connor, et al, 2000). The behaviour of a complex system cannot be explained by only analysing its parts, and certainly not by reducing one’s focus to just one component such as genes. When a system reaches a new point of complexity via evolution, unpredicted novel behaviours appear to emerge spontaneously which are greater in sophistication than that shown heretofore by the sum of its parts (DelMonte, 1996). Could it be that rather than “selfish genes” using bodies to reproduce themselves, organisms use genes to this end (Noble, 2006)?

When one examines the evolved complexity and sophistication of animal and human behaviour (including altruism, respect, compassion and affection), the world’s cultural achievements and the more profound archetypal symbolisation associated with the major religions, wisdom-traditions and philosophies of the world, then it is very parsimonious indeed to put all of this down to some unprompted evolutionary by-product of “selfish genes” as the advocates of biological primacy postulate.

Even at the animal level (especially with social insects, birds and mammals) the detailed intricacies of social behaviour, of metamorphosis and of very complex polymorphous life cycles (sometimes linked to very long distance migrations as with the monarch butterfly), as well as of behaviours such as mimicry, deception, inter-species exploitation, inter-species partner-