"The future has an ancient heart"
CARLO LEVI

Pari *Perspectives*

Ideas in
Science, the Arts,
Spirit and Community

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Re-enchanting the World

Pari Perspectives is a quarterly journal published annually in September, December, March and June by The Pari Center.

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Welcome to the first issue of Pari Perspectives

Over the years we've had so many interesting people contribute to the Pari Center events with their engaging and thought-provoking presentations that we wondered how we could capture these talks and give a wider audience access to them. From our discussions the idea of a Pari Center journal emerged.

Pari Perspectives is to be a quarterly journal (September, December, March and June) with the first two issues of each year (September and December) dedicated to the two major events that the Pari Center runs annually—one in June, which has a Jungian theme, and the second in September, which has more of a focus on physics and philosophy. This issue of *Pari Perspectives* takes as its theme ***Re-enchanting the World.*** Our presenters at the June event have generously contributed their essays and, in the case of Richard, poetry to this issue: Richard Berengarten, Andrew Fellows, Roderick Main, Shantena Sabbadini, and Yuriko Sato.

In addition, we have included a piece by the late Dr M.S.A. Sastroamidjojo, an Indonesian physicist who had a long correspondence with the late F. David Peat, the inspiration for the Pari Center. He writes of the Javanese Shadow Puppets and it seemed to fit our *Re-enchanting* theme very well.

In each issue we hope to include an essay by David Peat, who was a prolific writer and left behind numerous published and unpublished essays and articles.

And lastly, we'll have a local story on such topics as the community, the environment, the aging population, the challenges of living in a fairly remote village, and so forth. In keeping with our theme of *Re-enchanting the World*, Carlo Barbieri writes of a local pilgrimage/tourist project that came about following the discovery that four local monasteries, dating from medieval times, align with the polygon that forms part of the Ursa Major constellation.

We encourage our readers to send in their own contributions to the journal. Our focus will be on the subjects that we explore at the Pari Center; science, religion, spirituality, society, psychology language, and the arts. The themes for our next three issues are *The Quest for Wholeness* (December), *Our Changing World* (March), and *Communication/Perception* (June). Write to us at pariperspectives@paricenter.com for a copy of our Guidelines for Contributors. Anyone wishing to comment on the journal or the individual contributions can write to us at the same address. You could indicate whether or not you wish your correspondence to be published.

Kristina Aleksandra Janavicius and Maureen Doolan

The Pari Center

F. David Peat and Maureen Doolan - *Founders*
Shantena Augusto Sabbadini - *Director*
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The future has an ancient heart
CARLO LEVI (1902-1975)

*The role of an effective leader, policy-maker, organization—or even of a village like Pari—is not to aim for some pre-conceived goal, or obey a pre-set mission statement, irrespective of the terrain it encounters. Rather it is to navigate within this fluctuating landscape and find the place where one is supposed to be—the right place at the right time. This means being open and highly creative. It means operating with sensitivity and courage. I coined a term for this—*Gentle Action*. It expresses an action that is not imposed from outside but emerges out of the system itself in a gentle and highly intelligent way.*

F. David Peat quoted in *On Soul and Earth: The Psychic Value of Place,* Elena Liotta

One of David Peat's initial feelings on arriving in Pari was that the village was a container, a safe haven. The same families had been living there for centuries leading a traditional life, tending their vineyards and olive groves and taking care of the land.

He wrote: 'When I first visited Pari, in 1994, I was struck by the rather bizarre reflection that I was somehow living in the future. The village itself was at least 800 years old and, in essential ways, the rhythms of life had changed very little over the centuries. When, in 1996, I returned to live permanently in Pari this intuition persisted: that there was something of great value in this community that could be carried into our common future.'

It seemed to him the perfect quiet and peaceful environment from which to pause and find time for thought and contemplation. Also, where people could have the opportunity to meet in small groups for several days to make an in-depth exploration of ideas and themes about which they felt passionate. From within this beautiful and ancient site, he could create a place where people could express themselves freely within the safe atmosphere of a vessel. The Pari Center was born.

'These meetings,' wrote Peat, 'are not designed to exhibit one's intellectual fireworks, but rather to engage in mutual exploration of particular themes, not only simply from the perspective of "new ideas" but also as they related to questions of ethics, values and society. Underlying each meeting will be the sense that this discussion is taking place within an environment that has sustained a strong social meaning for over 800 years.'

For the history and philosophy of The Pari Center, or for information on Pari Center events visit www.paricenter.com

> **"Whoever is devoid of the capacity to wonder, whoever remains unmoved, whoever cannot contemplate or know the deep shudder of the soul in enchantment, might just as well be dead for he has already closed his eyes upon life."**
>
> **Albert Einstein**

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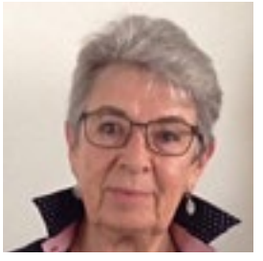

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Letter from Dott.ssa Alessandra Biondi, Mayor of the Municipality of Civitella Paganico

I am keen to express in the pages of this journal a special thanks to all members, scholars and professionals who have worked or are working on activities related to the Pari Center and the Cultural Association of Pari Networks. I thank also all those who have had the opportunity to visit our community through the Pari Center, which is based on the studies and teachings of the 'enlightened' professor, David Peat.

I got to know the Pari Center and its activities, promoted by the Peat family, about five years ago during my first government mandate. Knowing that one of our boroughs was, and continues to be, the focus of so much commitment and cultural/scientific initiatives has been a flattering discovery and a source of pride for all of us.

To the people who live in the beautiful village of Pari, and to the village association Sette Colli, goes the great merit of having welcomed, 20 years ago, this project of David Peat's; a project that led him to choose a small village in the high Maremma, outside of the more famous and popular tourist destinations of Tuscany, and to make it a prestigious venue for conferences and a popular destination for periods of international study.

I feel that all of us have the task of nurturing this project today more than ever. We all recognize the importance of keeping alive our small communities, which in recent decades have risked being depopulated, and the Pari Center is one of the many faces of sustainable tourism. The intention of the municipal administration is to continue to facilitate the initiatives carried out by the Pari Center, not only by making available the premises of the Palazzo that will soon be completely restored, but also creating opportunities to meet together and find new common horizons that promote the projects of the Pari Center, which give not only Pari but our comune an opportunity for worldwide visibility. Our *comune* is deeply grateful to David Peat for having begun this ambitious project and to Eleanor and Maureen for so tenaciously continuing what he set in motion. We wish them, together with all the collaborators, success with this new initiative—*Pari Perspectives*.

Alessandra Biondi

Dott.ssa Alessandra Biondi is the Mayor of the comune of Civitella Paganico, which encompasses six small villages in the high Maremma region of Tuscany, of which Pari is one. Dott.ssa Biondi was elected for a second term as mayor last May.

Opposite page: views from Pari


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"How glad I am to be able to roam in the wood and thicket, among trees and flowers and rocks ... in the country, every tree seems to speak to me, saying, 'Holy! Holy,' in the woods, there is enchantment which expresses all things."

Ludwig van Beethoven

The Sense of Wonder: Being Connected with the Enchanted World

YURIKO SATO

Marine biologist and author of *Silent Spring*, Rachel Carson, wrote in her last book, *The Sense of Wonder*, that she wished for each child to be gifted with a sense of wonder so indestructible that it would last throughout life as an unfailing antidote against the boredom and disenchantment of later years. The sense of wonder is a vital sign of psyche, animated and touched by the numinous life force of nature to which it belongs. Without the sense of wonder, our culture would be deprived of art, spirituality and even science, while individually we would lack any meaningful experience in life. In this article I explore the sense of wonder as the key to our connection with the enchanted world.

Nature

Japanese culture is rather well-known for its appreciation of nature, expressed in traditions such as Ikebana (arranging flowers), gardens and the tea ceremony. However, the Japanese did not even have a word for 'nature' until the 19th Century. Japanese scholars took great pains to find a word for it when the Western concept of nature had to be introduced to Japan. In the *Oxford English Dictionary*, 'nature' is defined as '*the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations*.' The Western notion of nature has a great emphasis on the 'non-human' and clearly opposes nature to humans and human interventions. It seems that the Japanese did not see nature as such an objective entity, and therefore there was no word for it.

Jungian analyst Erich Neumann states in his book, *The Origins and History of Consciousness,* that the evolution of consciousness is the peculiar achievement of Western man. Attaining this consciousness is symbolized as the act of a young hero slaying a dragon. The hero symbolizes ego consciousness and the dragon could be understood as the Great Mother, nature, and everything in the unconscious. This kind of consciousness was indispensable for the establishment of natural science. However, its strong differentiating mode severed our connection to the natural world of which humans used to be a part. The world has thereby become largely disenchanted.

Science

The advancement of science and technologies is normally considered the main cause of such disenchantment, and we assume that science and religion/spirituality are antagonistic to each other. However, the geniuses of the Scientific Revolutions in the 16th and 17th Centuries, such as Copernicus, Kepler, Galileo and Newton, did not try to study natural phenomena simply with a 'scientific' and 'rational' attitude as understood by us in the 21st Century. They were seeking knowledge of nature in order to know the plan of the Creator, which is engraved in the works of God, and to praise His glory. Their motivation to establish scientific

theories was strongly fuelled by their eagerness to know God's intention. Of course, their new scientific discoveries changed the accepted Judeo-Christian understanding of the universe, and the resulting new paradigm prepared the stage for the Enlightenment and the embracing of rationality. However, it is worth noticing that these scientific discoveries originated in religiosity—in the sense of awe of nature as God's creation. The sense of wonder can be independent of religiosity, although it is sometimes indistinguishable from the sense of awe. We have spontaneous feelings of surprise, joy, fascination or admiration when we encounter something extraordinary. Feeling, emotion, and the senses were indispensable for those great discoveries. Carson too emphasised the importance of feeling and emotions over merely knowing facts:

> *(I)t is not half so important to know as to feel. If facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow. (*The Sense of Wonder, *Rachel Carson, p.56)*

Something Infinite

In 1936, a schoolgirl named Phyllis wrote a letter to Albert Einstein, asking him, '*Do scientists pray, and what do they pray for?*' His answer was not straight, but it was honest:

> *Everyone who is seriously involved in the pursuit of science becomes convinced that some spirit is manifest in the laws of the universe, one that is vastly superior to that of man. In this way the pursuit of science leads to a religious feeling of a special sort, which is surely quite different from the religiosity of someone more naive.*

The Swiss psychiatrist and polymath, C.G. Jung, said in his autobiography *Memories, Dreams, Reflections* (1989, p.325), '*The decisive question for man is: Is he related to something infinite or not? That is the telling question of his life.*' Psyche is the organ to sense this 'something infinite,' i.e., something too great for human comprehension. The pursuit of science is looking more and more deeply into those mysteries in nature. Scientists unavoidably touch this 'something infinite' in their pursuit and, as Einstein said, it could lead to a religious feeling at the very deepest level.

Shinto—An Example of the Enchanted World Today

Shinto is Japan's indigenous religion, and is often referred to as animism—the idea that all beings have spirits. However, most Japanese seldom think of Shinto as a 'religion,' for it is more than that. Shinto has permeated everyday Japanese culture and customs as a part of tradition, and is deeply embedded in the ideas and attitudes of Japanese people and their way of doing things. Shinto cannot be talked about separately from nature in Japan. Japan has a wide variety of geographically diverse regions comprising seas, rivers, mountains, valleys, and plains. In addition, forests cover nearly seventy percent of the entire landmass. The climate is generally temperate, having four clearly defined seasons. The Japanese archipelago is situated in the path of typhoons and in a geologically unstable region at the convergence of four tectonic plates. This means there are frequent volcanic eruptions and earthquakes. Given these environmental conditions, in many ways nature in Japan is dynamic and potent—very alive and constantly

changing. It is not hard to imagine that people on the Japanese archipelago have developed a sensitivity towards nature, flora and fauna, seasonal cycles and patterns, and their sudden and sometimes catastrophic disruptions.

Shinto has its roots in prehistoric Japan, about 15,000 years ago. In the Jômon Period (from 15,000 until 2,300 years ago) a hunting, fishing, and gathering culture flourished. The Jômon life style was a very unusual case in the history of humankind. Normally it was with the advent of agriculture that settlement began, but it was not so with the Jômon people. Although they lived by hunting, fishing and gathering, they formed settlements as they were reliably provided with an abundant supply of food from the forests, rivers, and seas. This single form of civilization continued for more than 10,000 years. In such a rich natural environment, the Jômon people seem to have noticed visible and invisible signs of a numinous, life-generating force at work in nature and sharpened their sensitivity to them. They had great respect for that force. This was the root of Shinto, and remains its essence.

In the 6th Century, Buddhism was introduced to Japan. In Buddhism, nothing exists independently; this is a core teaching. The existence of anything depends on the existence of many other things, and if one of these other things changes, a different constellation emerges. This is called *dependent origination*, *(inter)dependent arising*, or several other similar expressions. Moreover, everything in nature, whether living or inanimate, even mountains, rivers, grasses, trees—all have Buddha nature. These Buddhist views had no conflict with those of Shinto. They syncretized and transformed each other. They formed the foundation of the Japanese view of the natural world before the concept of nature was introduced.

The Western concept of 'nature' was translated into Japanese as *shizen* 自然, which was adopted from an already existing Chinese word *zìrán* 自然. The *Tao Te Ching* appears to be the earliest writing that contains the word *zìrán* 自然, 'so of itself,' meaning that something emerges spontaneously and transforms naturally. The Japanese perception of the natural world can be grasped through this original meaning of the Chinese word. According to a Japanese scholar and historian of Chinese philosophy, Mitsuji Fukunaga, this view is connected to the worldview in which everything in the world, including humans, spontaneously emerges by itself and undergoes transformations. This allows the further view that all things have one and the same origin. Nature is experienced not just as inert matter, but as something sentient, i.e., as something which is endowed with life, spirit, or soul. It gave birth to the philosophy of 'living together,' not only with humans but with everything other-than-human.

Japan is now a so-called developed country, and yet Shinto, together with Buddhism, has seeped into people's everyday life. It is just one of many other examples which show that the enchanted world can exist even today, without conflict with modern science and technology. It is very close to the Platonic idea of the *Anima Mundi*, the World Soul: The world is a single living being endowed with a soul and intelligence, and all its parts share the same soul, which is an intrinsic connection between all living things on the planet. This intuition is found in many other traditions and philosophies, such as in the Brahman-Atman of Hinduism, the Buddha-Nature in Buddhism, in the thoughts of Hermetic philosophers, and the Gaia theory of James Lovelock and so on.

Connection— Sense of Wonder

The sense of wonder is a vital sign of psyche, which shows that psyche is alive. What does it mean, 'psyche is alive'? When we think of the body's vital signs, such as temperature, breathing, heartbeat, etc., they all show that the body is dynamically sensing and continuously responding to an ever-changing environment inside and outside. That is the body's aliveness. Can we think of psyche's aliveness as something similar? Could the sense of wonder be a sign that psyche is acutely sensing and dynamically responding to both the inner and outer worlds? Just as we have the expression of 'touching a chord' with someone, could we think of the sense of wonder as a resonance when a chord of psyche is touched? In order for such a resonance to occur, the instrument must be attuned. Staying attuned is not a static process, but dynamic, like the body's homeostasis. This dynamism is psyche's aliveness, and the sense of wonder is a sign that psyche is alive and 'sound.'

The capacity for this sense of wonder may vary between individuals and the stages of life. Children are full of it but, as Carson pointed out, in many cases this sense is dimmed in adults. This sensitivity, like any other, also depends on our state of mind. If we are mindful, or pay special attention, we sense more. Our modern consciousness, with our one-sidedly rational attitudes and constantly-busy minds,

stifles the sense of wonder; it leaves our lives filled with the mundane, leading to boredom and disenchantment.

There is an important factor in children's innate ability—something to do with smallness. When we adults think of something extraordinary, we tend to think of something big and special. However, beauty is also found in small things. Sometimes it is precisely because of the smallness of something that we can be struck by the sense of wonder. Carson pointed this out beautifully:

> *Many children, perhaps because they themselves are small and closer to the ground than we, notice and delight in the small and inconspicuous. With this beginning, it is easy to share with them the beauties we usually miss because we look too hastily, seeing the whole and not its parts. Some of nature's most exquisite handiwork is on a miniature scale, as anyone knows who has applied a magnifying glass to a snowflake. (*The Sense of Wonder, *Rachel Carson, p.76)*

We adults tend to miss small things, details, and so does our modern consciousness. In the Western mind, things are judged, analysed and categorized, but not so much so in the Eastern tradition. For instance, the *I Ching* is the outcome of records of countless associations and occurrences, over millennia. Each observation, no matter how big or small, common or rare, was recorded without being analysed or categorised. For instance, an emperor's death, the singing of a bird in the royal courtyard on the same day, and the withering of a certain tree during the same year were all assigned equal significance, regardless of their apparent importance. Among such observations, made like the sense of wonder without judgement or analysis, certain patterns emerged and were grasped.

Life, Light, Consciousness

Our bodily sensory organs have receptors, and those receptors receive molecules, light, heat, pressure, sound waves and so on. What is psyche receiving when it is touched? In the Shinto view, everything emerges through the numinous life-generating force in nature. In Buddhism, everything is endowed with Buddha nature. The *Anima Mundi* is permeated with one soul. In those worldviews, everything in this world stems from the same life principle and the world is formed out of those countless parts. It is dynamically maintained as one whole world, just as a body is organically formed out of trillions of cells and functions as a whole. I wonder if each individual being acts like a cell of the whole world, sensing and resonating with this primal life principle in itself and in others, as many cultures and philosophies seem to have grasped intuitively.

Life is very hard to define, and it seems that even science cannot give a satisfactory definition. In the view of analytical psychology, symbols are often the best, sometimes the only possible expression of what it is that psyche grasps. Some things cannot be expressed by anything but symbols. Life is symbolized as light in many cultures. For instance, Easter has its roots in the ancient Spring festival which celebrates life's coming back after winter. In Christianity, life's returning was overlaid with the resurrection of Jesus. The Easter Vigil is held in the hours of darkness between sunset on Holy Saturday and sunrise on Easter Day. I once participated in the Easter Vigil at a church in Beckenried, a small Catholic village in Switzerland. In the total darkness, a new Paschal candle was blessed, baptized and lit. Then all the other candles were lit and the interior of the church was illuminated all at once. In this context, the candlelight in the Easter Mass could also symbolise consciousness.

In Buddhism, all suffering stems from our worldly desires. We become attached to those worldly desires and suffer from those attachments. Such a state of mind is described as 'ignorance.' It is called, *mumyô* 無明. It literally means 'no light.' It seems to me that losing the sense of wonder, being blind, deaf, and numb to what is beautiful and awe-inspiring, is indeed 'ignorance' and can be likened to 'no light.' Inability to see the light is blindness of psyche and thus unconsciousness, i.e. not knowing the truth of life, or not recognising beauty. Perhaps this is why the word 'enlightenment' also has 'light' in it. In Buddhism, enlightenment does not mean acquiring some extraordinary knowledge—it is nothing like Archimedes' 'Eureka!'. It seems to be a rather unexciting, very calm eye-opening experience. It is said to be 'becoming aware of things as they are.'

In many cultures, and among some thinkers such as Paracelsus, the idea that there is a certain wisdom inherent in nature has arisen intuitively and been expressed as the *Lumen Naturae*, the light of nature, inner light, or hidden light in matter and so on. The connection between life, light, and consciousness seems not to be just symbolic. In a very new field of science, neurophotonics, researchers have been able to detect photon emissions from life activities.

The faint glow is so elusive that it can be seen only with the most sensitive detectors. However, it is becoming more evident that all living beings emit light. The *Lumen Naturae*, or the wisdom and consciousness in nature, seems to be not just our projection. I wonder if this light, which every living being has, is something to do with consciousness.

Magic at the Beginning

Can we, with our modern consciousness, re-enchant the world which we have largely disenchanted? In his essay 'Archaic Man,' Jung said that every civilized human being, however high his conscious development, is still an archaic man at the deeper levels of his psyche. 'Archaic' does not mean primitive, but primal or original. The archaic is a beginning, said R.J. Konzljanič in his contribution to *The Archaic: The Past in the Present*. Hermann Hesse wrote in his poem 'Steps,' *For every beginning has a specific magic / That nurtures life and bestows protection*.

I would like to propose understanding the life, light, and consciousness in nature which I have been talking about as the magic at the beginning of the world and at the beginning of each one of us as a part of it. That is the intrinsic connection between all; we have not lost this magic. In our time, there is a great emphasis on individuality, but it is also essential to acknowledge that we are all connected and living together, and that we are all in the great cycle of life as a whole. The sense of wonder is the living psyche's vital connection to the enchanted world.

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Re-enchanting the World through Myth and Synchronicity

RODERICK MAIN

Most of the content of this paper has been adapted from a book chapter published as 'Myth, synchronicity, and re-enchantment' in L. Burnett, S. Bahun, and R. Main (eds.) Myth, Literature, and the Unconscious *(London: Karnac, 2013), pp. 129-146.*

The Disenchantment of the World

'The fate of our times,' wrote Max Weber (1864-1920), 'is characterized by rationalisation, intellectualisation and, above all, by the "disenchantment of the world"' (1919, p. 155). For Weber disenchantment (*Entzauberung*, literally 'de-magification' or 'loss of magic') entailed several things: that there are in nature 'no mysterious, incalculable forces' and therefore that 'one can, in principle, master all things by calculation'; that it is impossible to know anything beyond the empirical world and therefore metaphysics is impossible; and that one cannot derive values from facts and therefore questions of meaning are beyond the scope of science (Weber 1919, pp. 139-146; Asprem 2014, pp. 32-40). Furthermore, Weber argued, since empiricism and reason provide no evidence for the claimed transcendent realities and values of religion, commitment to religion entails abandoning science and reason, making an 'intellectual sacrifice' (Weber 1919, p. 155; Asprem 2014, pp. 36-37). The Weberian scholar Lawrence Scaff elaborates on some of the problematic implications of this disenchanted view of the world:

> *The disenchantment thesis holds that modernity represents a loss of the sacred sense of wholeness and reconciliation between self and world provided by myth, magic, tradition, religion, or immanent nature. It ushers in the disruptive sense of disengagement, abstraction, alienation, homelessness, and the 'problem of meaning' that begins to gnaw at the vital core of modern experience and social philosophy. (2000, p. 105)*

Jung, Myth, and Re-enchantment

Where Weber described and explained the disenchantment of the modern world, C. G. Jung (1875-1961) actively sought to remedy it through bringing about a re-enchantment, and one of the principal ways in which he tried to do this was through his theory of myth. His theory interprets myths positively as means by which the unconscious, specifically the collective unconscious, can reveal itself to consciousness. Thus the myth of the hero, discussed at length in Jung's *Symbols of Transformation* (1911-12/1952), reveals unconscious structures and processes of the psyche. As Robert Segal summarises:

> *[T]he myth of the hero symbolizes at once an archetype and, even more, the psychological life cycle. The birth, childhood, and adolescence of the hero symbolize the emergence and development of the ego and ego consciousness, which is consciousness of the difference between oneself and the external world. The adulthood and death of the hero symbolize the return of the ego to the unconscious and its reintegration with the unconscious to form the self. (1998, p. 145)*

Attending to myths and mythic motifs, whether in poetry, novels, films, and art, or in religion and ritual, or in dreams and other forms of personal fantasy, enables one to integrate into consciousness the revealed contents of the collective unconscious, including the instinctual energy bound up in these contents, thereby both animating the psyche and furthering the process of self-realisation that Jung termed individuation (ibid., pp. 17-19). In this way the enchanting world of myth bestows meaning and can again be taken seriously by modern individuals. Myths, therefore, are of the utmost importance from a psychological point of view.

However, as Segal notes, Jung's theory of myth—at any rate, his early theory of myth— falls short of a re-enchantment of the world. For in this process of psychic revelation the external world acts only as a screen onto which the collective unconscious contents are projected. The inner psychological meaning of myths is appreciated precisely because these outer projections are withdrawn, that is, to the extent that one realises the myths refer not to the outer physical world but to the inner psychic world. As Segal summarises the implication of Jung's theory of myth:

> *Myths for moderns do not function to connect the inner world with the outer world, which remains impersonal and mechanical. Instead, modern myths function to connect—better, to reconnect—moderns to the inner world. Modern myths still provide meaning, but that meaning now lies entirely within humans rather than also within the world. (Ibid., p. 19)*

Segal suggests that for Jung the world served only as a middleman, which could be happily dispensed with if the contents of the collective unconscious could be revealed and encountered more directly, as arguably they can through the analysis of dreams or by the process of waking fantasy that Jung called 'active imagination.' Such an approach to myth might restore inner meaning but not the 'sacred sense of wholeness and reconciliation between self and world.' Jung's strategy for a fuller sense of re-enchantment of the world depended on a feature of his psychological model that he did not develop in detail until late in his life: his concept of synchronicity.

Synchronicity

Briefly, synchronicity describes and attempts to explain coincidences in which, for example, a person's dream or thought is matched by something that happens in the outer world, without it being possible that either event could have caused the other. Such coincidences can be experienced as especially meaningful and prompt one to wonder whether something more than mere chance may be involved. Jung defined synchronicity in a variety of ways. Most succinctly, he defined it as 'meaningful coincidence' (1952b, par. 827) or as 'an acausal connecting principle' (1952b). More fully, he defined it as 'the simultaneous occurrence of a certain psychic state with one or more external events which appear as meaningful parallels to the momentary subjective state' (ibid., par. 850).

Jung recounted his best-known example of synchronicity in his 1951 Eranos lecture 'On Synchronicity':

> *My example concerns a young woman patient who, in spite of efforts made on both sides, proved to be psychologically inaccessible. The difficulty lay in the fact that she always knew better about everything. Her excellent education had provided her with a weapon ideally suited to this purpose, namely a highly polished Cartesian rationalism with an impeccably 'geometrical' idea of reality. After several fruitless attempts to sweeten her rationalism with a somewhat more human understanding, I had to confine myself to the hope that something unexpected and irrational would turn up, something that would burst the intellectual retort into which she had sealed herself. Well, I was sitting opposite her one day, with my back to the window, listening to her flow of rhetoric. She had had an impressive dream the night before, in which someone had given her a golden scarab—a costly piece of jewellery. While she was still telling me this dream, I heard something behind me gently tapping on the window. I turned round and saw that it was a fairly large flying insect*

> *that was knocking against the window-pane in the obvious effort to get into the dark room. This seemed to me very strange. I opened the window immediately and caught the insect in the air as it flew in. It was a scarabaeid beetle, or common rose-chafer (*Cetonia aurata*), whose gold-green colour most nearly resembles that of a golden scarab. I handed the beetle to my patient with the words, 'Here is your scarab.' This experience punctured the desired hole in her rationalism and broke the ice of her intellectual resistance. The treatment could now be continued with satisfactory results. (Ibid., par. 982)*

In his essay 'Synchronicity: An Acausal Connecting Principle' (1952b), published the following year, Jung provided an amplification of the symbolic meaning of the scarab beetle:

> *There [...] seems to be an archetypal foundation to [this] case. [...] Any essential change of attitude signifies a psychic renewal which is usually accompanied by symbols of rebirth in the patient's dreams and fantasies. The scarab is a classic example of a rebirth symbol. The ancient Egyptian* Book of What Is in the Netherworld *describes how the dead sun-god changes himself at the tenth station into Khepri, the scarab, and then, at the twelfth station, mounts the barge which carries the rejuvenated sun-god into the morning sky. (Ibid., par. 845)*

The incident showed, for Jung, that psychic and physical events could parallel one another acausally but meaningfully, and that the imagery that provided the focus of the coincidence could be archetypal, that is, it could express a part of the mind that 'is identical in all individuals'—what Jung referred to as the 'collective unconscious' (ibid., par. 840). Beyond this, however, the episode can also be shown to have implications for Jung's theory of myth and to play a crucial role in his attempt to re-enchant the modern world.

> "I have plenty of machinery around me; what I really need is a more enchanting world in which to live and work."
>
> **Thomas Moore, *The Re-enchantment of Everyday Life***

Synchronicity, Numinous Experience, and Re-enchantment

In an interview with Mircea Eliade (1907-1986), Jung connected synchronicity to numinous and religious experience:

> *Religious experience is* numinous, *as Rudolf Otto calls it, and for me, as a psychologist, this experience differs from all others in the way it transcends the ordinary categories of space, time, and causality. Recently I have put a great deal of study into synchronicity (briefly, the 'rupture of time'), and I have established that it closely resembles numinous experiences where space, time, and causality are abolished. (McGuire and Hull, 1978, p. 230)*

In this statement, religious experience is characterised as numinous, and what is distinctive about numinous experiences is said to be that they transcend the ordinary categories of space, time, and causality. Synchronicity, as the technical term that Jung developed to articulate this transcendence of space, time, and causality, thus implicitly describes what for Jung is the kernel of numinous or religious experience. His view of the social and cultural significance of this emerges from an assertion he made later in the same interview: 'The modern world,' he stated, 'is desacralized, that is why it is in a crisis. Modern man must rediscover a deeper source of his own spiritual life.' (Ibid.) Jung's concept of synchronicity can therefore be seen as an explicit part of his strategy for rediscovering a deeper source of spirituality in order to re-sacralise, or re-enchant, the modern world and thereby address the crisis of modernity.

Myth Beyond Projection

The significance of synchronicity for re-enchantment and for re-thinking Jung's theory of myth receives further clarification through some remarks of the scholar of Gnosticism, Gilles Quispel (1916-2006), who was present at Jung's

Eranos lecture 'On Synchronicity.' Quispel reported that, after the lecture, 'even Jung himself seemed quite relieved and unusually good humoured.' He continued:

> *All his life [Jung] had rummaged in the collective unconscious, but now he had forced a breakthrough from the soul to the cosmos. He beamed when he told me:* 'Es geht um die Erfahrung der Fülle des Seins'*; it is the experience of the fullness, the pleroma, of Being that matters. And he said to me on another occasion that now the concept of projection should be revised completely. (Quispel, in Segal et al., 1995, p. 19)*

In his earlier theory of myth, Jung, like Sigmund Freud (1856-1939), considered myths to be the projection of the contents of the unconscious psyche onto the world. He differed from Freud in believing that these projected contents stemmed from a collective rather than personal stratum of the psyche. But for both thinkers the world onto which the unconscious contents were projected was in itself impersonal and mechanical, the world revealed and investigated by the hard sciences. Indeed, the psychological concept of projection had in its way contributed to the disenchantment of the world, for the concept implies that the meanings we perceive in the world are not there in reality but are being foisted onto the world by the human mind. However, when Jung's theory of myth is supplemented by his concept of synchronicity, the outer world, it could be argued, may not after all be totally alienated from human purposes but, at least on occasion, can be intimately involved with them. Thus, the real scarab beetle in Jung's example behaved in a way that seemed mysteriously connected with the patient's inner psychic world. As Jung later remarked to a correspondent: 'at the moment my patient was telling me her dream a real "scarab" tried to get into the room, *as if it had understood that it must play its mythological role as a symbol of rebirth*' (1976, p. 541, emphasis added). Jung went further: 'Even inanimate objects,' he wrote, 'behave occasionally in the same way—meteorological phenomena, for instance.' (Ibid.)

Myth and History

As well as providing Jung with a re-enchanted view of modernity, this revised theory also enabled him to reconsider the relationship between myth and history in narratives of enchantment from the past. In light of his concept of synchronicity, the mythic character of a story need not for Jung necessarily imply a lack of historical truth, since the archetypal motifs informing the myth, and giving it the vitality to persist as a gripping story, could express themselves as much outwardly in real-life events as inwardly in imagination and story. In his book *Answer to Job* (1952a), published in the same year as his major essay on synchronicity, Jung applied this principle to stories about Christ:

> *The fact that the life of Christ is largely myth does absolutely nothing to disprove its factual truth—quite the contrary. I would even go so far as to say that the mythical character of a life is just what expresses its universal human validity. It is perfectly possible, psychologically, for the unconscious or an archetype to take complete possession of a man and to determine his fate down to the smallest detail. At the same time objective, non-psychic parallel phenomena can occur which also represent the archetype. It not only seems so, it simply is so, that the archetype fulfils itself not only psychically in the individual, but objectively outside the individual. My own conjecture is that Christ was such a personality. (Ibid., par. 648)*

Overcoming Cartesian Rationalism

Jung stated that his purpose in recounting the synchronicity with the scarab beetle was 'simply to give some indication of how meaningful coincidences usually present themselves in practical life' (1952b, par. 845). It is clear, however, that the incident was in fact doing much more than this; indeed, that it was enacting, with Jung's patient, what Jung intended the concept of synchronicity to achieve for culture. For it was not just the patient's 'animus' (1952b, para. 845) or 'highly polished Cartesian rationalism' with its 'impeccably "geometrical" idea of reality' (1951, para. 982) that needed to be broken down but, as Paul Bishop notes, 'Cartesian philosophy, with its "geometrical method" and rationalism in general' (2000, p. 17). The patient's problem stood for the problem of the culture as a whole, and Jung's success with the patient was the success he hoped his essay would have with culture. On 24 January 1955, Jung wrote to Michael Fordham about what he hoped would be 'the impact of synchronicity upon the fanatical one-sidedness of scientific philosophy' (1976, p. 216), and on the same day he reported to R. F. C. Hull: 'The latest comment about "Synchronicity" is that it cannot be accepted because it shakes the security of our scientific foundations, as if this were not exactly the goal I am aiming at' (ibid., p. 217). Weber famously described the rationalised forms of modernity as an 'iron cage' (1904, p. 123). Jung's language in describing the synchronicity with the scarab evokes something similar. His patient was 'inaccessible' (1951, para. 982), 'rigid' (1952b, para. 845), 'sealed' in an 'intellectual retort,' in the 'ice of her intellectual resistance' (1951, para. 982), in the 'armour of her animus possession' (1952b, para. 945). Jung hoped for and then witnessed an event that would enable her to escape from—'burst' (ibid.), 'puncture,' 'break' (1951, para. 982)—this imprisoning condition.

Conclusion

To summarise and conclude, Jung's writings on myth can be seen as part of his attempt to re-enchant the modern world. However, the success of his attempt was limited so long as he saw myth solely in terms of the projection of intrapsychic, albeit archetypal, contents. With the concept of synchronicity, developed late in his life, Jung felt able to postulate a parallelism and acausal connectedness between inner and outer events that allowed him to find mythic motifs not only intrapsychically but also, non-projectively, in external situations and events, thus enabling a more far-reaching re-enchantment.

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"It is significant that the Latin word for poetry, *carmen*, is also the word the Romans used for a song, a magic spell, a religious incantation, or a prophecy—all verbal constructions whose auditory powers can produce a magical effect on the listener. Ancient cultures believed in the power of speech. To curse or bless someone had profound meaning. A spoken oath was binding. A spell or prophecy had potency. The term *carmen* still survives in modern English (via Norman French) as the word *charm*, and it still carries the multiple meanings of a magic spell, a spoken poem, and the power to enthrall. Even today charms survive in oral culture. Looking at a stormy sky, surely a few children still recite the spell:
Rain, rain
go away.
Come again
some other day.

Or staring at the evening sky, they whisper to Venus, the evening star:

Star light, star bright,
First star I see tonight,
I wish I may, I wish I might
Have the wish I wish tonight
A rational adult understands that neither the star nor the spell has any physical power to transform reality in accordance with the child's wish. But the poet knows that by articulating a wish, by giving it tangible form, the child can potentially awaken the forces of imagination and desire that animate the future. As André Breton proposed, 'The imaginary tends to become real.' "

Dana Gioia, from the essay 'Poetry as Enchantment'

On Synchronicity
Ten sonnets from *Notness*

Acklowlededgements to Shearsman Books, Bristol

RICHARD BERENGARTEN

When anxious waiting stops

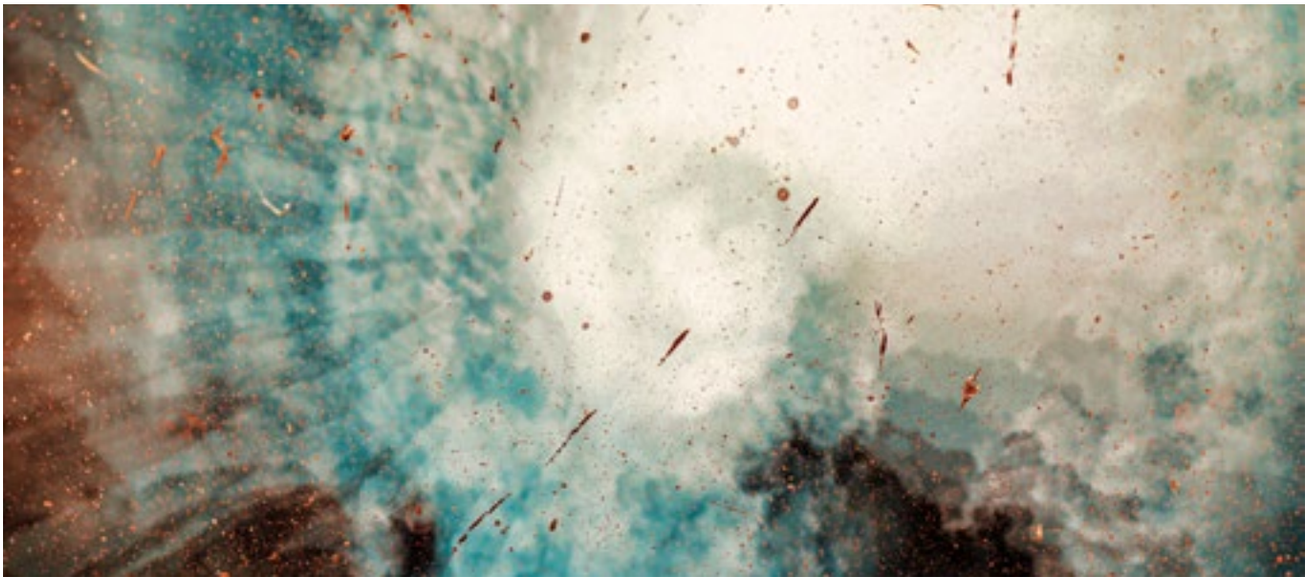
When anxious *waiting* stops, and *wants* diffuse,
and neither presses hard for consequence
then new views open, and receptive cues
bathe in a kind of floodlit innocence.
Through bones and organs and their folds and layers,
fording the body's semi-porous skin
the unexpected may come streaming in
on sudden flood, catching one unawares.
When you no longer look, it's then you see,
when you stop listening consciously, you hear
unnoticed pattern, innate harmony,
and plural demarcations disappear.
Through mists of dream and daydream's musing haze
the self itself attains clear-focused gaze.

When it arrives

You are not focused, not on anything
when it arrives. It strikes you unawares.
It can't be faked, and no conceit prepares
its rendering, a subtle *now*-surrendering.
It has no antecedents. As for heirs
its will is *here-now,* which redeems its shares
as it alerts you in a listening –
a corrugated wavelike glistening –
to your whole self and world, each coiled in each,
infinite depth in infinite outreach.
Your being, adrift in daydream or faint daze
of blurry perturbation, misted haze,
is opened, and a luminescent glaze
arrays the world of *this this this* in praise.

The flows of time

Nor is it just that time has different speeds
or that its currents currently compose
one passing river, or that this proceeds
through past to future. It's that *time-now* flows
not in some simple horizontal plane
but dips and peaks, in spirals, wells, coils, spools,
returning and re-gathering again
in centripetal-centrifugal pools
from so many dimensions and directions
and in such varied patternings and modes,
bearing such differing lightnesses and loads,
incursions, repetitions and inflections
that what this present holds and overspills
is all time, as it fills, empties, refills.



When things fit

To note disparities, things that don't fit,
and then discover that in fact they do,
reveals reality as composite –
as pattern, which a common thread runs through.
Event and mind, blurred, latent, localise,
inner and outer gather, graze, connect,
apparent counter-movements focalise
and suddenly, the human intellect
is borne on such a flood of energies
that, though you'll always fail to fathom how,
what once seemed unimaginable is
actualised in an inclusive *now*.
Delight inflects the heart. Welling surprise
opens your pores, streams through your hands and eyes.

Anomalous phenomena

‘Anomalous phenomena’, though strained
through test and retest, aren’t attuned to give
hoped-for results. Rather, being engrained
fast in resistance, their prerogative
appears to be to baffle, block, occlude,
refuse to open intervening valves
and, nonchalantly, carelessly, exclude
the curious watcher from the things themselves.
But should the watcher once stop watching and
let focal points lie fallow till they blur,
then things, without support or helping hand,
may of their own accord begin to stir.
So could it be that things themselves have eyes
enabling *them* to take *us* by surprise?

Fuse

‘Between apprehension’s insistent instant
and this awareness of it, lies the germ
of split consciousness, irreducible torment
of being, as if intentionless intent
were trapped here too.’ *But no!* In the blink term
that holds act and longing, egg admits sperm,
in unique momentum. Form (be)gets content.
And as from topsoil the peristaltic worm
wriggles its way out, look, up there, a lark
soars on cloud-morning, singing. And as fact
la(n)ces world itself and being in stark
brilliant focus – so touching, touched, intact,
world and *this* connect, fusing time and sky
with reverent irrelevant perceiving I.

Things constellate

Things constellate and cluster round the norm
and when they press hard in, the core explodes.
Form mirrors content, content mirrors form,
but when the mirror bursts, the tempered codes
that kept things' balances, their parity,
can hold themselves no longer, and instead
the rules that governed *this* reality
splinter in paradigms unheralded
by hope or expectation. Things change gear,
new types press out in forms unbroached before
and unencountered elements appear
from seething chaos, whose erupting core
thrusts *notness* through *here-now*. Beauty and fear
heal clean by fire or, clashing, knot in war.

Approach me not

The cavern where the dreamer sleeps enclosed
by panes of consciousness is made of stuff
permeable to eternity. Enough
of limitations grammars have imposed
on waves of seeing, traced on haze and seeming.
Approach me not. An *elseness* in me wakes
out through this body's gauze, its wefted walls,
so distance and horizons shed their skin
and *everything* and *nothing* tumble in
past ordering, past patterning, past scheming.
The bond, appearance, stretches taut and breaks
tensed contraries that differentiate,
and *I*, whatever *I* was, cannot wait.
A burned moon rises, and a black sun falls.

After eternity: a dialogue

First there was void, and then a soundless bang.
Time is an arrow, not a boomerang.
Life is a knotted string that time pulls straight,
spun out by change and chance into your fate.
While swallows gather and the summer dies
love is blinked out like summer's butterflies.
Love will play on for ever, never trying,
never striving or dying, time defying.
After eternity we live out time.
The bell strikes but you cannot hear the chime.
We live to praise, to celebrate and treasure
infinite presences no clock can measure.
The lock is timeless and the hand is yours
to turn the key that opens all time's doors.

Time's porous skin

Time's true to things in ambiguities
which in their fragile fractal repetitions
seem torn, despite their continuities,
a stuttered morse, dependent on transitions.
Bridges and bonds of parataxis in
time's fine but incompletely woven forms
stretch full of holes, as if its porous skin
were pocked by many more dimensions' storms.
I lose them in my waking but in sleep
past time I track their sheens beneath the crust
this consciousness must haul across time's deep
unfathomable ocean, bearing trust
this trawling (trailing, trialling) will keep
signing me well until this *I* is dust.

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> "Enchantment is the oldest form of medicine."
>
> **Carl Jung**

Enchantment: A Lost Key to Survival

ANDREW FELLOWS

To flourish in the Anthropocene without spiralling into barbarism, we must adapt—starting right now—to the constraints imposed upon us by the laws of nature. In practice this means not just relinquishing, but humanely reversing, economic and population growth to reduce the environmental impacts of our production and consumption. Living without the unprecedented comforts and opportunities to which we have become accustomed will be challenging, but we have no choice. We can, however, determine our attitude to it—will we have to be coerced kicking and screaming into frugality, or can we make the transition willingly, even joyfully? Established ideologies have no answer, not least because they have evolved under circumstances that have been overtaken by relatively recent emergencies such as global heating and the sixth mass extinction. Indeed, it seems that nobody, at least in the public domain, is even asking this absolutely vital question.

As a Jungian analyst, I know the transformative impact of finding meaning in inescapable individual suffering. Collectively, one way to find meaning in our loss of goods and services is to understand it as a form of *sacrifice*—a term from the same root as sacred, by which I mean the voluntary act of surrender to a principle that transcends our egotistical desires. Accepting that principle requires a 're-enchantment' of the world, which is nothing less than a *metanoia*—a revolution in our worldview at the deepest level—and as such is anathema to mainstream science, institutionalised religion and conventional politics alike. Max Weber described the hegemony of reason, especially science, and the commensurate devaluation of the spiritual in our bureaucratic, secularised and technological society, as 'disenchantment' of the world. Re-enchantment therefore advocates a rebalancing of our worldview in which meaning, and hence soul, are once more integral. Thus, as we tighten our belts, sacrifice could be understood as the difference between the sacred act of fasting and the mundane suffering of going hungry.

Rather than resorting to unfounded 'magical thinking' or mere sentiment, I want to approach re-enchantment through the lens of metaphysics in an attempt to reconcile science and spirituality, or at least to engage with them along the way. Metaphysics is the branch of philosophy that seeks to understand the nature of reality, and therefore immediately runs into the problem summarised by Alfred Korzybski's famous assertion that the map is not the territory. To conflate the two is the hubristic error of scientism and, more generally, of disenchantment. Korzybski's crucial distinction is closer to Eastern worldviews, especially Taoism, than to Western postmodernism, and allows some useful room for manoeuvre as will become apparent.

Our worldview is conditioned by metaphysical assumptions that have a nasty habit of disappearing from consciousness altogether. My wise old teacher from Beijing, Rose Shao-Chiang Li, once told me a story of a bird which grew and grew until it eventually filled the entire sky. With nothing to see in the sky that was 'not bird'—its outline had disappeared—the bird could no longer be seen. Arguably the most fundamental such 'bird' since the Enlightenment has been Cartesian dualism—the absolute division of the world into mind and matter. However, Baruch Spinoza, although inspired by Descartes, only a few years later posited an early form of dual-aspect monism in which mind and matter are two emergent attributes of an ontological 'Substance' (by which he meant 'stand beneath'), *Deus sive Natura* (God or Nature). The spiritual implications alone of this are radical, for the divine—whatever we take that to be—is returned to and permeates the world,

in contradistinction to the 'God above' of the Abrahamic faiths that dominate Western belief.

Three centuries later, the philosophical and scientific implications of other modes of dual aspect thinking began to be widely explored more or less in parallel with the development of quantum physics; these have been summarised by theoretical physicist Harald Atmanspacher (Atmanspacher, 2014). Among them, David Bohm's 'implicate order' and the Pauli-Jung conjecture (best known through the phenomenon of synchronicity) may be most familiar. I will focus on the latter because of its direct connection with Carl Jung's model of the psyche, which I will in turn compare with James Lovelock's Gaia theory. The expositions that follow have necessarily been condensed to an extent that may make them hard to understand. However, they are explained in detail in my book (Fellows, 2019), which also introduces sufficient theoretical aspects of Jungian psychology, Gaia theory and all the other contributing elements for readers unfamiliar with them. Both Jung and Lovelock have each in their own way contributed significantly to re-enchantment of the world—Jung through the neo-Platonic and Gnostic worldview that informs his psychology, and Lovelock through his perhaps unwitting invocation of the *anima mundi*—the world soul—and her female personification by his friend and neighbour, Jung had drawn extensively upon ethnological, philosophical, religious and esoteric perspectives on the mind-matter conundrum before beginning his scientific exchanges with the Nobel Laureate physicist, Wolfgang Pauli, in 1932. Pauli and Jung's radical conjecture, which took almost two decades to emerge, is a form of decompositional dual-aspect monism.

The mental and the material are epistemic manifestations of an ontic, psychophysically neutral, holistic reality, called the *unus mundus*[2], whose symmetry must be broken to yield dual, complementary aspects. From the mental, the unus mundus is approached via the collective unconscious, while from the material it is approached via quantum nonlocality. There are no firm boundaries between the mental and physical aspects on the one hand and their underlying domain on the other, hence my added shading. The dividing line between the epistemic and ontic domains is the 'default' boundary, which can, under certain circumstances, be transgressed in both directions (Atmanspacher & Fach, 2013).

If mind and matter are complementary aspects due to epistemic splitting of the unus mundus, this suggests that Jung and Lovelock were drawing different maps of ultimately the same territory, or at least territory with a common substrate, somewhat like political and physical maps of the world. This assertion deals with structure, however different the contents. Maps can, however, also embrace dynamics, and in this respect psyche and Gaia can be partially modelled by systems theory—a second reason why a degree of correlation between Jung's and Lovelock's maps is to be expected, for both are broadly characterised Following the systems principle of setting boundaries appropriate to the problem at hand—surviving the Anthropocene—the generic mental domain has been narrowed down to the human psyche, and the generic physical

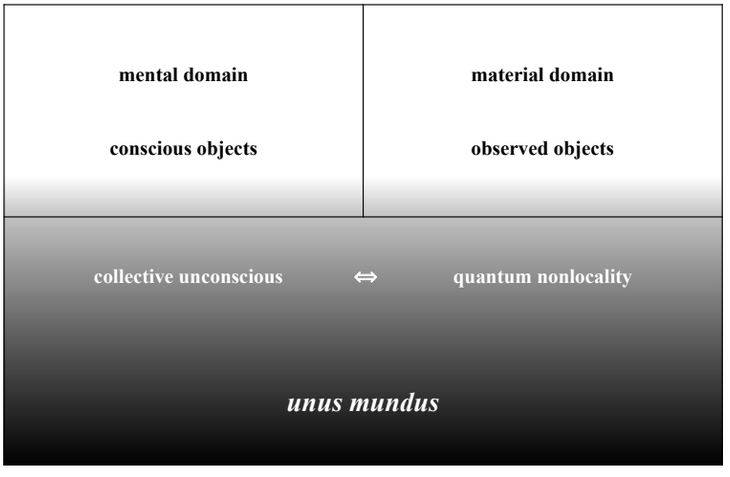


Figure 1: The Pauli-Jung conjecture. (Based on Atmanspacher, 2014: 253)

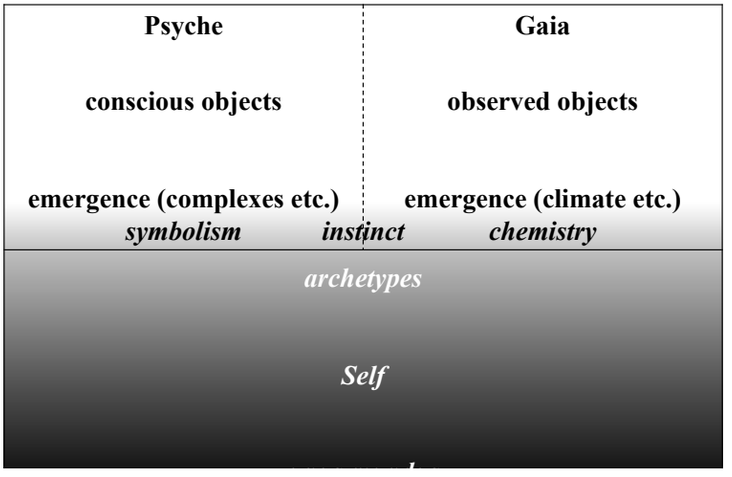


Figure 2: The Psyche-Gaia conjecture. (Fellows, 2019: 117)

domain correspondingly limited to this planet, while acknowledging that neither domain is in reality a closed system. The schema does not satisfy the requirements of a strictly decompositional model, not least because of the possibility of bidirectional direct (efficient) causality between the two epistemic domains. For example, the evolution of the human psyche has been in part determined by the physical environment and, conversely, the Anthropocene can be viewed as the impact of the human psyche on the physical environment. The dashed vertical dividing line between the epistemic domains allows for this.

The underlying cell again represents the ontic, psychophysically neutral domain; its parallel ordering influence on both psyche and planet manifests in the correlations between their properties and behaviour. Careful observation and investigation of the epistemic domains can tell us much about these correlations and the apparent teleology inherent in their behaviour, but it cannot explain to what any such teleology can be attributed. To accommodate this at the deepest level, the conjecture invokes the aspect of the Jungian 'Self' that is ultimately coterminous with the unus mundus. The archetypes act as the unseen agents patterning the epistemic domains of the human psyche and Gaia respectively under the ordering and unifying influence of the Self.

The upper left cell represents the epistemic 'inner world' of the human psyche, including all aspects thereof that can potentially be experienced. This 'subjective psyche' extends far beyond the ego to include all the contents of the personal unconscious, in particular complexes, which may be experienced through emotions, dreams, projections, the body and so on. I have tried to convey how ordering information crosses the ontic-epistemic divide according to Jungian psychology. The languages of this information are primarily symbolic and instinctual respectively, and the principal process by which it is transmitted is emergence, especially in the case of complex constellation, which has strong supporting evidence from neuroscience (Krieger, 2013).

The upper right cell represents the epistemic 'outer world' of planet Earth, including us and all the physical aspects and consequences of our actions. Since Gaia theory does not posit an ontic, psychophysically neutral underlying domain, the proposed corresponding ways in which ordering information may reach Gaia from there are inevitably more speculative. I have suggested that the languages are primarily instinctual because this is incontrovertibly the case in the animal kingdom (including us[3]) and beyond, and chemical because this is the most widespread mode of interaction between life forms and between 'animate' and 'inanimate' matter. The process is again emergence, manifesting in physical phenomena such as the climate, the atmosphere, and ecosystems.

To summarise, the Psyche-Gaia conjecture posits correlations between the behaviour and properties of psyche and Gaia via two maps: Jungian psychology plus systems theory, and Gaia theory plus ontic ordering factors. The detailed exploration of these correlations in my book encompasses dynamics, structures, contents and pathologies, and provides substantial evidence for the conjecture. I will only outline the last of these, but it is predicated on the preceding correlations, which offer powerful tools for analysing our current predicament, especially those of ego with *Homo sapiens* and of the unconscious with the other-than-human world.

	Psyche	**Gaia**
Cause:	monotheism of consciousness	human dominance
Effect:	enantiodromia	Anthropocene

Table 1: Correlated pathologies of psyche and Gaia. (Fellows, 2019: 137)

There is an uncanny parallel between the accelerating collective psychological phenomenon of ego dominance of the psyche, which underpins disenchantment of the world, and human dominance of the planet. Jung decried the former thus:

> *We lack all knowledge of the unconscious psyche and pursue the cult of consciousness to the exclusion of all else. Our true religion is a monotheism of consciousness, a possession by it, coupled with a fanatical denial of the existence of fragmentary autonomous systems.... This entails a great psychic danger, because the autonomous systems then behave like any other repressed contents: they necessarily induce wrong attitudes since the repressed material reappears in consciousness in spurious form.... The effect is collectively present all the time....* (Jung, 1929/1967: §51)

This spells out clearly the autonomy of the unconscious, which manifests here as 'enantiodromia, about which Jung wrote:

> *I use the term enantiodromia for the emergence of the unconscious opposite in the course of time. This characteristic phenomenon practically always occurs when an extreme, one-sided tendency dominates conscious life; in time an equally powerful counterposition is built up, which first inhibits the conscious performance and subsequently breaks through the conscious control.* (Jung, 1921/1971: §709)

We ignore the unconscious at our peril, for one-sidedness and repression are forms of dissociation, which is implicitly linked to disenchantment in *A Critical Dictionary of Jungian Analysis*:

> *...dissociation may be used to describe a more or less conscious approach, one which fragments in order to 'analyse' when a holistic, all-embracing attitude would be more productive. Western society's dependence on science and technology and on a certain 'rational' style of thinking illustrates this point of view.* (Samuels, Shorter & Plaut, 1986: 47)

Our relentless attempts to control and exploit nature have led to the Anthropocene, which is physical enantiodromia on a global scale—material suffering caused by the quest for material comfort, or simply the deprivation resulting from greed. Our prevailing response to date has been denial in the closely-related forms of inertia, nostalgia and hubris. How and why these defence mechanisms have come to paralyse our development is elaborated in my book using Jung's 'Stages of Life' developmental theory scaled up from the individual to the collective. The pivotal aspect of this is the enantiodromia of mid-life, when the emphasis for us as a civilisation or even species shifts from separation from nature to reconciliation with nature, or from what I call heroic development to frugal individuation. This is shown in my modification of a schema (Staude, 1981: 92) representing Jung's analogy of life proceeding like the passage of the sun across the sky from birth at sunrise to death at sunset:

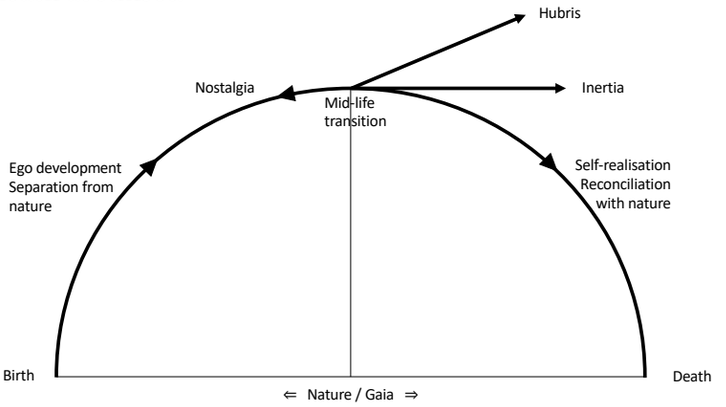
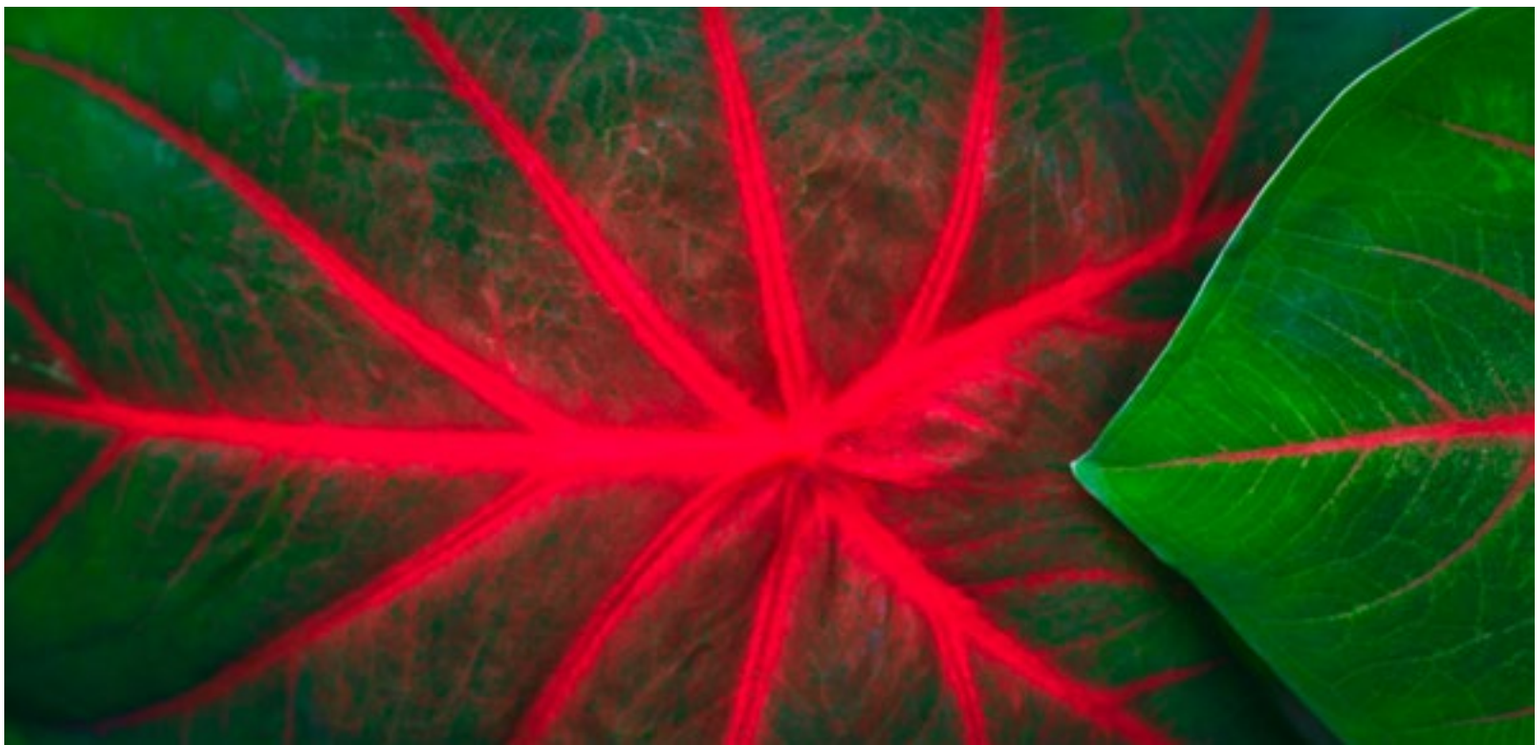


Figure 3: Collective responses to the mid-life transition in the contexts of psyche and Gaia. (Fellows, 2019: 147)

The term 'Self-realisation' that I associate here with reconciliation with nature alludes to the process that Jung called 'individuation,' in which the midpoint of the personality shifts from the ego towards, and under the influence of, the Self. Mapped on to our relationship with Gaia, this implies abandoning our current anthropocentrism in favour of the biocentrism advocated by deep ecology.

The original proponent of deep ecology was the Norwegian philosopher Arne Næss. It is intimately linked with re-enchantment, albeit through different language:



> *Deep ecology is radically conservative in that it articulates a long-established minority stream of religion and philosophy in Western Europe, North America and the Orient. It also has strong parallels and shared insights with many religious and philosophical positions of primal peoples... In a certain sense it can be interpreted as remembering wisdom which men once knew.* (Devall & Sessions, 1985: 80)

> *That wisdom can be approached mathematically, chemically, or it can be danced or told as a myth. It has been embodied in widely scattered economically different cultures. It is manifest, for example, among pre-Classical Greeks, in Navajo religion and social orientation, in Romantic poetry of the 18th and 19th centuries, in Chinese landscape painting of the 11th century, in current Whiteheadian philosophy, in Zen Buddhism, in the world view of the cult of the Cretan Great Mother, in the ceremonials of Bushman hunters, and in the medieval Christian metaphysics of light. What is common among all of them is a deep sense of engagement with the landscape, with profound connections to surroundings and to natural processes central to all life.* (Shepard, 1969: 5)

The eight 'basic principles' were formulated by Næss and George Sessions in April 1984 (Sessions & Næss, 1984):

1. *The well-being and flourishing of human and nonhuman life on Earth have value in themselves (synonyms: inherent worth; intrinsic value; inherent value). These values are independent of the usefulness of the non-human world for human purposes.*
2. *Richness and diversity of life forms contribute to the realization of these values and are also values in themselves.*
3. *Humans have no right to reduce this richness and diversity except to satisfy vital needs.*
4. *The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of non-human life requires such a decrease.*
5. *Present human interference with the non-human world is excessive, and the situation is rapidly worsening.*
6. *Policies must therefore be changed. The policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present.*
7. *The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between big and great.*
8. *Those who subscribe to the foregoing points have an obligation directly or indirectly to try to implement the necessary changes.*

I discuss each of these principles in my book; the second sentence draws a line in the sand from the outset between deep ecology and anthropocentric 'reform' environmentalism. Deep ecology's advocates share a wholehearted respect for Gaia's interrelated natural systems and a sense of urgency about the need to make profound cultural and social changes in order to restore and sustain the long-term health of the planet. Issues such as patriarchy, injustice, inequality that reform environmentalism habitually evades are therefore integral to their approach. Deep ecology demands a reduction in our standard of living, but does not compromise our quality of life, as Næss so beautifully illustrated in a 1982 interview:

> *I'm not for the simple life, except in the sense of a life simple in means but rich in goals and values. I have tremendous ambition. Only the best is good enough for me. I like richness, and I feel richer than the richest person when I'm in my cottage in the country with water I've carried from a certain well and with wood that I've gathered. When you take a helicopter to the summit of a mountain, the view looks like a postcard and, if there's a restaurant on top, you might complain that the food is not properly made. But if you struggle up from the bottom, you have this deep feeling of satisfaction, and even the sandwiches mixed with ski wax and sand taste fantastic.* (Bodian, 1982/1995: 36)

Deep ecology's approach is psychological rather than moralistic; it expands self beyond the boundaries of the narrow ego through the process of caring identification with larger entities such as forests, bioregions and the planet as a whole. Like Jung, Næss formulated a concept of 'Self-realisation'; they both took inspiration from the *Upanishads* and clearly differentiated their respective 'Self' concepts from the domain of the individual ego:

> *I do not use this expression in any narrow, individualistic sense. I want to give it an expanded meaning based on the distinction between a large comprehensive Self and narrow egoistic self as conceived of in certain Eastern traditions of atman. This large comprehensive Self…embraces all the life forms on the planet…together with their individual selves… Viewed systematically, not individually, maximum Self-realization implies maximizing the manifestations of all life.* (Næss, 1986: 80)

This 'ecological Self' is a Gaian complement to the Jungian Self, and Næss accords the same primacy to Self-realisation in the outer world that Jung did in the inner. Moreover, just as individuation encourages wholeness, deep ecology fosters diversity within unity, and not just biodiversity as in Gaia theory: '*Deep cultural diversity is an analogue on the human level to the biological richness and diversity of life-forms.*' (Næss, 1986: 73) In short, both Jungian psychology and deep ecology embrace wholeness, of which the majority is other-than-ego in the former, and other-than-human in the latter. These parallels are further enriched by the correlations established in the Psyche-Gaia conjecture and can be summarised as follows:

	Deep Ecology	**Individuation**
Change:	**Of:** worldview / ethos / population **From:** anthropocentric **To:** biocentric	**Of:** midpoint of personality **From:** ego **To:** Self
Goal:	biotic flourishing and cultural diversity	psychological wholeness
Agent:	ecological Self	Jungian Self

Table 2: Correlated dynamics of deep ecology and individuation. (Fellows, 2019: 180)

Re-enchantment is at the heart of both deep ecology and individuation, and the *metanoia* that they entail is now desperately needed. Disenchanted people make good consumers, so becoming re-enchanted, of which contact with the natural world is an integral part, is one way towards joyfully ending our addiction to consumption. Jung, Lovelock, Næss and others whose insights I have drawn upon all found time for the simple life close to nature, as do I. This entails foregoing our habitual levels of material comfort, abandoning ego-driven goals, slowing down and being quiet, attentive and receptive, and opening ourselves to the presence of the *anima mundi*. Entering into such communion with the world is both an encouragement to transform our attitudes in accordance with the principles of deep ecology and individuation, and a reward for doing so.

For anyone who clings to the Cartesian notion that animals don't have souls, an extraordinary documentary film, *The Animal Communicator* (Breytenbach et al., 2012) is a revelation. Anna Breytenbach appears to be communicating with a variety of mammals, a cockatoo and even fish. I say 'appears to be' because it is unprovable, but I verified her *bona fides* with Ian Player, the great South African environmental educator, conservationist and activist. Two more examples of learning from, rather than about, nature, concern the plant kingdom.

The first shows what can happen if we relinquish our patriarchal obsession with control, and simply support natural processes, as did a Japanese agronomist. From a single seed, Dr Shigeo Nozawa cultivated a giant tomato tree with a canopy eight metres wide, a trunk 15 centimetres thick, and bearing seventeen thousand (tasty) tomatoes, without any genetic manipulation or special fertilisers. Instead, he used a sophisticated array of sensors to optimise the environment for the plant. The roots were allowed to grow freely in fresh water, developing a huge mesh covering several square metres. Nozawa talked about the mind of plants and their infinite vitality in a wonderful Japanese documentary film series (Tatsumura, 1992) in language reminiscent of both Næss and Jung: '*The only thing I did was remove conditions that would be hazardous to the trees' growth. I just facilitated their fullest self-realisation.*' In other words, his approach was not to coerce the plant, but '*to provide assistance so it could reach its fullest potential… An infinite life force exists in the universe. The key to this life force is in our hearts.*' Deep ecology means working with, not against, nature, to maximise '*self-realisation*' just as Næss and Nozawa said.

The second gives a striking glimpse of what we can learn from indigenous science. When anthropologist Jeremy Narby went to live among the Ashaninca people in the Peruvian Amazon, he had no idea how they knew what use to make of which plant in the world's most diverse biome, which is estimated to contain at least 80,000 species. He was likewise astonished to hear these people speak of plants as their kin, as intelligent beings with personalities

and intentions. Narby, who described himself as a materialist, rationalist agnostic when he embarked on his fieldwork, was told that he would have to take ayahuasca to understand all this. He recounted his experiences and further insights into a mode of knowledge utterly unfamiliar to the Western mind, and the connections he subsequently made with molecular biology (Narby, 1999). The Ashaninca's explanation of how they know was that the plants themselves tell them in their visions. They listen and watch, the plants speak and show.

All these examples violate the disenchanted worldview of Western science by challenging our notion of mind, but as Francis Bacon argued in the 17th Century, '*The world is not to be narrowed till it will go into the understanding... but the understanding to be expanded and opened till it can take in the image of the world as it is in fact.*' (Bacon & Anderson, 1620/1960: 260) There is now a resurgence of serious interest in the possibility of nonlocal mind, hence the emphasis given to panpsychism at *The Science of Consciousness* conference last month[4]. The 'Sursem Project' at the Esalen Center for Theory and Research engaged some 45 leading academics from diverse fields for 15 years to explore this, producing two highly recommended compilations (Kelly, Kelly and Crabtree, 2007), (Kelly, Crabtree and Marshall, 2015). Without contradicting the associative findings of neuroscience, nonlocal mind can account for 'psi phenomena' such as telepathy far more elegantly than can the physicalist dogma that the brain generates mind. The contributors ultimately converge on a panentheistic worldview, which maintains an ontological distinction between the divine and the non-divine, and thus that the divine, as the soul of the universe, both permeates and transcends it. This bears some resemblance to the *unus mundus*, which I have equated with the 'cosmic' aspect of the Self. As one of the lead authors concludes:

> *...the world pictured by panentheism is not just the same old physicalist world with an altered expression, but a world whose constitution is fundamentally different in ways that matter to us as human beings.... The one thing we should all regard as unacceptable is unyielding and aggressive fundamentalism, whether of the religious or the scientific sort.* (Kelly, 2015: 542)

Panentheism is a truly enchanted worldview that is entirely compatible with my Psyche-Gaia conjecture and with deep ecology. It underpins the *metanoia* that I contended from the outset is needed to heal our broken relationship with the natural world. It is time to stop trying to dominate, but to listen carefully to nature within and nature without, for we have much to learn.

Endnotes

[1]Incidentally, Golding's novel *Lord of the Flies* remains a seminal portrayal of a spiral into barbarism.
[2]The term was used by Jung, who took it from Gerhard Dorn, a student of the famous alchemist Paracelsus in the 16th Century.
[3] By basing the conjecture on a subset of dual-aspect monism with conceptual origins in physics, I have arguably neglected the more explicitly biological aspect of the archetypes that characterised Jung's earlier thinking.
[4] *https://www.tsc2019-interlaken.ch*

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"The first fall of snow is not only an event, it is a magical event. You go to bed in one kind of a world and wake up in another quite different, and if this is not enchantment then where is it to be found?"

J. B. Priestley

Abstraction and the Challenges of Technology

SHANTENA AUGUSTO SABBADINI

Abstraction and Science

This article will look at various aspects of the current disenchantment of the world, as well as at the potential for re-enchantment, in terms of a key idea with many ramifications: the notion of *abstraction*.

The fundamental realization, I suggest, is that we live in a world increasingly dominated by abstraction. By abstraction I mean the attitude that reduces the richness and infinite complexity of the living world to reproducible patterns and measurable properties. It is the essential characteristic of science. Science is, in its very core, the abstract modelling of reality. The desire to reduce the unmanageable overabundance of the lived experience to a skeleton of measurable and reproducible 'facts' is the crucial step which gave birth to experimental science. 'Measurable and reproducible' implies the possibility of comparing and testing results and the repetition of experiments, making science a collective enterprise. It creates a 'scientific community' collectively engaging in the endeavour to understand the laws of nature.' What we call the laws of nature are relationships between measurable and reproducible phenomena, i.e. between reduced, abstracted versions of reality.

This is not meant to be a rejection of science. The totality of what we experience is hopelessly complex: it is definitely not measurable or reproducible. Science chooses to sacrifice the rich panoply of experienced reality for the sake of measurability and reproducibility.

'The book of nature,' said Galileo, 'is written in mathematical characters.' It is a crucial statement that could be taken as an early milestone for the beginnings of modern science. When we reduce the infinite complexity of reality to simple models that can be mathematically described, we discover that those models have predictive power. That is the key new fact that gave birth to modern science: 'The book of nature is written in mathematical characters.' What Galileo means is: we can build mathematical models that have predictive power.

Predictive power means control. All our technology comes from the ability to build models endowed with predictive power. We humans, fragile animals in a wild world, love control. The predictive power of science fascinates us. We are under its spell, understandably.

But a side effect of that fascination is that we forget how the powerful tool we hold in our hands originated. We forget that it is only part of reality, a part that has been selected for its measurability and reproducibility. We start mistaking our models for reality itself. We need to be reminded that

'this is not a pipe' (René Magritte) or that 'the map is not the territory' (Alfred Korzybski).

Now, the trouble is that the mathematical modelling of reality is indifferent to the issues that are closest to our heart. Technology, the marvelous monster that is such a large presence in our everyday life, is indifferent to the choice between good, bad, beautiful, ugly, love, hate, joy, suffering...

But that does not mean that it has no impact on our life. By choosing to focus on the skeleton of 'hard facts,' we forget the flesh and blood of reality, the infinite complexity and magic of lived experience. The outcome of that forgetfulness is a cold world, a world without soul, a world deprived of the dimension of meaning on which ethical choice depends. We find ourselves travelling at tremendous speed, but we do not know where we are going.

Our tools have become our masters. That's the argument developed by Iain McGilchrist in his wonderful book, *The Master and His Emissary*. The thesis of the book, simplifying it a bit, is that in our culture the left hemisphere of the brain has become largely dominant over the right hemisphere, an unbalance loaded with consequences.

The first approximation he makes about the right and left brain hemispheres is that the right hemisphere is involved in broad, global and flexible attention, while the left is specialized in local, narrowly focused and selective attention.

Now, while both styles of information processing are to some extent necessary in all tasks, including science, our scientific culture has given the brain's left hemisphere a large predominance over that of the right. We are largely unbalanced in favour of the left, in favour of the narrowly focused selective attention as opposed to the global recognition of patterns and meaning making.

But that, McGilchrist claims, is a reversal of their natural order. A healthy collaboration of the two hemispheres gives priority to the perception of the overall meaning and sense of direction, which is characteristic of the brain's right hemisphere, and only subordinately to the analytic attitude of the left hemisphere. In short, the servant has taken over the role of the master, and disorder necessarily follows.

I believe that the notion of abstraction I propose in this talk has much in common with McGilchrist's identification of the left hemisphere with selective attention. A 'left brain' dominated culture is an abstracting culture.

The roots of our abstracting attitude to the world are ancient: they go way back before the birth of modern science. In some sense they are as old as *homo sapiens*. One could trace its origin back to the development of tools, the beginning of technology, which has come to be such a tremendous force shaping our destiny (more about that later). Language, writing, money, all these things contain an element of abstraction (and they can perform their function precisely because of the abstraction they embody).

Abstraction and the Economy

A key abstracting role in our culture is played by money, which has become the universal symbolic measure of all energy exchanges. The economy has become the main force shaping our collective destiny, and money is the basic abstraction behind it. In no field is the distorted predominance of abstraction over the concrete reality of human experience more evident than in the sphere of the economy. The supreme abstraction here is called money.

I will describe the predominance of abstraction in the sphere of the economy in two steps. Firstly, I will reproduce, essentially unchanged, an argument I originally offered at a philosophers' meeting entitled *The Contribution of Philosophy to a Way Out of the [Economic] Crisis* in Milan in 2012. Secondly, I will update that argument to include current trends. I think the comparison between the two will make it apparent

1) how the evolution of technology has produced rapid change—a significantly evolved landscape in less than seven years;

2) how that change goes in the direction of increasing abstraction.

What is this elusive thing we call money that plays such a large role in our lives? It is a genial invention which is supposed to be the general measurement of all energy exchanges, a universal means of exchange for any goods and services, for converting different forms of energy into each other. If I am good at making shoes but have no bread to eat, *voilà*, this magic medium 'money' enables me to convert a pair of shoes into a loaf of bread.

It used to have the appearance of a thing when its concrete embodiment was metal. But even then its 'thingness' was rather superficial: Roman emperors quickly discovered that coins can be 'shaved,' saving on the metal while keeping the nominal worth of the coin unchanged. In modern times the 'metal embodiment' of money has been represented by the gold standard, the claimed

convertibility of money into gold. But that also is long gone.

Today, the circulation of money around the globe is estimated at four trillion dollars a day. This does not include the circulation of derivatives ('futures' etc.), which is estimated to be considerably larger (maybe 50 to 100 times so). Two percent of these four trillions correspond to the actual buying and selling of goods and services; 98% of it is purely speculative, not anchored in any real exchange. These trillions are merely figures dancing on computer screens in New York or Singapore.

The paradox of our modern economy is that this useful tool, money, has taken on a life of its own. It governs our own lives and has its own impact on the ecology of the planet. Two tendencies in its dynamics are crucial in this respect:

(1) the exponential growth of all economic activities

(2) the concentration of money in the hands of a few

Exponential growth on a finite planet means we are on a collision course with Mother Earth that is supporting us. This is an argument we hear many times these days. We are depleting the resources of the earth and destroying what supports our own life and that of all our fellow creatures. Eventually we may end up destroying ourselves.

The most serious consequence of ***the concentration of money in the hands of a few*** is not necessarily the impoverishment of the masses, which may or may not be a concomitant of it. A conceivable relatively optimistic scenario (at least in the short or medium term, before the depletion of resources and deterioration of the environment goes too far) is one in which the economic conditions of the poor majority remains stable or varies only marginally while the rich minority becomes enormously rich, i.e. the gap between rich and poor increases enormously. But even this relatively optimistic version of the future is not at all a desirable scenario. It creates two tiers of people and spells the end of the dream of democracy.

Abstraction and the Intelligence Revolution

While this argument, developed seven years ago, remains essentially valid in its general outline, some new phenomena have had a massive expansion in the meantime, causing a qualitative leap in the culture of abstraction and reinforcing considerably the consequences of the scenario outlined above.

These developments are sometimes described as the Fourth Industrial Revolution, or the Intelligence Revolution. (The First was the Agricultural Revolution, about 10,000 years ago. The Second the Industrial Revolution proper, in the early 19th century. The Third was the Information Revolution—the advent of the personal computer, the cell phone, etc.—in the last decades of the 20th century.) The Intelligence Revolution is characterized by two key phenomena:

(1) the evolution and spread of Artificial Intelligence

(2) the generalization of networking

Artificial Intelligence

Intelligent machines are already taking over many tasks up to now performed by humans and, what is probably even more important, many decision-making processes that are currently still carried out by humans. Computers are much more efficient than humans at instantly analyzing large amounts of data and using it to generate relevant algorithms. This is already apparent in various fields, including medicine. A question being asked today is to what extent the crunching through of huge amounts of data by an intelligent machine can replace and improve upon the 'clinical eye' of the doctor.

Machines can learn, can repair themselves and to some extent can reproduce themselves. Artificial Intelligence (AI) is rapidly progressing in domains like language production; vehicle driving; as well as face, voice and image recognition.

Machines already far outplay humans in the sphere of games. This is instructive to analyze because it may have implications going beyond the sphere of games. In 1997 IBM's Deep Blue computer caused a sensation by beating the world champion Garry Kasparov at chess. Deep Blue's strategy was still relatively 'primitive' in that it involved calculating in advance all the possible moves of both players. At the time, people thought: This will not be possible for a game of higher complexity, like the Chinese game of *Go*, which allows a virtually unlimited number of possible moves (2 x 10170 configurations). It took 20 years, but in 2016 the computer AlphaGo, produced by the British AI company DeepMind Technologies (bought by Google in 2014), was able to beat the world champion of *Go*. The strategy of AlphaGo was still in a way 'brute

force' since it consisted of analyzing millions of games of *Go*. But AlphaZero, a subsequent development of AlphaGo, did better: it was able to defeat AlphaGo 100 to 0 by being supplied just with the rules of the game and learned by playing against itself for a few hours.

The range, subtlety and flexibility of Human Natural Intelligence is at present still beyond the reach of AI. But there does not seem to be any fundamental obstacle to progress in that direction.

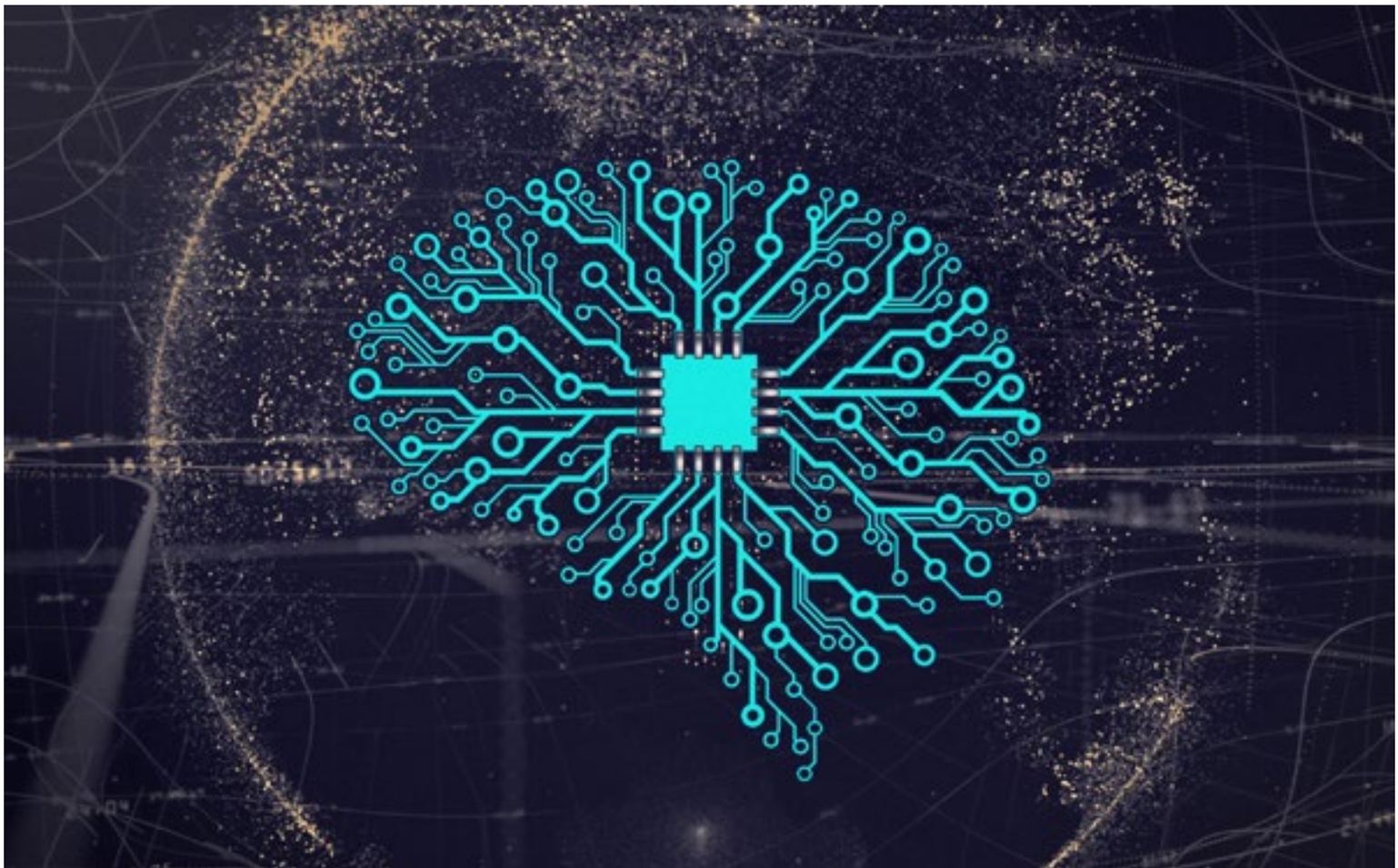
It is an open question to what extent machines will replace humans in various tasks and various forms of decision-making and what the benefits and risks will be. No doubt some aspects of that replacement will be beneficial. For example, it will deliver humans from performing dehumanizing repetitive tasks and free up time for enjoyment and creative occupations. It will improve the planning and performance of innumerable activities.

But the transition will not be painless. Millions (perhaps billions) of people will lose their jobs. And, even apart from that, there are worrisome aspects even in the most rosy scenarios of the Intelligence Revolution.

A crucial point is to what extent we will still be the programmers of our machines. A key step in the Intelligence Revolution will be the transfer of decisional processes to the machines themselves. Intelligent machines will be to a large extent self-programming. That being so, the question is: Will they still embody our ethics, our philosophy, our sense of purpose? Or will they perform whatever the task they have been instructed to perform, regardless of the consequences for human beings and for the biosphere? Imagine a machine that is able to self-program and self-replicate and has received the instruction to produce paper clips. Would it transform the whole planet into a paper clip factory?

Networking

A consequence of these momentous transformations that is already with us, and particularly impacts the ethical, economic and political dimension of our lives, is the generalization of networking and the associated Big Data flow. While the development of AI has been a focus of discussion for almost a century, the rapid development of the networking economy was not in the spotlight even as recently as a decade ago. In 2003 Mark Zuckerberg built a website called *Facemash,* exclusively for Harvard students. In 2012 the network, whose name in the meantime had changed to *Facebook* and had opened up to the general public, was offered on the stock market for $104 billion, the largest valuation to date for a newly listed public company.



It is now apparent that the networking economy is a key element shaping our future.

A hint of things to come is the recent news that visitors applying for a visa to enter the US for tourism, study or business will have (1) to disclose the social networks they use and give their passwords, and (2) to declare all mail addresses and telephone numbers they have used in the last five years. The US government estimates that the requirement will affect 15 million persons a year.

In the networking economy the user plays a double function, as a consumer and as a source of data. Practically all our moves in virtual reality are recorded and become data, which are used by the network to flood us with a constant supply of personalized information. Data is produced by every web-search, web-purchase or web-message, and that yields astonishing gains in predictive certainty and behavioural control. We have scarcely left the website where we have been looking for a flight when advertisements for car rentals, hotels, attractions, entertainment and various amenities connected with our potential destination have filled our screen. The prize of that competition is our attention. In an economy where information abounds, the consumer's attention becomes the scarce resource economic agents are competing for.

To get a sense of the scale:

- in 1997, 100 gigabytes of data were produced globally per *hour*
- today, 100 gigabytes of data are generated every *2 thousandths of a second* (Peter Hershock, senior fellow / director at the East-West Center in Honolulu, Education and Research Institute, established 1960 by the US Congress)

An important feature of the dynamics of networks is the so-called 'network effect.' The incentives for belonging to a network increase as the network expands. Successful networks absorb competitors or starve them of membership, eventually coming to be seen, not as optional, but as accepted necessities. This network effect is bringing about a winner-takes-all economy in which an ever smaller number of business winners gain commanding attention share, 'locking-in' consumers/users and garnering nearly all the rewards of economic growth. Thus, Google and Facebook today net 73% of all digital ad revenue in the US, and Google, Facebook, Microsoft and Yahoo—get 33% of all website visits globally (Peter Hershock).

Contrary, then, to the popular narrative that the internet supports egalitarian competition, the digital economy is structurally-biased toward building monopolies. For e-consumers and social media users, this is not all bad; digital monopolies afford real connective and experiential advantages (Think, for example, of how buying books has been revolutionized by Amazon). Understanding why we should be worried requires a deeper look... (Peter Hershock)

One aspect of the deeper look concerns the impact of the digital economy's bias towards building monopolies on the nature of the political process and on the future of democracy. Controlling the flow of data through the networks is obviously of paramount importance in political terms. The impact of fake news and troll sites on the outcome of elections is currently a hot topic of debate.

A century ago, imperial and commercial powers played a colonial Great Game aimed at controlling lands and labour. Today, a new Great Game is being played by corporate and state interests seeking global dominance through control of digital connection platforms and human attention-energy: dominance in the *colonization of consciousness* itself.

Through an arranged marriage of the *attention economy* and the *surveillance state*, a world is coming into being based on ambient and invisible control over where and how we connect, with whom and what, and with what range/degree of choices. (Peter Herschock)

Re-enchantment

It may be somewhat discouraging when we look at the pervasiveness of the dynamics we have to challenge in order to build a sane, humane, ethical, ecological, intelligence society. Hershock's diagnosis that what is at stake is the colonization of *consciousness* itself has an ominous 1984 ring.

E.F. Schumacher in *A Guide for the Perplexed* (quoted by Andrew Fellows) asks:

> *Can we rely on it that a 'turning around' will be accomplished by enough people quickly enough to save the modern world?*

Technology and the global effects previously described grow exponentially. Exponential growth, in case you have forgotten, means that the larger the value of a quantity that has been reached, the faster the growth. Can human consciousness keep pace with the impact of our actions? We don't know, but I would like to end this talk by sharing a few reasons for hope.

A very simple but powerful one has been beautifully

stated by my friend Satish Kumar, founder of the Schumacher College in Devon, UK, and peace pilgrim, who walked 8000 miles around the globe to meet the heads of state of what were then the four nuclear powers, to perorate the cause of nuclear disarmament.

In a personal communication he noted that the vast majority of humans have relatively simple needs and desires: things like good health, a peaceful home environment, healthy and happy children, a sufficient level of physical comfort, good relationships with neighbours... For some people we may need to add some degree of adventure and discovery, aesthetical and mystical experiences...

But nothing very costly. We have it all. Our wonderful planet Earth offers an abundance of resources to fulfill all our simple—and even some not so simple—desires. If we could just get rid of the *hybris* of endless growth (growth of population and growth of consumption) we would discover that there is plenty enough to go around, there is no need to fight for it.

Why does it not seem to be that way? The simple life, the simple desires and struggles of the vast majority of humanity never make it into the news. There is more goodness and sanity in the world than the news portrays. The horrors are there too, no doubt. But the vast majority of human beings are pretty decent.

And finally there is something else that also gives me hope: looking at the large picture. Human life is only a fleeting moment on a cosmic time scale. Will we still be here in a thousand years, in a million years? Maybe not, if we keep the present course! But so what? Life will go on. Life will keep trying out its innumerable experiments, will keep celebrating its eternal play, *lila*. Birds will keep singing. Flowers will keep blooming. Some kinds of them, at least.

As a boy I used to have a recurring fantasy that fascinated me. In my imagination humanity had disappeared and nature was reclaiming all the spaces that civilization had shaped according to its own use. Ruined buildings were covered with vines, highways were breaking down, banyan trees were growing in the cracks of the asphalt and strange birds were nesting in the canopy formed by the trees. Contemplating this landscape had a comforting effect on me.

Life is larger and stronger than us. Gaia, Mother Earth, is larger and stronger than us. The cosmos is larger and stronger than us. In terms of the large picture we are a precious, highly complex, little detail. Precious, but a detail.

SHANTENA AUGOSTO SABBADINI was awarded his PhD in physics from the University of California in 1976 where he contributed to the theoretical work behind the first identification of a black hole, the X-ray source Cygnus X-1. In the 1990s he was scientific consultant for the Eranos Foundation an East-West research center founded under the auspices of C.G. Jung in the 1930s. In that context he produced various translations and commentaries of Chinese classics in Italian and English, including the Yijing *and the trilogy of Daoist classics, the* Laozi*, the* Zhuangzi *and the* Liezi*. From 2002 onwards he collaborated with F. David Peat running the Pari Center for New Learning and in 2017 he succeeded his friend and colleague as director of the center.*

A Physicist Looks at the Javanese Shadow Puppet Performance

M.S.A. SASTROAMIDJOJO

Because of the lifelong preoccupation of the author with physics and philosophy, and in particular with Javanese philosophy, it is not surprising that he has been looking for a common conceptual ground for both physics and that element of Javanese philosophy which is expressed in Javanese shadow puppet play.

Why should physics be brought into juxtaposition with what is essentially art? Shadow puppet play is not only art but more significantly a 'sacral' art which even today is an integral part of Javanese culture.

Physics and art are but human attempts to get at the ultimate truth. Physics since Descartes, Newton, and Bacon has developed into a search for a fundamental building block. The underlying assumption is that once the 'fundamental building block,' in this case a subnuclear particle, is found, everything else will be deducible. This worldview is essentially mechanistic. If it was limited to the field of physics, it would be of interest only to physicists. However, this has not been the case.

Locke based his philosophy on the findings of Newton. Descartes had a profound influence on philosophy and Bacon's influence can be traced in almost all scientific disciplines.

In short, the present fields of sociology, biology, medicine, economics, and politics, are all based on the mechanistic worldview which holds that the world consists of separate parts. This worldview is therefore fragmented or non-holistic.

However, in the field of physics there has been an increasing concern about the validity of the quest for the 'ultimate building block.' The culmination of this questioning can be seen in the work of Geoffrey Chew, David Bohm, and John Bell, who challenged this mechanistic view through mathematical analysis and experiments.

Since the finding that there is no such thing as a 'fundamental building block,' no 'ultimate sub-nuclear particle,' but only 'fundamental dynamic relationships' and that these dynamic relationships are clearly portrayed in both the matter and substance of Javanese puppet play, an attempt has been made to re-view the contemporary fragmented worldview in the Western world by comparing it to Javanese Philosophy to see if, heuristically, new developments are possible.

We will therefore start by looking at how Javanese shadow play is performed and try to find the implicate message of the 'medium.'

Javanese shadow play is performed by a puppeteer who sits cross-legged in front of a screen. The puppets, which are made of perforated pieces of buffalo skin, are manipulated in such a way that a light source behind and above the puppeteer, or 'dalang,' throws the shadows of puppets on the screen.

The puppets are, curiously enough, 'shadow'-like, so that when holding a puppet, one is in fact holding a 'solid shadow.' The generic name of these puppets are 'shadows,' so that the shadow on the screen is nothing less than the 'shadow of a shadow.'

When one sits behind the screen, only shadows are seen. If one sits in front of the screen, one sees (1) the shadow on the screen, (2) the shadow in the hand of the dalang and (3) the dalang himself with the supporting 'gamelan'

orchestra, consisting almost entirely of percussion instruments, which are not unlike xylophones. The music can best be described as symphonic and the mode as reminiscent of Bach's 'point-counterpoint' compositions. The main impression is that of 'flowing movement.'

Animation of the shadow puppet is through the voice of the dalang and such is his art that before long there is the total illusion of the 'shadow' coming to life.

It should be noted here that the dalang himself, in so far as he is the prime mover of the puppets, is the symbol of a higher level or higher order. At the same time, he himself is a puppet in the hand of a still higher order.

The best dalangs are 'sensitives,' meaning that it is almost as if they are possessed by the selfsame 'spirits' or 'shadows' they are throwing on the screen.

Many dalangs take drugs or smoke opium to enhance their receptiveness.

The sequence of (1) shadow of a shadow, (2) solid shadow in the hand of the dalang, and (3) the dalang himself, is the way 'things' or 'events' are projected from deeper and deeper levels of ordering.

It should be noted that 'shadow' in Javanese culture stands not only for the physical phenomenon, but also for essence, spirit, and soul.

The shadow play itself is rigidly structured. The performance starts at eight o'clock in the evening and finishes at four o'clock in the morning. For the uninitiated, this seems to be excessively long. However, two things have to be remembered.

Firstly, this is not a performance in the modern sense of the word. It is first and foremost a communal meditation in which the dalang prepares the audience mentally to receive the 'wahyu' or 'enlightenment.' He does that not only through the content of the play, which is perceived and processed by the rational part of the mind, but also through the music, which is programmed to match the human biorhythm. Secondly, the real content of the totality underlying the story cannot be expressed in words. It has to be absorbed metaphysically, through a non-rational psychic process.

The structure or program of the play is as follows. From eight o'clock in the evening to half past twelve, the 'problem' or 'plot' of the shadow play is explained. War, love, intrigues are 'rationally' analyzed. The language of the play at this stage is ancient, classical Javanese, which is derived from Sanskrit.

From half past twelve to half past one the dalang starts the 'goro-goro' or 'time of trouble.' This stage brings everything back to the 'primogenial chaos' or, rather, the 'primogenial void.' The void should not be thought of as total emptiness.

It is pregnant with power and potentialities. It is the source of infinite power. It is called 'awang-uwung' and reminds us of the basic Taoist philosophy: 'The myriad creatures in the world are born from Something, and Something from Nothing.' During the goro-goro, the dialogue is in the vernacular. Jokes are told and the audience relaxes. One should not view this interlude as spiritually empty. It is exactly in this state of relaxation that the human mind is receptive to the 'unspoken' or 'implicated' content of the 'teaching jokes' and 'teaching stories.'

After the goro-goro, at two o'clock in the morning, when the mind is in the twilight zone between waking and sleeping, the language is switched back to classical Javanese and the 'solution of the problem' is presented. The unspoken, unwritten, message—the 'wahyu' or 'enlightenment'—of the play 'comes down' and is absorbed by the now psychologically prepared audience. This 'enlightenment' is not explicitly given by the dalang but is the blending of the soul with 'that-which-is.' It makes clear that rational, conventional, or linear thinking is not enough to 'solve the problem.'

The entirety of the puppet play, its outer form and inner content together, depicts the worldview of the Javanese, to wit:

> *That everything is connected with everything else.*
> *That nothing is static; everything is only 'becoming' or process.*
> *The source of all power is the primogenial void.*

Javanese philosophy has been described as syncretic, which is to say that it consists of bits and pieces of all kinds of beliefs and religions. If one sees in it bits of Buddhism on top of Hinduism mixed with Islam and Animism, then no doubt it could be construed as an example of syncretism. Geographically, Indonesia has always been on the nexus, or crossroads of two continents and two oceans and has been influenced by many beliefs and religions. But its syncretism has been active, not passive. Everything has been re-digested and re-created, resulting in a consistent system of thought of breathtaking beauty, grandeur and originality. Consider the following dialogue:

In the Dewa Ruci story, Bima, one of the five Pendawa brothers, is directed by his 'guru' or spiritual teacher to look for the *'water of knowledge'* in the middle of the ocean. After scooping the whole ocean dry, he finds standing on a rock a little man only a finger high. Outwardly he

resembles Bima closely; not the Bima standing in front of him though, but a Bima still in his adolescent years, the years of innocence.

When Dewa-Ruci, the little man, asks him what he is doing in the middle of the ocean, Bima tells him of his quest for the 'water of knowledge.' He explains that once he has swallowed this purest of all pure water, he will 'know everything.'

Dewa-Ruci, tells him that he has been misled by his spiritual teacher. There is no such thing as water which can make people all-knowing but, he adds, if you want to know everything you have only to enter my body by way of my left ear. Bima laughs and chides the little man. 'How can I fit into your body?'

'You are the size of my little finger,' answers Dewa-Ruci. 'Reflect a little. The whole universe is certainly bigger than your body, Bima, and since in this slight body of mine you can find the whole universe, complete with all the worlds mountains and oceans, you certainly will fit in.'

Bima, after deep thought, becomes convinced and starts to shrink in order to be small enough to enter Dewa-Ruci's body. In a flash he becomes one with the universe and therefore enlightened.

The 'wayang' or 'shadow' story is in essence a teaching story, which means that it is in fact a 'technical document.' As explained by Idris Shah, when he talks about Sufism:

> *An ancient yet still irreplaceable method of arranging and transmitting a knowledge which cannot be put in another way. Being a 'technical document' the content of the 'teaching story' can only be understood by people who are suitably prepared. Only then can the developmental effects of the story work on the individual or group.*

What has physics to say about all this? Physics since Newton has gone through a development from extreme mechanism and fragmentation to the present 'mystic' view, where the observer and the observed are thought to be one.

Bima's quest for the 'the water of knowledge' corresponds to the quest for the fundamental particle in physics.

Dewa-Ruci's claim that he has in his body 'the whole universe' is reminiscent of a passage in *The Turning Point: Science, Society and the Rising Culture* (1982) by Fritjof Capra, where he says:

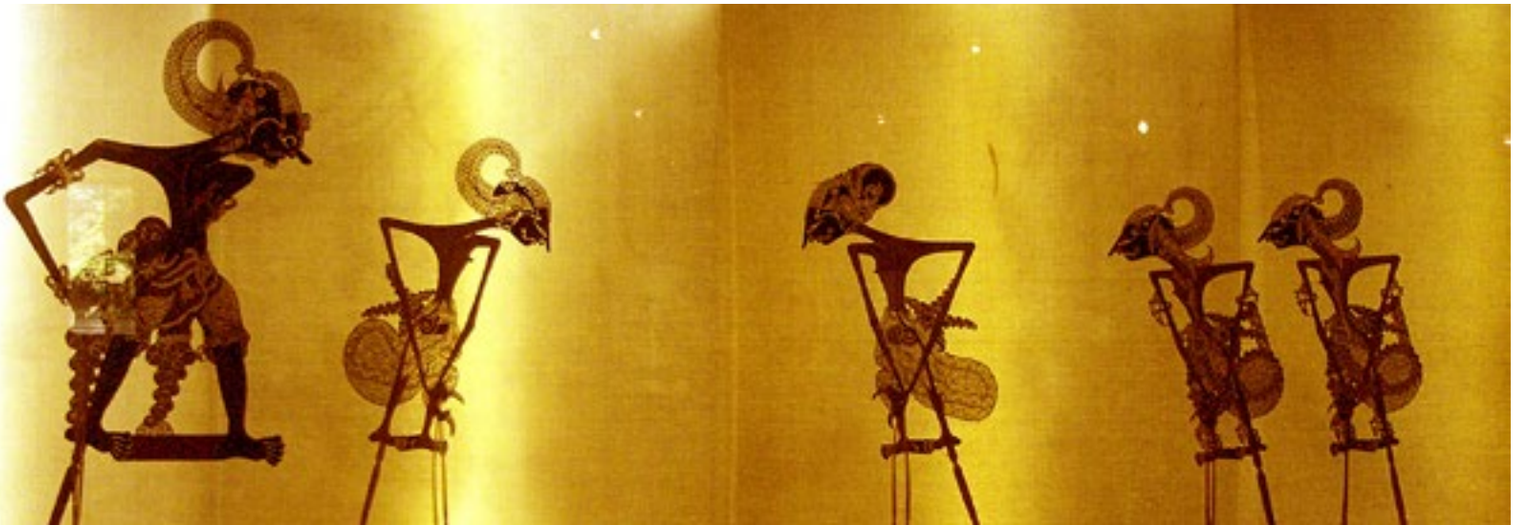
> *According, to the bootstrap theory of Geoffrey Chew (1960) and other physicists, nature cannot be reduced to fundamental building blocks of matter, but has to be understood entirely through self-consistency. All of physics has to follow uniquely from the requirement that its components be consistent with one another and with themselves.*

The 'bootstrap theory' of Geoffrey Chew also points to the possibility that 'Every particle consists of all other particles.' This does not mean that the whole material world is piled up in one little subatomic particle. Rather, subatomic particles should be viewed not as separate but as 'interrelated energy patterns in an ongoing dynamic process.'

This is a radical change from the view that there has to be a 'fundamental building block.' Science is now forced to entertain the thought that to study matter, in one way or another, human consciousness has to be taken into account too. The old mechanistic paradigm therefore has to shift to holism, which ultimately involves the (holistic) study of physics, biology, psychology, the social sciences and the arts. The whole universe is in fact one interlocking 'system of systems.'

One of the reasons for looking for a new interpretation of Javanese shadow puppet play is a growing dissatisfaction with the present worldview, which is by and large fragmented and non-holistic. It is this fragmented worldview which is at the root of many if not all the 'ills of this world,' be it on a personal level or on the level of society as a whole.

Despite all our accomplishments in science and technology we still have to ask ourselves, 'If everything is going so well why do we feel so bad?' Maybe a change of paradigm is



in order. It is proposed that the prevailing method of linear thinking be replaced by non-linear thinking.

Since traditional wisdom in Javanese society is largely non-linear, it would be interesting to examine the cultural foundations of this society.

Javanese shadow play is in many ways reminiscent of Plato's 'Allegory of the Cave,' in his *Republic*. This is especially true of Plato's notion of shadows and images in the cave. The sun outside is Plato's 'light of reality.'

As I have shown, Javanese shadow puppet play is rich in symbolism. The deeper one digs, the more one is surprised to find shadows behind shadows and dreams within dreams, implicating deeper and deeper levels of order. A more complete picture will emerge if a multidisciplinary study is made, involving linguistics, the abstract sciences, biology and psychology, to name only a few.

Finally, it should be pointed out that Javanese philosophy is not just 'something to read or to hear about.' Javanese philosophy has to be experienced.

The wayang or shadow story is called the 'lakon,' but meditation and other esoteric practices like praying and fasting are called 'nglakoni,' which has the same root 'lakon' and means 'acting-out-the-story.' The emphasis is on the inherent one-ness of 'thought and action,' of mind and matter, of time and space, and finally, of observer and the observed.

The message of the Dewa-Ruci story is clear. To attain enlightenment, the use of reason has a limit. One has to go back to the pristine, uncluttered state of mind symbolized here by the figure of Bima as adolescent, by way of meditation.

Why does Bima enter Dewa-Ruci by the left ear and not by the right ear?

In Javanese philosophy the word left or 'kiwo' denotes the paranormal, the normally not used, the world 'behind the mirror.'

Finally entering Dewa-Ruci's body means coming back to an earlier phase in your life or, rather, another state of your life; coming back to the primogenial void where on the one hand space, time and matter are being dissolved in a greater totality, and on the other hand there is still the imprint of one's personal identity.

After his enlightenment was attained in Dewa-Ruci's body, Bima has to come back to the world of everyday life. The message for us, who live in a world daily growing more dangerous to live in, is also clear: We cannot turn the clock back, but we can learn from the past. Sophistication has to be attained by simplicity.

UNIVERSITAS GADJAH MADA

M. S. A. SASTROAMIDJOJO (1921-2004) was a Javanese philosopher, environmentalist and physicist who headed the Solar Energy Research Center at Gadjah Mada in Yogyakarta. After retirement from the University he ran his own Environmental Laboratory in Sambisari, on the outskirts of Yogyakarta. F. David Peat in his book Blackfoot Physics *(1994) wrote 'Over the past few years I have been in correspondence with Dr M.S.A. Sastroamidjojo from Yogyakarta, Indonesia, a physicist who is seeking to bridge Western science with the traditions of his own people. He has written about the famous Indonesian shadow puppet play and the level of reality it presents. On the screen one does not see the puppet itself, but its shadow and the shadow of the one who operates it. Sastroamidjojo feels these levels resonate with those of modern physics. For him this ancient play of the universe is similar to David Bohm's idea that the reality we normally experience is no more than the surface manifestation of a deeper implicate or enfolded order.'*

Wolfgang Pauli: Resurrection of Spirit in the World

F. DAVID PEAT

The dialogue between religion and science takes place not only as an open debate between two disciplines but can also be a movement towards wholeness in an individual who seeks to reconcile inner and outer, subjective and objective, theory and experience. In considering this relationship between science and religion, it is useful to turn to the life of Wolfgang Pauli, one of the most important physicists of the twentieth century.

Pauli was born in 1900 in Vienna and published his first scientific paper within two months of leaving high school. By the age of twenty he had written a 200-page article on the theory of relativity that was praised by Einstein in the following words, 'no one studying this mature, grandly conceived work could believe the author is a man of 21 (sic). One wonders what to admire most...the psychological understanding of the development of ideas, sureness of mathematical deduction, profound physical insight, capacity of presentation.'

Pauli's conversations with Heisenberg paved the way for the quantum theory and, within months of Heisenberg's discovery, Pauli had applied the new theory to calculate the spectrum of the hydrogen atom. His later discussions with Bohr helped to formulate the interpretation of that theory. His famous Exclusion Principle explains why there is structure in the universe. Electrons, protons and other particles called fermions are governed by a principle of anti-symmetry, which means that they cannot all be in the same quantum state. This restriction gives rise to the differentiation of the material world into the various chemical elements. On the other hand, boson particles are governed by principles of symmetry, which allows them to congregate into a single coherent state, as is the case with lasers, superconductors and superfluids. Pauli's vision of overarching symmetry in nature also led him to predict the neutrino, twenty-five years before it was discovered experimentally.

For his part, Max Born believed Pauli to be a greater scientist than Einstein. Yet Pauli's name has never been well known to the general public in the way of the other scientific giants of the last three hundred years. The reason is that Pauli preferred to work behind the scenes, proposing new ideas and providing critical comments in conversations, lectures and letters.

In his personality, Pauli was something of a paradox. While some referred to Pauli as 'the conscience of physics,' others nicknamed him 'the frightful Pauli' and 'the whip of God,' because of his brutal and scathing comments during seminars. Referring to a colleague's paper, for example, he said, 'This isn't right. This isn't even wrong.'

Pauli was deeply attached to his mother, who committed suicide in 1927 on discovering her husband was having an affair. From this point on, Pauli's life went to pieces. His marriage to a nightclub singer lasted only a few weeks. Increasingly he turned to drink and became aggressive in bars to the point where he was thrown out. Finally, in his thirtieth year, he consulted Carl Jung, who found him 'a very one-sided individual whose unconscious had become troubled and activated; so it projected itself onto other men who appeared to be his enemies...he became terrible lonely...he began to drink...quarrel...got beaten up.' In Jungian typology, Pauli was a thinking type whose feeling

World Clock, Prague

function had been so repressed and unacknowledged that it now threatened to burst out and overwhelm him.

Jung also found Pauli so 'chock full of archaic material' that, not wishing to influence or 'contaminate' this material in any way, he referred him to a colleague, Erna Rosenbaum, for dream analysis. Rosenbaum had only just qualified, so Jung considered that she would not 'tamper' with her patient. And indeed, over the five months of analysis Pauli reported hundreds of remarkable dreams. He had opened up a dialogue with the very deepest levels of his unconscious mind and, in turn, it had begun to teach him. Pauli's encounter with the unconscious culminated in a vision of such sublime harmony—the World Clock—that it produced something akin to a religious conversion in the physicist. This dream expressed the mysterious harmony of the cosmos and, in its symbolism, united two worlds—represented by rotating discs. This theme of the unification of two worlds would occur again and again in Pauli's waking and dreaming life.

Thanks to these messages from the unconscious, Pauli began to have insights into his own nature and sensed the danger of his personality's oscillating from one extreme to another. He realized that he had been cold, cynical, atheistic and intellectual. He could swing, he wrote, from the thug and criminal to a nonintellectual hermit who had outbursts of ecstasy and visions.

Around 1935, Pauli dreamed that Einstein came to him and told him that quantum theory was one-dimensional but reality was two-dimensional. Pauli must accept a new dimension to reality and he believed that the missing dimension was the unconscious and its archetypes. Jung had proposed the archetypes as structuring principles of the unconscious mind, but Pauli now argued that they were also the underlying principles for structures and processes in the physical world. To this end, he embarked on a research program to develop what he termed a 'neutral language,' one that would apply equally well to physics as to psychology. He collaborated with Jung on the latter's work on synchronicity (Jung's 'acausal connecting principle' or 'meaningful connection'). Independently he began to study the way the archetype of the Trinity had influenced Kepler in his formulation of the laws of planetary motion.

But Pauli was now having other dreams, in which an 'exotic woman' visited him. Pauli believed her to be his soul. He began to see that the most important issue was 'the lack of soul in the modern scientific conception of the world.' The 'spirit of matter,' he believed, had been denied for 300 years and was now struggling for resurrection. He was driven by a vision of the return of soul to the world. While he spoke to very few about his new work, he did once tell his assistant, H.B.G. Casimir, 'I think I know what is coming. I know it exactly. But I don't tell it to the others. So, I am rather doing five-dimensional theory of relativity although I don't really believe in it. But I know what is coming. Perhaps I will tell you some other time.'

In parallel with his work on psyche, Pauli continued to struggle with the principles of symmetry and anti-symmetery in physics which, in his many conversations with Heisenberg, he referred to as an attempt to reconcile 'Christ and the Devil.' If we follow Carl Jung's injunction that alchemy was not so much primitive chemical experimentation but a psychological movement towards wholeness in which internal processes of the psyche are projected outwards onto matter, then Pauli's work in physics is all-of-a-piece with his endeavour to make a mystical marriage between matter and spirit.

According to Jung, Pauli's dream of the World Clock had produced something akin to a religious conversion and a radical change in Pauli's life. Nevertheless, in mid-life, he began to become depressed. But at the age of 47 he had the first of a series of disturbing dreams in which a 'Persian' visited him. On the first occasion, the stranger arrived carrying letters. He wanted to enter Pauli's university and study, but he was not allowed to do so. When he began to speak to Pauli in a sharp voice, Pauli asked him if he is his shadow. 'No,' said the stranger, 'you are my shadow.' Pauli asked if he wanted to study physics. The visitor said that he couldn't understand Pauli's language and Pauli would not understand physics in his language. But he was going to help Pauli by bringing him a chair for there was no chair in Pauli's study. Pauli must give up his illusions. 'He has many women but there can only be one.'

Wolfgang Pauli

Thinking over the dream, Pauli realized that his own attempt at a mystical marriage had been too academic. Despite his psychological insights, he himself remained unrelated to reality—his metaphorical office did not even have a chair. In spite of his vision of unification, he continued to live in a world where there was a clear split between

spirit and matter. The Persian's message was clear: Pauli's neutral language would never be sufficient to bridge that gap. Pauli had realized that the key element in our modern world is the lack of soul in the scientific conception of the world, yet he is now being told to be loyal to one woman—his own soul.

Pauli's dreams continued to alert him. Two years later he dreamed he was in the physics department of a high building. He read a notice that a cookery class would be given by Professor Pauli. Suddenly a fire broke out in the building. Pauli managed to escape and found a taxi at the entrance. The driver was the 'stranger' who said 'I'll take you to where you belong.'

Again Pauli was being warned that he had lost contact with reality. Cookery would take him to the raw material of life, to alchemical transformation. He believed that the stranger was the Hermes or Mercury who was tempting him to enter the world of the senses. If Pauli was unable to take this step within his own life, how could he ever transform the scientific vision to include the soul? In a letter to Jung, he wrote that the missing element was Eros; only love could bridge the gap between physics, spirit and psychology.

Increasingly, Pauli felt split in his life. His dreams had showed the direction in which he should move, yet he lacked the courage to change. He began to visit Jung's assistant, Marie-Louise von Franz, and formed a relationship that had deep spiritual significance for him. He persisted in the analysis of his dreams yet, according to von Franz, he 'would not surrender himself to the demands of the unconscious and suffer the consequences.'

In science, heat is the key to transformation. As a metaphor, it applies equally to alchemy as it does to psychotherapy. Processes within the alchemical retort are mirrored by those in the therapeutic encounter. Only heat, which arises in love, will thaw 'the frozen accidents of life,' as the Jungian Beverly Zabriski puts it. Through his dialogue with the unconscious and his projections onto the world of physics, as well as his attempts to reconcile matter and spirit in the world, Pauli himself was performing alchemical work. Yet alchemical gold never appeared. Eros had always been missing from his life.

Towards the end of his life, the physicist was granted a final dream. A woman is going to teach him to play the piano. She takes a ring from her finger and gives it to him. She tells him that this ring will unite the two worlds, for it is the ring from his school of mathematics. It is 'the ring of i.' The significance of this ring is that, in mathematics, 'i' stands for what are known as the imaginary numbers. Together with the real numbers, they create a two-dimensional plane. Again, the symbolism harks back to Pauli's transformative dream of the World Clock, a device that unified two worlds in the most sublime harmony.

But the figures in his dreams had grown angry and began to persecute him. He had lost his orientation and finally gave up his dream of unifying the inner and outer worlds. For a time, he persisted with physics and his attempts to reconcile 'Christ and the Devil.' During Christmas 1957, he wrote to Heisenberg, 'If only the two divine contenders—Christ and the Devil—could recognize that they had grown so much more symmetrical!' Shortly after this, Pauli went to the United States to explain his new theory. From there, Heisenberg received an abrupt letter telling him that he, Pauli, was withdrawing his work. A few months later Pauli fell ill and, following an operation, died of cancer.

Pauli himself may have believed that his life ended in failure—failure to unite 'Christ and the Devil' within his unified field theory of physics and failure to bring about a unification of matter and spirit within the world of physics. Nevertheless, the validity of his dream lives on. The example of Pauli is salutary. It tells us that this desire for a marriage between matter and spirit, science and religion, remains one-sided when it is only carried out at the abstract or intellectual level. Eros must enter in; one must not only seek unity without, in the world of ideas, but inwardly also, in one's own life. This latter, this search for inner wholeness, may be an unending process. Indeed, the process itself may be more significant than some fantasy of an ultimate goal.

This brings me to a final point, which, I hope will stimulate some debate. It is that region in which, I believe, science (as it is presently being practiced) and religion part company, or at least betray a different attitude towards knowledge and certainty. Religion is tolerant of mystery, of living with uncertainty and accepting doubt. Philosophers work in a long tradition, revising and illuminating perennial problems of truth, morals and conduct. Writers, artists and composers constantly add to, consolidate or transform their own traditions. Science, however, particularly theoretical physics in the latter half of the twentieth century, has constantly been seeking closure. It wants to reach the most fundamental level, the ultimate equation, the 'God' particle. Physics has created this final goal for itself and believes it to be an achievable end. The inability to reach such a hypothetical goal can therefore easily be viewed as a personal failure. It is true that an ultimate level

or explanation may indeed exist. Equally well it may not. It is entirely possible that, in a certain sense, physics could continue to dialogue with nature for the foreseeable future.

Possibly it was at this level that Pauli confused his failure to unify symmetry (Christ and the Devil) in physics with the openness of his quest for the wholeness of matter and spirit and with the nature of his own inner quest. Pauli's life, I believe, teaches us that the dialogue between science and religion must also continue in the life of each individual who engages in the debate. In this I am reminded of a story Carl Jung often related. It concerns the story of a rainmaker who was invited to a village that had experienced a long drought. After entering the village, the old man went to a hut, where he stayed for some time. Finally the rains began and the villagers asked the man how he had made the rain. 'I didn't make the rain,' was his reply. 'When I entered the village I found it in great disharmony, so that the processes of nature were not operating in their proper way. This also produced disharmony in myself. I therefore went into the hut to compose myself until my internal harmony was restored and equilibrium established. Then it began to rain.'

"The view of nature which predominated in the West down to the eve of the Scientific Revolution was that of an enchanted world. Rocks, trees, rivers, and clouds were all seen as wondrous, alive, and human beings felt at home in this environment. The cosmos, in short, was a place of *belonging*. A member of this cosmos was not an alienated observer of it but a direct participant in its drama. His personal destiny was bound up with its destiny, and this relationship gave meaning to his life. This type of consciousness—'participating consciousness'—involves merger, or identification, with one's surroundings, and bespeaks a psychic wholeness that has long since passed from the scene. Alchemy, as it turned out, was the last great coherent expression of participating consciousness in the West."

Morris Berman, *The Reenchantment of the World*

F. DAVID PEAT was a quantum physicist, writer, and teacher who founded The Pari Center in 2000. He wrote more than 20 books which have been translated into 24 languages, as well as numerous essays and articles. In 1971-72, he spent a sabbatical year with Roger Penrose and David Bohm, and thereafter his research focused on the foundations of quantum theory and on a non-unitary approach to the quantum measurement problem. Peat continued an active collaboration with Bohm and, in 1987, they co-authored the book Science, Order and Creativity. *David Peat died, in Pari, Italy in 2017.*

Celestial Phenomena and Siena's Four Monasteries Project

CARLO BARBIERI

The sun, the moon and the stars would have disappeared long ago…had they happened to be within the reach of predatory human hands. (Havelock Ellis, The Dance of Life, 1923)

In 2017, Mario Tessoni, a local architect, published a book entitled *Architettura, Mito e astronomia nel territorio Senese: Il circuito dei quattro Monasteri* (*Architecture, Myth and Astronomy in the Province of Siena: The Circuit of the Four Monasteries*). In his book, Tessoni describes in detail a discovery he had made a few years earlier: that at the spring equinox, four important monasteries dating from medieval times unequivocally align with the polygon that forms part of the Ursa Major constellation.

Before I tell you more about The Four Monasteries Project I will ask you, 'Should we be surprised by this discovery and what can we learn about enchantment from it?' To help you answer this question, I will write briefly about knowledge and how it was applied in pre-scientific times.

For at least ten thousand years, human beings have been studying the heavens and plotting the procession of the constellations and heavenly bodies across the night sky. Their observations and calculations are reflected in their calendars, their myths, their monuments.

By studying the architecture, myths and astronomy of the past and seeing the interconnections between them, we learn about the ideas of order, measure and time that were held in different ages and among different civilizations, allowing earlier peoples to see a connection between the boundless scale of the heavens and the more circumscribed one of our planet; divine creation and the anthropization process, namely humankind's transformation of the environment in order to meet its survival needs.

In pre-scientific times, celestial phenomena were the fundamental guiding principles by which human beings organized their means of survival processes on the planet. The knowledge on which these principles were based was acquired by studying the sky; day and night; the sun, moon, planets, and constellations of the cyclically changing seasons and their manifestations.

One of these constellations is Ursa Major, also known as the Great Bear. Ursa Major is a constellation in the northern sky and its associated mythology most probably dates back into prehistory, It is made up of the group of stars commonly called the Big Dipper. The handle of the Big Dipper is the Great Bear's tail and the Dipper's cup is the Bear's flank. The Big Dipper itself is not a constellation, but

Abbey of San Galgano

an asterism—a group of stars that is distinctive but smaller than a constellation.

Ursa Major was one of the original 48 constellations listed by Ptolemy in the 2nd century AD. Today it is the third largest of the modern constellations and is visible throughout the year from most of the northern hemisphere. Greco-Roman, Judeo-Christian, Hindu, Chinese, Japanese, Southeast Asian, and Native American traditions have all incorporated the Great Bear into their mythologies.

The Odyssey notes that it is the sole constellation that never sinks below the horizon and 'bathes in the Ocean's waves,' so it is used as a celestial reference point for navigation. It may be one of the few star groups mentioned in the Bible, Job 9:9; 38:32. It is referred to by such poets as Homer, Spenser, Shakespeare, Tennyson and also Lorca in his 'Song for the Moon.' It features in the painting *Starry Night over the Rhône* by Vincent van Gogh.

From the ancient days of mankind, monuments have been built to receive the rising or setting sun, often upon the summer or winter solstice, the spring or autumn equinox, or in alignment with specific stars and constellations. Throughout the world a great number of archaeological sites and prehistoric monuments, mounds, chambers, standing stones, tombs and temples have revealed alignments towards celestial events that played an important role in the life of many ancient cultures. Long before the pyramids were constructed in Egypt, ancient people there built elaborate structures aligned to the sun and stars.

Belief in the heavenly nature of geometrical forms has existed since prehistoric times and persisted in more recent times to inspire the design of important religious buildings. The great cathedrals of Europe were devised to bring the geometry of their construction into harmony with that of the universe, and with the geometries of their predecessors.

Colin Dudley in his book *Canterbury Cathedral: Aspects of its Sacred Geometry* writes: 'It is in the light of the ancient cosmology that one needs to envisage the culture that created the great medieval churches, all of which incorporate a geometry that is purposefully created in order to provide, through its supposed supernatural power, divine protection from the destructive powers of the earthly world and the Devil, and to attract the presence of the Almighty, creator of all the geometry in the universe.'

These churches were not addressing the eyes of human beings, but rather the eyes of heaven. To build a house of

God without his geometry would be vain; the purpose of geometry here was to unite the building with the eternal world of heaven and the heavens.

The Four Monasteries project, a local endeavour, is a tourist/pilgrimage itinerary that connects four such places of spirituality and hospitality that lie in the south of the province of Siena: the Hermitage of Lecceto in the hills of Siena, the Abbey of San Galgano in the Val di Merse, the Abbey of Sant'Antimo in the Brunello hills, and the Monastery of Monte Oliveto Maggiore in the Crete Senesi.

The pilgrimage route will form part of the 'slow movement' following paths and trails linking the above sites. It will be through countryside that is free of cars and typically Tuscan. According to the principles of 'slow movement,' pilgrims will travel on foot, on horseback, or by bicycle. A network of hospitality services—accommodation, places to eat, places to rent bikes and horses, wine and oil tasting, guided tours, etc.—is being developed.

Everyone expects Tuscany to feature incredible landscapes, but few people are aware what stargazing means in this region. The first world atlas of light pollution—excessive artificial light in the night environment—was published in 2001, authored by an American and two Italian researchers. This document revealed for the first time a very dark area in Southern Tuscany, covering the inland areas of the Maremma, Monte Amiata, the Farma and the Merse valleys, the exact same area in which the four monasteries are located.

When preparations for the project are completed we hope that some of you will come and trek the ancient paths of Tuscany, visit four medieval monasteries, and look up at the stars.

The Starlight Night

GERARD MANLEY HOPKINS

Look at the stars! look, look up at the skies!
O look at all the fire-folk sitting in the air!
The bright boroughs, the circle-citadels there!
Down in dim woods the diamond delves! the elves'-eyes!
The grey lawns cold where gold, where quickgold lies!
Wind-beat whitebeam! airy abeles set on a flare!
Flake-doves sent floating forth at a farmyard scare!
Ah well! it is all a purchase, all is a prize.
Buy then! bid then! — What? — Prayer, patience, alms, vows.
Look, look: a May-mess, like on orchard boughs!
Look! March-bloom, like on mealed-with-yellow sallows!
These are indeed the barn; withindoors house
The shocks. This piece-bright paling shuts the spouse
Christ home, Christ and his mother and all his hallows.

"We live under the power of Modern Consciousness, which means that we are obsessed with progress. Wherever you are is not good enough. We always want to achieve something, rather than experience something. The opposite of this is Spiritual Consciousness. By that I mean you find enchantment in every action you do, rather in just the results of your action. Spiritual Consciousness is not a particular religion but a way of being."

Satish Kumar

CARLO BARBIERI for 39 years was in the business of fashion fabrics in Como, northern Italy, the centre of the textile industry in Italy. With a view to retirement he decided to begin a new life and, in 1997, he bought an abandoned farmhouse, situated below the village of Pari, that had once been a small Benedictine monastery. Following retirement, at the beginning of 2000, he started restoring the farmhouse turning it into an agriturismo *(a working farm that accommodates guests). Since 2002 he has welcomed guests from all over the world, and every year produces oil from his olive groves. He is very active in the region promoting sustainable tourism connected with the 'slow movement.' Together with friends he has succeeded in bringing about the restoration of the nearby Petriolo hot springs and is now working hard to make the Four Monasteries pilgrimage a successful tourist attraction for the whole region.*

"Science, torn apart from its spiritual root, meant the end of alchemy, but also the end of a civilization with a united mind, a consciousness that could hold together ancient spiritual, psychic values and the newer progress of the analytical process. The mind-body split is not the essential wound in Western consciousness. It is the mind-spirit split. The intellectual severing that prepared the ground for the worst results of this rupture: the atrocities of 'rational ideologies' that our own century has experienced in abundance.

The golden light of metaphor, which is the intelligence of poetry, was implicit in alchemical study. To change, magically, one substance into another, more valuable one is the ancient function of metaphor, as it was of alchemy. The savage suppression of hermetic studies that occurred after the Battle of the White Mountain in 1620 ended the slow progress toward a unitary modern consciousness based, at least in part, on the intelligence of metaphor. Such a mind might, in our own day, have kept science (more specifically technology) attached to the spiritual hunger that is its ancient source. But as it is, the suppression by force of the magic sciences affected the tone of thought in the early 17th century injecting into it an atmosphere of fear.

This intellectual fear is familiar to us in modernity. It is the fear of mystery, of the wisps of life that refuse to be pinned down, that will not 'make' sense, that are irregular and do not *fit*. This fear has justified every atrocity in our immediate history: against Jews, against Blacks, Asians, against the victims of the abstruse ideologies of Communism and anti-Communism. It is the response of consciousness stripped of its old allegiance to spiritual values. It makes us think of gold as glitter. "

Patricia Hampl, *A Romantic Education*

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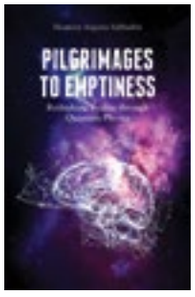
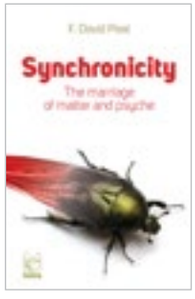
Pilgrimages to Emptiness: Rethinking Reality through Quantum Physics
Shantena Augusto Sabbadini



In plain everyday language this book approaches quantum physics and cosmology as 'instruments of wonder,' i.e. as ways to contemplate and appreciate the extraordinary mystery we are immersed in. The eternal questions humans have been asking (who are we? what is this universe? what is mind? what is matter? what is life?) are addressed in this book from a scientific perspective. By pushing our scientific knowing as far as possible we become aware of the infinite expanse of our 'unknowing.' Sabbadini explores how we lost our connection with the world soul and how that connection is re-emerging from an unexpected direction. In the end we are left with a sense of wonder at the subtlety of existence and gratitude for the outstanding ride we are freely given.

Synchronicity: The Marriage of Matter and Psyche
F. David Peat



'Synchronicities,' says Peat, 'open the floodgates of the deeper levels of consciousness and matter, which, for a creative instant, sweep over the mind and heal the division between the internal and external.'
As well as exploring the Jung-Pauli relationship Peat outlines the history of synchronicity, and the book features chapters on alchemy, consciousness and the *I Ching*. 'It may well be that for us, in the early 21st century, to accommodate ideas of synchronicity in any fundamental way will require a profound transformation of the way in which we view ourselves, nature and society,' says Peat. He ends with a speculative and provocative chapter on the possible source of true synchronicities.

Holy Wedding: The Inclusion of Synchronicity and Hermetic Principles in the Worldview of the 21st Century
Remo F. Roth

Holy Wedding is the opus of a trilogy that commenced with Remo Roth's previous works *Return of the World Soul I*, an analysis of the pivotal relationship between the great minds of depth psychologist Carl Jung and physicist Wolfgang Pauli, and *Return of the World's Soul II*, a model of psychophysical reality for a generative world.
In this latest work Roth leads us on a pathway towards a coniunctio of the leading edges of contemporary human consciousness; physics and psychology. He addresses the 'Holy Wedding' of psyche and matter as an issue of prime importance not only in the evolutionary impulse of us as a human species but also to our survival.

In Search of Psi: Contemporary Perspectives on Extra-Sensory Perception, Psychokinesis and Survival
Edited by Adam Rock and Lance Storm

The editors, Dr Adam J. Rock and Dr Lance Storm, have put together *In Search of Psi* because they noted that the vast majority of similar books on the intriguing subject of parapsychology are actually too light-weight and lacked any real depth on the more serious aspects of the paranormal.
Topics covered include telepathy (thought transference), precognition (seeing the future), human levitation, multiple dimensions, and the riddle of space-time. There are chapters that thoughtfully delve into the possibility that human personality can survive bodily death. *In Search of Psi* discusses communication with departed loved-ones and travels far afield to foreign locales, such as New Guinea and remote American-Indian communities in New Mexico, USA, to find out how psi is understood amongst indigenous cultures. *In Search of Psi* also examines the evidence for psi and takes a look into the future to see what uses psi might have for the generations of tomorrow.