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CONTENTS

Welcome to the Conference	Hazel Nelson	3
Understanding Spirituality from a Psychological Perspective	Isabel Clarke	5
The Collective Unconscious and its Relation to Spirituality and Spiritual Experience	George Bright	16
Quantum Theory and the Concept of Reality	Chris Isham	36
Consciousness: A Link between Science and Religion	Chris Clarke	50

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FROM THE EDITOR

This year's annual conference on the theme "Science and the Spiritual" was attended by some 50 Friends, and it was a truly inspirational event. Although we cannot share with those not present the richness of our discussions together, the main speakers have all provided full written versions of their formal presentations so I am delighted to be able to use the June issue of *Universalist* as the *Conference Proceedings*¹ report.

Although the four speakers came from the seemingly disparate fields of theoretical physics and psychology their talks blended beautifully, drawn together by their shared concern of the implications of their work for how we relate to the 'spiritual other'. Chris Isham introduced us to some of the basic findings and implications of quantum theory. Isabel Clarke and George Bright, from their different cognitive-behavioural and psycho-analytic perspectives, provided psychological models of how and why spiritual awareness occurs, and Chris Clarke argued for consciousness as being the link between the physical and spiritual worlds.

All the presentations challenged us to rethink what we thought we knew to be immutable FACTS. For example: Did you know that one thing can be in two different places at the same time? – and that even our logic, which seems to us to be *necessarily* true, does not always apply? Do material things have an underlying meaning that is independent of the meaning we humans give them? Can all physical things be said to have consciousness? – and what might that be like?

I hope I have whetted your appetite! Read on – and enjoy.

Hazel Nelson

¹ Because of the length of these *Proceedings* I am holding all other material until our next issue of *Universalist* in October.

WELCOME TO THE CONFERENCE

Hazel Nelson

It was a great pleasure to welcome the participants to this year's conference – it was good to see so many old friends again, and to be able to warmly welcome those who were joining us for the first time.

Why did we choose *Science & the Spiritual* as our theme? Science is often portrayed as if it is somehow *necessarily* opposed to any notion of a 'spiritual other', as if science, if it is to be true to itself, must *necessarily* challenge people's reports of their spiritual experiences and their understandings of these. But must science necessarily challenge and look for reductionist explanations for spiritual experiences? - or can the scientific methodology and the huge advances in scientific knowledge gained in the recent past be used in a positive way, to help us explore and better understand them? It is certainly true that many scientists today *do* speak as if the spiritual *can't* exist - because it can't be described or explained by modern science. But I must admit I've always found this a slightly curious argument. Since science has evolved quintessentially as a way of describing and explaining the physical world, if it doesn't have the appropriate tools and methodology to also explore the spiritual world why should we find this so surprising? I'm reminded of the situation forty years ago, when I first entered the world of clinical psychology, when the pressure to establish psychology as a 'true science' had led behavioural psychologists to declaim that we should not be concerned with people's subjective experiences (since they were not measurable or objectively verifiable) but only with their actual behaviour – e.g. no 'pain', just 'pain behaviour'. Not the most empathic starting point for a psychotherapist meeting with a distressed patient! Thankfully we've moved a long way since then and psychotherapy is once again concerned primarily with people's feelings, thoughts and distress, but at a more theoretical level

scientists are still finding it very hard to get to grips with the world of subjective experiences and consciousness at anything other than very surface levels - because they still lack the appropriate tools to do so.

When faced with the absolutist claims made in the name of science, I think it is helpful to bear in mind that science is, essentially, a human invention. In nature, *what is – is*. And *what is* cannot be wrong. So if the scientific tools and methodology that we've developed so far can't account for something then it's our modern science that is - I'm not going to say 'wrong', because it's not wrong for the situations to which it applies - but is *insufficient* and needs adapting. Or, as I suspect in this case, needs a radically new (but still scientifically rigorous) approach.

Under the onslaught from the atheist scientist, which seems such a popular pastime at the moment, it is tempting to opt out of the dialogue altogether, declaring that the physical and spiritual worlds are quite separate so science has and can have nothing to say to us about spiritual matters. But I think that to withdraw in this way would be unhelpful, not least because the physical and spiritual worlds clearly **do** interact, in us humans if nowhere else (taking the most conservative position), and seeking to understand ourselves and the world around us seems to be a fundamental part of what is to be human. But beyond our inherent drive to understand ourselves better, I think that science **does** have the potential to help us to a better understanding of what these spiritual experiences are, what they relate to, etc. , etc., and therefore does have the potential to help us to actually develop and enrich our sense of the 'spiritual other'.

Some scientists have taken up the challenge of investigating subjective experiences and consciousness and this is now regarded as a respectable area for scientific study. Those focussing specifically on spiritual experiences are still quite rare, however, so we are fortunate indeed to have four leading authorities from the fields of theoretical physics and psychology to guide us through what current science really can (and cannot) tell us about 'the spiritual other'.

UNDERSTANDING SPIRITUALITY FROM A PSYCHOLOGICAL PERSPECTIVE

Isabel Clarke

Starting from Experience.

The obvious place to start tackling a subject as nebulous, elusive and contentious as spirituality (especially when viewed from the standpoint of science) would be to define the term. Google, the Oxford English Dictionary and all other authorities in old or new media form are ready to assist with neat, encapsulating, forms of words. I do not intend to start from the obvious place! A central plank of the argument I will be developing in this piece is that we as humans have two distinct ways of knowing, of gaining knowledge about our world, our environment and all matters that concern us. One is the sort of intellectual, categorising, knowing 'about' that sends us scurrying to Google and the rest. But that is only one. The other way of knowing we grasp through experiencing; we know by feeling. In fact we navigate our way through life using both, often together or interchangeably and each has its area of expertise. It is no good going into a science exam relying on our intuition, but it is equally useless to look up the quality of a relationship – whether or not it is the one we will trust our life to - in a book. This article will appeal to both ways of knowing in turn, but when considering spirituality I argue that we need to start from experiential knowing, as that is what tells us that there is 'something there'.

It is because science has decisively captured the intellectual high ground in our society and propagated the notion that the first way of knowing I described is the only one, that we even need to ask 'Is there anything there?' about spirituality. Archaeological and anthropological records bear witness that in every other society known to humans religion, the sacred, the spiritual were not only recognized but given pride of place. So, we do not go to the scientists for an answer to this question, but to the mystics, the artists, the

poets, and the mad people. These have travelled beyond the limited bounds of precision into the source of all newness and creativity, all wonder and awe, and, because it is a journey that leads from the known into the unknown, also a potential source of real danger.

First of all, however, we could do worse than to ask ourselves the following questions: "Do terms like 'spiritual experience', 'sacred', 'holy', 'where the veil is thin' have any meaning for us?" If "yes" (and though 'yes' will be the answer given by many to this question, it will be by no means by all), how do we know that these terms are applicable in a particular case? Not by book learning, I would suggest, but by a sense, a feeling – maybe a feeling of awe, a sense of stepping beyond the bounds of our individuality, of being in relationship with that which is beyond – not precisely knowable because it lies beyond our limited capacity for precise knowledge. We can feel more than we can precisely know.

The term 'spirituality' is a rough designation for a whole quality of experience which is marked out from the mundane. In its more extreme form, it is as if the journeyer has stepped over an invisible boundary into another world; the props are the same, but suddenly the same trees, sky, or whatever are suffused with meaning; they hold a supernatural glow. Reliable certainties such as being safely contained within oneself, dissolve. Everything feels connected, synchronicities abound and metaphor comes to life. This is a place beyond time and place. Commonly attested experiences such as telepathy, pre cognition and experiences that seem to suggest that the contents of someone else's psyche have been tapped into, such as past life reports, illustrate the way in which time, space and boundaries between minds do not hold sway in this domain.

Amid this sense of cosmic significance, whether wonderful or terrible (never just normal), certainties about the self also dissolve; the self might be lost in the whole or feel supremely important. The emotions associated with such experiences are inevitably heightened – or absent (this is a place of paradox), whether emotions of awe and wonder or of threat. Indeed, as one of the boundaries that dissolves

is that between inner and outer, along with time, earlier trauma can be re-encountered in this state of mind. Having experienced trauma is one of the factors that seem to make this state more accessible. It is also associated with times of transition when the familiar containers of relationship and role are no longer holding the individual in place.

I am here painting the extreme of inhabiting a territory which is more often accessed by straying towards the edge: a particularly glorious sunset; loss of self in the emotional intensity of relationship. It is in the extreme manifestations of this way of experiencing, as reported in the spiritual literature and by those who acquire the diagnosis of psychosis, that we can more easily identify its characteristics. Important among these is that it reveals the capacity of the human mind to step out beyond the bounds of the individual self – into what? That mind is not something permanently locked in separate skulls; it can be that – but equally it can be sea that we swim in. Central to such journeying beyond the threshold of the everyday is the importance of being able to get back again. It is all too easy to get lost there. As with Theseus in the labyrinth of the Minotaur, it is necessary to acquire and hold fast to Ariadne's thread!

Understanding the Two Ways of Knowing from a Scientific Perspective.

I will now turn my attention to grounding these ideas of two ways of knowing, and the capacity to experience beyond our individuality, in what we know about brain organisation; how this capacity is fundamental to the make-up of the human being. In brief (and I have written about this extensively elsewhere²), the observation that we have access to two distinct ways of experiencing, the mystical/anomalous and the everyday, is an artefact of the organisation of the brain. There appear to be two separate, overall, circuits in the brain, very roughly corresponding to the logical and

² Clarke, I. (2008) *Madness, Mystery and the Survival of God*, 'O' Books, and Clarke, I. (2010) *Psychosis and Spirituality: the discontinuity model*, in I.Clarke, Ed. *Psychosis and Spirituality: consolidating the new paradigm*. (2nd Edition) Chichester: Wiley

the emotional. One concerns the precise, logical, verbally based aspects of our thinking apparatus that we acquired late in our evolutionary journey from apes to humans. The emotional circuit bypasses cumbersome, verbal, new brain thinking. It comprises the sensory and body based systems. It reacts rapidly and emotionally. Normally these two systems work smoothly together – but neither is in overall control, which explains why human beings are so wobbly and prone to break down under stress. When that stress is extreme, or under the influence of certain practices or certain substances, the two circuits drift apart. We are left with the older, less precise, more supernatural feeling one. This idea of two overarching meaning making systems taking turns to be in control comes from the Teasdale and Barnard’s Interacting Cognitive Subsystems (ICS) model of cognitive architecture³ (for a more accessible take on the ICS model see:⁴).

Teasdale and Barnard thus identify two central meaning making subsystems, the emotional/relational one that they call ‘the implicational subsystem’ and the logical one, ‘the propositional subsystem’. In ordinary consciousness these two work seamlessly together, providing the illusion that this fundamental split in our make-up does not exist. It is when we step beyond the bounds of this ordinary consciousness, across the threshold into that other way of knowing, that this split makes itself felt. I will now explore what this means for who we are as human beings in a bit more detail – because it means that we are not who we think we are!

Being partly Relationship

Along with our capacity for language and precise logical thinking, we have in our evolutionary journey as human beings acquired individual self-consciousness and the powerful sense of individual self that this gives us. We tend to assume that this experience tells us

³ Teasdale, J.D. and Barnard, P.J. (1993) *Affect, Cognition and Change: Remodelling Depressive Thought*, Lawrence Erlbaum Associates, Hove:

⁴ Clarke, I. (2008) *Ibid* P.95-101

who we are. Access to that other way of experiencing, however, opens the door to a more connected way of being; a stepping beyond the individual and into relationship. The emotional circuit is designed to organise relationship – both with others and with ourselves. We are not only the unitary creatures of our self-conscious experience – we are also relationship.

This is very evident to someone like myself who works in mental health. Mental ill health is always the product of a disruption in that inner relationship. The potential of that ‘other’ circuit taking charge also means that we lose the safe boundedness that we tend to take for granted. The sense of oneness, of empathy and connection characteristic of spiritual experiences comes from stepping out of our individuality into that place of relationship. The sense of invasion and loss of privacy of thought that is sometimes met in psychosis comes from the same source.

According to this model the non-rational, implicational subsystem, which I prefer to call the relational, is the older part of our makeup, which we share with our nonhuman ancestors. Its functioning regulates our sense of relatedness, of having a place in webs of connectedness. For instance we are familiar with everyday experiences of being of one mind with those we are in close relationship with. Studies in group process, and the therapeutic concept of transference, illustrate that these experiences are shared and real. That relationship is central to our sense of self is only too clear to anyone who has lost someone they love. Grief shakes us to our foundations, and that all too common experience of grief is a good place to start from in order to make sense of the real nature of relationship.

We are given tears to help us to process the grief of loss, to express its pain, to really feel it and then be able to start to repair the damage that the hole has made in our shattered self and to move on. The funeral, the weather and the plants of that time, the birthday, and so on will re-awaken that grief as if it were now. This is because we have here tapped into implicational memory and there is no time

in the implicational/relational subsystem. Thus the bonds that hold us to that person remain, even when in the background of our current lives. In this way, loss gives us a clue as to the real nature of relationship, a clue to understanding relationship not as a superficial add on but as something deeper. When someone is far away, say on the other side of the world, even if we rarely or never communicate and are unlikely to ever visit, there can still be a strong sense of relationship, of connection. In the same way, when someone has died, the sense of relationship lives on. That is what makes the pain so unbearable – the relationship is as powerful as ever, but in contrast to the distant individual, where we do have the option to grab a phone or a plane even if we don't take the option, beyond death there is no chance of ordinary human communication. However, the sense of relationship continues to be palpable. Everything that that individual has given to us – the sense of our value reflected by their regard for us - remains. Who is to say that that relationship is not still two way, even in the absence of direct communication? As mentioned earlier, time and place do not obtain beyond the threshold and neither does the boundedness of the mind.

Relationship and Spirituality.

Relatedness and loss extend way beyond our obvious family and friends into deeper, frequently unacknowledged connections: our ancestors and those who come after us, the animals and the very ecosystem of earth itself. There is also a further experience of relationship, reported by humans throughout the ages, with that which is widest and deepest but beyond knowing. The object or subject of this relationship is variously labelled as God, Goddess, Great Spirit, etc. In the case of that ultimate relationship that remains alive to the majority of humans (though denied by many in our society) who is to say, as was argued in the case of individual loss, that a relationship that is so keenly experienced is not two way? This is not a question that can be answered with the certainty of propositional knowledge because it lies outside the scope of

propositional knowing. It lies in the realm of mystery. We do, however, need to be aware that all these relationships, acknowledged and unacknowledged, are knitted into the fabric of our being.

This model says something about human being, that we are more closely bound to one another than is generally recognized, that we are inherently unstable when we have lost those attachments and in isolation: because relationship will inevitably be a shifting sands on which to found a sense of self, we are continually in flux. Another implication that will be explored below is that our relationships have moral consequences. This perspective also offers a way of understanding spirituality as following naturally from that experience of being in relationship with the Whole.

I hypothesize that in terms of this subsystems model, we encounter a *spiritual* quality of experience when the relational-implicational subsystem is in the ascendant, but in the absence of the self-focused emotions that usually dominate our attention. In such states we may experience being in relation to the Whole. It might for instance be mediated by an experience of beauty, of nature, or of a more abstract apprehension of God or the absolute. In the short term such experiences are generally perceived as ecstatic and awe-inspiring but they entail a loss of all the customary bearings – of what we think of as our normal reality - in which our sense of self is grounded. So it is not healthy to spend too long in states such as these. I like to use the term “transliminal”, literally meaning “across the threshold”, to describe such states, to free them of the baggage of other descriptors (mystical, psychotic etc.). Ultimately, whether these experiences are beautiful and transformative or on the other hand nightmarish journeys where boundaries and safety are stripped away depends on whether we know how to pass both ways across the threshold (or “limen”), whether we hold fast to Ariadne’s thread.

The Moral dimension

Viewing spirituality in terms of relationship like this gives us a way into that moral dimension which is at the heart of all religions and, I claim, is the hallmark of an authentic spirituality. Whereas religious morality can get, in my view, hijacked into the sterile realm of individual purity, its true nature is to be an outward looking zeal for justice.

This follows naturally both because any positive, empathic relationship implies responsibility for the beloved and because, in the deeper sense that 'we are relationship' (see above), the quality of our important relationships becomes part of us. It is, therefore, highly significant that our society is locked into relationships which are distorted by reckless abuse and exploitation of these wider connections. This predicament damages us as much as it does the peoples and creatures we exploit to maintain a wasteful lifestyle and the planet itself. These damaging relationships in which we are enmeshed without being given choice cause us deep pain that, were we more aware of it, would be hard to bear. The more sensitive the individual the more attuned they will be to this underlying pain. A characteristic way in which human beings attempt to block out pain is through addiction.

Addiction is about shutting off. Addictions limit and narrow our attention and intention, as a defence against feeling and against really feeling alive; essentially it is a defence against living. The heroin addict's life, reduced to obtaining the next fix, means jettisoning all values, relationships and morality in that frantic quest. In this respect, spirituality is the opposite of addiction. The more obvious addictions, to alcohol, drugs, disordered eating etc., are of course widely prevalent. Looking a little deeper we can see how our whole society is trapped into an addiction to consumption, whether of material goods, travel, passive entertainment and so on. (The Creation Spirituality writer, Matthew Fox had wise things to say about this⁵.) The pursuit and enjoyment of these things can come to define our status and relationships, and so our selves. But they cut us

⁵ Fox, M. (1983) *Original Blessing*. Santa Fe, New Mexico: Bear & Co.

off from more important relationships, from family and love, and from a true appreciation of what it means to be human.

Even if we are not conscious of the two sides to our being, even if we have become numb to ways of knowing that though they cannot be reduced to rational formulae nonetheless relate us to all that is most vital for us, we can still sense that something is amiss. Doing something about it is another matter. These addictions, so effectively promoted by political and commercial interests, help maintain the status quo. Our leaders say they take climate change seriously but the solutions offered are reduced to individual action. Acknowledging the need for fundamental systemic change is too politically risky. Instead of tackling the challenge of changing lifestyles, they prefer to engage in wars to secure diminishing natural resources for their own countries.

The Importance of Spirituality

It is in the context of our apparent powerlessness, trapped in an economic, social, political order that is headed for disaster, that the spiritual dimension of our being becomes particularly important. True, religion and spirituality can become just another escape, a sterile addiction to comforting feelings and experiences, 'the opium of the people' in Marx's words. However, there is another sort of religion and spirituality, one that is certainly exemplified by the fearlessness of the Quaker commitment to justice and peace, that accepts the challenge of entering into relationship, of stepping across the threshold, prepared to face the pain of what we are involved in and own righteous anger to give energy and courage to work for change.

Perhaps it is only through tapping into that wider sense of relationship with the Ultimate, stepping out of the narrow confines of individuality, common sense and the prevailing ethos, and cautiously venturing across the threshold, that we can tap into the courage and vision to break out of this deadly stalemate. I am suggesting that having the courage to be truly open to that spiritual

dimension might be the key to opening ourselves to a sense of right relationship – of love and, because love means responsibility, of justice and justice action. Connecting with wider realities beyond ourselves will put us in touch with wellsprings of creativity by linking our individual being with the Whole, with the being of the Universe.

The other side of this is a relinquishing of defences and an opening in vulnerability, which brings with it dangers. Often it is the sensitive people who feel most deeply the ills of their age who are prone to break down or crisis when stepping beyond the self. My own involvement with mental health in my job as a clinical psychologist in an acute mental health service and as a volunteer with the Spiritual Crisis Network⁶ is aimed at addressing this vulnerability. Often an encounter, both with the reality beyond the self and with unacknowledged parts of the self, is needed in order for someone to escape from a trapped, dead end place in their life. If such a break out of the mould can be supported successfully the result can be creative and transformative. However, such success relies also on the strength and togetherness of the individual as well as the availability of a supportive context. All too often this process is grievously misunderstood and the result for the individual is disastrous and diminishing.

Conclusion

In conclusion, I would suggest that it is important that we come to understand our complexity, to understand that our self-conscious experience of coherence is misleading. This is because we have the potential of two ways of knowing. In one we are bounded in our individual self and can gain precise information over a limited canvas. This way of knowing has given us immense control over our environment, bought with consequences that we have not faced up to. In our other way of knowing we have the potential to encounter The Whole – but cannot grasp it in any useful sense. We need to

⁶ www.SpiritualCrisisNetwork.org for more information.

understand that being human is a balancing act between these two – there is no comfortable resolution in this life; science will never reveal everything, as all the important things that we feel and experience, like relationship and qualities, are forever beyond the grasp of precision. If we accept this, maybe we can step beyond the confines of the isolated and powerless individual. We need others, who are inspired by the same vision, with whom we can find the courage to feel and to act, and the determination to live sustainably and so stand up for justice for the earth and its creatures in the face of the consumer dominated society we live in. We need to be aware of the danger of despair at the enormity of the task, of shutting down in the face of a seemingly insurmountable challenge, but rather use the emotions of both love and anger positively, in full awareness, so that they can become instruments of change and sources of energy. And let us not forget that once we do open ourselves in this way we are open not only to the pain of the cosmic context but also to its wonder, its love and its sustaining power. This is what I see as spirituality and its role in our world and its future.

Isabel Clarke is a Consultant Psychologist working in the NHS. She specialises in the use of cognitive behavioural therapy with people with psychosis and is a leading authority on the psychology of spirituality. Her book *Madness, Mystery and the Survival of God*, published by ‘O’ Books in 2008, was reviewed in the Feb 2010 issue (no.88) of *Universalist*.

THE COLLECTIVE UNCONSCIOUS AND ITS RELATION TO SPIRITUALITY AND SPIRITUAL EXPERIENCE

George Bright

The theme of this conference speaks of a duality, an 'on the one hand and on the other', in which science and spirituality are contrasted, staring at one another across a chasm which may or may not be bridgeable. The assumption in the conference theme seems to be that the two do not speak the same language, maybe are not of the same substance and, at the very least, have a troubled history of not getting along very well together. They may even long for each other's disappearance. Underlying the three stated conference themes is an anxiety, and also anxiety's opposite, a hope. The fear is that science is antithetical to spirit, maybe in a modern context superior to it. If it allows spirituality to survive, it will only be on condition that spirit can be reductively expounded in scientific terms. The hope, expressed rather tentatively in the third and first of the conference theme statements, is that science may not necessarily oppose the spiritual but may enhance our understanding of spirit. The corollary, that spirituality might enhance science, is not explicit, and from this I surmise that the conference is directed mainly to those whose primary commitment is to spirit, rather than those mainly committed primarily to science

My own professional field of analytical psychology has for the past hundred years been a meeting place, sometimes a bridal chamber sometimes a battle-field, in which science and spirit have been in continuous engagement with one another. For much of the past century, Freudian psychoanalysis was the dominant player in the therapeutic market-place and so dominant in the theoretical field of depth psychology, and Freud, the defining authority for psychoanalysis, was quite clear that science had dispatched

spirituality for good. For Freud, all spirituality could be reduced to frustrated sexuality, and sexuality could be approached in a positivistic, scientific way. In his thought, religion was based on an illusion fostered as an untenable defence against anxiety. Interestingly, in the past fifty years spirituality has trickled back into the psychoanalytic field, most notably through the work of Wilfred Bion, to the extent that The New Library of Psychoanalysis series now boasts a title; *Psychoanalysis and Religion in the 21st Century: Competitors or Collaborators?* (Black, 2006), whose back cover blurb states:

Freud described religion as the universal obsessional neurosis and uncompromisingly rejected it in favour of 'science'. . . . [This book] brings a fresh perspective to the subject of religion and psychoanalysis, answering vital questions such as: How do religious stories carry or distort psychological truth? How do religions work, psychologically? What is the nature of religious experience?

The psychoanalysts who have contributed essays to this volume clearly share some common ground with the organisers of this conference, even if they seem, from the above statement, to be quite clear that truth is on their side and that religion will have to be examined for its conformity to 'psychological truth'. This raises for me the question of authority in the field we are now discussing. To what authority do we appeal to settle disputes arising between science and spirituality? Must the appeal be to 'scientific' authority, the objective criteria which science can measure and research? Or is our appeal to the ultimate subjective authority of what matters for the individual - the authority of the individual conscience? As each of these authorities is proper to one field or to the other, to what other kinds of authority might we appeal to settle disputes between science and religion?

In this talk I shall draw on the work of C.G. Jung, the founder of the discipline and therapeutic practice of analytical psychology, to consider these themes in terms of the relationship between mind and matter. Jung, as I shall discuss, had a life-long preoccupation with

the split between science and spirituality which he experienced as a division within himself. I shall set out briefly some aspects of his model of unconscious processes, showing from what experiences he derived it, and then suggest ways in which his proposal of what he termed 'psychoid' unconsciousness has relevance and usefulness for anyone who is trying to deepen their understanding and practice of spirituality. In other words, I shall present Jung himself as a subject for study with regard to the interplay of science and spirituality, and try to set out some elements of the psychological model he elaborated which also address this interface. In the last part of this talk, I shall set out some thoughts of my own, based on Jung's conceptualisations of mental life, to indicate my own approach as an analyst to working with science and spirit.

Jung's project: human existence as a relationship between two worlds

Jung's life-long project might be described in terms of his attempt to establish relationships between two worlds. I think this project is very similar to the aim of this conference. Jung experienced a dilemma within himself, and all dilemmas represent a possible opportunity as well as an evident stumbling-block. The dilemma we are addressing at this conference is the split between spirit and science, which might equally be referenced as the split between body and spirit or between matter and mind

Jung writes in his memoir *Memories, Dreams, Reflections* of how he perceived this split within himself:

The play and counterplay between personalities No. 1 and No. 2, which has run through my whole life, has nothing to do with a "split" or dissociation in the ordinary medical sense. On the contrary, it is played out in every individual. In my life No. 2 has been of prime importance, and I have always tried to make room for anything that wanted to come from within. He is a typical figure, but he is perceived only by the very few. Most people's conscious understanding is not sufficient to realise that he is also what they are. (Jung/Jaffé, 1983, pp. 62-3).

No. 1 personality refers to Jung the scientist and empiricist; No. 2 connotes Jung's living in ". . . another realm, like a temple in which anyone who entered was transformed and suddenly overpowered by a vision of the whole cosmos Here nothing separated man from God; indeed, it was as though the human mind looked down upon creation simultaneously with God." (op. cit. p. 62).

Interplay between these two worlds runs throughout Jung's scientific published work. The two appear in his early medical dissertation, entitled *On the psychology and pathology of so-called occult phenomena*, in which Jung applies a scientific investigatory method to the phenomena of spiritualist séances. As a psychiatrist he addresses the interface of sanity and madness. As a Kantian, he discusses the relationship between the phenomenal and noumenal worlds, which in the broader tradition of German idealism is expressed as the interface between the Real and the Ideal; as a psychotherapist, his concern is with the interplay of his patient's rationality and irrationality, which might equally be expressed as the relationship between the conscious and unconscious mind. Theologically, the pair features as Man and God or the human and divine, earth and heaven. Most broadly of all, they are expressed in Jung's writing on the relationship between matter, including body, on the one hand, and on the other, what he variously terms 'psyche', 'mind', 'spirit' or 'soul'. Recent discussion of Jung's approach in terms of Max Weber's concept of 'enchantment' and 'disenchantment' suggests that "Jung chooses to locate himself and his work precisely on the border between the two constellations" (Saban, 2012, p.23). In 1957 Jung told his secretary, Aniela Jaffé, that "[my works] are fundamentally nothing but attempts to give answer to the question of the interplay between the 'here' and the 'hereafter'." (op.cit. p. 330)

Jung's interest includes the dynamics of the relationship between the two. The first term of the pair (phenomenal, Real, rational, conscious, Man, body, matter) is, by definition, accessible to investigation and measurement, but by what means can we

investigate and engage with the second, whether conceptualised as noumenon, Ideal, irrational, unconscious, God, mind, psyche or soul? Jung's work emerges from the matrix of a post-religious situation in which the Christian programme of revelation, faith and religious practice is no longer widely acceptable or viable as the bridge between the two, yet in which the positivist secular alternative may be equally unacceptable. The problem, as posed by Kant, was of an invidious choice between soul-less materialism on the one hand and groundless spiritualism on the other. By 1912, Jung had achieved considerable renown within the relatively new field of scientific medical psychiatry, a field into which he had introduced some of Freud's previously little-recognised therapeutic techniques and conceptual formulations. His project at this stage in his life and work was, like that of the authors of *Psychoanalysis and Religion in the 21st Century*, to explain religious and spiritual phenomena in scientific terms; to replace the decayed religious bridge between the two worlds by a psychological understanding of the same universal myths and symbols used by religion. He sets out his project thus in *Symbols and Transformations of the Libido*, his first major theoretical work, published in 1912:

I think belief should be replaced by understanding; then we would keep the beauty of the symbol, but still remain free from the depressing results of submission to belief. That would be the psychoanalytic cure for belief and disbelief. (Jung 1916a § 356).

In this work, Jung shifted his research interest to mythology, folklore and religion, suggesting that all these phenomena stem from a collective or phylogenetic layer in the unconscious mind which is common or collective to all humans. Mythology represents movements of energy within the unconscious, and certain patterns of movement of energy, which Jung terms 'primordial images', are seen as typical. Thus is "belief replaced by understanding".

Although the term 'collective unconscious' only enters Jung's vocabulary in later writing, the concept of a collective unconscious is set out here in 1912. In a diagrammatic form, we could picture

consciousness as at the top of the diagram, sitting upon a layer of unconscious contents which would include, as Freud suggested, thoughts and memories which have been repressed and 'lost' to consciousness because of their unacceptable nature from the point of view of the conscious mind. Then, below this layer of the personal unconscious, Jung posits an unconscious which is shared by all humanity and which is patterned, structured and has dynamics common to us all. The 'primordial images' of the 1912 book later become the 'archetypes' of the collective unconscious, and these are regarded as the typical and universal structuring and directing pathways for psychic energy which is termed 'libido'. Below the collective unconscious, Jung later suggested a still deeper layer of the 'psychoid' unconscious, and it is to this that I will shortly return as it seems to me that this concept can offer some insights, from the point of view of analytical psychology, into the concerns of this conference.

We left Jung's 1912 work on science and religion at the point where he had replaced "belief by understanding", thereby solving the dilemma of our conference topic by subsuming the spiritual to the scientific judgment of the thinking mind. In so doing, Jung realised that, even if the judgment of science was benign rather than dismissive of spirituality, he had effectively reneged on one half of himself, his No. 2 personality. In his Preface to the 1952 re-edition of this work, he wrote:

I was driven to ask myself in all seriousness: "what is the myth you are living?" I found no answer to this question, and had to admit that I was not living with a myth, or even in a myth, but rather in an uncertain cloud of theoretical possibilities which I was beginning to regard with increasing distrust So in the most natural way, I took it upon myself to get to know "my" myth (Jung, 1952a, p.xxiv).

Jung's "getting to know of his own myth" began in the December of the following year, 1913. Disenchanted with the scientific and medical success of his career and now in his late thirties, he experienced himself as one who might have gained a whole

professional world, but had lost his own soul. In *The Red Book* he expresses the situation thus:

The spirit of this time would like to hear of use and value. I also thought this way, and my humanity still thinks this way. But that other spirit forces me nevertheless to speak, beyond justification, use, meaning. Filled with human pride and blinded by the presumptuous spirit of the times, I long sought to hold that other spirit away from me. But I did not consider that the spirit of the depths from time immemorial and for all the future possesses a greater power than the spirit of this time, who changes with the generations. The spirit of the depths has subjugated all pride and arrogance to the power of judgment. He took away my belief in science, he robbed me of the joy of explaining and ordering things, and let devotion to the ideals of this time die out in me The spirit of the depth took my understanding and all my knowledge and placed them at the service of the inexplicable and the paradoxical. He robbed me of speech and writing for everything that was not in his service, namely the melting together of sense and nonsense which produces the supreme meaning. (Jung, 2009, pp. 119-20)

By late 1913 Jung had resigned from all of his psychiatric, university and psychoanalytic appointments and began a period of rediscovery of his soul for which the psychoanalytic world never forgave him and from which one still hears the completely unfounded accusation that “Jung had a psychotic breakdown in 1913”. Now that, after almost one hundred years, Jung’s *Red Book* has been published and is available for study, the truth about Jung’s professional and personal volte-face in 1913 can be more adequately described. From November 1913, he disciplined himself to sit in his library on several nights each week and to pay attention to the phantasy stream which he found could be released by deliberately emptying his mind of conscious thought. In *Symbols and Transformations of the Libido* he had, following William James, identified two ways of thinking: ‘directed thinking’ and ‘phantasy thinking’. The former roughly corresponds to scientific thought, being verbal and logical, while the latter consists of imaginative products. In the 1912 book, Jung had subjected phantasy thinking to the supposedly superior analysis of directed thinking - the ‘spirit of this time’ exerting its superiority

over 'the spirit of the depths', or, as the publishers of *Psychoanalysis and Religion in the 21st Century* put it, an enquiry into "how do religious stories carry or distort psychological truth?" From November 1913, Jung reverses this meaning-making process and gives hermeneutic priority to the stream of his own phantasies; it is they, now, which carry the greater authority. Following publication in 2009 of *Liber Novus*, Jung's *Red Book*, in which these phantasies are recorded, illustrated and subjected to thoughtful and sometimes lyrical reflection, we can now study in detail Jung's "getting to know of his own myth." I regard *Liber Novus* as a significant contribution to the topic of this conference because, in it, Jung neither reduces his visionary experience to science nor abandons science to express his experience purely in terms of art. Rather, he attempts what one commentator has termed 'the hermeneutics of vision', and in so doing, sets, I think, a path which is relevant to the dilemma which is the subject-matter of this conference. In 1957 Jung expressed the process of producing *The Red Book* and then refining its insights into scientific language thus:

The years, of which I have spoken to you, when I pursued the inner images, were the most important time of my life. Everything else is to be derived from this. It began at that time, and the later details hardly matter anymore. My entire life consisted in elaborating what had burst forth from the unconscious and flooded me like an enigmatic stream and threatened to break me. That was the stuff and material for more than only one life. Everything later was merely the outer classification, the scientific elaboration, and the integration into life. But the numinous beginning, which contained everything, was then. (Jung/Jaffé 1983 p. 225)

Psychoid unconsciousness: from the unknown to the unknowable

From 1916 to the end of his life in 1961, Jung worked to set out the insights afforded by the spirit of the depths in medical and scientific terminology. His revival of the term 'psychoid' comes into his published work in 1946 and Jung has not left us a comprehensive account of the meaning he gives to this concept, to which he refers almost in passing little more than a dozen times in his currently

available published writing. My own engagement with the concept of psychoid unconscious came from a reading of his 1952 essay: *Synchronicity: an acausal connecting principle* in which he argues from the observable fact of synchronicities to suggest that they imply an underlying state of meaningfulness which exists objectively in matter as well as subjectively in the mind of the observer (cf. Bright, 1997). Jung uses the term 'psychoid' to denote that this objective underlying meaningfulness is not only unconscious but also ultimately unknowable.

In *Synchronicity: an acausal connecting principle* Jung (1952b) investigates how we might understand what he terms synchronistic phenomena, "the simultaneous occurrence of a certain psychic state with one or more external events which appear as parallels to the momentary subjective state." (op.cit., para 850); but his essay ranges far beyond a simple enquiry into meaningful coincidences, and after discussing the limitations of the scientific, teleological and hermeneutic approach to synchronicity, he postulates his concept of the psychoid as an acausal connecting principle between mind and matter. In the early part of his essay, Jung critiques the limitations of a scientific-reductive approach to these phenomena. Even when the final cause of teleological goals is added to investigation of original causality, the scientific method fails to elucidate synchronistic phenomena, and Jung attempts a methodological explanation of why this approach is bound to fail. In the laboratory situation, he writes, Nature is deliberately restricted to answering specific questions posed by the investigator through the elimination of other variables. This process necessarily limits "the workings of Nature in her unrestricted wholeness" (ibid. para 864). "If", on the other hand, "we want to know what these workings are, we need a method of enquiry which imposes the fewest possible conditions, or if possible no conditions at all, and then leaves Nature to answer out of her fullness" (ibid. par 864). This Jung calls "the intuitive or 'mantic' experiment-with-the whole." In this approach, "there is no need of any question which imposes conditions and restricts the wholeness

of the natural process." In this approach, the disadvantage "which leaps before the eyes" is that "in contrast to the scientific experiment, one does not know what has happened." The parallel with analytic methodology is striking. Refraining from channeling and restricting the patient's discourse or imposing conditions to its flow so as to leave the psyche free to "answer out of all her fullness" has been fundamental to the analyst's technique ever since Freud first formulated the golden rule of free association. The disadvantage and sense of frustration involved in not being able to know with any certainty what is going on are well-known both to analysts and to their patients.

To this methodological dilemma in the investigation of synchronicity Jung adds important observations on the problems inherent in suggesting that the causal element in synchronicity is teleological. "Causality," he writes, "is only one principle, and psychology . . . cannot be exhausted by causal methods only, because the mind lives by aims as well." However, to invoke teleology in a causal explanatory way is to presuppose some foreknowledge: "Whether we like it or not, we find ourselves in this embarrassing position as soon as we begin to reflect on the teleological processes in biology, or to investigate the compensatory function of the unconscious Final causes, twist them how we will, postulate a foreknowledge of some kind." He elaborates: "Psychic finality rests on a 'pre-existent' meaning which becomes problematical only when it is an unconscious arrangement. In that case, we have to presuppose a 'knowledge' prior to all consciousness." In Jungian terms this a priori knowledge is the archetypal arrangement of the collective unconscious, or in individual terms, the self's drive towards the goal of individuation. In religious language, it corresponds to the concept of the pre-existent mind of God and the destiny of the individual soul - for example, the Islamic concept of *metkub*. Teleology cannot be invoked as an explanatory cause without also raising the question of the meaning of the goals; for to cite goals as a form of cause in psychology is to presuppose some

kind of foreknowledge, some kind of purpose, begging the question of how we understand the purpose - the question of what the goals might mean.

The final-cause approach thus brings Jung to hermeneutics as a third possible way of understanding the connecting principle in synchronicity. If meaningful coincidences cannot be connected causally, their connecting principle might lie in the "equal significance" of parallel events; "in other words, their *tertium comparationis* is meaning." (ibid para 915). In my view, the postulate of psychoid processes, inaccessible to knowledge or investigation, which was a product of Jung's investigation of synchronicity, has a relevance far beyond the field of enquiry into synchronicity, and offers insights in both the analytic and the religious field.

Jung raises the question of meaning as a possible connecting principle in synchronicities for which no scientific causal connections can be established, yet which retain some connection in terms of meaning. Is this meaning simply a subjective product, or is it objective? The implication of the latter is that meaning so conceived would have to exist outside the mind. "Meaning," he writes "is an anthropomorphic interpretation What the factor that appears to us as 'meaning' may be in itself we have no possibility of knowing" (ibid. para 916). When the psyche is studying itself, the circularity is obvious, and it is hard to see how the psyche can be in a position to establish the existence of objective meaning.

For Jung, however, this was not an adequate answer to his question about the existence of objective, final or transcendent meaning. He agrees that we possess no scientific means of proving the existence of objective meaning which is not simply a mental product; but we are, he argues, driven to suppose the existence of objective meaning if we are to avoid the attribution of 'magical causality' to synchronous events. Magical causality involves ascribing to the psyche "a power which far exceeds its empirical range of action. In that case we should have to suppose, if we wish to retain causality, that Swedenborg's unconscious staged the

Stockholm fire, or conversely that the objective event activated in some quite inconceivable manner the corresponding images in Swedenborg's brain." (ibid. para 915). If we are to take the fact of synchronistic phenomena seriously, psychology now requires a concept of transcendent meaning. It seems to me that Jung is adopting a similar method here to that which Freud had used fifty years earlier when he argued from the apparently trivial phenomena of slips of the tongue, jokes and dreams to elaborate his concept of the part played by the unconscious in human psychology. It is unfortunate (though foreseen by Jung himself) that Jung's similar approach to synchronicity has all too often been read mainly on the trivialising level of bizarre coincidence and paranormal things that go bump in the night, rather than following through his argument towards his radically new and original insight into the nature of unconscious meaning, from which we can extrapolate important practical pointers towards a valid approach to the fields of analytic practice and religious truth.

In my reading, *Synchronicity: an acausal connecting principle* is quite simply Jung's original contribution to hermeneutics, that is, the study of meaning, to which he introduces a new concept of the transcendent nature of meaning. "Synchronicity", he writes, "is not a philosophical view but an empirical concept which postulates an intellectually necessary principle." (ibid. para 960). It "postulates a meaning which is a priori to human consciousness and apparently exists outside man." Jung uses the term 'psychoid' to refer to the latent and unconscious meaning which exists in all matter, not just in the human mind, and still less in the conscious mind. Even though the contents of the psychoid are ultimately unknowable to human consciousness, it is as Jung argues an intellectually necessary concept if we are to avoid invoking magical causality as an explanation of synchronicities.

Absolute or objective meaning is seen by Jung as uniquely the property of the psychoid, which he defines as not only unconscious but unknowable. Two implications follow from this. Firstly, if we

accept Jung's concept of the psychoid, we cannot look to the human mind alone as the source of meaning: "We must completely give up the idea of the psyche's being somehow connected with the brain, and remember instead the 'meaningful' or 'intelligent' behaviour of the lower organisms, which are without a brain" (ibid. para 947). In other words, meaning derives primarily from the psychoid nature of both mind and matter, rather than being the creation of the human brain or psyche. In the analytic task, this implies that, as well as the subjective meaning which analyst and patient create, there is also an underlying or objective aspect of meaning which they have to try to find, with the proviso that, as this aspect of meaning is psychoid and therefore ultimately unknowable, they must have the humility to accept that such meaning can never be wholly elucidated. This, it seems to me, is very similar to the task of the religious person who is trying not only to make truth but to find it. In practical everyday clinical terms, I think that Jung's concept of the psychoid nature of meaning helps the analytic couple to accept that any conscious attribution of meaning, such as an interpretation, must be regarded as subjective and provisional; a work-in-progress, and not a revelation of absolute truth. Any concept which deters from such attribution of objective truth to interpretations must be worth the consideration of every analyst, as the pressure to establish meaning as if it were absolutely true and definitive is intense and relentless. Bearing in mind that underlying patterns, connections and meanings do exist, but are psychoid and therefore ultimately unknowable, helps both analyst and patient to refrain from speaking about and using pattern and meaning as if they know all about it - that is, as if it were wholly accessible to consciousness. Interpretations of the meanings of suffering can then be regarded as openings for further exploration, rather than as a way of dissipating the tensions which originate in the psyche's drive of the self towards repair and individuation. If we apply the same psychoid understanding to the quest for religious truth, the believer can achieve a position of reverence, even awe, that God evidently has a mind, while accepting

that the contents of his mind on any specific point are unknowable. In an era when there seems to be a renewed wish on the part of many so-called 'fundamentalist' theists to assert that they know the mind of God, I suggest that reference to Jung's concept of the psychoid and therefore unknowable nature of objective meaning and truth could most helpfully be held in mind.

In summary, Jung has argued from the observation of synchronistic phenomena to posit the psychoid nature of meaning, in much the same way as Freud famously argued from slips of the tongue to propose the existence of the personal unconscious. By 'the psychoid nature of meaning' Jung implies that:

- (i) Meaning is *a priori*; it has an objective existence, rather than being merely a subjective creation of the human mind. I think that Jung is arguing that it is both objective and subjective, not one or the other.
- (ii) Objective meaning exists in matter as well as in mind.
- (iii) Such meaning is unconscious and ultimately unknowable - it is 'psychoid'.

Equally, we could use Jung's concept to refer to the psychoid nature of order or pattern. This would imply that:

- (i) All things and events are related in an underlying and objective way, rather than subjectively ordered only in the human mind.
- (ii) This underlying order is unknowable, and though some very useful inferences may be made about it, these can only be provisional.
- (iii) Another way of expressing this would be that order is objectively given, as well as subjectively imputed.
- (iv) Hence meaningful order is to be discovered as well as made, but can never be fully elucidated.

Thus, beneath the familiar levels of the personal unconscious and the collective unconscious, both of which can be investigated and related to by the conscious mind, Jung suggests that there subsists a lower level, psychoid unconsciousness, at which the distinction of matter

and mind is no longer possible, and which is wholly impenetrable to the conscious mind, which can do no more than impute the existence of a psychoid level of unconsciousness from the observable fact of meaningful coincidences.

Paul Bishop, Professor of German at Glasgow University, has suggested that the assertion of underlying though unknowable meaning was not only a well-attested preoccupation of Jung's (sometimes dismissively described as his 'mysticism'), but also corresponds to a significant contemporary area of concern. He writes:

Jung's yearning to transcend the restrictions of spatio-temporal categories, and his desire to embrace the absolute, represent nothing less than a modern restatement of the romantic dream of immediacy and totality. Furthermore, whilst the Jungian notion of the archetypes licenses the most un-Kantian speculations, such notions as the 'mysticism of physics' and the existence of an 'implicate order' suggest that key aspects of Jung's later psychology may well be symptomatic of a deeper underlying trend in current Western thinking. And this trend could well, in Kant's terms at least, be called *Schwärmerei*, of the kind which the philosopher of Königsberg thought he had dispatched for good. (Bishop, 2000, pp. 58-9).

Schwärmerei was Kant's dismissive term for what he regarded as unwarranted romantic credence in the irrational and non-observable; the state into which we fall if we transgress the limits of reason and claim direct knowledge of the noumenal world. Bishop has cogently argued that Jung mis-read Kant (whether deliberately or by what he terms 'misprision') to support his project of connecting from the world of the No. 1 personality of the rational, consciousness and of matter, deep into the underlying world of Spirit, soul and the divine, the world of his No. 2 personality. In my reading of Jung, the assertion that, at the psychoid level, unconsciousness is not merely unconscious but also unknowable guards adequately against any attempt to over-claim empirical knowledge of what a religious person might term 'the mind of God' or what the analytical

psychologist can call 'the psychoid unconscious'. However, Jung's fascination with the other-worldly undoubtedly sometimes borders on credulity, even though he consistently guarded against such over-claiming in his published scientific work. For example, in his 1934 essay *The soul and death* he suggests:

Under certain conditions . . . [the psyche] could even break through the barriers of space and time precisely because of a quality essential to it, that is, its relatively trans-spatial and trans-temporal nature. This possible transcendence of space-time, for which it seems to me there is a good deal of evidence, is of such incalculable import that it should spur the spirit of research to the greatest effort. (Jung, 1934, §813).

This reads to me like the harbinger of Jung's subsequent research on synchronicity and so a root of his concept of psychoid unconsciousness. In his published work Jung was careful not to over-claim beyond the assertion that the psychoid is unknowable. In his personal and private intuitions, he may have gone further, and research into Jung as a visionary may be a fruitful area for future Jung scholarship.

Splits: Science, spirit, matter mind

I have set out in some detail Jung's proposition that there is a depth beyond which knowledge cannot penetrate and his empirical evidence for this proposition, because an empirically-based concept of 'the unknowable' seems to me to be a possible key to the dilemma which is the subject of this conference. The dilemma is the widely-perceived antipathy of contemporary science and spirituality and the presumed superiority of science's claims, which threaten to leave spirituality in a reductive second-place of being valid only if expressible in scientific terms. Jung seems to me to be important in this discussion because this dilemma was his own, and because the fullness of his engagement with it has produced both concepts and clinical approaches which in my experience enable many to engage with similar dilemmas in their own lives, whether these are

formulated in terms of science/spirit, matter/mind, conscious/unconscious or more colloquially, head/heart. Jung, at the conclusion of working on *The Red Book*, writes: "I must catch up on a piece of the Middle Ages - in myself. We have only finished with the Middle Ages - of others." (ibid. p.457). I think he is referring to a return to the period before science and religion parted company, when theology was still regarded as 'queen of the sciences'; and in Jung's intellectual life, research into alchemy and into mediaeval theology became a preoccupation at this time. I am assuming that our task is unlikely to take the form of such research. So, how might the ideas I have sketched out help you and me to approach the dilemma of the split between science and the spiritual?

The concept of psychoid unconsciousness suggests that there will always be a point at which knowledge and investigation has to stop. What this point may be cannot be predicted, and that such a point may exist is not, in my view, to be taken as an excuse for investigatorial laziness, still less for credulousness. Science and empiricism should do the very best they can, and I do not agree with the idea that some things are too sacred to be subjected to the rigorous questioning of research. The important and interesting question, to my mind, is what happens at the point that we reach the unknowable, at any rate for the time being?

Emotionally, I think two reactions are possible. The most common is shame. For example, in my own professional field a patient pays good money to an analyst and, more important still, invests huge sums of trust and hope in the analytic process, often the treatment of last choice because no pharmaceutical or other psychological treatment can be offered to alleviate their distress. The patient confides in detail all they can about himself to his analyst who listens as carefully and thoughtfully as he is able. The implicit - and often explicit - hope is that the analyst can alleviate the patient's distress. After a while, it may become evident that the analyst may be able to do no such thing. The patient might scale back his hopes; if his analyst can't cure him of his psychic pain, surely he can at least

tell him the meaning of it? Maybe to some extent meanings can be found and constructed by analyst and patient together, but it is highly probable that these will be little more than provisional, and that the analytic couple will, at key points and each in his own way, have to confront the apparently shameful fact that they can provide neither cure nor meaning. I suggest that this is a source of shame because the conscious goal of analytic treatment is often held to be some form of knowledge - the replacing of unconsciousness with consciousness. While this may be a feature of some analyses, it is not, to my mind, the goal, and when it is regarded as the goal, the effect of so over-valuing knowledge is to force its opposite, ignorance, into the shadow of the analyst and his patient. From a total psychology point of view, ignorance and knowledge are simply constructs of the conscious mind, the 'I', and as such given the values that the 'I' places on them. As the 'I' exists mainly in and through consciousness, it not surprisingly tends to perceive knowing as good and not-knowing as inferior or bad.

A religious position might well look different. In the context of religion, not-knowing is afforded a high value, and this rescues it from the shadow position of shamefulness into which the 'I', acting as if it were the absolute authority, tends to force it. In a religious attitude, when the individual reaches the point at which knowing is no longer possible, the emotional reaction is not one of shame, but may be one of awe. In the first, non-religious, situation, a styming of the process of investigation produces first a redoubling of the investigatory efforts, and if these still fail, shame results. In my second case, of research undertaken from the basis of a religious attitude, when the barrier of the unknowable is reached an attitude of awe in the face of the unknowable is available, potentially leading into the activity which religious people call, quite simply, *worship*.

Certain conditions are, I think, required if this second attitude, that of awe and worship, is to be made possible, rather than the more common ego-determined attitude of frustration and shame. The main condition is for containment. Religion has a long history of

expertise in this regard, and evidence from prehistory to the present day suggests that in order to worship, we usually need to be in some way contained, by a stone circle, a dedicated building, or maybe most importantly of all, by a community of fellow-worshippers. Analysts also aim to provide a containing environment in terms of the reliable analytic relationship and its containing setting within a consulting-room, not so different from the containment of a religious setting. In such settings, analytic or religious, the task is to provide a sufficiently strong and reliable container for engagement in awe, excitement and practiced skill with the powerful forces of spirit which are beyond their comprehension, in the service of life.

I will conclude with an illustration of what I consider to be an analytic attitude to the psychoid, but drawn not from the context of analysis but from the much older discipline of religious practice. I attended the funeral of a young man who had met a sudden and violent death. Before the service, the priest officiating pointed out both to his parents and to me that the date of the funeral was exactly eighteen years to the day since the deceased's baptism in the same church and at the same hour - an event which the parents and I had attended. I was deeply struck that the priest simply communicated this information, and left it without any comment. I could well have imagined another priest milking this meaningful coincidence for its significance; perhaps drawing inferences about the death and rebirth symbolism of both baptisms and funerals, either as supporting evidence for a statement of what he might believe to be objective religious truth, or at the very least to try to offer some comforting sense of meaning to mourners affronted by the apparently meaningless death of a much-loved child and friend. The fact that he did not so do greatly, I think, helped the mourners to confront the archetypally-based forces of rage, grief and death, these being far better mediated by the symbolic situation of containment within a church and its liturgy than by the bathos of a spoken explanatory interpretation.

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Further reading

I have contributed a chapter to a forthcoming book, due for publication in August 2013, in which I develop some of the themes of this talk around Jung's concept of psychoid unconsciousness:

Cavalli, A., Hawkins, L. & Stevns, M. (eds.) *Transformation: Jung's Legacy and Contemporary Clinical Practice*. London: Karnac.

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QUANTUM THEORY AND THE CONCEPT OF REALITY

Chris Isham

Introduction

Throughout my long career as a theoretical physicist, I specialised in foundational studies in quantum gravity and in quantum theory itself. Although my work during the last few decades has been exceptionally mathematical it has also been strongly influenced by my life-long interest in philosophy and, since my mid-thirties, with the ideas of Carl Gustav Jung.

One side-effect of this portfolio has been a recurrent involvement with the challenges posed by considering 'Science + X' where 'X' is any of a range of approaches to encompassing reality that go beyond the domain of science proper. In particular, for some years I was much involved in the 'Science and religion' debate and, more recently, in 'Science and the Arts', specifically the role theoretical physics can play in informing/relating to visual art, especially the work of the British artist John Latham who died recently and with whom I became very friendly fifteen years ago.

Now I find myself addressing the subject of 'Science and spirituality'. This sounds as if it might be subsumed in 'Science and religion' but in practice it raises many issues that lie outside the domain of formal religion. Indeed, much theological work does not touch on spirituality per se, and much spiritual experience takes place with no direct reference to any particular religious tradition. This raises the obvious question of what can I, *qua* theoretical physicist, have to say about the subject of spirituality? At this point I must sound a note of caution. Regrettably, the more 'popular' literature that touches on quantum theory and spirituality all too often invokes the fallacious argument that:

- (i) Quantum theory is mysterious; and

- (ii) Spirituality is mysterious.
- (iii) *Therefore*: there is a link between quantum theory and spirituality☺

To begin a more serious discussion it seems prudent to ask “What is actually meant by ‘spirituality’?”. In days gone by, one would have addressed this question by beetling off to the local library to see what the Encyclopaedia Britannica had to say on the matter. Less leg work is needed these days since, broadly speaking, ‘Google knows everything’ and in this instance the internet obligingly provides us with the following:

Google: “The term ‘spirituality’ lacks a definitive definition, although social scientists have defined spirituality as the search for ‘the sacred’, where ‘the sacred’ is broadly defined as that which is set apart from the ordinary and worthy of veneration.

The use of the term ‘spirituality’ has changed throughout the ages. In modern times spirituality is often separated from religion, and connotes a blend of humanistic psychology with mystical and esoteric traditions and eastern religions aimed at personal well-being and personal development.

The notion of ‘spiritual experience’ plays an important role in modern spirituality, but has a relatively recent origin.”

For the purposes of my lecture I have adopted the following line of argument:

- (i) Clearly, much can be said about spiritual experience from the perspective of psychology. This is addressed in the article by Isabel Clarke.
- (ii) Consciousness plays a key role in psychology, and there have been long-running, and frequently heated, debates about the role(s) played by quantum physics. I refer the interested reader to the articles and lectures of Chris Clarke.
- (iii) This leaves me free to talk about quantum theory *per se*: my favourite subject as it happens⁷.

⁷ I confess to here employing the traditional academic style of finessing to others the really tricky parts of a debate!

The underlying logical flow here is:

physics → brain → consciousness → spiritual experience [1]

However, there is another line of argument that starts from the complementary realm of the unconscious:

physics → collective unconscious → spiritual experience [2]

This is grounded in the fundamental role played by spirituality in the work of Jung; indeed, Jung's insistence on including a spiritual aspect of human experience played a central role in his famous break with the dogma of his teacher Sigmund Freud. This topic is covered in the article by George Bright.

Any discussion involving physics and spiritual experience cannot avoid addressing the infamous mind-body problem that has plagued the Western world since the time of René Descartes⁸ and his introduction of a strong dualism between the mind and the body. In this context, note that in line [2] I have omitted the physical brain as being a key link between the physical world and the domain of the unconscious. The idea that there might be a direct link between these two realms is part of the philosophical view of the mind-body problem known as 'dual-aspect monism'⁹.

Dual-aspect monism underpins much of Jung's thinking. Indeed, he famously predicted that quantum physics would play a fundamental role in the next major development in our understanding of the human psyche. Here are two key quotes:

- Psyche touches matter at some point, and, conversely, that matter has a latent psyche.¹⁰

⁸ Descartes was not the first philosopher to address the mind-body problem. However, Cartesian dualism has strongly influenced the Western world.

⁹ Dual-aspect monism accepts that there is only one type of 'stuff' in the world—what we call 'matter'—but there are two poles in our perception of this stuff. Thus, in our essence, we are neither mental nor physical beings alone. Of course, we are free to speculate that the poles should really be spiritual and physics, not mental and physics.

- Sooner or later nuclear physics and the psychology of the unconscious will grow closer together as both of them, independently of one another and from opposite directions, push forward into transcendental territory, the one with the concept of the atom, the other with that of the archetype.¹¹ **Carl Jung**

Over the years I have gained much inspiration from pondering these remarks.

What is a Thing?

From the range of the basic questions of metaphysics we shall here ask this one question: ‘What is a thing?’ The question is quite old. What remains ever new about it is merely that it must be asked again and again.¹² **Martin Heidegger**

Theoretical physics is concerned with the mathematical study of matter, space and time. In this talk I will concentrate on matter and, in particular, the conceptual implications of its description using modern quantum theory.

Let us begin with Heidegger’s famous question “What is a thing?” and the way in which it is addressed by modern physics. One can do no better than to quote the philosopher’s answer to his own question:

A thing is always something that has such and such properties, always something that is constituted in such and such a way. This something is the bearer of the properties; the something, as it were, that underlies the qualities.

It transpires that this notion of a ‘thing’ captures precisely the metaphysical content of classical (i.e. pre-quantum) physics and is associated with the philosophical framework of ‘simple realism’ (often referred to as ‘naïve realism’). This requires that at any given moment of time there is a ‘way things are’, which means that all physical quantities have values. This is the ‘common-sense’ view of

¹⁰ *The Structure and Dynamics of the Psyche*, Volume 8 of the collected works of C.G. Jung. Routledge & Kegan Paul, London (1969).

¹¹ *Aion: Researches Into the Phenomenology of the Self*, Volume 9, part II of the collected works of C.G. Jung. Routledge & Kegan Paul, London (1959).

¹² *What is a Thing?* M. Heidegger, South Bend, IN: Regenery/Gateway (1967).

the world that we all normally adopt. From a scientific perspective, it has the important implication that if I measure a physical quantity the result I get is the value that the physical quantity 'had' immediately before the measurement. In the slogan much favoured by the theologian/physicist John Polkinghorne, "Epistemology models ontology".

In classical physics, this conceptual framework is captured by the following basic requirements for the mathematical structure associated with any (non-quantum) physical system.

- (i) The 'way things are' at a given moment in time is represented by a 'state'. The collection of all states is a mathematical space, Ω , called the *state space*.
- (ii) Any *physical quantity*, 'A', is represented by a mathematical function that associates to each point/state in Ω a real number that is identified as the value of A in that state.
- (iii) A *proposition*, 'P', about the values of any collection of physical quantities is represented by a subset of Ω : viz, the set of all states for which the proposition P is true.
- (iv) The state changes in time according to some deterministic law. Thus the state at any particular time is uniquely determined by its value at any earlier or later time.

At this point it is appropriate to make some general remarks about the role of mathematics in physics. Specifically, all entities of physical interest are represented by mathematical quantities that satisfy dynamical equations determined by the system in question; for example Maxwell's equations of electromagnetism, or Newton's equations of motion for a point particle in a gravitational field. However, what is not so immediately obvious - although it is of the profoundest importance - is the deep interplay between the *mathematics* used in a particular physical theory and the, often implicit, underlying *metaphysical* framework.

The structure of classical physics as described above illustrates very well how conceptual issues are intimately tied to the mathematics employed. In particular, the use of state spaces and

real-valued functions captures precisely the essence of naïve realism. For example, the representation of propositions by *subsets* of Ω guarantees that, *of necessity*,

- The propositions satisfy a *Boolean* logic (this is easy to see with the aid of Venn diagrams); and
- In any given state, a proposition can only be ‘true’ or ‘false’ (either the give state does, or does not, lie in the subset of Ω that represents the proposition).

This result is of fundamental importance and immediately raises the question about the function of *logic* in the formulation of theories of physics. In particular, is logic essentially part of the *empirical* content of the theory, or is it *a priori* as Kant, following Aristotle, believed?

It is important to distinguish between two different ways in which logic enters into a piece of theoretical physics. On the one hand, ‘logic’ refers to how we human beings describe the world. Arguably, this type of logic *is a priori*, at least in some respects.

However, as shown above in the discussion of classical physics, a logic may also be associated with the ‘inner’ structure of the mathematical model, and this logic is empirical in so far as the theory concerned is subject to the normal requirements of scientific methodology. In this respect, *ordinary* human logic is a *metalogic* we use to talk about the theory.

In regard to the ‘internal’ logic of a theory, outside the domain of classical physics there is no *prima facie* reason why this should be Boolean. Indeed, as we shall see below, quantum physics is most decidedly *not* Boolean. I have pondered from time to time if it might not be profitable for theologians to explore the possibility that the internal structure of *their* subject matter may not be Boolean. The same applies to psychology, and indeed the work of Matte Blanco provides an explicit structure of this type.

What is a Quantum Thing?

The underlying metaphysical structure of quantum physics is completely different from that of classical physics. Rather than

dealing with ‘how things are’ at any moment of time it gives only counterfactual statements about measurements. More precisely, in the standard instrumentalist interpretation of quantum theory, the ‘state of the system’ predicts only the *probability* of what results would be obtained *if* a series of measurements is made.

In addition, and quite unlike classical physics, many pairs of physical quantities are mutually *incompatible* and it is not possible to make measurements of both at the same time. As a result, it is not possible to say that all physical quantities ‘*have*’ values at any given time: so this approach is very anti-realist. Nevertheless, it is natural to see if this interpretation can be developed to give some sort of ‘realist’ view. However, the following example of ‘quantum logic’ shows that this is not going to be easy.

Let us imagine that I am staying at a ‘quantum hotel’ and go down for breakfast. On enquiring what is available, the waitress replies “You can have eggs and sausage or bacon”. The natural parsing of that sentence is “You can have eggs and sausage *or* you can have eggs and bacon”. In symbolic form, if E , S and B denote respectively the propositions, “eggs are available for breakfast”, “sausages are available for breakfast” and “bacon is available for breakfast” then:

$$E \text{ and } (S \text{ or } B) = (E \text{ and } S) \text{ or } (E \text{ and } B)$$

However, the situation in quantum theory is quite different. Now, there exist triples of propositions whose mathematical representatives E, S, B satisfy:

$$E \text{ and } (S \text{ or } B) \neq^{13} (E \text{ and } S) \text{ or } (E \text{ and } B)$$

Indeed, there are cases in quantum theory where $(E \text{ and } S) = 0^{14}$ and $(E \text{ and } B) = 0$ but $E \text{ and } (S \text{ or } B) \neq 0$. In our hypothetical hotel this would describe the situation in which if I replied ‘eggs and sausage please’ I would get nothing, and if I replied ‘eggs and bacon please’ I would get nothing. The only sensible option would be to reply ‘eggs and sausage or bacon please’ (the full English breakfast, as it were)

¹³ \neq means ‘does not equal’.

¹⁴ The symbol 0 denotes the identically false proposition

in which case you would get eggs plus a quantum superposition of eggs and bacon!

Understandably, students in quantum theory often recoil at such violation of common-sense and speculate that this strange 'logic' arises because the theory is incomplete in some way: to reclaim sanity you must discover a set of 'hidden variables' whose values, if known, would lead to normal logic. All physical quantities would then have precise values in a quantum state and the probabilities can be interpreted as in classical statistical physics (for example, the theory of gasses) where they simply reflect our, inter-subjective, lack of knowledge¹⁵ of the details of the system.

However, one of the deepest results in quantum theory is the famous Kochen-Specker theorem which asserts the impossibility of simultaneously assigning values to all physical quantities provided only that these values respect functional relationships between quantities. For example, the value of the quantity 'energy squared' is required to be the square of the value of the quantity 'energy'¹⁶.

An equivalent statement of the Kochen-Specker theorem is that there is no complete and consistent set of true-false assignments to the propositions about the physical world. Thus the quantum theory of a 'thing' is diametrically opposite to the naïve realism envisaged by Heidegger. However, the theorem does admit the possibility of *contextual* properties. Specifically, the value of a physical quantity depends on the 'context' in which it is envisaged where a 'context' is any collection of mutually compatible quantities that are compatible with the given quantity. I shall return to this interesting possibility later.

The Concept of Reification

The denial of naïve realism by the Kochen-Specker theorem throws us back to the conceptual challenge posed by the instrumentalist

¹⁵ This is the so-called *epistemic* interpretation of probability theory.

¹⁶ It is hard to see what could be meant by the physical quantity 'energy squared' if this condition was *not* satisfied.

interpretation of quantum theory. This raises many intriguing issues. In classical physics, and in the normal discourses of human life, if I measure the value of a physical quantity, the reason I get the result I do is simply that the quantity in question *had* that value immediately before the measurement. However, in quantum theory what I measure is *not* the way things are because, according to the Kochen-Specker theorem, there is *no* 'way things are'.

On the other hand, immediately after making a measurement the quantity in question *does* have a value - i.e. the result of the measurement - and so it is 'as if' measuring a physical quantity brings the value of that particular quantity 'into being'(reification): an act of reification of what was before only *latent*.

There have been many disparate views on the status of these acts of reification. Broadly speaking, these divide into two camps:

1.) **Charybdis:** *Reification is a real physical process.*

The act of 'bringing into being by measurement' is the result of some underlying physical process which takes place according to meaningful, but as yet unknown, laws of physics.

The main difficulty here is deciding precisely what is meant by a 'measurement'. This is far from easy, but if there was an unequivocal answer we would be presented with a fundamentally *dualist* view of the world in which 'things' split into (i) 'physical systems', and (ii) 'observers' that perform measurements about these systems. This is particularly problematic for 'quantum cosmology', the attempt to apply quantum theory to the universe itself. For where are the observers who stand outside the system? By definition there can be none if the system under study is the entire universe.

2.) **Scylla:** *Reification is **not** a real physical process.*

A famous example of this position is the 'many worlds' interpretation of quantum theory. Here, following an act of measurement, all possible results are deemed to 'co-exist'. This view is particularly popular amongst those working in quantum cosmology but it is hard to give a precise mathematical formulation of what is really being asserted.

Over the years, there have been many suggestions that true reification occurs only when the sense data of a measurement enter the *consciousness* of a human being. Whether or not Jung knew of this I do not know, but this ‘idealist’ slant would certainly be one route into developing Jung’s fundamental idea of the *unus mundus* with its underlying dual aspect monism approach to the mind-body problem.

There have been basically two quite different views on the how consciousness might get involved with the world of quantum theory. The first is that consciousness *can* be described in terms of an underlying physical theory; the second view is that it *cannot* be so described. This is a highly contentious subject and although it might become scientifically viable one day, this is arguably not the case at the moment. For more information, see the article by Chris Clarke.

The Mathematics of Partial Existence and Truth

As mentioned earlier, the internal logical structure of classical physics is Boolean because of the association of propositions with subsets of a state space. Now, it happens to the case that the very foundations of mathematics are based on the theory of sets and subsets¹⁷, so there is a curious link between the foundations of classical physics and the foundations of mathematics.

However, starting in the 1960s it came to be realised that there are *other* possible foundations of mathematics each of which replaces set theory with the more general idea of a *topos*. The definition of a topos is quite sophisticated and I shall not attempt to give it here. Suffice it to say that in a topos the possibility arises (not, of course, in the special case of the topos of sets) that:

1. A proposition can be only ‘*partly true*’!
2. A (mathematical) ‘thing’ may only ‘*partly exist*’.

In both cases the ‘partial’ aspect has a precise mathematical specification and is associated with a logical structure that is non-Boolean.

¹⁷ Via the so-called ‘ZFC axioms’.

When, almost twenty years ago, I first read of the possible ‘partial existence’ of mathematical objects I became so excited that I could not sleep that night! My mind was locked on the possibility that the fitful existence of quantum objects (for example, Schrodinger’s infamous cat) might be captured mathematically in a topos that contained partially-existing mathematical entities. Maybe the difficulties in interpreting quantum theory arise because the *wrong* foundations of mathematics are being used! Perhaps there is a topos in which quantum theory looks a lot simpler conceptually than it does in the usual topos of sets.

It transpires that this hope is fully justified¹⁸, and to each quantum system there is associated a unique topos such that, broadly speaking, classical physics in this topos is equivalent to quantum theory in our normal topos of sets! This striking result means there is a deep link between the foundations of physics and the foundations of mathematics.

In this approach to quantum theory there is no need to invoke reification, many worlds, or any of the other dubious concepts that clutter the usual attempts to interpret quantum theory in a realist way. Instead, we find that, just as in classical physics, there is a clear ‘way things are’ in the sense that each quantum mechanical state assigns truth values to all propositions at once. However, the logical structure of both the collection of propositions and the collection of possible truth values¹⁹ is *non-Boolean*. More precisely, the truth value of any proposition is:

- 1.) *multi-valued*; and
- 2.) *contextual*.

The possible contexts associated with a proposition are just the sets of propositions that are quantum-theoretically compatible with it. However, a major result of this type of topos is that the truth-values

¹⁸ My collaborators in this venture have been Jeremy Butterfield and Andres Doering.

¹⁹ In a Boolean logic the only truth values are the pair {*true*, *false*} with the obvious logical operations ‘*true* and *true* = *true*’, ‘*true* and *false* = *false*’, ‘*false* or *false* = *false*’, etc.

of a proposition involve *all* possible contexts at once: there is no need to make a selection of any particular one.

In this way we succeed in regaining a ‘realist’ view on quantum theory but it is not the naïve realism associated with the Boolean algebras of classical physics. Rather the underlying philosophical picture is ‘contextual realism’: a precise, mathematically defined example of popular postmodernism.

Let us return now to the problem of securing breakfast in a quantum hotel and see how things look from the perspective of the non-Boolean logic associated with the topos. A key result is that we regain the distributive law:

$$E \text{ and } (S \text{ or } B) = (E \text{ and } S) \text{ or } (E \text{ and } B).$$

Thus our new logic resembles Boolean logic in regard to the most important property. Clearly, ‘topos quantum logic’ stands in sharp contrast to normal quantum logic with its fundamental non-distributive structure with collections of propositions E, S, B such that:

$$E \text{ and } (S \text{ or } B) \neq (E \text{ and } S) \text{ or } (E \text{ and } B)$$

However, there is one significant difference between topos quantum logic and standard Boolean logic. Namely, there exist propositions P such that²⁰:

$$P \text{ or } \text{not } P \neq 1$$

where ‘1’ denotes the proposition that is identically true.

Equivalently, there are propositions Q with the property that:

$$Q \text{ implies } \text{not } (\text{not } Q) \text{ but } \text{not } (\text{not } Q) \text{ does not imply } Q$$

If we imagine that Q is the proposition “my name is Chris” then we are asserting that this implies “it is not the case that my name is not Chris”. On the other hand, the proposition “it is not the case that my name is not Chris” does not imply that my name is Chris!

This absence of the ‘principle of excluded middle’ is characteristic of what is known as *intuitionistic* logic, which was studied well before the discovery of topos theory. Arguably, there are situations in the real world where intuitionistic logic is more

²⁰ Here *not P* denotes the negation of the proposition P . For the simplest (Boolean) logic (*true, false*), we have *not true = false*, and *not false = true*.

appropriate than the simple 'black and white' properties of a Boolean logic.

On a final note, people sometimes ask me what does the type of mathematics I have been describing actually 'look like'. What do people like me spend their day doing? The answer has nothing to do with the sums and multiplications of GCSE mathematics, or indeed with the content of a typical undergraduate mathematics course. The topos ideas all have very precise mathematical constructions, but in detail these are very complicated on a first encounter and we often represent what we are doing with simple diagrams that encode much of the crucial information in a way that the eye can follow. A good example is the diagram below (see next page) that essentially describes the 'state space' in a quantum topos.

Conclusions

This article might seem to be about rather abstruse problems in the foundations of physics, and that is true. However, nowhere in writing it have I forgotten the goal of trying to see if the humanly all-too-important subject of spirituality and spiritual experience can benefit from such studies.

Of the various branches of science that are relevant to such a goal, I deem it self-evident that it is psychology that is the main driver of such an enterprise. However, in 'psychology' I include not only modern clinical psychology, as discussed for example by Isabel Clarke, but also the various psycho-analytical schools, one of which, the Jungian, is epitomised in the article of George Bright. Notwithstanding the logical line of argument:

physics → brain → consciousness → spiritual experience,
I think it is to the line:

physics → collective unconscious → spiritual experience
that my ruminations on a topos foundation for quantum physics are most likely to be relevant. If we take seriously Jung's dual-aspect monistic philosophy on the relation between mind/psyche and body, and if his speculations on the fundamental role of quantum

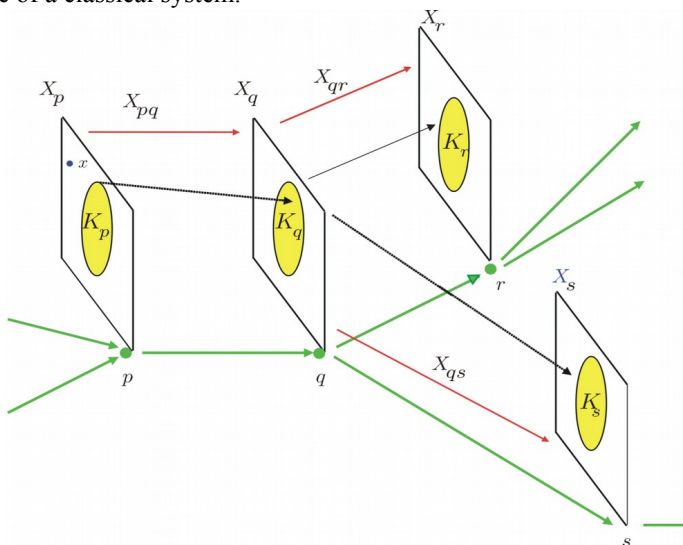
theory in that subject are well-founded, then it is essential to find an interpretation of quantum theory that is not instrumentalist, and topos theory provides such an interpretation. For my part, it would be extremely exciting if these ideas could lay the foundation for a proper scientific study of the matter pole of Jung's profound ideas of a *unus mundus*.

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Example of a diagram used to convey an idea from topos theory

The letters 'p', 'q', 'r', 's' etc., denote contexts in the quantum theory: i.e., collections of mutually compatible physical quantities. Then the sets X_p, X_q, X_r, X_s etc., are the 'local' state spaces associated with the collections p, q, r, s respectively. Thus, in effect, we have an array of 'classical systems' glued together with the 'linking' functions X_{pq}, X_{qr}, X_{qs} etc., to give the single entity (a *presheaf*, or *varying set*) that is the quantum analogue of the state space of a classical system.



CONSCIOUSNESS: A LINK BETWEEN SCIENCE AND RELIGION

Chris Clarke

Introduction

Science and religion (along with business) are among the most influential strands of global culture. Like all human endeavours, science and religion are often misdirected; but, to make matters worse, they are often at loggerheads with each other. How can this tension be diffused, so that science and religion can support, rather than hinder, each other? One response to this question has been the doctrine developed by Steven Jay Gould (1999)²¹ of 'non-overlapping magisteria', NOMA for short, which holds that these two ways of thinking should be seen as dealing with entirely separate areas having no connections between each other. I would agree that there are essential differences between the approaches of science and religion, but I will argue that we can do better than the mutual avoidance of NOMA, and that there are grounds on which these 'magisteria' can actively co-operate.

The basis for this optimistic view is a proposal that there are important connections between science and religion arising from the nature of consciousness. Because of this, science and religion can be seen not as independent, and certainly not as contradictory, but rather as complementary. Consequently, their relationship could be a source of mutual support for the good of humanity and of the whole planetary community.

There are two main planks to my argument for this. First, I will propose that the vital core of religion is spirituality. Second, I will argue that consciousness plays a vital role in both spirituality and in science (especially in quantum theory). This will require the

²¹ See the bibliography at the end for these citations

clarification, as the argument proceeds, of the terms 'spirituality', 'consciousness' and 'quantum theory'. Finally, in order to see the possible extent of a true dialogue between religion and science, we will need to look at the extent to which the situation goes beyond NOMA, examining whether or not science and religion might actually overlap, rather than just being connected.

Spirituality

To begin this discussion, I will give a rough explanation of what I mean 'spirituality'. I see it as the development of our deepest connections: namely the inner connections of our relationship with ourselves, and the outer connections that we have with the totality of the cosmos. In developing this idea, however, we encounter an obstacle. When we starts to pin down the nature of the connections that underlie spirituality, we realise that spirituality takes very many forms. To illustrate this here I will take just two very different quotations as examples. The first is from Alan Wallace, a physicist and a liberal, contemporary writer from the Madhyamaka Buddhist tradition (a branch of the Eastern family of religions). The second quotation is from Meister Eckhart, a religious teacher, mystic and philosopher from the scholastic tradition of the Western Christian church, writing in the 13th – 14th centuries.

Wallace (2007) explains that:

[One can] so profoundly settle the mind that virtually all thoughts and other mental constructs become dormant. ...the culmination of this meditative process ... is characterized by three essential traits: bliss, luminosity and non-conceptuality.

Meister Eckhart (Quint, 1955) proposes that:

God must become utterly I, and I utterly God, so fully one that this 'he' and this 'I' become and are one 'essential is', and in this essence eternally work one work.

Taken at face value, these statements seem very different; but we must proceed carefully, because in this area words need to be taken with a pinch of salt: words here are merely pointers to what is indescribable. In both traditions the essential point is the existence of

unity between what is within us and what is outside us. This is explicit in Eckhart's use of 'God' and 'I', but Wallace's words are more ambiguous. His description of the goal of meditation could be regarded simply as a matter of refining a subjective experience; but the context of Madhyamaka Buddhism suggests instead an entering into an absolute which transcends any distinction between what is within and what is outside, between 'I' and 'that'. In Eastern religion the unity of these relationships of within and outside was first made explicit in the Upanishads by the slogan *tat tvam asi*, (that art thou); in which 'that' is Brahman, the outer absolute, and 'thou' is Atman, the inner absolute.

Crucially, neither Wallace nor Eckhart are describing an isolated experience. Rather, they are speaking of the progressive deepening of a relationship between inner and outer. As Martin Buber (1958) stressed, 'experience' is the contrary of 'relationship': the first is an 'I-It' interaction, the second is an 'I-thou' unity, and it is on this latter that both Eckhart and Wallace are reporting.

Consciousness

From this sketchy indication of spirituality, I can start to build the idea of consciousness. Its basis is the ordinary usage 'conscious': I am conscious when I am aware, either awake or dreaming, and not when I am in dreamless sleep or under anaesthetic. Consciousness is then the process or essential cause of my being aware. Consciousness is, indeed, 'me' – what I am - from the point of view of my awareness; not what I am as body or as particular qualities or as what I may be *aware of*, but my being as it is received by myself. The philosopher Thomas Nagel (1974) stresses this aspect of consciousness as subjective being when he writes that:

an organism has conscious mental states if and only if there is something that it is like to *be* that organism—something it is like *for* the organism.

So one could characterise consciousness as part of 'what [my being] is like for me', independently of the content of that consciousness.

Clearly in the state of consciousness underlying the spiritual accounts just quoted consciousness is particularly personal: Wallace talks of “meditation”, Eckhart of the “utterly I”. This consciousness is *non-conceptual*: not the factual statement of a discovery, but a qualitative relationship. It is also a relationship with something that is larger than me: Eckhart describes it, with dramatic emphasis, as within God and even identical to God. The quotations have in common a suggestion that human consciousness is a part of a universal consciousness.

If we move from this fundamentally spiritual mode of consciousness to the consciousness of our everyday being, we can distinguish the *process* of consciousness, our own awareness, from the *content* of consciousness, what we are aware of. And at this everyday level we can give a conceptual account of what it is that we are aware of. But we need to beware of identifying the process of consciousness itself from this content of consciousness, or of identifying the content with our verbal account of it.

The role and nature of consciousness can be elaborated in the light of Isabel Clarke’s analysis, in her presentation for this meeting, of different ‘ways of knowing’ in terms of the various cognitive subsystems of Teasdale and Barnard (1993). We are aware (conscious) of things in two ways: in conceptual terms, and also in ‘implicational’ or ‘relational’ terms. So, considering consciousness in the abstract, we would say that consciousness is a process that spans across these main implicational and relational cognitive subsystems – as Barnard explicitly states. On the other hand, considering how we experience consciousness, we note that through our propositional subsystem we are exclusively focussed on the *content* of consciousness, seen in rational terms, without seeing consciousness itself; whereas through our implicational subsystem we have an awareness that is reflexive, so that we are conscious of our consciousness. So from this viewpoint we understand our consciousness through our relational subsystem.

To summarise: consciousness is a process of awareness that acts through both central subsystems but which we understand most clearly through our relational subsystem.

This status of consciousness has important consequences for the way in which science studies consciousness, which takes us to the heart of the science-religion conflict. In science the goal is objectivity: the withdrawal of the scientist as a person into an 'observer' whose findings can be replicated by any other suitably equipped observer. In the terminology of Teasdale and Barnard, science sees the world through the propositional subsystem. In view of the formulation of consciousness made above, this means that orthodox scientific methods will find it hard to make sense of consciousness. Indeed, some scientists and scientifically minded philosophers go far as to deny the validity of any way of knowing other than through the propositional subsystem, ignoring the implicational subsystem. The philosopher Daniel Dennett (1991), for example, argues that the thing that is given the special name 'consciousness' is just the moment-by-moment way in which the brain links together sounds, scents, inner talking and so on in a constantly changing series of 'drafts': organized connections between bits of sensory data and bits of memory that help us navigate in the world. On this view, the only valid account of either our own subjective experiences or publically observable phenomena such as the results of experiments is a propositional account. Reality is propositional.

This brings us to the heart of the conflict between science and religion. Once either side has taken the position that there is only one way of knowing, namely their own, then debate becomes impossible because that side has denied from the start the validity of the main evidence offered by the other side. The result is particularly poignant in situations where the protagonists for religion do not themselves clearly recognise the essential role of spirituality and implicational knowing in religion, and so are lured onto the ground of factual

argument on the nature of 'reality', where they are inevitably out-manoeuvred by scientists.

From this it might seem that the best that can be hoped for would be a truce in which each side recognised the internal validity of the others' position, without there being any common ground on which the two positions could be compared. This is essentially the NOMA position of Gould described above. It is as if we inhabited a world that was divided into two cosmic countries, with different ways of behaving and different languages, and no way of translating between the two. (Ironically, many traditional cosmologies described the universe as just like this, with a division into separate layers of underworld and overworld!) According to Kant, however, the divisions of the world that we know are simply consequences of the divisions in our ways of knowing. So the world as we know it, *with its spiritual and its scientific aspects*, arises from our relational and propositional cognitive subsystems, respectively.

This recognition shines an optimistic light on the situation. Once we recognise that the two ways of knowing that are involved here actually coexist in our minds, and that our minds have sophisticated though neglected processes for integrating them²², then we open up the possibility of a genuine dialogue between the two areas. It becomes possible to make connections between the propositional and implicational viewpoints, contrary to the NOMA position. Note, however, that we cannot stir the two ways of knowing together into a homogeneous unity. Instead, we can consider how science and the propositional can understand the spiritual and relational, and vice versa.

A useful metaphor for understanding one way of connecting the two main ways of knowing is 'modelling'. A model represents some aspects of a phenomenon that are of current interest and ignores others that are not. Modelling in this technical sense is

²² Teasdale and Barnard call the integration of the propositional and the implicational "the central engine of cognition" and assign the maintenance of its smooth running to what they call "consciousness"

closely parallel to its more colloquial sense of, for example, the construction of a small wooden replica of a large metal ship. The model is faithful to the original regarding many important aspects, such as (in the case of the ship) the relative sizes of the main parts of the object. Trying to understand consciousness from a propositional point view is analogous to this sense of modelling, in that one tries to find a propositional account that reproduces some of the features of consciousness, without claiming to have grasped its true substance. Science can understand and investigate consciousness, but within the limitations set by the nature of this subject. So science can model consciousness and study its action on the world *as if* consciousness was carrying out some particular mechanical process. It is in this sense that many physicists would say, as scientists, that consciousness is able to carry out some essential process in manipulating quantum mechanical actions in the brain. At the same time each scientist has the opportunity of authentically understanding consciousness through their own implicational knowing.

Consciousness and Quantum Theory

In 1939 the physicists Fritz London and Edmond Bauer (German and French respectively) published a pamphlet (1939 / 1983) that injected a radical new proposal into science: that consciousness itself played a role in physics. The proposal has been debated ever since, with its supporters declining within the physics community but increasing among writers with interests in spirituality. The background to this proposal was the period between 1905 and 1927, when physics underwent the most radical change in its methods and ideas since the seventeenth century. From this time on, fundamental physics was understood to be governed by the system of 'quantum theory', which differed radically from its predecessor, now called 'classical physics'. There appeared, however, to be a problem with the theory concerning how quantum theory and classical physics fitted together.

To visualise the problem, imagine an experiment in which electrons are being projected, one at a time, towards a metal screen with two slits in it. (This is much like what happened in television tubes before they were replaced by solid state displays.) On the other side of the screen the experimenter has set up detectors in several positions to record the arrival of an electron, from which one might find indications as to which slit the electron had gone through. Notoriously, the result required a description in which each electron went through both slits and on the far side it behaved as a 'wave function' (now usually called a 'quantum states') in which an aspect of the electron going through slit #1 was combined with an aspect of it going through slit #2 and the presence of the electron was 'smeared' over a large region of space and time. Despite this extension of the electron in space, once the experimenter had detected the electron it subsequently behaved as if it had a definite position at the moment when it was detected. It was as if the act of observing rolled up the extended quantum state into a single point. The weird (i.e. quantum) behaviour at the level of particles was converted into a normal (i.e. classical) behaviour in the detection apparatus. There was thus a problem about how to reconcile the quantum and classical behaviours properly, a problem which could apparently be phrased in two ways.

- (a) Quantum theory deals with a world full of wave functions (quantum states), each of which consists of a multitude of intertwined components, each component representing a particular situation. But when one performs an experiment to determine what is the actual situation of some physical system, such as the position of the electron, one obtains a perfectly definite result. There seems to be a 'flip' or 'collapse' of a wave function into a definite position. How is this possible?

Or alternatively ...

- (b) Quantum theory is needed for small things like electrons, while classical physics is fine for large things like detecting apparatuses; so there must be some way in which quantum

theory reduces to classical physics when it is scaled up to deal with larger systems. How does this happen?

The London & Bauer pamphlet tackled question (a). They proposed that the consciousness of the physicist performing the experiment altered the state of the electron into one that was well defined:

We note the essential role played by the consciousness of the observer in this transition from the mixture to the pure case. ... [the observer] has with himself relations of a very special character. He possesses a characteristic and quite familiar faculty which we can call the 'faculty of introspection.' He can keep track from moment to moment of his own state.

These authors strikingly use the word *conscience* (French, clearly here meaning consciousness) and also allude to the reflexive nature of consciousness in which we are aware of our awareness

Then in 1970 Heinz-Dieter Zeh proposed a mechanism whereby classical physics could emerge from quantum theory (question b) without any reference to consciousness. He noted that every quantum system is affected by its environment, responding to unpredictable changes of temperature, fluctuations in the gravitational field and so on, which produce variations in the way that the various components that make up a quantum state are put together. The energy of these variations increases as the size of the system increases until they become of the same magnitude as these components themselves. Because the variations are random and unknown, the only information left in the wave function in this situation will be the probabilities with which one would expect each component of the state to be manifest. The quantum state has thus become a classical *statistical* state. Its information is of the same nature as the information contained in a dice that has been shaken and then covered: we know the probabilities for each face of the dice – each $1/6$ if the dice is fair, or varied in a knowable way if the dice is loaded – but we don't know which face is actually facing upwards. The system now effectively obeys classical *statistical* physics. Physicists had been uncomfortable with London and Bauer's proposal, because it seemed to involve woolly and unscientific ideas;

while Zeh's solution relied on familiar statistical physics. So Zeh's account was accepted by the majority of the physics community with sighs of relief.

Unfortunately, questions (a) and (b) are not equivalent. If we could understand how there can be definite outcomes to quantum processes (question a) then this would explain how classical physics arises (question b). But the converse doesn't hold: question (b) does not explain question (a). So, despite Zeh's important work, in order to understand quantum theory we could still need to bring in consciousness, as proposed by London and Bauer, in order to explain (a). To do this fully, however, would involve us in bringing in the relational way of knowing, which clashes with the basic propositional approach of science. The conflict of different ways of knowing that beset the science-religion debate now threatens another impasse; but this time, with the very specific questions of quantum theory in front of us, we now have a focus from which to understand the situation. As discussed in the previous section, we can develop models of the implicational subsystem, testing them against the requirements of quantum theory, in order to connect the implicational to the propositional.

Modelling consciousness

In the spirit of modelling, let us start by considering the scope of consciousness. What things are conscious? Of course humans are conscious, by definition; and I can't deny that other large mammals – dogs, cats, horses etc. – are conscious; and I've got quite a soft spot for snakes ... The problem is, having accepted Nagel's definition of consciousness as "what it is like to be", then either you are conscious or you are not, but there is no obvious point in the animal kingdom, or even in the whole tree of life, at which to draw the line between consciousness and non-consciousness. So I find myself led, along with several other writers, to the doctrine of 'panpsychism': that *everything* material is conscious; everything *is*, in and for itself, albeit in ways that are rationally incomprehensible to us humans. This

raises vital repercussions concerning the way we think about the world. As Freya Mathews (2003) asks, “Can the dualistic conception of matter be replaced by a reanimated conception, a conception according to which matter actually matters, morally and spiritually speaking, suggesting to us a new way of being in the world?”

This presents a problem for any scientific model of consciousness. For if we say that *everything* is to be conscious, what counts as a ‘thing’? Is a living room suite, consisting of a sofa and two chairs, a conscious thing? No, because this example clearly consists of three things, not one thing. So could each chair and sofa on its own be conscious? Well, when we think about it this can’t be the case either, because chairs and sofas are really multiple as well, consisting of bits and pieces nailed and strung together; surely a ‘thing’ that is conscious has to be homogeneously connected in some way? But then, this argument could be extended to rule out almost everything. We are at sea in uncharted waters, and we could speculate indefinitely along these lines.

The focus of modelling the role of consciousness in quantum physics can now sharpen the discussion, however. We can focus on what we can expect consciousness to *do* in concrete situation of physics. Can we identify the situations in which consciousness intervenes within things so as to produce definite outcomes for conscious processes? This will give an indication of the range of different ‘things’ encompassed by panpsychism. That is to say, we could discover what things have the appropriate structure to generate interventions in their own processes in the way which would model the action of consciousness?

One salient intervention that might be wrought by a being’s consciousness on itself is *conatus*, defined by Spinoza as “the endeavour wherewith everything endeavours to persist in its own being”. This is interesting, because it precisely describes the action of a conscious being *on itself*. It suggests, for instance, that if, as London and Bauer suggested, the role of consciousness in physics is to hold quantum systems in a well-defined state, then *conatus* might be an

action by a conscious system that maintained its own quantum state. We can then explore in more detail how this might be done, and what it implies for the nature of the conscious being itself.

Following up this line of thought suggests that consciousness might achieve this via a quantum theoretic phenomenon called 'the Zeno effect' in which repeatedly observing something inhibits its making any changes to its state (i.e. a watched pot never boils). So a starting point might be the idea that anything is conscious if it maintains its existence by applying the Zeno effect in observing itself.

To cut short a very long story (Clarke, 2013), a likely hypothesis is the following dense and cryptic statement:

that consciousness is manifest in any region of space in which there is a well-defined quantum state, and which cannot be decomposed into separate parts that themselves have well defined quantum states.

The model of the action of consciousness on itself is a repeated observation of its own state that maintains these criteria for consciousness.

In all these physics-oriented accounts of how things can be conscious, we need to keep in mind that what is being discussed is not consciousness itself, but *models* of consciousness. The quantum mechanical account of the action of a thing on itself is no more than a model of the essence of consciousness, which is simply the act of Being of that thing. But having a model brings together into a single debate the propositional and the implicational ways of knowing, as it brings together the people who are most at home with one or the other way of knowing.

Science and spirituality

We have travelled a long way from the passionate insights of Eckhart with which I began this presentation, into a nitty-gritty of physics that seems like the opposite extreme. So I will end by returning to my favourite mystic, but with a quantum flavour.

Eckhart gives us glimpses of his experience, using language as best he can (and certainly not consistently) to point to what is non-

conceptual, a realm that implicitly includes consciousness. On seeing a tiny beetle and recognising that it is conscious, he identifies it with the source of all consciousness, declaring that “*there is God*”. What Eckhart recognises in the creature is *istigkeit* (isness), and for him “isness is God”. A much reduced echo of this can be found in quantum cosmology, in which the whole universe acts as a single system with a single quantum state, but composed of the states of individual systems within it, each of which is ‘entangled’ (non-causally correlated) with each of the others. Many writers have noted the similarity between this and the Buddhist story of the ‘Web of Indra’²³: a great net with a jewel on each of its knots, in which each jewel reflects all the other jewels in itself. One might draw an analogy between this and Sally McFague’s idea of the cosmos as “The body of God” (McFague, 1993).

This interconnection of all quantum systems, and of the individual system with the cosmos, is reflected in Eckhart’s remark that “God must become utterly I, and I utterly God, so fully one that this ‘he’ and this ‘I’ become and are one ‘essential is’, and in this essence eternally work one work.” (Quint, 1955, Pr83: DIII, 47, 5f). It is clear from Eckhart’s writings that the “work” is Being, from which creativity “boils over”. Thus the disclosures that he is describing are ones where his individuality becomes included in pure Being. This is the actuality of which the physics language is a model. We might say of this that ‘his’ consciousness becomes included in a universal consciousness, or we might say it becomes apparent that consciousness in itself is universal, as well as being individual.

I would like to think that these considerations, or others like them, will draw scientists and spiritual practitioners into genuine dialogue. But this cannot be done on a basis of business as usual. The challenge is that participants must be willing at times to set aside their own assumptions and their own ways of knowing, in order to

²³ The story is an extensive elaboration by Garma Chang of a passage in the Buddhist “Flower ornament sutra”.

appreciate the riches of those on a different path. The reward for this could be a transformation of our one-eyed glimpses of the world into the fully three-dimensional panorama that is available to humanity.

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ANNUAL QUG CONFERENCE 2014

Next year's Quaker Universalist Group conference will be on a 'Peace' theme, and will be held at the Woodbrooke Quaker Study Centre in Birmingham on Friday 23rd - Sunday 25th May.

LONDON QUAKERS (in conjunction with QUG) DIALOGUE 12:

NATURE, NURTURE AND FREE WILL

Saturday 22nd June 2013, at Friends House, Euston.

10.30 a.m. – 1.00 p.m.,

With refreshments. No charge.

When God gave Adam the freedom to choose whether or not to eat the apple, was this gift to mankind a blessing or a curse? Did it ennoble mankind, or did it condemn mankind to sin, failure and punishment?

Modern psychology has developed a compassionate face that does not judge or blame but seeks to understand and explain human personality and behaviour in terms of nature and nurture. But this compassionate face comes with a challenge to one of our most entrenched and treasured beliefs – our belief in our freedom to choose how we behave.

So just how 'free' is our free will? This question is not just of academic interest; it has profound implications for how we understand and relate to ourselves, to one another and to God - to how, as Quakers, we walk over the world.

The debate will be opened by Hazel Nelson, a clinical psychologist and QUG committee member, and Chris Isham, a distinguished theoretical physicist who was one of the principle speakers at this year's conference.

This is a joint enterprise between London Quakers and QUG, so we would love to see as many QUG members present as possible, to hear *your* views on the subject. So please do join us if you can.