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The Body as Fiction / Fiction as a Way of Thinking

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**CHAPTER 3 –
THE MATTER OF BODIES
AND THE PARADIGM SHIFTS OF
POST-STRUCTURALISM,
QUANTUM PHYSICS AND
ECOLOGICAL SPIRITUALITY**

In his discussion of the possibility of a ‘new politics of truth’ Michel Foucault described truth as ‘a thing of this world...produced only by virtue of multiple forms of constraint.’¹ Rather than being something that exists outside of power and history, truth is both an effect of power and itself a producer of powerful effects.

Each society has its regime of truth, its ‘general politics’ of truth: that is the types of discourse which it accepts and makes function as true; the mechanisms and instances which enable one to distinguish true and false statements, the means by which each is sanctioned; the techniques and procedures accorded value in the acquisition of truth; the status of those who are charged with saying what counts as true. (133)

In this chapter I would like to trace a brief history of the epistemological privileging of empiricism and materialism as sanctioned ways of knowing the world and understanding embodiment, and then look at some challenges to this dominant view in the form of quantum physics, spiritual ecology and post-structuralism. In doing so I would like to propose a different ‘political economy’ of truth, and the ways in which these shifts in beliefs and attitudes about bodies and knowledges have influenced my project.

The ‘Old Science’: Classical Materialistic Science and ‘Sciencism’

Classical Newtonian or ‘atomistic’ physics is still central to contemporary western medical or ‘allopathic’² practice, to medical and science journalism, and (hence) to popular notions of science and bodies. In general, this view continues to be presented as if it were the only possible valid one, and as if ‘science’ were a monolithic set of impersonal rules – a handbook as it were – for understanding the universe. Thus the phrase ‘what does science say about this?’ as a journalistic preface is likely to lead to a single definitive answer (the ‘actual’ truth)

rather than to a consideration of a range of opinions within a complex – and often politically charged – debate that changes over time.

In this sense, classical science is a form of structuralism – a search for, and belief in a set of representational keys, ‘as if the world were made to be read by man’³. As a ‘truth’ discourse operating within a system of classical logic, it has, arguably, an inherent tendency towards reductionism and positivism. Thus, in its extreme (but very common) version, it becomes scientific fundamentalism, or sciencism, where ‘scientific method’ (systematic empirical experiment and applied logical analysis) is regarded as a way to know things for *certain*; as the *only valid* way to know anything; and as ultimately (given enough time and experiment) the way to know *everything*.

In this view, anything not submittable to and demonstrable via scientific experiment and current scientific logic should be rejected, ignored or opposed as either wrong or as an unfounded – and potentially dangerous – belief.

This belief can also become circular: anything that doesn’t support or verify the current dominant scientific paradigm must by nature be ‘bad science’ or ‘junk science’, the product of a scientist who has lost his or her way, veered from the fold, and is no longer worthy of the title.⁴

This unshakable faith in a particular scientific paradigm and in scientific method itself (as a way of ‘reading’ the universe) is still deeply ingrained in western culture in such a way that it is rarely even recognised *as* a belief system, but is instead usually regarded as the very antithesis of, and indeed a potent antidote to belief.

Classical science is an extraordinary achievement, but it has limitations. The strength of classical science and empiricism is that it is good at reducing, abstracting, isolating, dividing, comparing, measuring, quantifying and categorising. Its genius is to take all variability and reduce it to constants; to determine single causes and single effects that were repeatable, predictable and controllable. However within the philosophical framework of binary opposites that privileges one way of ‘knowing’ as the dominant and, in effect, only way, it can become deeply oppressive and limiting.

As Elizabeth Grosz suggests, rationalism attempts to explain everything by reference to logic, reason and *mind*; empiricism attempts to explain everything by reference to the ‘hard’ evidence of *matter*. That is, each in its own way reduces mind and body to one or the other.⁵

And within an economy of the same – an economy of the One truth – this is a One that cannot allow itself an independent, autonomous Other (211n) with which it could experience a relationship not based on dominance and control or repression.

The spirit/matter split and the body as ‘machine’

Popular notions of the history of science tend to put great emphasis on Galileo’s battle with the Christian church, but to gloss over or ignore the religious beliefs of Newton and Descartes, and the centrality to their theories of an assumption of the existence of a ‘God’ of some kind. (That is, a transcendent single deity that made the world rational, logical, and with timeless and universally applicable laws.)⁶

However one of the reasons Newtonian science flourished (whereas Galileo had such a struggle) was that the Cartesian mind/body split also facilitated a timely spirit/matter split. This meant that instead of being competing true discourses locked in battle (competing over the same territory), science and religion could by tacit agreement divide the territory up between them – with science being the arbiter on the material world, and the church having jurisdiction over the spiritual.⁷

As such the notion that science and spirituality are antithetical or at best complementary systems of thought (antagonistic, or benignly co-existing but not in any way inter-related) is a component of this historical demarcation, and of the mind/body split that enabled and fed it, rather than a pre-existing condition of these discursive practices.

Indeed in many ways the new scientific revolution of the early modern age could be seen as supplementing, reinforcing, benefiting from and consolidating the work of the Christian Church in repressing certain heresies.⁸ For insofar as they shared a basis in phallogocentricism, they increasingly constructed a public realm that disparaged and at times sought to forcibly repress or eradicate values and characteristics associated – via a set of structuring binary oppositions – with femininity, nature and the body. Witches and ‘Old Wives’ were not only linked to the heresy of the ‘Old Religion’ (paganism, pantheism, Wicca and goddess worship), they were also competitors in the healing arts with the rising profession of medicine, and with science in ways of interpreting, describing and engaging with reality.

Frances Bacon, the founder and passionate advocate of the empirical method, was also Attorney General for King James I, and the language he used to describe his new method of investigation was evocative for the times. Nature had to be ‘hounded in her wanderings’, ‘put

in constraint' and made a 'slave'; with the aim of science being to 'torture nature's secrets from her.'⁹

After several hundred years of plague, crop failures, starvation and witch trials, the notion of nature as terrifying, devouring and evil increasingly resonated with Europeans, and the idea that with science we could 'render ourselves the masters and possessors of nature' as Descartes put it, was a seductive promise.¹⁰ In proclaiming this desire for control over the physical world as a pure scientific quest and in its ability to reduce, quantify and compare, it was also a system that dovetailed well with the needs of colonisation and the rise of capitalism.¹¹

As a 'regime of truth', science, like Christianity, exercises power which it also protects. Medical and scientific heresy is still a punishable offence although the methods are more subtle than those used by the Church during the Middle Ages. Heretics or dissenters (who advocate non-dominant ways of healing, or ascribe to theories or experiment on phenomena that are not compatible with the dominant scientific paradigm of reality) have for much of the last century been ridiculed, derided, harassed, ignored and denied funding, jobs, publication and influence.¹²

In the legacy of Classical Physics and the Cartesian mind/body split that is still the dominant medical model, the body is primarily seen as a machine made of replaceable and upgradeable parts that can wear out or become diseased. In this model the body is inert and passive matter, in itself neither intelligent nor sacred. Consciousness or mind is 'the ghost in the machine', and a function or product of the brain which is what controls the body, much as a computer might operate and electricity animate a mechanical device.¹³

The discovery of the role of micro-organisms such as germs and bacteria in the formation of disease, and the success of antibiotics in the twentieth century helped consolidate this view of the body as essentially passive, with disease as something that occurs as a result of an external invading force. Likewise, improvements in anesthesia and surgical techniques, and successes in repair and transplant surgery have reinforced the notion of the body as comprised of co-ordinating but fundamentally separate parts that are subject to wear and tear.

These and other successful applications of Newtonian science have contributed to its power, particularly in the twentieth century. In this model, effective medicine is about heroic intervention by a body expert (or 'body mechanic') and the timely use of a piece of medical technology (such as a pharmacon or technique). The doctor, or the pharmacon, is the healer,

with the patient or client having little or no role except to comply and not interfere with what the doctor orders.¹⁴

However, as the twentieth century progressed it became clear that there were also a large (and increasing) number of illnesses and diseases that were not successfully treated by this form of medicine and this view of the body.

Challenges to the dominant model include the continued absence of the promised cure for cancer despite billions of dollars in research and many decades focussed on the problem, and the failure to produce ‘magic bullets’ for the increasing number of viral agents or even for something as ubiquitous as the common cold. Another challenge is the number of unwanted and often serious side-effects from treatments and practices favoured by orthodox medicine; indeed the frequency of this has required a new word – ‘iatrogenic’ – to be coined specifically to refer to illness directly caused by medical intervention. Other factors include the emergence of ‘superbugs’; the rise of a new generation of chronic debilitating illnesses for which orthodox medicine has little or no effective treatments nor any coherent explanation (indeed, illnesses such as Chronic Fatigue Syndrome for many years were regarded as being purely psychological precisely because they were unable to be explained within the dominant model); and, in the wider scientific world, the failure of the Green Revolution and the loss of faith in new wonder chemicals such as DDT.

As a result, after a period of almost unquestioned dominance, in recent decades there has appeared a resurgence of interest in ‘alternative’ or holistic views of bodies and health.

Ecological (holistic) views of the body, models of dis-ease and the self/other duality

In contrast to the mechanistic view, ‘alternative’, ecological or holistic notions of the body regard it as fundamentally inseparable from ‘mind’, with the mind-body inter-related in complex and dynamic ways, many of which we do not yet understand and which cannot readily be measured using existing classical methods.

Empirical scientific methods are based on isolating and testing one causal factor at a time, with the other ‘confounding’ effects either eliminated, neutralised or accounted for in some way; whereas holistic views regard the complexity of factors and their synergistic effects in a wide range of contexts as vital.

Holistic healing models generally regard the body as having innate intelligence and a profound ability to self-heal, and thus give a much more active role to the patient. The role of the professional is largely to seek and provide information and – in partnership with the client – to facilitate and support the body to utilise its own powers to self-heal. This might be by removing as many blockages, obstacles and confusions within, and unnecessary stresses upon, the body-mind system as possible and by generally strengthening it.

Complementary medicine is a strategic combination of these views and methods, regarding orthodox medicine as not necessarily wrong, but limited. Thus one might support the body by giving antibiotics to reduce the bacteria load, or by surgically removing a cancerous growth, and also give herbs to boost the immune system, thus allowing it to then self-heal.

Maddie's use of complementary medicine in the novel (herbs and surgery, for instance) is thus more than just a consumer choice, but is tied to a deep philosophical shift in the ways in which we view ourselves, our embodiment, and our relationship to the ecology of the planet.

In her book *The Alchemy of Illness* Kat Duff explores the meanings of illness across different cultures and historical periods, and argues that western allopathic medicine is unique in seeing disease as meaningless, having no value in an individual's life or in the cultural life of a social group.¹⁵ In allopathic medicine disease is an irrational condition that is completely extraneous to the normal operation of bodies, which are seen as having clear and finite boundaries and self-integrity. Thus a disease is generally imaged as a foreign hostile agent or condition requiring removal or cure to return the body to its original state of health. (The dominant metaphor here is the body as a separate country or state under attack, with the treatment aim being to repel or destroy the invader to eliminate the problem.)

There is the potential within the holistic view, however, for a much more complex and fluid notion of the body-mind (or body-mind-spirit) and its strategic boundaries. This includes the concept of the 'non-local' mind – the idea that the mind or consciousness is not synonymous with or contained within the physical brain, but can and does extend beyond the body boundaries¹⁶ (indeed, rather than the brain producing consciousness, this idea suggests that consciousness might produce the brain). And it includes the body-mind's relationship to both the smaller and larger aspects of 'itself' – to individual cells or permanently resident organisms on the one hand (the billions of bacteria, for instance, that make up a significant proportion of our bodies) and the planet on the other.

In this holistic or ecological view, health is not the *absence* of disease agents (or threats), but *balance*. Here the individual 'body-mind' is a strategical entity interdependent within a wider universal body-mind (the super-organism of which the individual body-organism is one part, itself likewise made up of billions of interdependent systems), and there is thus logically no 'outside' for disease agents to attack 'from'. As such, at its deepest level this model both requires and makes possible a view of disease agents (when the overall system is in balance) as being one aspect of the superorganism that is able to be utilised by another aspect (the body-mind) in its process of evolution, change, and continual seeking of homeostasis.

In this model then, the role of healing is not simply (or not always) to return the individual to his or her previous pre-illness state, but might be to help them move through the illness to a new state. To move to greater wisdom and insight, for instance; or a physical illness may become the precipitating factor or catalyst for healing old psychological wounds.

As one writer put it, in this system of knowledge, 'disease in the superorganism's elements is a force that manifests a crisis in the superorganism itself. Disease is a message that can help the superorganism deal with the crisis and reconfigure itself.'¹⁷

In my novel, Maddie is a student of Aikido – a defensive martial art which derives many of its underlying principles from Buddhism and a belief in the interconnectedness of all things. Thus her challenge when diagnosed with cancer is to turn towards it, and learn from it, rather than simply try to annihilate it (bombing it with toxic chemicals). Rather than trying to defend and maintain an existing position, Aikido teaches her to use the energy of the incoming conflicting force to move to a new and better position while also neutralising its harmful effects.

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For while the ‘war on disease’ metaphor favoured within allopathic thinking prefers to posit a clearly definable outside enemy, in the holistic model if cancer is a war, it’s a civil war. And when a war must be fought on home territory, the orthodox approach which seeks to identify and quickly destroy the attacking agent often puts the whole body into a position of danger or siege. (The infamous ‘bombing a village in order to save it’ of the US-Vietnam war days, or the current controversial approach of taking away civil rights in order to ‘protect’ citizens.)

Within a holistic or ecological view of bodies and illness, cancer is not an invading force, but a mistake made by the body’s own cells. A mistake in an individual cell that has mutated and then begins to rapidly divide, and a mistake in the healthy functioning of the immune system which normally cleans up and destroys mutated cells before they proliferate. Here, the logical task while neutralising the cancerous cells is also to look closely at what is occurring within the body-system itself – what has gone out of balance. That is, to ask what fundamental aspects of the system and the way it is currently operating does this symptom indicate might need to be changed?

A holistic approach would also look at the long-term costs and benefits to the overall health of the body – and thus its ability to resist not just this but future problems – of the various methods or strategies contemplated. For instance, chemical agents which are unable to effectively discriminate between healthy and unhealthy cells, and which could weaken the body overall, would thus obviously be a last resort if used at all; while strategies that boost the body’s general immunity and functioning and repair its relationships to other systems and the wider ecology would be favoured.

In the novel I have juxtaposed Maddie’s interest in the philosophy and practice of Aikido with images and memories from the Vietnam War. As with war, ‘successes’ tend to strengthen the public dominance of a particular model or strategy, and failures weaken it. In the twentieth century, a number of striking successes for the allopathic approach – such as the virtual eradication of small pox, the discovery of anesthesia, penicillin and the synthesising of analgesic agents – have helped make the goal of eliminating disease and suffering almost unquestioned as the ultimate (and entirely feasible) goal of medicine and the scientific project in general.

However this search for control over nature has also led to extreme levels of unhappiness, starvation, ill-health and pain within the world’s population, not to mention environmental damage on a scale unimaginable in the past. Indeed the long-term effects of allopathic/classical attempts to alleviate or eradicate suffering perhaps mark the differences

between this and the ecological-holistic views most clearly. An ecological view would predict that a project of continually dividing the world and its effects into a binary system of desirable/undesirable and then seeking to repress, control or eliminate the latter is always going to create problems in the long run, however successful it may appear in the short term.

18

Nevertheless, in the centuries after Newton laid the foundations for the classical scientific model (and classical model of the body), it had a long series of incredible successes and became extraordinarily powerful. Everything seemed to be explainable by it, and its predictive ability constantly enabled new technologies and inventions that changed the relationship of humans to their environments, including their relationships to each other.

The 'New Science': Quantum Physics

However, towards the end of the nineteenth century and throughout the twentieth, experiments began to be devised that enabled observation of sub-atomic particles, and these showed surprising interactions and states that couldn't be made to accord with classical physics. It seemed that at the subatomic level (the level of the 'quantum' – or the space within and between atoms) the perfectly predictable machine-like material universe might in fact be something much more subtle, complex and flexible than classical physics could allow.

What follows is a brief overview of some of the key findings of quantum physics that have implications for epistemology in general and for our understanding of materiality in particular.¹⁹ For if, as I have argued, classical physics is a form of structuralism, quantum physics, as a form of post-structuralism, may be able to offer some valuable insights for post-structuralist feminism's project of deconstructing the mind/body split.

Quantum physics is also important to this discussion of the influences on my research directions and outcomes in the novel in the way that it offers a form of scientific support (albeit tentative and contentious) for many of the tenets and practices of holistic medicine, especially insofar as these are influenced by eastern, indigenous and premodern traditions of knowledge and spirituality.

Three of the key observations that underscore the new physics are the wave/particle paradox, Heisenberg's Uncertainty Principle, and Bell's Theorem.

The wave/particle paradox and the dual nature of light

The wave/particle paradox concerns the way that it is possible to demonstrate that light (or more generally, electromagnetic radiation) is a wave, and yet it is equally possible to demonstrate that it is a particle, even though within classical physics these are two mutually exclusive properties. Indeed, even though one excludes the other, both are needed in order to understand light.²⁰

As light produces the interference phenomenon, it must be waved. Yet (using a different experiment) it also produces the photoelectric effect, so it must be particles (that is, solid). It depends entirely on the choices made by the observer (what instruments or experiment is used) which aspect it will manifest.

Which is to say that the perceived reality of the phenomena depends on what you are looking for, and how you look.

Heisenberg's Uncertainty Principle

In classical physics, in order to apply Newton's laws of motion to an object (some would say, even to know that an object *is* an object²¹) we need to know both its precise initial position and its momentum. However at the subatomic level we can never accurately measure both the position *and* the momentum of a moving particle. Indeed, the very act of observing a moving particle changes it.

The more we confine a particle to observe its position, the more uncertain, or less defined, its momentum becomes as a result. While if we affect it so we can track the momentum, then its position becomes uncertain.²²

At a macro or gross level we can make measurements that are close enough not to matter, and so the cornerstones of classical physics – causality and predictiveness – are generally effective. But at the subatomic level – with such minute particles moving at such high energy – the time it takes to shift from one form of observing – or one *concept* of the object – to the other is so significant that a precise measure of both qualities is *in principle* impossible.²³

The Uncertainty Principle, for which physicist Werner Heisenberg was awarded the Nobel Prize in 1931, is the mathematical expression of this relationship of uncertainties. It also suggests that we have to rethink our relationship to what we perceive as 'reality'. Classical physics regards the world as being able to be broken down into smaller and smaller component parts that can be objectively observed. But at the subatomic level, it seems that

these parts can't be observed without changing them in one way or another – without making a decision about *what* will be observed, or what quality will be made to manifest.

'What we observe,' Heisenberg wrote, 'is not nature, but nature exposed to our method of questioning.'²⁴

Or as Fritjof Capra describes it, 'The properties of subatomic particles can only be understood in a dynamic context; in terms of movement, interaction and transformation', as 'a fundamental "restlessness" of matter'.²⁵

At this level then, knowledge always has a level of uncertainty or contingency about it (contingent on the observer's position, intention and choice of observational tools); is always an approximation, a purposeful compromise: our 'knowledge' and our 'reality' inextricably linked in an interactive and consensual relationship.

Or as physicist John Wheeler commented: 'One has to cross out that old word "observer" and put in its place the new word "participator". In some strange sense, the universe is a participatory universe.'²⁶

Bell's theorem

Fundamental to classical physics is the idea of the universe as comprised of spatially separate parts joined by local connections, with the parts determining the operation of the whole through a series of physical (i.e. local) causes-and-effects that operate as immutable laws. It was this view of universal objective and predictable reality that Einstein refused to give up, even though his theories of relativity and his early experiments with light fed directly into the development of quantum physics. Einstein remained convinced that hidden local variables would be discovered to explain the apparent contradictions to these laws, such as that involved in the EPR (Einstein-Podolsky-Rosen) thought experiment.

The EPR paradox as proposed by Einstein regards a thought experiment in which twin protons are given matching opposite spins, so that their total measured spin is zero. If one changes direction or speed when measured, the other must change too so that the spins continue to match oppositionally. What was unexplainable was that, within the theory of quantum mechanics, no matter how far apart the protons were located (whether separated by a few metres or by millions of kilometres) a change in one would instantaneously result in a corresponding change in the other.

In classical physics no signal can be transmitted faster than the speed of light, and yet in quantum physics this change in the twin proton's spin would always be instant, regardless of how vast the distance between them (one proton could be on earth and the twin in outer space and the theory was that this would still happen).

The EPR paradox (or 'spooky action at a distance') suggested for Einstein that there was a missing variable yet to be discovered to explain this, or that quantum theory was simply wrong.

For David Bohm, however, who further developed the experiment towards making it testable in the 1950s, what it suggested was that there must be some deeper (superliminal) level of communication, interconnection and interdependence between the protons that is beyond what can be explained in terms of classical physics and local effects.

In 1964 John Bell published his mathematical proofs that showed that if the statistical predictions of quantum theory (based on this notion of the existence of such superliminal interconnections, or 'irrational' behaviours – behaviours that go outside the laws of classical physics) are actually correct, then the fundamental principle that there must always be local causes must be false. As the statistical probabilities or predictions of quantum physics were subsequently shown to be consistently accurate, not just in the microscopic but also in the macroscopic world,²⁷ some see Bell's Theorem as, in effect, the final nail in the coffin of the deterministic world-as-machine view of the universe. In 1975 physicist John Stapp described it as 'the most profound discovery of science'.²⁸

Since that time, the EPR paradox has been demonstrated as technology has become available to test it.²⁹ Indeed, the increasing weight of evidence – derived from applications of quantum theory – continues to support the existence of a system of 'non-local effects', a web of connections, a fundamental interdependence that informs and underlies all the apparently separate components of the universe.³⁰

The Copenhagen Interpretation of 1927 and the idea of a relational, interactive universe

The Copenhagen Interpretation, formulated by a meeting of a group of physicists in 1927, said in effect that quantum theory is about 'correlations' in our experiences. It is about 'what will be observed under specified conditions'³¹ – as opposed to what 'is' in some kind of objective ultimate way existing apart from our observations and participation.

An essential feature of the Copenhagen Interpretation was Niels Borh's principle of complementarity: that reality is relational and interactive. For these physicists, the only way light can be explained as both wave-like and particle-like is that these are not properties of light 'itself', but of our *interactions* with light.³² In this view, observer and observed are always related in dynamic ways; there is no external world available to us to be measured and observed without our changing and influencing it by that measuring and observation. Indeed, it could be said that it is only through a complex of interactions that what we think of as 'reality' comes into (or gets its particular) being.

'Tendencies to exist'

The smallest object we can see under a microscope contains millions of atoms. But the next step down to subatomic particles reveals that what we think of as solid objects are predominantly empty space. To get an idea of the scale of subatomic particles – the amount of space between the particles that make up an atom – Gary Zukav presents the following image:

'The dome of Saint Peter's basilica in the Vatican has a diameter of about fourteen stories. Imagine a grain of salt in the middle of the dome of Saint Peter's with a few dust particles revolving around it at the outer edge of the dome. This gives us the scale of subatomic particles.' (57)

However, Zukav continues, a subatomic particle is not an object like a speck of dust. It is a 'tendency to exist' or a 'tendency to happen' (57). At the subatomic level 'mass and energy change unceasingly into each other' (58).

In this view, contrary to what was assumed within classical physics, the world cannot be decomposed into its smallest units or base building blocks. At the smallest level there are no objects, only what could be conceived as 'tendencies' – tendencies to occur – and which become performed a certain way when they interact with an observer. Which is to say that observation is a part of the process whereby things assume their thingness as such.³³

**The quantum soup, the Real, the Impossible,
and the 'implicate order' of eastern spiritual traditions**

In reading this view of quantum physics, I am reminded of Slavoj Zizek's image of the Lacanian notion of the Real through his description of a scene from a science fiction story. In this a man is in a car and as long as he looks through the window he sees the world as usual, but if he winds the window down suddenly and terrifyingly the outside reveals itself as the unfiltered, unedited Real (the Impossible): a 'grey and formless mist, pulsing slowly as if with inchoate life'.³⁴

Deepak Chopra says: ‘It’s as if, behind your back, there’s a constantly flowing quantum soup, and the moment you turn and look, it’s transformed into ordinary material reality through the projection of your consciousness.’³⁵

Or David Bohm: ‘All matter, including ourselves, is determined by “information”. “Information” is what determines space and time.’³⁶

While in Hinduism the material world is ‘Maya’: an illusion. And in Buddhism, ‘Dharmadhatu’: the emptiness of phenomena. ‘All phenomena,’ writes Tenzin Palmo, ‘although they exist on the relative level, are devoid of inherent existence. They exist only in dependence on causes and conditions.’³⁷

Physicist David Bohm, working from the implications of Bell’s Theorem, suggests that as well as the ‘explicate order’ that operates at the atomistic level, and which we can measure and track as a system of individual separate local causes and effects, there is also at a deep level a (hidden) ‘implicate’ order: where everything involves, is connected to, and is ‘enfolded within’, everything else.

Bohm uses the metaphor of a hologram to depict this ‘unbroken wholeness’ that he sees as the fundamental structure of the universe. A hologram is a three-dimensional image created and viewed with the aid of lasers and which – unlike an ordinary two-dimensional photograph – is by nature indivisible. If you illuminate only one section of a hologram, it contains within it all the information of the whole but in less intense detail. So if you have a hologrammatic image of a human body and tried to separate out the head or an arm, or the area around the heart, you would still end up with an image of the whole body.³⁸

Bohm’s work provides just one example of where quantum physics meets eastern spiritual traditions. For Bohm, ‘everybody not merely depends on everybody else, but is everybody else.’³⁹

As Fritjof Capra suggests, ‘...Eastern thought, and more generally, mystical thought provide a consistent and relevant philosophical background to the theories of contemporary science,’ both conveying ‘the unity and interrelation of all phenomena and the intrinsically dynamic nature of the universe.’⁴⁰ Capra quotes the Tantric Buddhist Lama Anagarika Govinda: ‘The Buddhist does not believe in an independent or separately existing external world...The external world and his inner world are for him only two sides of the same fabric, in which the

threads of all forces and of all events, of all forms of consciousness and of their objects, are woven into an inseparable net of endless, mutually conditioned relations.’⁴¹

Likewise, said a Japanese Zen master upon attaining enlightenment: ‘I came to realise clearly that Mind is not other than mountains and rivers and the great wide earth, the sun and the moon and the stars.’⁴²

Other physicists who noted this similarity include Heisenberg, Niels Bohr and Julius Oppenheimer, as well as a host of contemporary scientists and biologists⁴³. Oppenheimer wrote in 1954: ‘The general notions about human understanding...which are illustrated by the discoveries in atomic physics are not in the nature of things wholly unfamiliar, wholly unheard of, or even new. Even in our own culture they have a history, and in Buddhist and Hindu thought a more considerable and central place. What we shall find is an exemplification, an encouragement and a refinement of old wisdom.’⁴⁴

While quantum physics may still be largely unknown outside of physics departments, many of these ideas have strong connections with those that have emerged in the latter part of the twentieth century in the form of a spiritual ecology, or in the notion of the ‘New Age.’

The spiritual ecology of the New Age

The chief characteristic of the ‘New Age’ of spiritual ecology is not the newness of the ideas themselves – which are generally either influenced by or actively drawn from a diverse range of East Asian, pre-modern, indigenous and subaltern spiritual traditions. What is marked about the New Age is a resurgence of these ideas in this specific context: as a global cross-fertilisation occurring at a time when there is also a highly evolved technological and scientific culture, and within a capitalist and deeply individualised social system.

As a loose umbrella term, ‘New Age’ is a way of describing elements or tendencies common to practices as diverse as ‘alternative’ or holistic healing modalities (extending from and into psychiatry, psychology and medicine), Shamanism, Wicca, Paganism, the Goddess movement, the Modern Primitives⁴⁵, the Bioneers (a term coined to describe a range of scientists, engineers, economists and futurists who use ecological principles)⁴⁶, Deep Ecology, and spiritual ideas from Indigenous and Asian traditions.

As such it could be described as a return of the repressed – the mystical, the feminine and the queer – the outside of the slash that separated the rational from the irrational, culture from nature throughout the modern scientific age.

There is a range of historical factors contributing to this 'return', or shift in thinking.

The counter-culture, hippie and feminist movements of the 1960s and 70s led to a more general questioning of authority, a greater openness to subjective experiment, and increasing numbers of people involved in both parenting and public life, hence a breakdown in the strict division between these spheres, and more seepage of personal experience and authority from one to the other.

Another factor is globalisation and the greater availability of cross-cultural travel, as well as the influence of Indigenous rights movements and the way these connected with both political and ecological activism, and academic post-colonialism. This often posed a deep challenge for left wing atheists who were concerned to recognise Indigenous knowledges and perspectives after centuries of paternalistic dismissal, and were thus also forced to seriously take on board spiritual notions.

As mentioned previously, the increasing recognition and experience of the limits of allopathic (orthodox) western medicine to understand and treat an ever-growing range of chronic health problems, and the discrepancies for many people between their own experience and what they are told is possible and impossible also continues to fuel the spread and uptake of New Age ideas; as does the growing popularity of practices such as yoga (often described as the marijuana of spirituality – the harmless-seeming activity that can spark a gradual process of change in the unsuspecting western rationalist).

Awareness of the down-sides and environmental destruction caused by the achievements of modernity and post-modernity has also given strength to the arguments for more holistic, ecological ways of looking at the world.⁴⁷ Ideas and information coming from the new (quantum) physics, chaos theory, and models such as James Lovelock's *Gaia* thesis continue to be influential.⁴⁸

As a movement or force, the greatest strength of the New Age movement – anti-authoritarianism and the valuing of subjective experience – is also its greatest weakness.

As a populist movement with diffuse intellectual roots and influences and no unified philosophy, central organisation or hierarchical means of legitimation, its openness to new ideas and experiment can often manifest (or be interpreted) as 'anything goes' and the issue of quality control can become fraught. This is especially so when who does the controlling, what

measuring techniques, and what indices of quality (or ‘truth’) are to be used are all questions at the very heart of the New Age critique of western empirical reductionism.

While many of the theorists of New Age philosophy have scientific backgrounds or current practice of some kind, and many work from within universities or medical research institutions, anything currently defined as ‘paranormal’ within the dominant scientific understanding tends to be viewed as a form of religion – based on faith rather than experiment and theoretical reasoning – and within the mind/body, matter/spirit split as the very opposite to reason. As such anything associated in any way with the phrase ‘New Age’ has tended to be viewed with deep suspicion if not active hostility within academia.⁴⁹

For instance, while polls show that the majority of people in western countries express belief in some kind of paranormal phenomena (such as telepathy or clairvoyance) – and that this percentage increases with the level of education – in contrast, less than two percent of psychology departments in universities have even one faculty member engaged in serious research about paranormal phenomena.⁵⁰

The New Age movement further tends to be regarded as tainted because of the way it has developed within capitalism as a key marketing category, with a plethora of saleable products and services. It is also often rejected as fundamentally apolitical because of its interest in individual advancement, despite the connection with environmental, anti-materialist and global activisms, and the 1960s feminist redefinition of the personal as political.

As with any field of endeavor, discipline or loosely connected movement, the quality and sophistication of the writing and research in this area, as well as the political engagement of proponents and their ideas varies. To hear ‘as the New Agers would say’ or ‘New Agers believe’ is every bit as frustrating as hearing ‘Feminists say’ or ‘the post-structuralists believe’ or ‘science tells us’, as if these are all monolithic or monochromatic systems of thought.

As a paradigmatic or post-structuralist shift (from the structuralism of mechanistic or classical science and the structuralism of theism), there are a number of common elements to the disparate ideas contained under the umbrella of New Age or spiritual ecology. These could be described as follows: an emphasis on the whole rather than the parts, a belief in the connectedness of all things, a valuing of subjective knowledge and an openness to information acquired through means other than reason or empiricism, and a high regard for the metaphysical or non-material. It also would tend to see the body (and all matter) as not

only intelligent (as opposed to inert and passive) but also sacred (that is, the divine as existing *within* all material creation rather than as either separate from it, or non-existent).

The sixth sense, the ‘paranormal’, and the evolving quantum Self

The context from which these ideas are viewed or approached, however, is vitally important. If merely grafted onto liberal humanism, for instance, the emphasis on personal-development can become individualistic and self-serving, and often reduced to a justification for capitalistic greed or selfishness.

In the context of either (or both) quantum physics and the Eastern spiritual traditions, however, the notion of the connectedness of all things and responsibility for one’s actions as (at some level) a participant in the creation of reality requires a subtle but crucial shift in the very definition of ‘self’. It is this shift – to seeing the distinction between ‘self’ (the ego or personality: the self as manifest and constructed in this life), and ‘Self’ (the ‘Higher Self’ or part that connects into the quantum field: the essential part that is not merely interdependent with everything and everyone else, but at some level *is* everything and everyone) that generally takes a lot longer to grasp for those not born into such a tradition.⁵¹ But it is this shift towards a notion of Self that is intrinsically connected with or one with everything else in the universe which allows a move beyond the self/other duality. And it is this – together with the related view of the intelligence and sacredness of all life-matter – that is the most radical aspect of this philosophy.

Quantum physics – via reference to the implicate order or ‘hologramatic universe’, and in recognising western notions of time-space as fundamentally illusory – can also help to provide a foundation for understanding ‘paranormal’ or ‘para-psychological’ activities and phenomena.

Tenzin Palmo says that Buddhism sees us as having not five but six senses, with consciousness regarded as the sixth sense.⁵² This idea suggests that consciousness is able to gather information directly (from the spiritual universe or quantum field) and not just process information brought to it by the other (physical) senses. That is, that it is possible for the Self to have access to informational fields beyond what can be known by the self, or beyond the self’s individual experiences – through touch, taste, smell, seeing and hearing – in this life.⁵³ Or to put it another way: that the mind has the potential for non-local action, influence and knowledge gathering.

The New (Post-modern/Post-structuralist) Age

In many ways it is perhaps more appropriate or useful to think of the ‘New Age’ as an era or epoch – an Age that we are currently ‘in’ or increasingly creating – than as an ‘ism’ with a set of adherents and opponents. A useful comparison here might be to the post-modern, which makes far more sense as an ‘age’ – that we are in whether we like it or not – than as a philosophy or belief structure (with ‘postmodernists’ and ‘others’). Or even with feminism, which has inevitably left its mark on the entire culture, not just on those who agree with its major tenets. In this sense we (and my characters) are all in the New Age – or the point where the New Age and the Scientific Age overlap – and experiencing or affected in various ways by a cultural rethinking of ideas, achievements and values of the Scientific Age, and materialism in general, across a wide range of fields. The ‘eye-rolling threshold’ might differ for each of us, but even the most hardened opponent, in having to oppose, is nevertheless a participant.

It is as a major cultural paradigm shift and critique of positivist epistemologies and notions of objectivity that quantum physics and the new spiritual ecology share a number of traits with post-structuralism.

Post-structuralism likewise tends to regard reality (as opposed to the Lacanian concept of ‘The Real’) as a construction – an effect of certain complex shifting relationships and structures of exchange within a society – and hence, as changeable.

The search is not for truth, or origins, but for an understanding of how something works in a particular context or moment; for probabilities or habits, truths rather than Truth; for strategic maps rather than grand-all-encompassing narratives.

There is less distinction in post-structuralism between ‘primary’ and ‘secondary’ sources: every text (such as a work of theory) can be read as a primary text, and every text (such as a document from an archive) is also an interpretation. Representative systems – such as science, history, art, economics, politics, philosophy, religion – both reproduce and create as they describe. And every text is open-ended, variable and changing: produced by the way it is inserted into and transmitted through seemingly endless processes of cultural exchange.

The following is a brief summary of some of the elements that could be considered common to these shifts – of post-structuralism (from structuralism), quantum physics (from Newtonian or classical physics and the Cartesian mechanistic world view), and ecological spirituality

(from monotheism or atheism). These shifts don't cancel, repudiate or replace the previous paradigms (setting up a new truth in place of the old one), but are strategic engagements with these earlier ideas, revealing their limits, and valuing what they had repressed or disowned.

The common elements of these three movements of post-structuralism include:

- the notion of a subjective participatory universe – rather than that of an independently existing reality that can be objectively and accurately detailed, measured and described through language, logic, empirical experiment, reasoning and mathematics
- (thus) the idea that to some extent we shape and create the world when we detail, describe and otherwise engage with it
- a questioning of singular concepts of truth, meaning and representation, instead allowing for multiple, co-existing and not necessarily reconcilable truths – in contrast to the law of (logical) non-contradiction
- a notion of values, ethics, politics, relationships – rather than 'disinterested' truth
- a tendency towards specific, fluid, contextual, relationship-centred (and hence value-driven and purposeful) knowledges – rather than reducible, repeatable, static 'objective' (object-centred) knowledge
- a more fluid notion of subjectivity (the self, with a small 's'), as constituted by relationships with others, and (as such) as fragmented, shifting, constantly in process, constantly performed or narrated within particular contexts – rather than as an individual and unified essence
- complex processes within a field or network – rather than linear causes and effects
- an interest in complexity and specificity – rather than reductive models; diversity and difference – rather than sameness; dynamic inter-relations – rather than prediction and control
- a sense of power (or divinity) as everywhere and in everything – rather than as external, top down and hierarchical.

**Relational or purposeful knowledges:
towards a new political economy of truth**

In writing a novel which touches on so many issues of scientific concern (the basis of gender differences; the causes of transsexualism; the best medical practice for diseases such as breast cancer; the truth about the safety or otherwise of breast implants; the value of breastmilk and the science or art of breastfeeding; the facts of menopause; the eradication of suffering or the exacerbation of it through genetic engineering and body modification; the damage caused or the damage spared by wearing bras; and so on) I have found myself concluding that there are no fact-based paradigms versus faith-based ones. All paradigms are belief systems (including this one).

As Feyerabend put it in his 1975 exercise in *reductio ad absurdum*, ‘How To Defend Society Against Science’: ‘Theories cannot be justified and their excellence cannot be shown without reference to other theories.’⁵⁴ So even the use of logic or empirical method to determine truths about the nature of the universe is predicated on a theory, or belief, that the universe is logical, empirical, and objectively observable.

While science is generally believed to be a distinct case in epistemology in being based on ‘hard’ evidence, empirical scientific evidence is often ignored, dismissed, or overridden if it goes against the accepted model of how things work⁵⁵; and the results of empirical studies can often be contradictory. In medicine, in particular, it often seems that for every study showing one effect of a particular treatment or agent, there is another showing the opposite.⁵⁶

Indeed a study involving medical anthropologist and researcher into parapsychology, Marilyn Schlitz and member of the British Skeptics, Richard Wiseman, suggests that all other things being equal (or identical, as in this study) the universe is so accommodating to our wishes and intentions that to some extent – especially with more esoteric phenomena – we each find what we believe it is possible to find, or what we intend to find.⁵⁷

Evidence is just evidence – it is invaluable, especially when sifted, examined, analysed, deconstructed and backed up from a number of sources and angles – but it is not proof. It must still be interpreted within a theory or model.

Even mathematical ‘proofs’ are contingent. As Einstein commented, ‘As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality.’⁵⁸

We cannot prove anything sufficiently to define universal laws that exist across cultures, space and time – but we can define working models, compromises, probabilities, and habits. Which is to say that ‘proving’ something is both a subjective – or intersubjective – and purposeful activity: you prove it to your satisfaction so you can make decisions, which are always, on principle, going to have a level of uncertainty about them, are always to some extent going to involve a ‘leap of faith’.⁵⁹

As such our knowledge is always an approximation, always relational and contingent and purposeful (that is, relative to, or contingent upon our purposes and experiences). And our knowledge is also ultimately – at least to some extent – a choice.

‘The undecidability of the decision’ and the era of the aporia

In his book, *Refiguring History*, Keith Jenkins draws on Jacques Derrida’s notion of the ‘undecidability of the decision’ as one of the hallmarks of the post-modern age. As Derrida puts it, ‘Inheritance is never a given; it is always a task. It remains before us.’⁶⁰ In Derrida’s terms this is the era of the ‘aporia’, a condition of being in which we must constantly make decisions but without any of the old secure foundations of certainty. All of our values, beliefs, interpretations, representations, ethics and political actions are subject to the ‘undecidability of the decision’, the impossibility of knowing anything for certain any more except that every decision (every choice) will have consequences; that every moment of decision (or indecision) is an act of violence, to a greater or lesser extent, to or upon another. For in the same way that nothing can be completely true (there being no objective vantage point outside of the flux of existence for an ultimate truth to exist), no decision can be completely just; everything is always subject to endless possibilities of revision and contestation, always in a state of play and openness.⁶¹

The absence of a firm objective empirical foundation for knowing anything can be extremely disconcerting and threatening, or it can be liberating.

A controlled system for the production and legitimation of knowledge, policed and vouched for by a hierarchical system of specialists and authority offers a sense of security (whether this is comprised of religious leaders or of sciences operating within universities and hospitals and using an allegedly infallible ‘scientific method’). But if there is violence in the undecidability of the decision (and in the unpredictability of populist forms of knowledge, which are a two-edged sword that can be extraordinarily reactionary, or extraordinarily

radical), there has also always been violence in institutionalised and positivist systems of knowledge.

To live in the era of the aporia means that we can no longer (or should no longer) abdicate all decisions and values to rationalism, but that we need to take responsibility for assigning value and meaning, as individuals and as communities.⁶²

Indeed, post-structuralism only leads to an ‘anything goes’ apolitical amorality if you still see logic (or truth) as the primary reason one adopts a point of view or takes an action, rather than logic mixed in with beliefs, values and feelings, which arise from experience.

Relative truths are about relationships. Without recourse to a belief in objectivity, knowledge becomes not so much subjective, as inter-subjective; and in the absence of a unified notion of truth, an alternative concept could be ‘purpose-driven’ knowledges.⁶³

However in order to develop good relational and purpose-driven knowledges, feelings (including spiritual feelings) need to be given a stronger role, and need to be theorised more.

Just as in the 1970s we used to look in vain for the words ‘women’ or ‘Aborigines’ in the indexes of too many books on Australian culture and history, I’ve found myself becoming more and more astonished at the lack of the terms ‘emotion’ or ‘spirit’ (or ‘affect’) in the indexes of the majority of books on theory, cultural studies, and even works on literature. What in the past had seemed a natural omission is starting to look very strange indeed, that we should even try to talk about culture without reference to these ideas; although there are signs that this is changing.⁶⁴

The epistemological issues I’ve explored here are ones I’ve repeatedly had to grapple with in coming to terms with the vast amounts of conflicting information thrown up by my topic and the project of writing on and through breasted bodies.

These are also issues I’ve had to resolve to my own satisfaction before I could find the confidence to embrace some more controversial and minority (almost taboo) positions for my characters on topics such as cancer treatments, which for many people are life and death matters. It was difficult to keep trusting my own research and analysis in the face of a powerful orthodoxy that consistently fails to address the tenuousness – despite billions of dollars of research – of its evidential bases for a range of very toxic treatments.⁶⁵ It was by exploring the history and politics of these views, and deconstructing them according to

current paradigms, that I was able to understand this process, as well as feel able to present an alternative view not as the 'real' (and only) truth, but as an offering of another way of looking at these things, and as a valid and possible choice.

The notion of truth as relational, and representation and knowledge as purpose-driven has important implications for historiography and fiction writing (story-telling and theorising), which I'll be discussing at greater length in Chapter five. But first, in the next chapter I'd like to further explore the role of the body and emotions in beliefs, knowledges and decision making; and the notion of the 'thinking body' and 'feeling mind' as a way of moving beyond the mind/body duality.

Endnotes for Chapter 3:

The Matter of Bodies and the Paradigm shifts of Post-structuralism, Quantum Physics and Ecological Spirituality

¹ Michel Foucault, 'Truth and Power: an interview by Alessandro Fontana and Pasquale Pasquino' in *Power/Knowledge* (Ed.) C. Gordon (Sussex: Harvester Press, 1980) 109-133.

² The term 'allopathic' (as opposed to 'homeopathic') refers to a method of treating disease with agents that produce effects different from those caused by the disease itself. See the entry under 'Allopathic' at *Wikipedia*, 2 Dec. 2005 <<http://wikipedia.com>> for an extensive discussion of this term and its usage today to generally refer to conventional western biomedicine.

³ Michel Foucault, *The Order of Things* (London: Tavistock, 1977) 98.

⁴ For example, see the article and reader comments on the work of Candace Pert at Skeptico website which is typical of this logic. Pert's work is neither analysed or refuted but merely dismissed as 'bad science' with readers commenting 'I get quoted the old "even scientists said so" all the time. It's so hard for people to understand that "scientists" does not mean "science". Even they can be quacks!' and 'Don't they have to be *doing* science to be considered scientists? This lady is more like an "Artist Formerly Known as Scientist".' Skeptico Blog, 11 Dec. 2005 <http://skeptico.blogs.com/skeptico/2005/05/candace_perts_m.html>

⁵ Grosz, *Volatile Bodies*, 7.

⁶ Galileo was also religious. He didn't dispute the idea of God, he just disputed the Church's version of creation, and as the Church was committed to a single Truth (theirs) this was a problem that could only be dealt with through repression. Newton was not only a Christian (albeit with unorthodox views on some issues), he has also been referred to as 'the last magician' since the release of his hitherto suppressed but extensive papers on alchemy and religion. See Stephen David Snobelen, 'Newton Reconsidered,' interviewed by Paul Newall, Galilean Library, 6 June 2005 <<http://www.galilean-library.org/snobelen.html>>; also Fritjof

Capra, *The Turning Point: Science, Society and the Rising Culture* (London: Flamingo, 1982/3) 51.

⁷ This point about the demarcation of spirit to the church and then all else to science being part of the conditions under which Newtonian science flourished was made by Sylvia Fraser, *The Quest for the Fourth Monkey: A Thinker's Guide to the Psychic and Spiritual Revolution* (Ontario: Key Porter Books, 1992) 71. Kat Duff, in *The Alchemy of Illness* (Virago, London, 1993) page 50, makes a similar point about the secularisation of the body enabling science to carve out its own territory.

⁸ See *Women & Spirituality: Burning Times* [Documentary film] (USA: Wellspring Media, 1999) for an interesting account of the way that medical-juridical-scientific power was consolidated, first by aligning itself with ecclesiastical power and honing its methods on the witch trials, and then overtaking it.

⁹ Capra, *Turning Point*, 40-41.

¹⁰ Descartes cited in Capra, *Turning Point*, 46. The point about the context in which the idea of using science to control nature became seductive is made by Kat Duff, *The Alchemy of Illness*, 49.

¹¹ Also see Catherine Keller, 'The Breast, the Apocalypse, and the Colonial Journey' as discussed in chapter one.

¹² The most famous case of medical persecution was Harry Hoxsey. See Kenny Ausubel, 'When Healing Becomes a Crime' *Tikkun Magazine* (12 Jun.2001) 6 Jul. 2005 <<http://curezone.com/art/read.asp?ID=91&db=5&C0=779>> and Ausubel's book and film with the same title. For an example of a respected scientist whose employment and funding opportunities changed drastically when he began investigating phenomena that could not be explained within the dominant paradigm, see *Rupert Sheldrake's Website*, 10 Jul. 2005 <<http://www.sheldrake.org/>>. Patients can also be punished for not complying with doctor's orders. See for instance, Eve Hillary, 'DoCS – Stealing Our Children for Medicine?' *Cancer Information & Support Society Newsletter* 23. 5 (Sept/Oct 2003), republished at *Royal Rife Website* (August 2003) 25 Dec. 2003 <<http://www.rife.org/australiaeve.html>>. Hillary's article concerns a 12 year old Australian girl who was removed from her family and forced to undergo chemotherapy in 2003 against her own, her family's and her local doctor's wishes,

and despite there being little evidence to show that chemotherapy was effective for her particular kind of cancer. An attempt was made by DoCS (Department of Community Services) to suppress this article until a court hearing in the NSW Supreme Court affirmed the right of the author to publish.

¹³ For a recent mainstream example of this view, see the educational documentary for children made in 2002 with the promising title *The Thinking Feeling Body*, but which describes the brain as the ‘controlling centre’ of the body. Thus the eyes see something and send the unedited image to the brain which then tells the hand to move to grasp it, and so on. *The Thinking Feeling Body*, written and dir. by Francois Fombertaux (Australia: ABC-TV, 2002).

¹⁴ The 2005 US doctor-drama *House* beautifully plays out this model week after week as the patient, after presenting with the problem, usually conveniently goes into a coma while the team of doctors run diagnostic biochemical tests, carry out epidemiological research and use logical analysis to determine the single cause. They then apply the correct and always 100% successful remedy (in the nick of time) to the inert patient, who only opens his or her eyes and starts to contribute to the drama again once the cure is effected. There are rarely any side-effects, either of the illness or of the treatments (unless it is the wrong treatment), and the patient is usually back to normal in a short time once the problem has been successfully diagnosed and fixed.

¹⁵ Kat Duff, *The Alchemy of Illness*, chapter 3.

¹⁶ See below in the discussion of quantum physics for a possible scientific support for the notion of consciousness as a non-local phenomenon.

¹⁷ Serena Anderlini-D’Onofrio, “‘Of the Virus Party’: Ecofeminist Perspectives on Dissent in AIDS Science’ *Nebula* 1. 1 (June 2004) 4 Jan. 2005 <<http://www.nobleworld.biz/images/ARTL1.pdf>>. While I don’t agree with all of the conclusions of this article, Anderlini-D’Onofrio’s opening overview of an ecological holistic view of health and disease is excellent. Also see Polly Matzinger’s interesting theory of the immune system as responding to signals of ‘danger’ rather than signals of ‘not-self’ as in the dominant model. Polly Matzinger, ‘Tolerance, Danger and the Extended Family,’ *Annual Review of Immunology* 1.12 (1994) 991 –1045. For the transcript of an interview with Matzinger see ‘A challenge to the traditional way of thinking of how the immune system

works', Interview by Norman Swan for *The Health Report*, ABC-Radio National (15 Dec 1997) 10 Oct. 2003 <<http://www.abc.net.au/rn/talks/8.30/helthrpt/stories/s10678.htm>>.

¹⁸ It is worth noting that the comparisons used to show the success of science in improving quality and length of life are usually between life now in rich western nations, and life during some of the worst periods of the effects of 'civilisation' such as in the Middle Ages and during the Industrial Revolution, as these are the only earlier periods for which we have any kinds of statistics. Comparisons of quality or average life span now and life before the formation of cities in non-arid areas would be just guesswork.

¹⁹ The main sources for this section include: Fritjof Capra, *The Tao of Physics: An Exploration of the Parallels Between Modern Physics and Eastern Mysticism* Second Revised Edition (Boston: New Science Library, 1975/1985); and Gary Zukav, *The Dancing Wu Li Masters: An Overview of the New Physics* (London: Rider & Co., 1979 / 1989); as well as a variety of internet sites and articles that I have checked these against, or as referenced. Capra is a systems theorist and physicist and his influential and detailed book has been in print in the original and revised editions since 1975. Zukav was first introduced to these concepts at a physics conference. He has since developed his own 'new age' philosophy in a series of books, but *The Dancing Wu Li Masters*, like Capra's book, is a detailed and careful reporting of the complexities and implications of the new physics, written in consultation with physicists from across the United States, and has remained in print since its publication in 1979. The title refers to a Chinese term with a number of interweaving meanings: Wu Li can be translated, for instance, as 'patterns of organic energy'; Wu also means 'void' or 'non-being' (or 'nonsense'); 'my heart/my mind'; and 'mine or 'self'; while Li also means 'universal order' and 'organic patterns' (Zukav, 31-3). Both books draw heavily on the interpretive work of physicists Niels Bohr, Werner Heisenberg, John Wheeler, John Stapp and David Bohm – and of course Albert Einstein, although Einstein never completely accepted the implications of quantum theory and was convinced that a mechanical explanation would eventually be found, which has not been the case.

In the discussions that follow unless otherwise stated the very brief descriptions have been developed from reading the above sources (that is from reading the chapters devoted to the particular experiment as well as material and descriptions throughout the books for how it relates to other work and ideas). If I have used a specific phrasing or description from one author in particular I have referenced this separately, otherwise the descriptions (and any mistakes) are mine.

²⁰ Zukav, 116.

²¹ Zukav, 135.

²² Capra, *Tao of Physics*, 158-60.

²³ *Ibid.*, 140-1.

²⁴ Cited in Zukav, 136. For more on the Uncertainty Principle see Zukav, 114-136, esp. 133ff, and Capra, *Tao of Physics*, chapter 11, 145-161 and passim.

²⁵ Capra, *The Tao of Physics*, 192 & 193.

²⁶ Cited Capra, *Tao*, 141.

²⁷ By John Clauser and Stuart Freedman in 1972; see Zukav, 309.

²⁸ Stapp's statement is frequently quoted. For example, see the entry at the Wikipedia site, 16 Jan. 2006 <http://en.wikipedia.org/wiki/Bell's_Theorem>.

²⁹ The first time was by Edward Fry and Randall Thompson in 1976. See 'The EPR Experiment', 16 Jan. 2006 <<http://members.shaw.ca/quadibloc/science/eprint.htm>>; also the *Wikipedia* entry on the EPR Paradox, 16 Jan. 2006 <http://en.wikipedia.org/wiki/EPR_paradox>.

³⁰ See Capra, *Tao*, 311ff and passim; Zukav, 297ff.

³¹ Zukav, 62n.

³² Zukav, 116.

³³ Capra, *Turning Point*, 68 and chapter 3 passim.

³⁴ Slavoj Zizek, *Looking Awry: An Introduction to Jacques Lacan Through Popular Culture* (Cambridge, Mass.: MIT Press, 1992) 14-15.

³⁵ Deepak Chopra, *Restful Sleep: Complete Mind-body Programme for Overcoming Insomnia* (London: Rider, 1994) 63.

³⁶ Cited Zukav, 327.

³⁷ Tenzin Palmo, *Reflections on a Mountain Lake: A Western Nun Talks on Practical Buddhism*. (Sydney: Allen and Unwin, 2002) 248.

³⁸ Capra, *Tao*, 319-20. Also see Zukav, 324-5 for an interesting metaphor for describing Bohm's notion of 'enfoldment'. Vicki Kirby also refers to the metaphor of the hologram in *Telling Flesh*, 64-5 and makes a mention of Bohm (n3, 176).

³⁹ Bohm, interviewed in the documentary, *Art Meets Science: From Fragmentation to Wholeness* (MI: Mystic Fire Video, 1994).

⁴⁰ Capra, *Tao*, 25.

⁴¹ Cited Capra, *Tao*, 143.

⁴² Cited Kenneth Kraft, *Crosscurrents*, 2 Jul. 2005
<<http://www.crosscurrents.org/greening.htm>>.

⁴³ Many well-known writers on 'new age' spirituality have also had careers as scientists or medical practitioners. Deepak Chopra, for instance, is an endocrinologist; Peter Russell, author of *The TM Technique: An introduction to Transcendental Meditation and the Teachings of Maharishi Mahesh Yogi* (London: Routledge, 1976/1985) studied physics, mathematics and psychology, and researched consciousness at the University of Bristol; Kat Duff is a psychologist; Candace Pert (see chapter 4) was one of the most cited scientists in the US during the 1980s; Marilyn Schlitz was a medical anthropologist and a senior scientist at the Geraldine Brush Cancer Research Institute; Larry Dossey is a medical practitioner; and so on.

⁴⁴ Oppenheimer from 1954, cited in Capra, *Tao*, 18.

⁴⁵ See for instance V. Vale and Andrea Juno (Ed.) *Modern Primitives: An Investigation of Contemporary Adornment & Ritual* (CA: Re/Search Publications, 1989); also see *Bodyplay*,

the website of Fakir Musafar, the ‘father’ of the Modern Primitives movement, 20 Oct. 1999 <<http://www.bodyplay.com/>>.

⁴⁶ The PBS radio program *New Dimensions* (California) ran a series of interviews under this heading a few years ago. For information about *The Bioneers* organisation and annual conference: see <www.bioneers.org>.

⁴⁷ It is interesting to see even traditionally conservative groups such as farmers becoming increasingly involved in practices outside of dominant rationalist farming science. For instance, the Whole Farming group in Wangaratta, which includes farmers of all ages and experience, apparently share information about building energy towers and dowsing as well as discussing general organic farming issues. (Personal communication, Sarah Minife, Wangaratta farmer, 3 Sep. 2005).

⁴⁸ James Gleick, *Chaos: Making a New Science* (London: Cardinal, 1987). James Lovelock, *Gaia: A New Look at Life on Earth* (Oxford/NY: Oxford University Press, 1987).

⁴⁹ For instance, Deepak Chopra’s first book *Quantum Healing* published in 1989 before he got his ‘new age guru’ tag was taken seriously as a synthesis of medical knowledge and Eastern spirituality; it was, for instance, reviewed favourably in *The New England Journal of Medicine* and Chopra was interviewed and his work praised on *Science Bookshop*, ABC Radio National (17 December 1981).

⁵⁰ Dean Radin, ‘Thinking about Telepathy’, *Royal Institute of Philosophy* website, 25 Aug. 2005 <<http://www.royalinstitutephilosophy.org/think/article.php?num=13>>.

⁵¹ This could be compared to the way post-structuralism is taught and understood now after 25 years, and when it was first finding its way into humanities departments and being ‘translated’ and taught by (ex)Marxists or humanists. The hangover effect of the old paradigms coloured the interpretations, and a lot of the more empowering and politically effective notions within post-structuralism were often diminished. Indeed those most versed in the old knowledges often had the hardest time grasping the full potential of the new ideas. Likewise, a little New Age knowledge can be a dangerous thing, and the old paradigms can tend to lead to simplistic and reductive readings. The law of karma, for instance is often read as a kind of individual punishment to those raised on Christianity, whereas a more

sophisticated reading of it is that karma is always visited on oneself by one's (higher) Self, and that karma is a choice (and a privilege) in order to learn, to understand, and to evolve.

⁵² Tenzin Palmo, *Reflections on a Mountain Lake*, 87.

⁵³ One way of imagining this kind of information gathering could be to see it as akin to a vast spiritual internet. This idea could also be compared to (or be compatible with) Jung's notion of the collective unconscious and synchronicity.

⁵⁴ Paul Feyerabend, 'How To Defend Society Against Science' (1975), e-text version at *Galilean Library*, 5 Jun. 2005 <<http://www.galilean-library.org/feyerabend1.html>>.

⁵⁵ For instance, see Sahand Boorboor, 'Integrating the Incompatible: The Rise of the Incorporated Immune System' *JUR* 1. 1 (Fall 2002) 6 May 2005 <<http://sa.rochester.edu/jur/issues/fall2002/sahand.pdf>> for an examination of how many decades it took and how much accumulated evidence was required to begin to change the dominant scientific belief about the way the immune system worked. Feyerabend (as cited above) also provides several examples.

⁵⁶ For instance, an editorial in the *British Medical Journal* in 1991 stated that: 'Only about 15% of medical interventions are supported by solid evidence... This is partly because only 1% of the articles in medical journals are scientifically sound.' Richard Smith, Editorial 'Where is the Wisdom? The Poverty of Medical Evidence' *BMJ* 303 (October 5 1991) 198-99. Tom Jefferson, from the Cochrane Collaboration Methods Group, commented that: 'If peer review were a new medicine it would never get a licence... We had great difficulty in finding any real hard evidence of the system's effectiveness, which is disappointing, as peer review is the cornerstone of editorial policies worldwide.' Interview in *The Guardian* (London) reprinted in *The Sydney Morning Herald* (18 Jan. 2003). Both quotes cited by Don Benjamin, 'Evaluating Cancer Therapies and Developing a Cancer Program' Extracts from a speech presented to the *Annual Cancer Seminar, Cancer Support Association of WA* (3 May 2003) 15 Feb. 2005 <<http://www.ciss.org.au/documents/Evaluating%20Therapies%20Developing%20a%20Program031b2.rtf>>.

⁵⁷ See Richard Wiseman and Marilyn Schlitz, 'Experimenter Effects and the Remote Detection of Staring,' *Journal of Parapsychology* 61 (1997) 197-208. Also Carolyn Watt and

Richard Wiseman, 'Experimenter Differences in Cognitive Correlates of Paranormal Belief and in PSI' *Journal of Parapsychology* (Dec 2002) 25 Aug. 2005 <http://www.findarticles.com/p/articles/mi_m2320/is_4_66/ai_97754938>. For an interview about this with Schlitz and other scientists with differing views about paranormal phenomena, see *Closer To Truth*, Show 212 Transcript, 'What is Parapsychology? Round table interview with Barry Beyestein, Dean Radin, Marilyn Schlitz, Charles Tart and James Trefil', 25 Aug. 2005 <<http://www.closetotruth.com/topics/mindbrain/212/212transcript.html>>. Schlitz proposed the notion of 'experimenter effect' after she and Wiseman were involved in a study together where they both used the exact same protocol and came up with totally opposite results; results which also reflected their beliefs about what was possible. Schlitz then went to London and replicated the experiment in Wiseman's laboratory, and still came up with her original results.

⁵⁸ Cited by Fritjof Capra, *Tao of Physics*, 41.

⁵⁹ The reference here is to a difference between blind faith (a requirement of some religious beliefs) and the faith, or trust, which is an integral aspect of all thinking and acting. You always need to have a leap of faith to then experiment or play with a new idea, or even to utilise an old one.

⁶⁰ Cited in Keith Jenkins, *Refiguring History : New Thoughts on an Old Discipline* (London/New York : Routledge, 2003) 31.

⁶¹ *Ibid.*, 13, 23ff and n1. 71.

⁶² 'Economic rationalism' is a potent example of this desire to abdicate decision-making to supposedly rational or objective market 'forces', rather than making decisions – for instance about welfare policy, or ways of interacting with the ecology – based on (perhaps 'irrational') values.

⁶³ An example of purpose-driven knowledge can be seen in Buddhism, which promotes certain precepts not as ultimate truths or commandments, but as instructions (recommendations or possible choices) if you wish to live a life which harms neither oneself or others. See Tensen Palmo, *Reflections*, 47.

⁶⁴ Scott McLemee, 'Getting Emotional: The study of feelings, once the province of psychology, is now spreading to history, literature, and other fields', *The Chronicle of Higher Education: Research & Publishing*, 49.24 (21 Feb. 2003) A14, 6 Aug. 2005
<<http://chronicle.com/free/v49/i24/24a01401.htm>>.

⁶⁵ See Chapters 4 and 5, and the 'Sources' section for these chapters, in the novel samples in part two of this thesis.