Spirituality and evolutionary theory
A Sense of Transcendence
How evolutionary psychology can enhance our understanding of spirituality

1. Introduction
This is the first draft of a paper, based on a talk given at the Society of Mary & Martha in Feb 2013, and repeated at St Stephen's Church, Exeter in Feb 2014. References will be added in due course.

2. an outline of the argument
Spirituality has two crucial dimensions, metaphorically referred to as the "vertical" and the "horizontal".

Human beings possess a faculty (the sensus transcendentis) by which we are capable of being open to "Ultimate Reality" (identified as "God" in some but not all religious and faith traditions). This is the vertical dimension of spirituality.

The sensus transcendentis is responsible for those experiences which go by the general name of "religious experiences".

"Religious experience" does not refer only to the exotic "Damascus Road" type of event, but more generally to our awareness of transcendent characteristics of existence such as value, awe, meaning, purpose and sacredness ("VAMPS"). Although dramatic religious experiences happen only to a few, VAMPS are part of the human lot – they are "human universals".

The sensus transcendentis is a product of evolutionary processes and is a part of our psychological make-up. In keeping with other human characteristics, both bodily and mental, it evolved in the ancestral environment as an adaptation conferring enhanced "fitness" on our forebears.

Although the sensus transcendentis is a universal human faculty, its output or productions are shaped by the concepts and categories belonging to specific cultures. That is to say, biology and culture interact, and this has resulted in both theistic and non-theistic religious and spirituality traditions, and, increasingly in the modern era, in secular forms of spirituality.

The "horizontal dimension" refers to our capacity for moral awareness, altruism, social action – the doing or praxis.

3. What spirituality means
In an article published in 1983, theologian William Principe describes how the term "spirituality" arose within a Christian context. It derives, unsurprisingly, from the Latin "spiritus" (a noun) and "spiritalis/ spiritualis" (an adjective). In Paul's epistles this refers specifically to a life lived according to the Holy Spirit. . The actual term "spirituality" (as opposed to "spirit" or "spiritual") first occurs in a 5th century letter (once attributed to St Jerome) where the recipient is urged to "so act as to advance in spirituality", the context making it clear that "the author is urging a life according to the Spirit of God", that is, the

Pauline sense is still primary. But, as the centuries passed, a new meaning started to be attributed to "spirit" whereby it came to refer to an alleged entity in its own right as part of an human being, and with the increasing development of both secularism and individual, "spirituality" became increasingly privatised. By the seventeenth century, and I quote Principe, "spirituality came to refer to the interior life of Christians, but often with suspicious overtones of enthusiasm or even heresy".

Many authors decry the privatisation of spirituality. Kenneth Leech, who worked as a parish priest in the East End of London, professed himself "appalled" at the way "in which 'spirituality' is being promoted as a way of avoiding and evading the demands of justice and of struggle for a more equal world". He was suspicious of any claim that spirituality is a private, individual affair, maintaining that "Christian spirituality is social spirituality. It is the spirituality of the Kingdom of God, of a pilgrim people, of the Body of Christ…"

From these considerations, I take it that there are two crucial dimensions to authentic "spirituality" as understood within a Christian context, namely: 1) awareness of and openness to God and to the influence of the Holy Spirit in all aspects of life (the "vertical" dimension"); and 2) the social/ethical/political response to that openness, awareness and influence – the praxis (the "horizontal" dimension) – how we connect with other people, other sentient beings, the inanimate world: the rest of creation, in other words

However, it is also clear that the term "spirituality" is no longer confined to a Christian understanding. This is illustrated by the existence of the Crossroad series of 25 or so volumes with overarching title of "World Spirituality: An Encyclopaedic History of the Religious Quest". There are volumes on "Buddhist Spirituality", "Hindu Spirituality", "Islamic Spirituality", "Jewish Spirituality", "South and Meso-American Native Spirituality" and "Secular Spirituality" as well as Christian Spirituality. These are written or edited by practitioners of the different religious traditions, so it's not a question of religious imperialism, of Christianity imposing its own terminology on other religions: the terminology has been absorbed into those other traditions. But of course, as Ursula King, a noted writer on spirituality, points out, every language and culture has its own word for "spirit".

So the term "spirituality" has become a generic term with its principle focus being not so much on the original Judaeo-Christian conception of the Holy Spirit, as on a perceived dimension of human nature, "a general human capacity for self-transcendence, for movement beyond mere self-maintenance or self-interest…".

Below, I draw upon religious pluralism, but, to anticipate a little, John Hick, a major proponent of pluralism, uses the term "the Real" to refer to Ultimate Reality, by whatever names it is known by in the different traditions: God, Allah, nirvana and so on. I am taking the "vertical" dimension of spirituality to refer our being open to "the Real".

As I have said, the "horizontal" dimension of spirituality refers to our openness and response to other people, the created order and so forth - the area of ethics and altruism, of social action: the practice, the doing, of spirituality. But my focus in this article is on the "vertical" dimension of spirituality.

4. religious pluralism

There have been and still are a huge range of religious traditions. As well as the many primal religions, there is the Semitic group of Judaism, Christianity and Islam; the Indian group of Hinduism, Buddhism and Jainism; the Sino-Japanese group of Confucianism, Taoism and Shinto; and so forth. Further divisions and sub-divisions result in a positive delta of religious traditions: in Christianity there are Orthodox, Catholic, Reformed, Protestant … further subdivisions yielding Amish, Anglicanism, Baptist, Brethren, Christian Science, Church of the Latter Day Saints, Methodist, Mennonite, Mormonism… and similarly with other religious traditions. This raises the question of how these various religious traditions relate to each other, and there are three main stances that one tradition can take towards the others: exclusivism, inclusivism and pluralism.

Exclusivism maintains that only one religious tradition is true (one's own, of course) and that salvation or enlightenment or liberation cannot be achieved unless the one favoured route is undeviatingly followed. It and it alone is definitively true. Within Christianity one form of exclusivism is doctrinally expressed by the Catholic teaching that there is no salvation outside the church, a stance which has softened considerably since it was first pronounced in the 15th century.

Inclusivism is the contention that although one particular religious tradition holds the only fully true account of God, nevertheless other faiths could possess partial truths and their teachings can therefore be accepted to the extent that those teachings agree with the teachings of the one true faith.

The Catholic church embraced an inclusivist position at Vatican II which extended the possibility of "eternal salvation" to those who, "through no fault of their own, do not know the Gospel of Christ or his Church, but who nevertheless seek God with a sincere heart, and, moved by grace, try in their actions to do his will as they know it through the dictates of their conscience." Karl Rahner, one of the main architects of this aspect of Vatican II, coined the term "anonymous Christian" to describe such a person.

Pluralism takes a further step. Whereas exclusivism and inclusivism both take one particular religious tradition to be the one true path, pluralism contends that no one single religious tradition can be privileged above the others, and that all traditions offer potential contact with or access to Ultimate Reality. This is not however to claim that all traditions are equally true, or equally efficacious for salvation or enlightenment or fulfillment; as Hick says, self-evidently "not all religious persons, practices and beliefs are of equal value. Indeed the great founders and reformers were all acutely dissatisfied with the state of religion around them". But pluralism maintains that we cannot actually

tell for certain which religious tradition is the most true or the most efficacious. But if, as pluralism claims, all religions offer a valid access or approach to Ultimate Reality, there would appear to be a major problem, namely that the different religious traditions have different conceptions of the nature of Ultimate Reality. They contradict each other. One striking incompatibility is between theistic traditions with their belief in a personal God (Yahweh, Allah, the Father, Shiva, Vishnu…) and non-theistic traditions positing among them a range of non-personal Absolutes (Brahman, the Dharmakaya, Nirvana, Sunyata…). On the face of it the pluralist paradigm requires Ultimate Reality to be simultaneously both personal and impersonal, but how can "God the Father" be equated with "Nirvana"? If they can't be equated, then surely either Christianity is false, or Buddhism is false, or both are false, but both can't be equally valid/ true/salvific – can they?

In response to this, pluralism draws a distinction between "the Real-as it is-in-itself" and "the Real-as-we experience it". This distinction is derived from the philosophy of Kant, so a short diversion is necessary.

Kant argued that although we are embedded in a real universe, we do not actually perceive other things as they are "in themselves" but only as they appear to us. The input from some object is filtered through and shaped by our physical senses and our cognitive apparatus, so what we experience is the result of an interaction between the information coming in to us, and how our brain processes that information and makes sense of it. There is a lot about the world, the universe, that we don't actually experience, at least not directly – the subatomic world, for example, or most of the electromagnetic spectrum of which visible light is only a tiny fraction. We only experience the world through the limitations of our perceptual apparatus..

Returning to religious pluralism, the pluralist position is that Ultimate Reality, "the Real", is also not directly accessible to us, but it is refracted through the prism of the thought patterns, mind-sets and particular concepts and categories that characterise the culture e belong to; hence "we always perceive ['the Real'] through the lens of a particular religious culture with its distinctive set of concepts, myths, historical exemplars and devotional or meditational techniques".

Religious pluralism, then, provides a understanding of the wide religious diversity we see in the world and throughout human history by maintaining that "the Real" is not experienced directly "in itself" but as mediated through constructs and categories of thought that differ from culture to culture, such that in some traditions "the Real as we experience it" is theistic in form, and in other traditions it is non-theistic. Therefore, both theistic and non-theistic experiences, and (within these two sub-divisions) different forms of theism and non-theism, are all potentially valid apprehensions of "the Real".

So, pluralism does not claim that all religions are equally efficacious, nor that all religions are equally true regarding their cognitive claims about the nature of Ultimate Reality. What pluralism maintains is that all religions are valid

responses to ultimate Reality.

The reason for introducing religious pluralism is that it is based on the understanding that religious response, and with it, spirituality, is a human universal. No one single religious tradition can claim to be a human universal, but the capacity to be open to "the Real", however it is actually manifested in experience, can be taken to be a human universal when apply the religious pluralism insight to the fact religion has been a part of human existence and human society ever since Homo sapiens evolved, and possibly before then. And religion, whatever else it might be, has been a primary vehicle for the experience of and expression of spirituality. Now, religion may have declined in some parts of the world, but all the evidence is that spirituality in the sense of being open to the transcendent dimension – VAMPS – is – not in decline, merely increasingly expressed and pursued outside institutional structures of specific traditions. This is borne out by the work of Sir Alister Hardy, who established the Religious Experience Research Unit, his colleagues and his successors.

The possibility of there being such a human universal of openness to Ultimate Reality" is not a new idea. Christian theologians in particular (but not exclusively) have over the centuries referred to an innate human capacity for being aware of, and responding to, God.

5. The sensus divinitatis
Thomas Aquinas suggests that "[t]o know in a general and confused way that God exists is implanted in us by nature", the 18th century New England divine", and John Calvin used the concept of innate knowledge of God as part of his argument that we humans cannot plead ignorance of God and his commandments as an excuse for our wrong-doing.

"There is within the human mind, and indeed by natural instinct, an awareness of divinity [sensus divinitatis]. This we take to be beyond controversy. To prevent anyone from taking refuge in the pretense of ignorance, God himself has implanted in all men a certain understanding of his divine majesty… Since, therefore, men one and all perceive that there is a God and that he is their maker, they are condemned by their own testimony because they have failed to honor him and to consecrate their lives to his will… since from the beginning of the world there has been no region, no city, in short, no household, that could do without religion, there lies in this a tacit confession of a sense of deity inscribed in the hearts of all" (John Calvin, quoted in Plantinga 2000: 171).

The contemporary theologian Alvin Plantinga develops at considerable length the concept of the sensus divinitatis. He maintains that it is a cognitive faculty implanted by God, and its function is the apprehension of God and delivering to us basic beliefs about God: his being creator, his omnipotence, his omniscience, and so forth. However, this faculty is prone to malfunction as a consequence (he contends) of sin.

Plantinga of course is arguing from a theistic position, and specifically a

Christian position, and even more particularly from a Reformed position. By contrast, I am advocating a pluralist position, and so I tweak the idea of the sensus divinitatis, and use the term "sensus transcendentis" to cover both theistic and non-theistic experiences of transcendence. Now, whereas Plantinga maintains that the sensus divinitatis has been designed and implanted (by God) to enable us to be aware of God and to deliver to us knowledge of God, I am contending that the relevant faculty is actually the sensus transcendentis, which has been shaped by evolutionary processes to enable us to be open to "the Real". It delivers to us experiences of and access to Ultimate Reality, and those experiences are shaped by our cultural concepts, categories and so forth.

This leads to the next question: if the sensus transcendentis is indeed a part of human nature, how did it come into being? Plantinga, discussing the sensus divinitatis, maintains, following Calvin, that it has been implanted by God. He is, I may say, not a fan of evolutionary theory.

I am such a fan, and I turn to evolutionary theory to give an account in evolutionary terms of the how it is that we humans possess such a faculty.

6. evolutionary theory
I don't wish to spend much time on the basics of evolutionary theory, since the idea of biological evolution is pretty well known, and specific aspects of it will emerge when I shortly move on to the discipline of evolutionary psychology. What I will say is that it is useful to realise that it is not one single theory but a collection of theories.

There is the theory that all life on earth is related and that species have come into being by natural processes. This is the theory of common descent, or "descent with modification". That is, a given species has descended from previous, earlier species, but with modifications, alterations which have turned them into different species. Humans and chimpanzees, according to this theory, have both descended from a joint ancestral species. The evidence is that the two lines leading to Homo sapiens and pan trog started to diverge between 5-7 mya.

There is a huge amount of evidence backing the theory of common descent, rather than each species having been created separately. The evidence comes from: biogeography, palaeontology, morphology, embryology, molecular genetics.

Central to the Darwinian account of evolution is the theory of natural selection. The logic of natural selection is that in any population of organisms there is variation in heritable characteristics. The genes of those individuals whose characteristics confer an advantage, however small, over other members of the population will on average be better represented in the next generation, so that in subsequent generations those advantageous characteristics will spread throughout the population. Thus when it comes to fleeing from a predator, faster gazelles are at an advantage compared with slower gazelles, so (other

things being equal) fleetness of foot will be selected for, and any genetic predisposition for such fleetness will spread through the ensuing generations. These advantageous characteristics are known as adaptations, because they enable their possessors to be adapted to environmental conditions.

Thirdly, there is the mechanism by which variations occur in a population. The principle mechanism has long been considered to be mutations occurring in our DNA; these days, however, other mechanisms also giving rise to variations are being identified. For my purposes, it does not matter what the precise mechanisms are by which variations occur in populations of a species.

The evidence that natural selection occurs is found in a number of well-known phenomena such as the development of bacterial resistance reducing the efficacy of antibiotics, and the development of insect resistance to insecticides such as DDT, as well as more specific instances such as the divergence both biochemically and in their breeding times of two populations of apple maggot fly parasitising apples and hawthorns respectively alterations in the characteristics of finches' beaks on the Galapagos islands over several consecutive years of drought; and genetically-based differences in phenotypic traits in guppies subjected to different predators.

7. Evolutionary psychology
Moving on to the specific sub-discipline of evolutionary psychology which looks at how the human mind has evolved, such that our human psychology can be also understood as a product of evolutionary processes. The focus here is on human psychological universals, not on individual psychologies.

Two currents of thought come together in evolutionary psychology: first, the adaptationist approach in evolutionary biology whereby natural selection is understood to work on the variations within a given population such that those organisms which are better adapted to their environment are more likely to survive, reproduce, and have their genes preferentially represented in subsequent generations and, second, the "modularity of mind" approach in cognitive psychology, whereby the human mind/brain is understood to consist of a set of "mental modules" with specialised functions.

There are 2 key concepts:
(1) Environment of Evolutionary Adaptedness (EAA)

We evolved in response to the challenges of the physical, social and biotic environment in which our hunter-gatherer ancestors lived, namely the environment of the Pleistocene age (c. 1.8 mya to 10 kya). Our ancestors faced a range of challenges, some of which are obviously still with us today, about finding food, finding mates, co-operating with others and so forth; but there are aspects of our environment which have changed: the vast bulk of us no longer live a hunter-gatherer existence; and our social environment is considerably more complex. This means that some of our adaptations have become maladaptive: when our ancestors lived in an environment where obtaining food was uncertain and erratic, it was adaptive to stoke up on high

octane food when obtainable in order to survive the periods of scarcity, but this continuing penchant for sweets and fats is "maladaptive in [environments] with fast-food restaurants" (Bjorklund and Blasi 2005: 829), contributing to the increase in obesity

The second key concept is that of Massive Modularity. One image of the human mind is that of its being a "blank slate" which experience writes on, such that our environment and culture determines our psychology. Evolutionary psychology opposes this view, contending that our mind are not "blank slates" when we are born, but that we come into the world already prepared by evolution in readiness for the environment we will face – our social environment, physical environment, biotic environment. According to evolutionary psychology, the human mind can best be thought of as a collection of "mental modules" – organic computers, as it were - each of which having evolved to meet a specific challenge or aspect of our environment

A range of potential mental modules have been suggested and described, such as language acquisition (Pinker 1994), face recognition (Boyer and Barrett 2005), facial expression of the emotions (Ekman 1998), colour discrimination (Shepard 1992), cheater detection (Cosmides and Tooby 1992), mate selection (Buss 1994), intuitive morality (Hauser 2006), intuitive psychology (Baron-Cohen 1995), intuitive physics (Pinker 1988), intuitive biology (Pinker 1998)

8. Two examples of Mental Modules
(1) The Language Acquisition device (LAD)

We start with the observation that acquiring a language is taken to be a normal part of child development. Virtually all of us acquire a language at a young age, and become more proficient as time goes by. A child who does not start to speak at the usual sort of age causes concern. Compare that with the ability to solve quadratic equations, or to play the violin. We don't expect our two year olds to sit down and, by instinct and intuition, solve quadratic equations or compose a violin sonata. That usually takes a lot of training and teaching, and even then with no lively hope of success. If a child does do something that well, they are considered a prodigy. Acquiring a language, by contrast, is something that appears simply to happen to a child who is brought up in a linguistic environment, that is to say, virtually all of us.

The evidence is strong that we are genetically prepared by evolution to acquire language – though note: we are not, or certainly don't seem to be, genetically prepared to acquire a particular language. A baby born to Japanese-speaking parents but who is brought up in an English speaking environment will acquire English, not Japanese, and will acquire it just as proficiently as a child born of English speaking parents brought up in an English speaking environment. The linguistic environment determines which language is acquired, not the biological background of the child.

This genetic predisposition to acquire a language is referred to as the "Language Acquisition Device" and is considered by evolutionary psychology to

be a mental module, or possibly a suite of mental modules. There are a number of lines of evidence supporting this contention, such as:

Individual humans are proficient language users regardless of intelligence, social status, or level of education.

Children are fluent speakers of complex grammatical sentences by the age of three, without benefit of formal instruction.

Children are capable of inventing languages that are more systematic than those they hear, showing resemblances to languages that they have never heard, and they obey subtle grammatical principles for which there is no evidence in their environments.

Disease or injury can make people linguistic savants while severely retarded, or linguistically impaired with normal intelligence.

Some language disorders are genetically transmitted.

The "creolization" of pidgin languages (the automatic creation by young children of a fully functioning grammatical language out of ungrammatical pidgin language)

The phenomenon children deprived of a linguistic environment during the first few years of life, not acquiring language and being unable to learn one when older.

To illustrate the last point, Chelsea, a hearing-impaired girl, was misdiagnosed as mentally-retarded, and she was not exposed to a natural sign language. When as an adult she was diagnosed properly and fitted with a hearing-aid, attempts to teach her a language failed despite her relatively normal intelligence. She learned some words, but never acquired a grammar, and would say things like "The small a the hat" and "Breakfast eating girl". By contrast, hearing-impaired children do acquire a fully functioning sign language if communicated with through signing at the same development stage that hearing children acquire spoken language.

This kind of evidence supports the contention that one of our mental modules, or possibly suite of mental modules, is indeed a "Language Acquisition Device" which enables us to acquire language, provided we receive the appropriate stimulus during the critical period of our development. In other words, it needs to be kick started, in the same way that an infant's healthy visual system will atrophy if he is literally kept in the dark.

(2) Intuitive Psychology: the Theory of Mind (ToM)
We are natural, intuitive psychologists, capable of inferring other people's states of mind (beliefs, hopes, intentions) with a fair degree of accuracy. This capacity for intuitive psychology has been dubbed "Theory of Mind" ("ToM"), described as the faculty by which "[an] individual imputes mental states to

himself and to others (either to conspecifics or to other species as well)" (Premack and Woodruff 1978: 515). It is in operation when I know that the car-keys are in the sitting-room, but I realise my wife believes they are in my coat pocket: I am attributing a state of mind, a belief, to my wife which differs from my own belief.

The status of ToM as a human universal in adults is well attested . It can be seen – or inferred – to develop in the first few years of life, notably with results of the "false-belief" test. In this, a child is shown, say, a cornflakes box and asked what they think is inside it. The answer they give is, unsurprisingly, Cornflakes! The child is then shown that the box actually contains something else, such as ribbons, and is then asked what someone else (their Daddy, say), who hasn't seen the contents, would think is in the box. The responses differ according to the age (or, more accurately, the developmental stage) of the child. Whereas young children answer that Daddy would think there are ribbons in the box (that is, attributing to Daddy the knowledge that they, the child, now has), older children correctly answer that Daddy would think there are cornflakes in the box even though the child knows the true answer is ribbons. That is to say, younger children attribute to someone else the same belief that they now have; whereas the older children can distinguish between what they know to be the case and what someone else would think to be the case. They can attribute a false belief to someone on the basis of their current knowledge and what they (falsely) believed earlier regarding the contents of the cereal box.

The proposed modularity for ToM receives support from Baron-Cohen's work on autism, a condition he dubs "mindblindness" (1995) as it describes the inability to read, or see into, other people's minds – autistic people are unable to infer another's state of mind, and perform poorly on "false belief" tasks, as with the ribbons in a cornflakes pack. Yet this inability to "mind read" can occur in conjunction with high levels of intellectual functioning in non-social spheres of life, as evidenced by the life of the autistic biologist Temple Grandin.

We are clearly not born with a fully functioning ToM, but it emerges as part of our developmental sequence, with most three-year-olds failing the false-belief test, and most five-year-olds passing it, and there is evidence that ToM develops at roughly same time and in the same sequence in most children around the world.

Theory of Mind would have been extremely important, and remains important, in the whole business of social interaction, the detection of cheating and trustworthiness, of the possibility of co-operation, of aggressive intent or friendly intent of other people, and so forth. Theory of Mind evolved because it better adapted its possessors to the social environment into which they were, and are, born.

So those, in very sketchy outline, are examples of what evolutionary psychology means by "mental modules" – faculties which have evolved to deal with particular aspects of the environment – in the case of both the LAD and

ToM, aspects of our social environment.

My proposal, and this is the culmination of what I am presenting, is that our suite of evolved mental modules includes one which opens us up to, or gives us access to, or makes us aware of, the transcendent aspect of our environment, that which transcends the purely material or physical. A mental module which I have term the sensus transcendentis.

9. The sensus transcendentis

It is time to return to the proposal summarised in the introduction, but now with the opportunity to clarify and justify it in the light of religious experience, religious pluralism and evolutionary psychology. The proposal is that:

Through the processes of evolution, human beings have become endowed with a faculty by the operation of which we are predisposed to be aware of, open to and capable of responding to an aspect or characteristic of our total environment that is, or is experienced as being, transcendent. This faculty, which I term the "sensus transcendentis", is a mental module, a part of our psychological make-up, which in keeping with other mental modules has evolved as an adaptation conferring enhanced genetic fitness to our forebears in the ancestral environment, and which continues functioning today in response to the same aspect or characteristic of our total environment. Although the "sensus transcendentis" is a human psychological universal, its output of transcendent experiences, being mediated through the interpretative concepts and categories pertaining to specific cultures, has historically been experienced and embodied variously in both theistic and non-theistic forms of religion, and increasingly in secular forms in the modern era. The operation of the "sensus transcendentis" constitutes the "vertical dimension" of spirituality.

Now to examine the various aspects of the above proposal:

i The sensus transcendentis is a mental module

In postulating the sensus transcendentis as a mental module, I am maintaining that the total environment, to encounter which our evolutionary faculties have prepared us, includes not only the physical, social and biotic aspects, but also a transcendent aspect of which the sensus transcendentis is the evolved correlate in the psychological make-up of H. sapiens;

I do not mean, however, that we can separate the environment into different, non-overlapping factors – physical, social, biotic and transcendent – such that the adjective "transcendent" labels a definable area, different from the others. The proposal is that the sensus transcendentis detects intimations of transcendence arising from all or any aspect of the total environment. A given part of the environment is not necessarily confined solely to being either physical, or biotic, or social; it can belong to all of these aspects simultaneously. For instance, from the point of view of a human being, any other human being simultaneously belongs to the physical, biotic and social aspects of the environment. You belong to my physical environment because

you are an object of a certain size and certain weight; you belong to my biotic environment because you are an organic entity that is part of the local eco-system; and you belong to my social environment because you are a potential co-operator, or rival, or mate. In the model being proposed, then, the sensus transcendentis is also in play, not simply confined to a distinct area of the total environment. By responding to one aspect of the environment rather than one area, its domain is that of transcendence which is (potentially or actually) ubiquitous.

ii It is a sensus "transcendentis", not a sensus "divinitatis"

The concept of the proposed sensus transcendentis takes its inspiration from that of the sensus divinitatis developed by Plantinga (2000), and it is important to note that I am not proposing that the sensus transcendentis is in addition to a sensus divinitatis, but that there is only the one faculty for which I claim "sensus transcendentis" is a better description.

A key difference between the two descriptions is that whereas Plantinga claims that the function of the sensus divinitatis is to deliver knowledge of the Christian understanding of God as the omniscient, omnipotent Creator, Sustainer and Redeemer of the cosmos and so forth, the function of the sensus transcendentis is to detect intimations of transcendence and deliver as its output experiences of transcendence to the human organism – that is to say, "religious experience". But not necessarily theistic experience, let alone Christian experience.

iii. The sensus transcendentis is a human psychological universal

In postulating the existence of the sensus transcendentis as a mental module, I am close to those who argue that it is spirituality, not religion, for which we have a natural disposition, and that "[b]oth religious and nonreligious spirituality… can be construed as alternative cultural constructions giving expression to the natural predisposition", leading to the conclusion that all human beings, "including secular atheists and others hostile to religion, must on our definition possess spirituality in some form" (Hay and Socha 2005: 598, 607). The logic of the model I am proposing similarly entails that all human beings possess the sensus transcendentis mental module. It is part of human nature.

iv. a cultural input shapes the output of the sensus transcendentis

According to the model, the sensus transcendentis detects or infers transcendence from cues in the total environment and delivers religious experiences as its output to the human organism. These experiences are not raw and unmediated, but are filtered through, shaped by, embodied in particular concepts, categories and images peculiar to the culture of which the individual is a member. Although the sensus transcendentis itself is a human psychological universal and hence pan-cultural, the form of its output in any given instance, being conditioned by the prevailing culture of the individual, is

not universal.

This aspect of the model follows directly from religious pluralism, whereby all religious traditions, theistic and non-theistic alike, are understood to be manifestations of "the Real-as-experienced", brought about by "the Real-in-itself" mediated to us through our various and varying cultural concepts and categories. What is experienced by the individual (the "religious experience") is the outcome of those cues, those inferences, being filtered through, shaped by, embodied in the cognitive concepts and categories by which the individual habitually orients him/herself – many of which concepts and categories being cultural in origin.

That has unpacked my conception of the sensus transcendentis, but as I believe Thomas Huxley said, many a fine theory has been destroyed by an ugly fact… or possibly, by a lack of facts. So, are there facts, or at least empirical evidence, supporting the theory that we have a sensus transcendentis as part of our innate psychological makeup?

10. Evidence
The adaptiveness of the sensus transcendentis in the EEA

The claim that the sensus transcendentis is an evolutionary adaptation requires it to have been adaptive in the EEA, which raises the question of what adaptive advantages could the sensus transcendentis have conferred – and possibly still confer – to its possessors?

Some suggestions for the adaptiveness of religion, the vehicle for spirituality for most of human history, are that it underpinned the ethical system of a group or community, giving it greater stability and coherence which better adapted the group to survive periods of adversity, in turn improving the fitness of the groups members; or that the religious system of a group was itself adaptive by strengthening individual commitment, again enhancing both group and therefore individual fitness; whilst Hay and Socha (2005) argue that experiences of religious or spiritual awareness functioned by enabling individuals to cope better with "existential issues" – that's the cheery stuff like death, guilt, freedom, isolation, anxiety, responsibility, meaninglessness and such like. These possibilities, if true, would all result in improving the individual's chances of survival and reproduction; that is, any genetic basis for the sensus transcendentis would be selected for.

ii. The present adaptiveness of the sensus transcendentis

The evidence that religion/spirituality is currently adaptive focuses mainly on the impact of religion/spirituality on physical and mental health. Hundreds of studies into the relationship between religion/spirituality and health indicate that there is lower heart disease and cardiovascular mortality, lower blood pressure, greater longevity, less depression, lower suicide rates, lower levels of anxiety. There is also evidence that "true belief" in the religion one practices is necessary for a resultant health benefit, and that "extrinsic religiousness" –

when one is involved in religion because it is the conventional thing to do, but with no intrinsic belief or commitment – correlates with poorer health outcomes than does intrinsic religiousness (Griffiths 2002). Of course, better physical and mental health in themselves do not constitute better genetic fitness, but the relationship between health and genetic fitness is universally accepted in evolutionary thought, for "it is almost inconceivable that people in better health would not also have higher reproductive success. People in good health would be more likely to find mates, and to find good mates, than people in poor health, and thus to reproduce at higher rates" (Sanderson: 2008: 151)

iii. The working of the sensus transcendentis in young children:

Evidence in support of the postulated sensus transcendentis comes from specific research into the spirituality of children (Coles 1990, Best 1996, Mercer 2006, Ota et al 1996).

One researcher concludes that children are "intuitive theists", citing research which shows that children's reasoning is highly teleological, that is to say, attributing purpose to things. When asked about clouds, preschoolers answer that they are made for "raining", rather than raining simply being what clouds do; and when asked to decide whether prehistoric rocks "were pointy because of a physical process… or because they performed a function" children prefer the latter, giving explanations for the pointiness of rocks such as "so that animals wouldn't sit on them and smash them" or "so that animals could scratch on them when they got itchy".

The researcher concerned concludes that "[c]hildren view natural phenomena as intentionally designed by a god", or at least that they are "predisposed to develop a view of nature as an artifact of nonhuman design" (Kelemen 2004: 296, 299). Moreover, as she points out, teleological explanations have in fact been a staple of human understanding until very recently, and that "reasoning about all aspects of nature in nonteleological physical-reductionist terms is a relatively recent development in the history of human thought" (Kelemen 2004: 299). Her point is that our default position seems to be that of teleological rather than causal explanations – that is, explaining things in terms of purpose rather than in terms of what has caused them. Whilst this obviously does not entail teleological explanations being correct and causal explanations being incorrect, it does add to the evidence that we have a predisposition to see, or seek, purpose.

One researcher who recognises that spirituality does not necessarily entail God-talk is Hay (Hay 2006; Hay and Nye 2006), who has developed the work initiated by Alister Hardy. Exploration into the spirituality of children has uncovered their openness to "meaningful aesthetic experience, religious experience, personal and traditional responses to mystery and being, and mystical and moral insight" (Hay and Nye 2006: 109).

None of these lines of evidence alone is conclusive, but they make a

cumulative impact, strengthened when combined with the evidence of the adaptive nature of religion/spirituality. It becomes increasingly plausible that H. sapiens possesses a faculty along the lines this enquiry proposes, and increasingly implausible that such experiences of purpose, meaning, value, sacredness, of intimations of transcendence, could arise as the by-product of other cognitive modules as many researchers argue.

11 Conclusion

In this paper I have brought together a number of concepts in order to argue that human beings possess an evolved faculty, which I have termed the sensus transcendentis, by the operation of which we are able to be open to, and experience a sense of, transcendence, and this constitutes the "vertical" dimension of spirituality, the horizontal dimension of which is the capacity for responsive ethical behaviour. The development of the model of the sensus transcendentis is based on the assumption that a scientific investigation of the world and of human nature is perfectly valid in its own terms and need not be seen as antithetical to spirituality, but on the contrary can contribute to an understanding of that phenomenon. It does not, however, claim to be, and should not be read as, an argument either proving or disproving wholesale the specific claims of all or any one religious or faith tradition.

Of course, it remains to be seen whether the sensus transcendentis model can be expanded, developed or modified in due course in the light of continued developments in evolutionary theory, but whatever the actual mechanisms which have brought it into being over the immense stretches of evolutionary time, the phenomenon of human spirituality should be accepted as being firmly rooted in our evolved human nature.