



Fig 1: The mind-brain relationship remains the unfathomed abyss in the scientific description of reality.

The Cosmology of Sexual Paradox and the Fall

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This is the article that came out of our talk in Jerusalem, while on our 90-day orbit of the planet. It is an in-depth and wide ranging review supported by cosmological science and human cultural and genetic history with significant implications for religions and the future of humanity.

1: Sexual Paradox of Existence - Mind and Body

Our experiential universe remains poised on a paradox, so acute, that neither the scientific description of reality, nor the religious cosmologies of history have succeeded in revealing its inner nature.

From birth to death, the only avenue we possess to knowledge of the world around us is not through the physical universe and objective reality of the world at large, but through our subjective conscious experience. In all our experiences of the everyday world it is our private subjective consciousness which is doing the experiencing and this consciousness can take on many forms, spanning dream, memory, reflection, and hallucination.

And despite the fact that we all have physical brains, the relationship between brain states and conscious states remains the abyss in the scientific description of reality, for which there is as yet no convincing explanation. In a sense although many of us think of the physical world as the primary reality, our understanding and acceptance of the objective physical universe comes about only indirectly, through the consensual agreement of our subjective conscious experiences of the everyday world. Thus in a sense all we know is conscious experience.

Nevertheless, the scientific era has brought about a new understanding of the physical universe which has come about only through applying skeptical principles that a theory is never proven, but only gains validity when critical experimental attempts to disprove it fail, and applying stringent tests for refuting fantastic and incorrect theories, by careful examination of inconsistencies and replication of experimental results. The end product is our extraordinary scientific model, in which we have come to understand that the dynamics of physical processes and the future of life around us depend on microscopic forces and the generation of fundamental wave-particles that give rise, through their interaction, to the atoms and molecules which comprise the world around us and govern its reactions, structures and changes.

This has led to an explosion of scientific knowledge, which has literally overturned our preconceived religious notions of the universe and taken us to the brink of a cosmological description, which is penetrating beyond our wildest dreams, reaching back to the cosmic origin and weaving together the great cosmological events shaping the universe at large with the microscopic forces that makes us the molecular organisms we have discovered ourselves to be. However this knowledge is and has always been gained indirectly through experiments which ultimately change our subjective conscious experiences, for example through witnessing the strips of dark and light chemicals that decode a DNA sequence, or the dark or light resonance bands in the hydrogen spectrum which can tell us the universe appears to be flying apart at close to the speed of light.

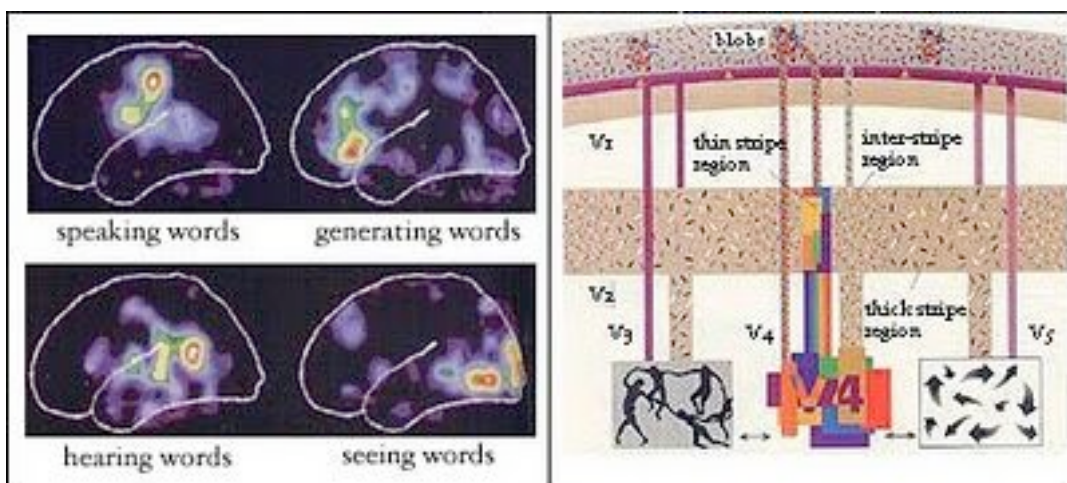


Fig 1b: (Left) Brain activity associated with language and (right) local parallel processing of color and motion in vision. Although brain scanning has made it possible to associate specific regions of the cortex with specific aspects of conscious thought and experience, these are just correspondences between biological brain states and perceived conscious events. We still have no idea how the brain generates subjective consciousness.

No one knows how the brain generates conscious states, which are our complete and only avenue to experiencing the physical world, or even if it is a meaningful question to ask, since brain states are objective molecular events and conscious experiences are entirely subjective and do not have the same existential status as physical events, being the ephemeral miasmas of dream, memory and reflection.

For the purposes of brain science it is convenient to think of the conscious mind as an internal model of reality constructed by the brain to carry out its central integrated decision-making tasks, but this begs the question of how it can generate extra-physical impressions, such as the incredibly detailed experiences sometimes accompanied by vivid dreams or the kaleidoscopic landscapes of psychedelic reverie, where alternative realities, as real and palpable as waking experiences of the world around us, are invoked in similar detail.

Indeed Indian philosophy sought to reverse this relationship between the physical and the mental, considering material forms as grosser than the finer mental ones, so that mind could not be described in terms of physical forms and structures. On the other hand, we all know that if we are hit on the head or cut our wrists, we may lose consciousness or may even expire, so the primacy of the physical world cannot be taken in doubt, even though it is experienced indirectly through our subjective consciousness.

We thus end up in a paradox, because neither the physical, nor the mental world description on its own can adequately describe our existential cosmology. Moreover they are complementary to one another, evoking together the complete dynamics of conscious existence in the physical world, and they are symmetry-broken in the sense that their properties are qualitatively different from one another in such a way as to comprise a complementary whole from their fundamental differences. This is the state of symmetry-broken complementation leading to paradox, we refer to as sexual paradox.

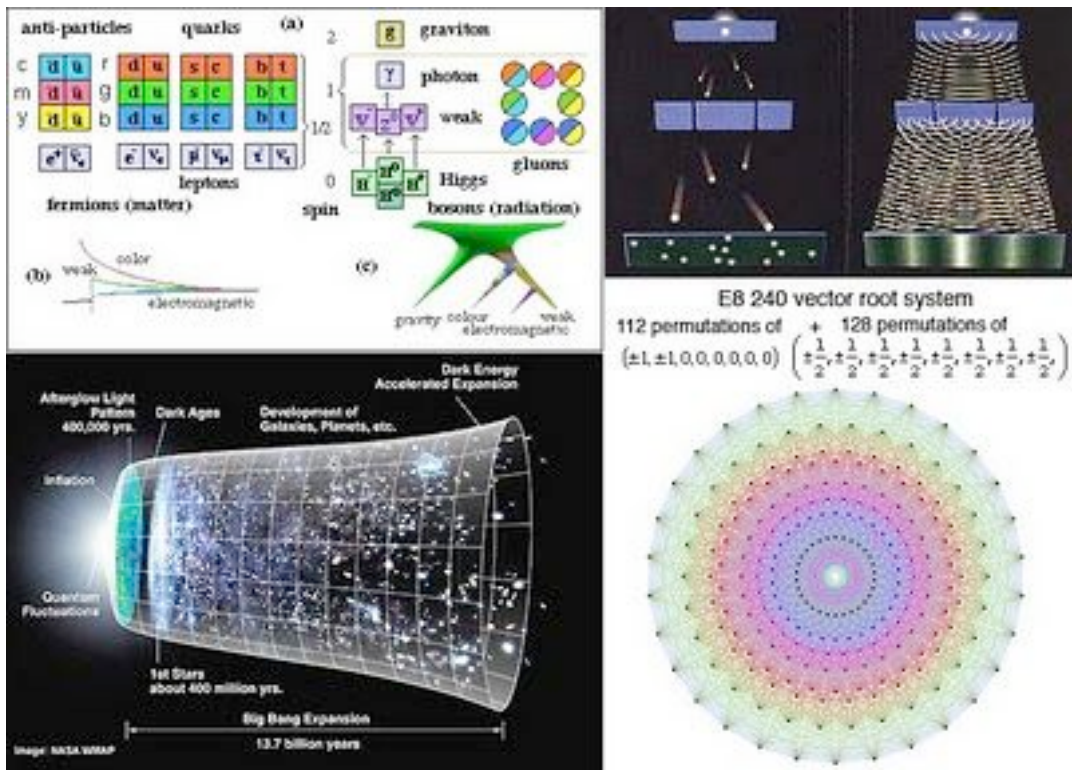


Fig 2: Sexual paradox in physical cosmology: Top-right Wave-particle complementarity. Top-left symmetry-breaking of the forces of nature, invoking boson-fermion or matter-radiation complementarity. Bottom left: Cosmic evolution is a reflection of this symmetry-breaking. Bottom right: Despite the idea of super-symmetry between bosons and fermions, the pivotal group E8 believed to be at the core of the cosmic design shows symmetry-breaking between its bosonic and fermionic roots.

2: Sexual Paradox in Physical Cosmology

The quantum universe consists entirely of wave-particles - that is quantum entities display both the properties of a traveling wave and a moving particle, sometimes manifesting as one and at others as the other but never both in the same situation. For example in a double slit interference experiment as in the top right hand of fig 2, photons are released in localized particulate units from excited atoms, but then radiate as waves through the apparatus before reappearing as particles with bands of statistical density following the wave amplitude, when they are reabsorbed by the detector.

The wave and particle aspects are both complementary and symmetry-broken topologically in the sense that the wave and particle aspects form discrete and continuous descriptions of the quantum dynamics. They are also robustly sexually paradoxical. Any description attempting to derive from one aspect only, implicitly carries the other aspect within it. For example in quantum field theory, although the fields are described as an infinite collection of interacting particles acting as force carriers, the particles are still transmitted according to a wave propagator function .

There are also a further series of complementarities emerging from quantum reality. Wave-particles come in two types: The bosons, such as the electromagnetic photon, which have integer spin, and mediate forces and exists as radiation because they are able to infinitely superimpose, as in lasers. By contrast, the half-

integer spin fermions can only enter the same wave function in magnetically complementary pairs of opposite spin, thus forming incompressible matter.

The standard model of particle physics involves a highly symmetry-broken divergence between both the four fundamental forces of nature and its bosons and fermions. In particular the bosons and fermions occupy very different classes, although both respect the internal symmetries of the forces. The complementary and opposite positive and negative energetics of the bosonic and fermionic components has led to the idea that nature must be super-symmetric - i.e. that for each boson, there should be a corresponding fermion partner so the positive and negative energies almost perfectly cancel, except that this symmetry is broken by one or other of the partners gaining a very high mass so they would only appear at high energies e.g. in the LHC.

However super-symmetry may also be discretely broken in a way which might mean the overall contributions of the bosons and fermions cancel, but there are different numbers and arrangements of each. The group E_8 , which is central to many super and string theories attempting to unify gravity with the other forces, carries within it a discrete symmetry breaking, which nevertheless generates the entire 240 dimensional root system for E_8 from an asymmetric distribution of 112 'bosonic' root vectors with integral components and 128 'fermionic' ones (with half integer coordinates), as in the lower right of fig 2.

Complementing this is a cosmological description of the origin of the universe derived from it, in which an early rapid inflation, caused by the high negative-energy of the symmetrical state of the forces, traversed into a shower of hot fundamental particles with attractive gravity, as the symmetry-breaking occurred, knitting the evolution of the universe as a whole into the same process. We thus end up with a gigantic universe whose kinetic energy of expansion is just balancing its gravitational potential energy, leaving it on the edge between expanding forever and ending in a big crunch. A more subtle symmetry-breaking is being searched for, e.g. in the weak force, which can help explain the preponderance of matter over anti-matter which is essential for a material universe to exist without annihilating itself back into pure radiation.

There are further manifestations sexual paradox in the partially conflicting assumptions of relativity and quantum theory in their treatment of space and time.

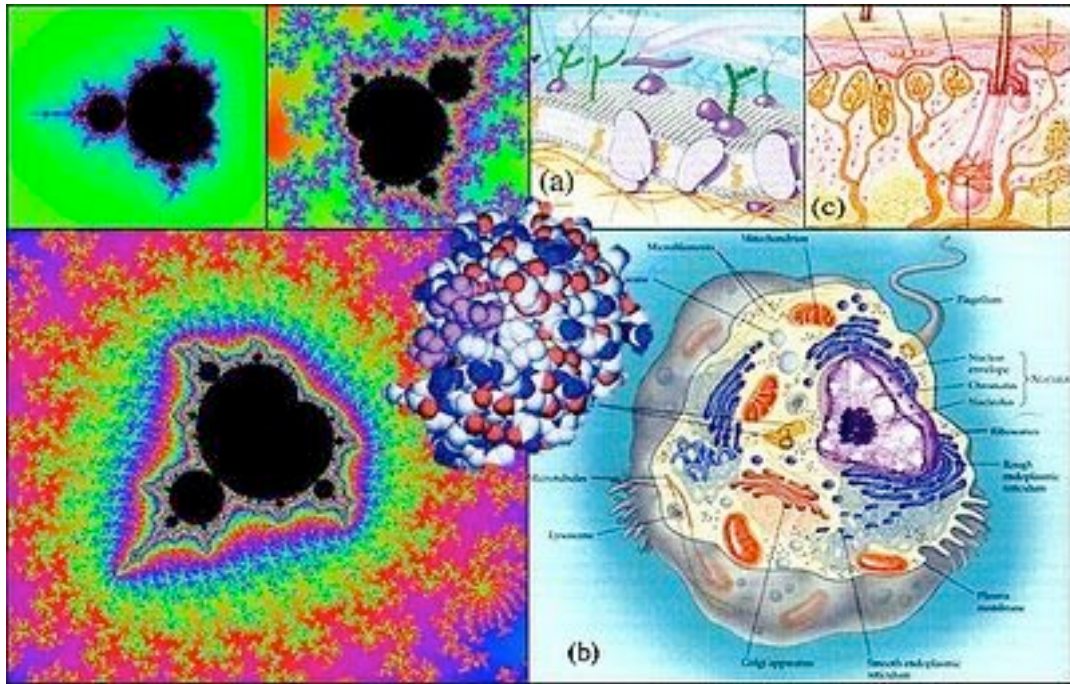


Fig 3: Biological tissues (right) display a fractal architecture on ascending scales from the molecule to the organism in a manner reminiscent of the Mandelbrot set (left). This may be more than a mere analogy. Symmetry-breaking results in symmetry-broken structures - atoms - in which positive nuclei are orbited by negatively charged electrons. The resulting interaction between the electromagnetic force and the electron's charge distribution is highly non-linear resulting in chemical bonding. These non-linearities are not resolved by covalent or ionic bonding, giving rise to a chain of cooperative weak-bonding effects, which enable the action of large protein enzymes (lysozyme with substrate centre) and the formation of supra-molecular complexes and cell organelles. The architecture of tissues is thus a consequence of the symmetry-breaking of the fundamental forces.

These symmetry-breakings are essential for conscious life to exist, because the asymmetric arrangement of matter results in a complete symmetry-breaking of electromagnetic charge with respect to the nuclear forces, which is subject to highly non-linear energetics as a result in the effects of distributed charge on wave orbitals, resulting in the chemical bond. It thus gives rise not only to atoms, but molecules, and molecular complexes. The non-linear nature of chemical bonding means the forces are never fully resolved at any stage and display a spectrum of cooperative weak bonding effects. These are able to generate the fractal molecular structures of biology from cell organelles to whole tissues, and ultimately to the conscious brain, making it a final interactive result of cosmic symmetry-breaking.

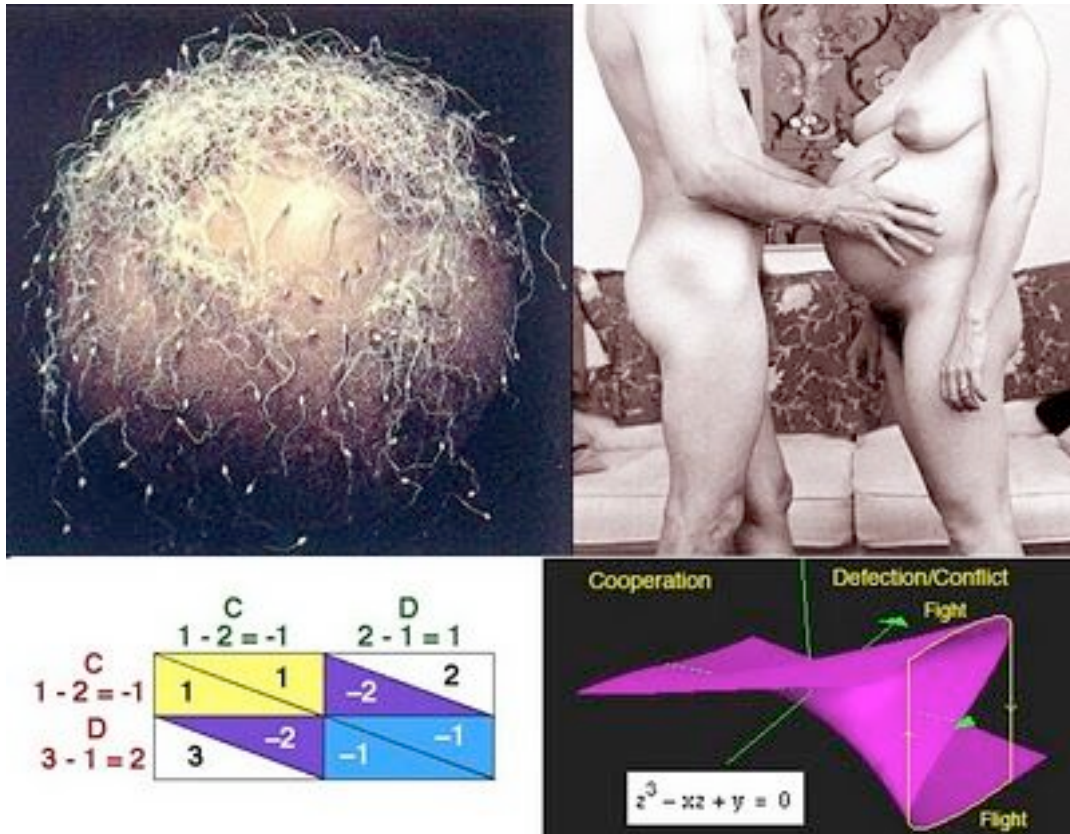


Fig 4: Human sexual symmetry-breaking at the single celled level (top left) and organismic level (top right). Symmetry-broken prisoners dilemma matrix (bottom left) and cusp catastrophe (bottom right).

3: Strategic Sexual Paradox and Human Evolution

If we come back for a moment to the biological realm, at a single celled-level we are profoundly symmetry-broken. The fertilization of an ovum by one of a multitude of sperm is reminiscent of the wave particle complementarity of fig 1, and this may reflect more than a mere analogy and represent a deeper quantum complementarity in biology. Sperms have evolved to become little more than motile particulate DNA with almost all their organelles digested to avoid cytoplasmic warfare. By contrast ova, while also containing a full complement of DNA are solely responsible for cytoplasmic inheritance and the continuity of the cytoplasm itself and have evolved to make a split second wave excitation-triggered fast reaction to discriminate the statistical rain of prodding sperms into a single wave-particle fertilization event at least reminiscent of reduction of the wave packet.

Here we are talking only about binary fusion sex, but there are other forms of pan-sexuality and sexual paradox in the biological realm, from bacteria and viruses, up through fungi, which demonstrate the versatility and universality of the principle, running back to the source of life itself. Bacteria and viral elements share an ecosystemic relationship, where viruses and extra-chromosomal plasmids act as sexual agents, promoting active conjugation and the exchange of genetic material through viral transfer, even between different species of bacteria. Fungi also have forms of conjugation sex, which can permit up to 22 different sexual strains, instead of the mere 2 of fusion sex. The gene which precipitated fusion sexuality may also

have been an autonomous 'jumping gene' which, unlike the two sexual partners, who can contribute only half their DNA to their offspring, managed to contribute its entire genome, to cause sexual determination, just as mitochondrial genomes continue to do in the maternal line.

The Prisoners' Dilemma is a famous strategic paradox in game theory which arises, when two agents are caught in a situation where they can both gain a moderate benefit from cooperating but because of the high payoffs for successful defection, each is tempted into betraying the other, resulting in both receiving a negative outcome when both spill the beans implicating one another. The classic situation is two prisoners who are tempted to betray one another to get off a serious charge, but it also applies to situations from nuclear confrontation to evolutionary competition, and in particular the polarized reproductive strategies of the two sexes of a species, neither of which can escape the other, but each of which is evolving to take advantage wherever possible. When modeled dynamically, the Prisoners' Dilemma results in unstable dynamics on a cusp between cooperation and outright defection, as shown in the lower right of fig 4.

In all higher animal species, each is also running an evolutionary Red Queen race (running while standing still), just as occurs between parasites and their prey, because, while one sex is evolving to pursue a strategy to replicate their own genes as effectively as possible, given the sexual prisoner's dilemma of sharing half your genes, the other sex is doing the same, leading in many species, from fruit flies to sea urchins, to outright genetic warfare, where the male may literally try to poison the female to cause her to be able to bear only his current offspring, or to strategically break through the egg's defenses, with compensating reactions from the female in each case.

The reproductive strategies of female and male organisms are also as significantly symmetry-broken as sperm and ovum. From the moment the two gametes became polarized to avoid cytoplasmic gene warfare, the investments of the female organism became fundamentally different from the male because the larger size and smaller number of her eggs causes the female to have a much higher reproductive investment per offspring than the male. In live-bearing mammals, whose females get pregnant and lactate and thus have a huge parenting investment in a small number of offspring, this difference is at a peak.

In all animals, because of the higher investment of the female in reproductive parenting and the greater investment of males in fertilizing as many females as possible, females tend to be choosy and try to select males with the best genes. Female reproductive choice is thus paramount in humans as it is in all mammalian species, although given our strong pair bonding, mutual mate choice is also a major player.

In mammals the XY form of chromosome-based sexuality results in XY males with unique expression of a single X, while XX females collapse one or other of their two X's in all somatic cells including the brain, to avoid poisoning the non-sex cell lines, resulting in a chimera of brain X-expression, just as in a (female) tortoise-shell cat's patchy coat. Partly due to their unique X expression, male have a much higher

variation in natural intelligence. This puts mammalian females in the best position to select males with good X genes, many of which figure in brain development, as well as good genes on the other chromosomes.

In humans, mammalian sexual polarization has reached a further climax, due to the massive and risky nature of human pregnancy and the long term parenting required for human development. Thus, despite our lip service to being culturally defined by a common intellectual endowment, the reproductive strategies of the two human sexes are maximally polarized, by comparison with just about all animal species.

This state of sexual polarization may explain both the evolution of human super-intelligence and the emergence of human culture, art and intellectual discovery. The unstable dynamic of the cusp on which the polarized prisoner's game of sexual paradox occurs, is where reproductive choice has its most powerful effect. The Red Queen race of mutual mate selection, biased by female reproductive choice may have put Homo sapiens in a position where choosy females favouring good hunting, art and music, story-telling, and supportive and resourceful parenting in their men folk, repeatedly selected for the best genes for emergent super-intelligence, the female generations retaining the same genes in a way which may have promoted their own astuteness of choice, leading to a runaway peacock's tail of intelligence and social complexity.

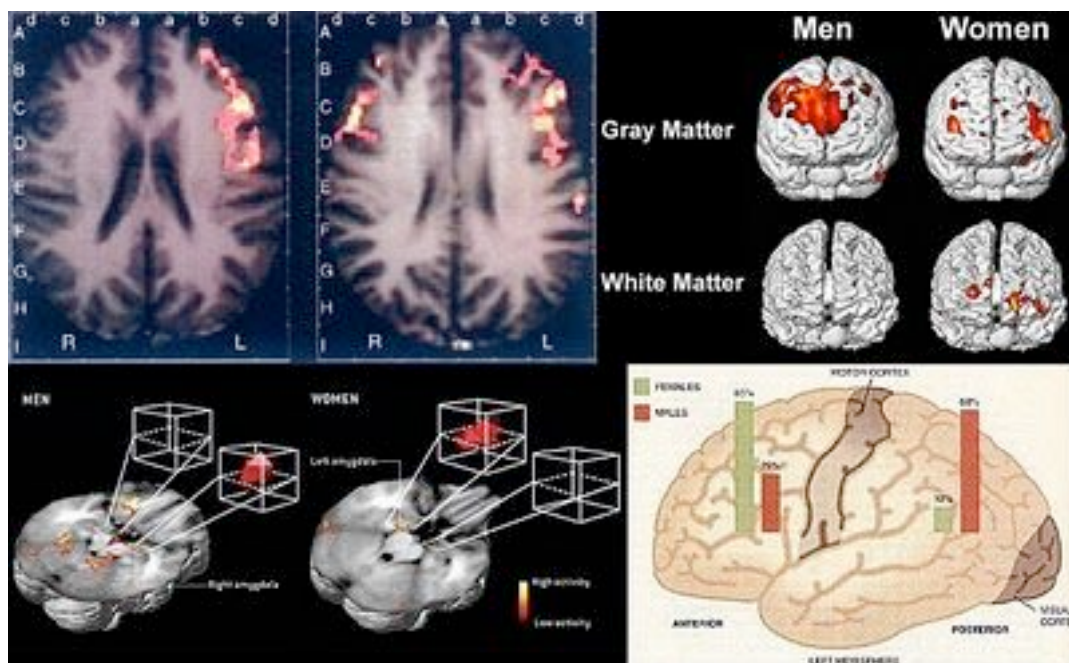


Fig 5: Top-left Male (left) and female (right) language areas show differing degrees of lateralization. Bottom-right: Difference in stroke locations causing aphasia (language loss) in men and women. Top-right: Differences in gray and white matter utilization indicative of different cortical couplings. Bottom-right: Differences in amygdala expression when faced with a fearful scene suggesting male targeted and female context-related focus.

There is also evidence for sexual symmetry-breaking in brain function. Men tend to have superior targeting and mental rotation and females better recognition by landmark. Female humans also tend to have less lateralized speech areas, more

connections between the hemispheres and greater natural capacity for early language acquisition and may have originated human speech through common gathering, following the grape-vine of gossip about sexual relationships essential for reproductive success, and 'mother-talk' with their infants, while men spent more time in silent vigil, hunting. Brain lateralization has a deep evolutionary basis in distinguishing predator and prey strategies, is driven by testosterone and correlates with greater male involvement in hunting for sexual favours.

These considerations eliminate from human emergence both 'Flintstones' man the hunter scenarios where men secure women by clubbing and abduction, and patriarchally enforced marriage choices under threat of dire penalties for adultery. These by contrast inhibit the evolution of super-intelligence, because the male sex, which should be subject to primary selection, is preventing evolution taking place, by repressing female reproductive choice. There is a deep reason for this - paternity uncertainty. Men do not produce live young, as women do, and thus, in addition to their heightened sense of mortality from not bearing live young, they fear the offspring of a female partner may be another man's child, so they are liable to attempt wholesale defection against female reproductive choice through gaining control of institutions of culture, society and religion.



Fig 6: Several religious creation cosmologies involve sexual paradox, including (a) Tantra (top left), where the universe is a coitus of mind and body that has become fragmented into the plethora of phenomenal existence, the Tao (lower left) where nature is the complementation of creative yang and receptive yin and 'the way that can be told is not the countless way', the 'Elohim of Genesis 1 creating humanity 'male and female in our likeness' (modern rendering centre). However the Eden creation story (right) begins a tragic defection, setting a lone God in conflict with the primal human pair over their presumed sexual transgression, leading to the fall from paradise.

4: Sexual Paradox and its Breakdown in the Religious Imperative

Several of the key religious creation cosmologies agree with the sexually paradoxical origin we have seen in the first two sections.

The Tantric origin conceives the cosmos as a deep coitus between Shiva as the observing cosmic mind and Shakti as the integrated material universe. As the coitus disengages, and the experience fragments into maya, or illusion, this cosmic consciousness becomes divided into separate conscious beings observing the

plethora of phenomena of the world around us.

The Tao is likewise a cosmology of nature, in which two inter-dependent principles receptive yin and creative yang lie at the source of all phenomena and any attempt at fully explaining it lies in paradox because in Lao Tsu's own words 'the way that can be told is not the countless way'.

The 'Elhoistic origin ('Elohim is the [male] plural of God) in Genesis 1 is also sexual in archetype, since Adam and Eve are made male and female 'in our likeness' implying the godhead is a sexual dyad in partnership, as in polytheistic religions, from Sumeria to Hinduism, as it is in the creation stories of many ethnic peoples.

However, with the advent of the Eden story of Genesis 2 there is a tragic breakdown in the cosmology, in which a now lone God curses humanity and throws them out of paradise ostensibly for eating the fruit of knowledge of good and evil which Eve mistook for the wisdom of the tree of life, but actually because of their sexual transgression in the act of carnal knowledge, for which woman was doomed to pain of childbirth and obedience to her husband, just as the man was doomed to obedience to God.

There a fundamental change in God's nature from beneficent creator in partnership to a jealous moral deity and wishful lover of the bride Israel, who curses the people if they stray from worshipping Him and Him alone, despite the fact that in Proverbs, Hochmah or Wisdom declares she was with Him from everlasting before his works of old - i.e. in the very cosmic origin.

The role of the moral deity has several functions which can also be thought of in social evolutionary terms. By making everyone obliged to worship an unseen God who is claimed to be able to see into our very souls, it strongly encourages moral action towards one's co-religionists, discourages internal defection within a society and enables a society to become robust and dominant in the face of external competitors, leading to large conservative societies which convert or annihilate their competitors. While religious cultures have certainly acted to impose such processes, they may also arise from a genetic component which is reinforced reproductively by the imposed cultural constraints.

The societal role is coupled with a more insidious and frankly diabolical role, in repressing female reproductive choice, because religions, particularly monotheistic religions of the 'one God' have also set in place patriarchal marriage laws and dire punishments, such as stoning for adultery, which are generally aimed at punishing women for their perceived transgression, in exercising any degree of autonomous reproductive, or partner choice, in the face of imposed patriarchal laws. In several major religions these imperatives are also designed to encourage demographic expansion of the religious following by unmitigated reproduction.

Contrary to the claim that, unlike the false pagan idols, the abstract God of creation acting in history is the one 'true' God, we shall see shortly that this idea is neither new, nor a 'superior' development.



Fig 7: Sabbath creation of Genesis 1 (centre) surrounded by Christian (above) and Muslim (below) views of the supernatural demonstrate that these are products of the mental realm sharing affinities with imagination, dreaming, prophetic vision and hallucination, rather than being descriptions of any form of objective physical reality.

Religious descriptions of the greater cosmos including heaven and hell share features which clearly place them in the mainstream of conscious mind constructs, rather than physical world descriptions. While the sabbatical creation can be forgiven for its flat Earth cosmology with the 'Elohim placing stars in the dome of the heavens, and evoking the plants before the sun and moon, later descriptions of paradise, heaven and hell in Christian and Muslim theology have much closer affinities with the dream time and visionary imagination than any model of reality consistent with the physical world.

Both show compensatory attempts to resolve sexual contradictions in their imposed beliefs. The Christian heaven is permeated by sexless angels, as a reflection of the belief that the carnal sin would be undone in eternal life, who instead sport large feathered wings, which lost all meaning when Galileo demonstrated the Earth orbits round the Sun and we discovered the upper atmosphere converges towards the lifeless vacuum of space and would provide no lift for such airy appendages. By contrast the Muslim paradise is packed with seventy-two black eyed houris made virginal every morning for the insatiable sexual pleasure of men, again violating the procreative essence of sexual existence, and the equally biological nature of

women. Both in turn look to a hellish day of judgment when the final cookie crumbles and the moral deity exerts his terrible final accounting, launching the moral imperative from social evolution to fully fledged cosmological catastrophe and with it promoting one evangelical path or another as the final rulers of the planet and its people.

These extremes of apocalyptic utopia amid violence and tumult, demographic inflation, and the frank repression of female reproductive choice, present a significant risk to the future of humanity and the fecundity of planet Earth. They represent a fundamental break down of sexual paradox, to form a fascist rule of order in frank contempt of the sustainable continuity of life. It is essential for the world to address the fascist utopian aims of world religions to engender a world where ecosystemic survival and the continued survival and evolution of the human race will be fostered instead of end-of-day conflict.

Many features of Western society from economic short term boom and bust, winner take all venture capital exploitation, rape of the planet in tragedy of the commons type resource exploitation, and the vast differences in wealth between the rich and the poor all appear to derive from the types of gain and advantage of spermatogenic reproductive strategy, risking mortality to achieve disproportionate competitive fortune, in the absence of any counterveiling long-term out-front female reproductive investment strategy that protects successive generations of offspring and the ecosystems in which they have to survive.

To see how this situation may have arisen and to help us gain a more sustainable long-term solution to the problem, we need to look deeper into human evolution over the last 150,000 years and the emergence of human culture and religion from the smaller social groupings of ancient gatherer-hunters.

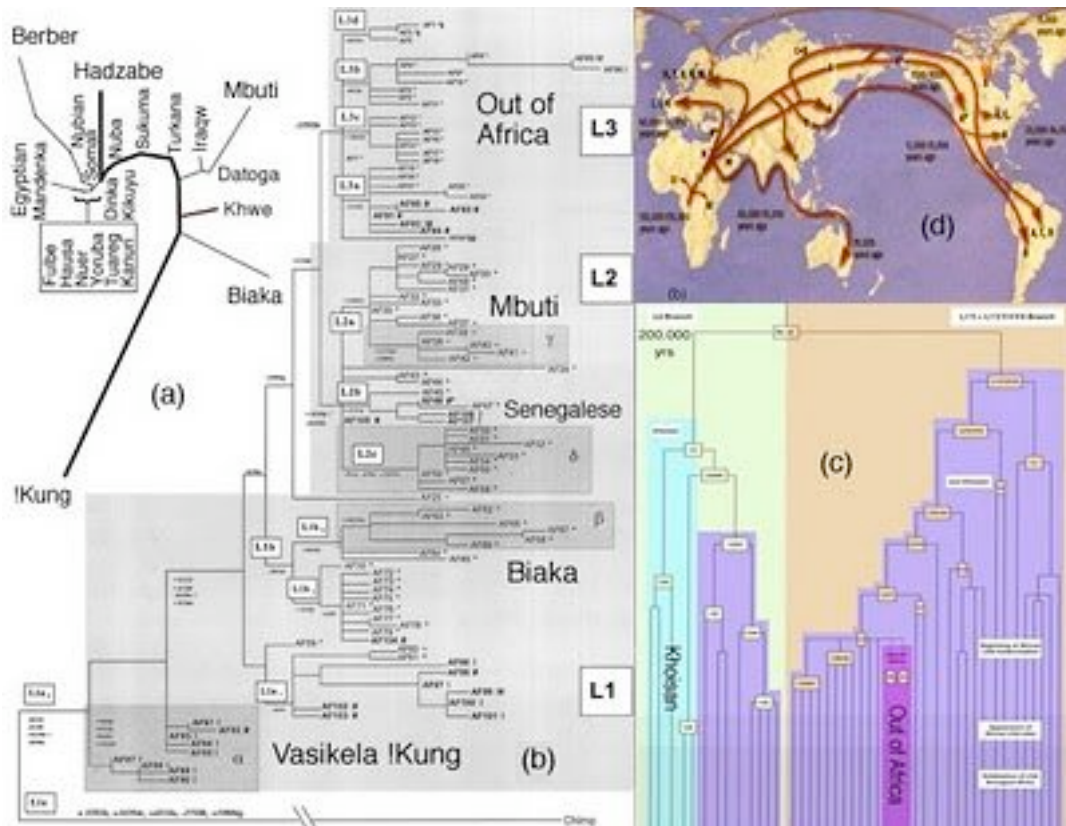


Fig 8: (a-c) Three evolutionary trees of the root of the mitochondrial evolutionary tree of humanity which is the basis for the "Out of Africa" evolutionary Eve hypothesis (d).

5: Human Evolutionary Origins, Sexual Paradox and the Religious Quest

One way of testing the idea of human cultural explosion through sexual paradox in reproductive choice is to examine the history, cultural practices and genetics of some of our most ancient gatherer-hunter populations, whose social patterns have changed little over tens of thousands of years. Good candidates for such investigation are the !Kung-San Bushmen of the Kalahari and some of the Pygmy peoples of the Congo Basin, both of whom have an ancient presence close to our African origins and a genetic footprint and history that places them close to the root of human cultural origins.

By a variety of measures, the !Kung appear very close to the root of our evolutionary tree. Mitochondrial measures which first advanced the Out of Africa hypothesis genetically, consistently show the !Kung-San as closer than any other group to the common root of the African Eve. Further refinements of the mitochondrial tree have exposed an ancient division in !Kung mitochondrial evolution involving a deep split separating Khoisan mitochondrial inheritance from other groups, including those migrating out of Africa, and a deep division between two Khoisan types L0k and L0d going back 140,000 years, suggesting a separation of some 100,000 years, possibly caused by long term drought in Africa. This is thus consistent with a continuing !Kung presence in Africa going back up to 150,000 years.

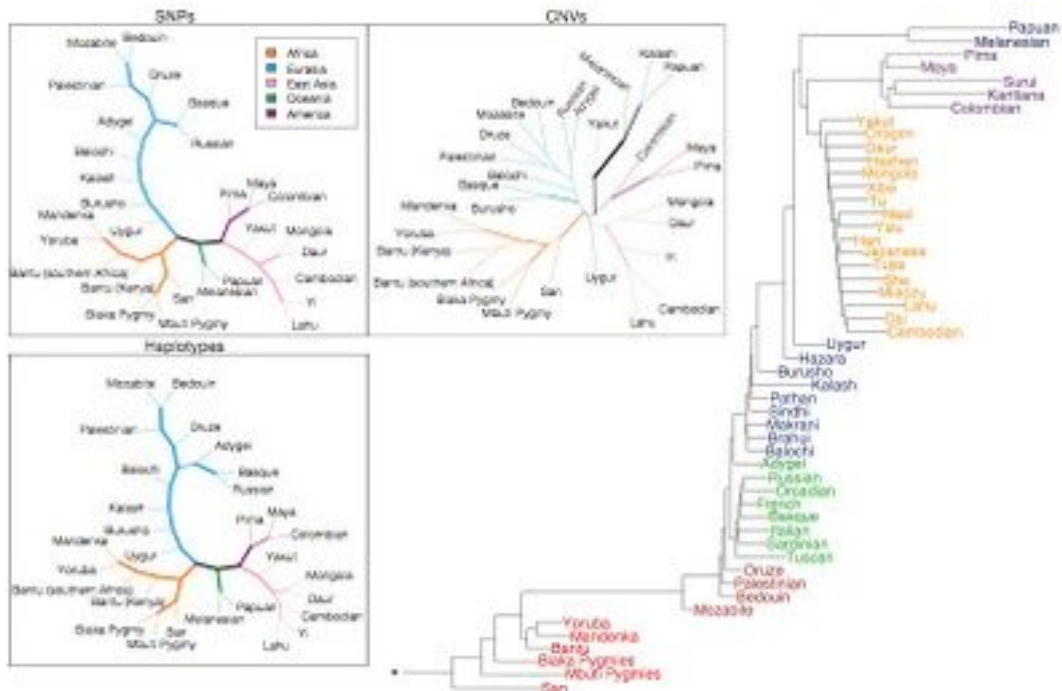


Fig 9: Human divergence trees calculated by single nucleotide polymorphisms top left , bottom right. The remainder are trees for haplotypes and copy number variation between populations. San are very close to the common root.

Other genetic measures, including autosomal single nucleotide polymorphisms, haplotypes and copy number between populations also put the !Kung very close to our evolutionary root. Male inherited Y-chromosome studies show a more complicated picture with some evidence for cross breeding with an Adam genome deriving from the Ethiopian region, consistent with human migration in which migrating males take local wives.

Given these genetic measures and the long lived, slowly changing, demographically static nature of the !Kung way of life, which has preserved the high mitochondrial diversity of the !Kung female population, it is pertinent to examine the patterns of !Kung socio-sexual interaction, and their cultural and religious traditions to see how they reflect on our vastly more recent cultural developments from the time of the Sumerians on.



Fig 10: Nisa in old age

When the gods gave people sex, they gave us a wonderful thing. Sex is food: just as people cannot survive without eating, hunger for sex can cause people to die!
Kung saying - Nisa.

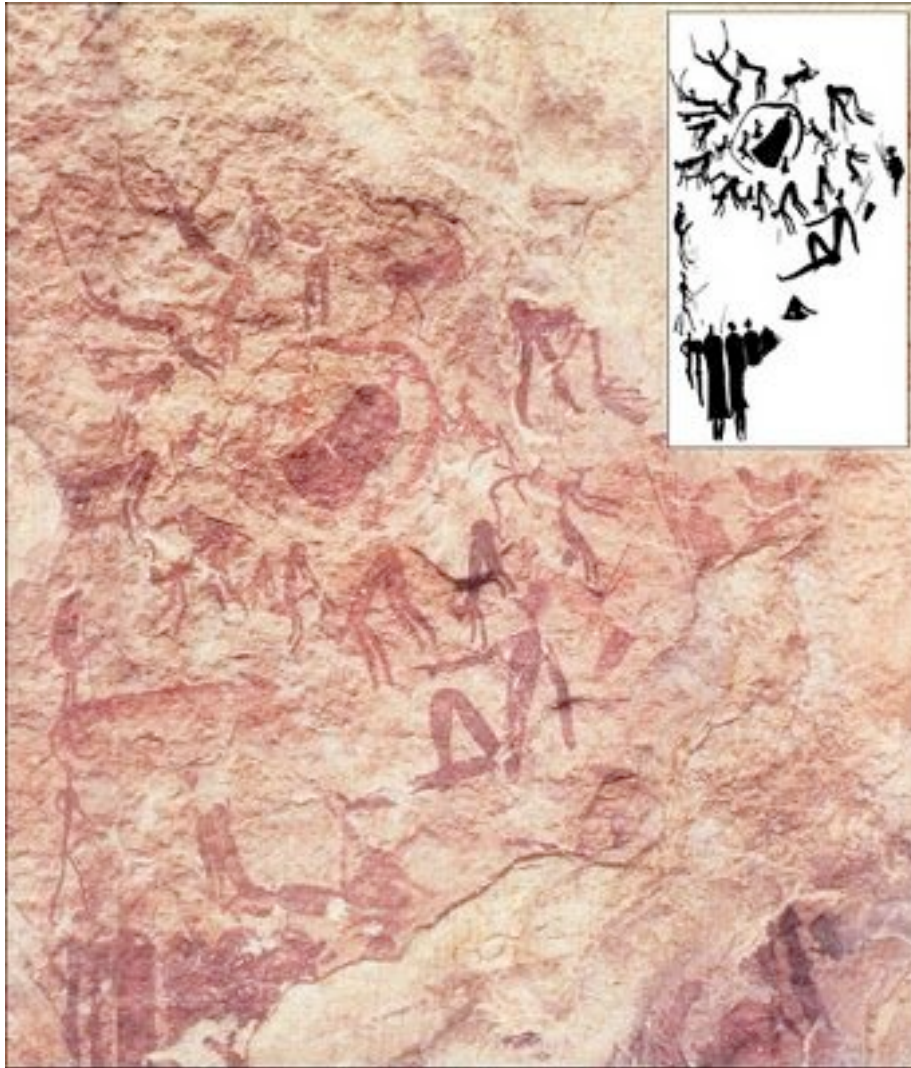


Fig 11: Fulton cave drawing 1000 BC celebrating the first menstrual rite, Drakensberg Mountains, Natal

Paradoxically at the end of a long period of patriarchal repression of women's rights and choices in major civilizations over the last 4,000 years, !Kung women have been noted to have retained a similar degree of reproductive choice to modern Western women, although there is some physical abuse by their men folk and the male elders try to exert a degree of influence over marriage and sexual relationships by endeavouring to define culture and set rules about marital disputes. Although they follow a nominally patrilineal inheritance, it is recognized that women will traditionally go to the maternal household to assist with their first birth. The personal accounts and experiences of a !Kung woman pursuing her various sexual relationships in !Kung society are eloquently recorded in the book 'NISA' by Marjorie Shostak.

As an indication of the ancient influence of women over sexual favours, southern Bushmen women last century were reputed to refuse sex unless given meat, forcing the men to end up becoming arrested for rustling cattle.



Fig 12: Modern Eland ceremony celebrating a girl's menarche.

The !Kung retain respect for menarche as a sacred process of immense 'spiritual' power, rather than being 'unclean', celebrated in the Eland ceremony, whose records go back as far as Fulton's Cave 1000 BC, in which the woman is conceived as being so powerful that if a young warrior sets eyes on her he may be magically put off his hunting prowess.

!Kung religion embraces abstract deities with consorts which belie the claim that the notion of an abstract creator God acting in history is a new and superior development, or any evidence that such a God is thus real and absolute or part of a destined progression from native ignorance to religious enlightenment. They embrace their deities metaphysically in contrast to the compulsive, superstitious rule and fear-based worship of modern world religions, such as Christianity and Islam.

Bushmen believe in the existence of two gods: a greater god manifesting the creative force and a lesser god invoking the malevolent forces of uncertainty and misfortune, each with a shadowy consort.

They have many names, but the !Kung Bushmen most commonly call them Gao!na and //Gauwa. The Bushmen do not see these as a good and bad god. When a missionary inquired into a Bushman's ideas of good and bad he was told it was 'good' to sleep with another man's wife, but 'bad' if he slept with yours.

Gao!na, the !Kung Great God, using one of his seven divine names, created himself:

*"I am Hishe. I am unknown, a stranger.
No one can command me.
I am a bad thing. I follow my own path."*

Then he created a Lesser God who lives in the western sky where the sun sets; and after this two wives for himself and for the Lesser God. Gao!na, tallest of the Bushmen, was in his earthly existence a great magician and trickster with supernatural powers, capable of assuming the form of an animal, a stone or anything else he wished, and who changed people into animals and brought the dead back to life.

Their creation story reads poetically along very similar lines to the Sabbatical creation of Genesis ...

But as the Great God who lives beside a huge tree in the eastern sky, he is the source and custodian of all things. He created the earth with holes in it where water could collect and water, the sky and rain both the gentle 'female' rain and the fierce 'male' rain thunder and lightning, the sun, moon, stars and wind. He created all the plants that grow on the earth. He created the animals and painted their individual colours and markings, and gave them all names. Then came human beings, and he put life into them; and gave to them all the weapons and implements they now have, and he implanted in them the knowledge of how to take all these things for themselves.

Thus their hunting and gathering way of life was ordained from the very beginning and Gao!na ordained that when they died they should become spirits, //Gerais, who would live in the sky with him and serve him. He set the pattern of life for all things, each in accordance with its own rules.

The !Kung also practice mystical union with the unknown in ancient trance dancing rites which are also recorded on rock drawings and currently consume cannabis in a manner similar to Indian sadhus. They thus carry both a tradition of abstract religion with a sophisticated philosophical streak as well as a mystical shamanic tradition of direct contact with the ineffable. There is thus no evidence that modern world religions constitute a progression from primitive beliefs and more of an implication that such aspects of religious experience and practice may have a genetic component.



Fig 13: Modern !Kung family.

The picture of human sexual relationships conveyed by !Kung society strongly suggests that human cultural emergence did indeed arise from a social climate in which each sex retained sufficient autonomy over reproductive choice, so that each had to run while standing still resulting in the evolution of super-intelligence from a state of sexual paradox.

This is also supported by deeper evolutionary traits in Homo sapiens, indicative of evolution driven by female reproductive choice, including a lunar coupled sexual cycle involving menstruation, rather than declared estrus, concealed ovulation depriving males of any easy opportunity to know when a female is fertile, pronounced ecstatic female orgasm and the loss of a bony penis in men requiring male sex to demonstrate a genuine indicator of genetic fitness.

Archaeological evidence from southern Africa also points to an early cultural emergence up to 150,000 years ago and to cultural patterns consistent with both jewelry and make-up consistent with women being free and able to make themselves beautiful and attractive to the opposite sex. While there is no evidence how these were used or by which or either sex, the use of ochre is consistent with the need for women to appear nubile and healthy and is associated also with the

menstruation. The prominent appearance of both beads and ochre contrasts completely with the repression of women's adornment in conservative burqa and niqab clad Muslim societies, where any attempt by a woman to ornament her beauty is regarded as punishable by whipping or arrest.

This implies that such religious sexual repression, which has also been shared to varying extents by other patriarchal religions as well as Islam, is a modern aberration caused by male defection against a more ancient pattern of female reproductive choice to which we are indebted for the evolutionary emergence of human super-intelligence, culture art, music and good husbanding and parenting, and must needs respect and preserve into the future for our species to survive and prosper.



Fig 14: Ancient beads and marked ochre. Left: Ostrich shell beads Yoilangalani river Serengeti National Park (c 40,000 - 110,000) Centre: Scored ochre block. Blombos (c 77,000). Ochre use dating back to 164,000 years has been found at Pinnacle Point in South Africa. Right: Pea-sized *Nassarius kraussianus* shells pierced and showing wear from leather thongs. Blombos cave (c 75,000).

The discovery of carvings on a snake-shaped rock along with 70,000-year-old spearheads nearby has also dramatically pushed back the earliest evidence for ritual behavior that could be called religion. The finding comes from a cave in the Tsodilo Hills of Botswana, a mecca of sorts for the local San people, who call it the Mountain of the Gods. The 6m rock bears a striking resemblance to a snake, including a mouth-like gash at the end. Hundreds of small notches are covered the rock. Entrants to the cave apparently made these markings to enhance the snake illusion by creating the impression of scales and movement. Snakes feature prominently in the traditions and the mythology of the San, sometimes called the Bushmen.



Fig 15: Tsodilo Hills Cave