

EVOLUTIONARY WATER: WOMBS, SEAS, TEARS AND THEIR UTRAQUISTIC RELATION

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metisian aqueducts
swollen with life
water made flesh

This article explores the evolution of water as charted by earlier scientific and more recent multidisciplinary inquiry. Its value lies in its scientific parallel to mythic water, creation and the maternal, through disavowed Greek mythic water deity Metis and how her absence from dominant discourse may have inadvertently influenced current evolutionary theory. This paper demonstrates crossovers and tensions between the disciplines of hard science through the work of Charles Darwin, particularly *The Descent of Man* (1859), and feminist humanities through the work of Elaine Morgan. It also elucidates psychoanalyst Sándor Ferenczi's concept of utraquism at the biological and evolutionary level, as a methodological tool. Darwin does not refute that life began in the sea, but what is missing in his account is what happened after the amoeba migrated to land, and how human beings evolved from this simple life form. Or did they? Further, I consider the work of tears and their inter-relationship to biology, affect and emotion.

Keywords

Amphimixis; Utraquism; Phylogenetic Regression; Aquagenesis; Sándor Ferenczi; Sigmund Freud; Charles Darwin; Evolution; Water; Elaine Morgan; Anna Gibbs

Genealogy and Trace

[1] In recent decades, investigative scientists have laid bare controversial insights and discoveries and expanded on and refuted Darwin's early theses, providing significant new and fluid fragments of knowledge. Such investigations include the work of Ferenczi through his book, *Thalassa: A Theory of Genitality*; Elaine Morgan's feminist work, *The Descent of Woman*; and the writing of marine biologist, Richard Ellis: *Aquagenesis: the Origin and Evolution of Life in the Sea*. These three thinkers try to piece together fragments of the evolutionary puzzle through the hydrodynamics of water and its relationship to other forces. But how well can they succeed when so many pieces of the evolutionary jigsaw puzzle have yet to surface from the hydrothermal ducts of the earth's bedrock, the elusive abyss and the traces of knowledge to which we have access, or have repudiated? These seemingly disparate theoretical inquiries into water and its genealogy disrupt the dominant terra firma school of thought. Darwin's recent 200th anniversary also provides provocation for further critique. While some knowledge remains obscure, other knowledge is more immediate than previously realized, when approached through a lens extrinsic to scientific discourse.

[2] What does seem clear among the chaos – and I don't use chaos here as a negative term but as that rich accumulation of matter that creates forms – is that too few coherent fragments and traces of evolution have been found to substantiate an overall picture, be it terra-centric or aqua-centric. And western science, since its earliest beginnings, has been informed by Greek myths and religiosity, from which the term *utraqism* originates, the vital and holy blending of body and blood. ¹ In this paper I apply an *utraqistic* methodology to explain the inter-relationships between water and earth or fluids and solids, elementally, psychically and organically. Returning to Foucault for a moment, the genealogy of water is as replete with incoherent traces and dispersals as the story of the water deity Metis, the first order goddess of all Creation about whom there remain very few fragments of knowledge. Foucault writes

Genealogy does not resemble the evolution of a species ... On the contrary, to follow the complex course of descent is to maintain passing events in their proper dispersion ... to identify accidents, the minute deviations – or conversely, the complete reversals – the errors, the faulty appraisals ... (147)

[3] The story of Metis,² responsible for all creation in 1st reign of Olympus and later as first wife of Zeus in the 5th Olympian reign, could be considered one such faulty or incomplete appraisal, an

almost un-mappable deviation that I argue demands a figurative reconstitution of the fragments of dispersal and absence. After Zeus' consumption of her she simply disappears from the record. So too, with the theories of evolution that have attempted to present absolutes – that have been constructed as history, knowledge and origin – where there are none, and overlooked the value of water in the equation. Marine biologist Richard Ellis seems to echo Foucault's insistence that deviations and momentary (faulty and not faulty) trends are part of the overall puzzle. He suggests

We can spot particular trends over time, but those trends [as noted through fossil fragments] do not necessarily provide the answers to the why's and wherefores; they only enable us to identify certain patterns that we can superimpose on the data, which might give us the idea that something other than random selection – or random evolution, or random extinction – has been occurring for these billions of years. (258)

[4] While the examination of fossils might suggest that one creature has led to another, without the in-between fragments and disciplinary inter-relationships as well as relationships between water and earth, animals, vegetables and minerals, twenty-first-century knowledge is almost helpless in piecing the whole story together. Our early hominid ancestors and their habitats can only be partially traced. Isolated fossil findings in current times might and might not be reference points to the existence or extinction of whole species that may or may not be our ancestors. Time, tide, temperature and action have made an incomplete but indelible mark on human curiosity. We can only surmise. Water it seems is at the source of such investigations, the ever-present common denominator of every thing.

[5] It has been long understood that all life depends on water; divine or chemical in nature it is the *élan vital* of life on earth, the universal solvent or aqua mater as I have called it in the previous chapter. According to Ellis's appraisal of available data, water developed in volcanic hydrothermal systems formed after intergalactic cataclysms that resulted in bombardment of the earth. The chemical environments of such hydrothermal ducts provided the building blocks of life not possible on the earth's surface.³ Water is unique matter as it is the only substance on earth to exist naturally in three states; liquid as water; ice as solid; gas as steam or water vapour (water suspended in air). Ellis estimates the amount of water on earth to be 326million cubic miles (20), yet only three per cent is drinkable. Ellis suggests that water existed on earth less than a billion years after the planet was formed

Life began in the oceans perhaps 3.8 billion years ago, and remained submerged till 360 million years ago, when the first tetrapods emerged to take up a terrestrial existence, and lead the invasion of the land. For more than 2.5 billion years in the history of life on Earth, all living things on Earth were underwater. (17)

[6] Approximately 4.5 million years ago, Ellis asserts that a great collision occurred between earth and other bodies of matter, and before that, perhaps 65 million years ago a prior collision occurred, wreaking similar chaos. Such collisions are loosely referred to as the 'Big Bang Theory', a term coined in 1927 by Belgian priest Georges Lemaître.

[7] Certainly the works of Charles Darwin, Jean-Baptiste Lamarck and Ernst Haeckel are cognisant of the relational effects of cataclysm in different systems. As Ellis continues to explain, life on earth was possible because of particular interactions between different substances in the cosmos as a result of these collisions; geological utraquism. The primary substances released were carbon, hydrogen and oxygen, the latter two consistent with the chemical property of water and the former the primary chemical responsible for the formation of organic matter, and living organisms.

[8] The scientific Big Bang theory ⁴ is analogous with the metaphoric or mythic telling of the birth of the cosmos through the splitting of the Cosmic Egg, that released the tripartite being of Metis, Ericapeaus and Phanes,⁵ or the ineffable 'mother substance' as cosmologists call it. This 'mother substance' went on to fragment and disperse in order to create other aspects of being that are understood in an ontological and cosmogenic sense to be lower life forms emanating from the great 'oneness' or oversoul. Despite it being widely considered as a metaphor (or a fiction) for the genesis of metaphysical life on earth, myth does serve a purpose in understanding the workings of evolution that frequently divide scientists and theorists from disparate fields. Understanding parts of whole stories of creation perhaps makes myth and science less incommensurable than they first appear.

[9] Darwin added to and subtracted from the insights of his scientific elders and contemporaries, not the least of whom was his paternal grandfather, Erasmus Darwin (1731-1802), a doctor, naturalist and inventor. Darwin junior based and developed his theory of evolution and natural selection on his grandfather's earlier musings coupled with his own expedition, *The Voyage of the Beagle*, bringing ontology and biography into an uncanny tryst.

[20] Charles Darwin's inheritance and the research gathered from his journey, and his meticulous diarising led him to believe that humans are descended from lower life forms, namely the early hominid. This is consistent with cosmogenic reasoning in the reverse, that is, that current human, animal and vegetable matter are corrupted fragments of a higher life form – the original 'mother substance'. Prior to this great scientific voyage, Darwin had seriously considered vocational life, believing in a divine redeemer. This choice would have been somewhat out of step with his grandfather's position as someone who renounced Christianity, but nevertheless alluded to 'a great cause' as being the instigator of evolutionary life and species diversification.⁶ However, through his travels, discoveries and interactions with people and species the world over, Darwin shifted from a base of pure faith to a more dominantly scientific one, renouncing his former religious beliefs and leaving many questions unanswered. As contemporary feminist philosopher Elizabeth Grosz suggests

Though Darwin seems to be reluctant to address the highly speculative question of origins, and though he lacked any scientific evidence to aid in these speculations, he does hypothesize that it may be the case that 'all the organic beings which have ever lived on this earth may be descended from some one primordial form' (643), but he never goes further than to suggest that this is highly conjectural, and in some sense, ultimately irrelevant. (22)

[21] At the end of his life, Darwin put forward the term 'scientific humanism'. I suggest the utraquistic nuance in this term lends itself to a combined understanding that might align faith in a divine, or at the very least the non-biological and philosophical aspects of humanity with biological science. Following Darwin's trajectory, it seems that man had a moral conscience inextricably tied up with superstition and myth that was also related to cognitive function in higher mammals and expressed through the development of speech in humans.

[22] Relating the story of Copernicus and his masterwork, *On the Revolution of Heavenly Spheres*, Darwin avoided the error of this and his other predecessor Galileo by alluding to spirituality and morally associated codes in more general terms based on his observances of ritual around the world in 'primitive' and 'civilized people', and by making scientifically related comments about his observances, rather than assumptions based on the superstitions and rituals of those he observed.

[23] Grosz suggests that Darwin is quite clear in suggesting that morality and intelligence serve the purpose of pragmatism and that, 'It is significant that if a survey of comparative moralities were

available, Darwin suggests, those acts, impulses, and desires that strengthen a culture's perception of its common good would become good and moral' (62). Morality, it seems, is linked both to spiritual and cultural concerns enabled by higher cognitive function and language. Yet, as Grosz suggests, it remains arguable that other species such as songbirds, whales and dolphins, don't have a language that might inform a species-specific moral code.

[24] The force of the enlightenment era worked in Darwin's favour as the western world moved more towards science and technology and away from what he termed, 'blind faith' (originating in Christian dogma from The Book of Revelations and the Book of Genesis).⁷ Despite some cross-reference, the tensions between the two regarding creation remain to this day and have been argued widely by philosophers and clerics. Yet Grosz says, 'Ontology seems to be the forgotten or elided element of contemporary philosophy' (17) and the broader philosophical resonances and indeterminacy in Darwin's work still remain insufficiently covered in current times.

[25] Darwin was one of the few who could convincingly cross this divide between God-centered blind faith and atheistic science through a more philosophically aligned investigation. The mood at the time of his discoveries was certainly more hospitable to scientific exploration and facts than that of his predecessors. Religion is often represented in discourse as fanatical, especially in its fundamentalist forms as he observed, but spirituality and morality were another matter. Darwin seemed to consider the potent space between these positionalities, albeit vaguely. In this stance, disciplinary utraquism and its seemingly disconnected fragments are problematised. The joining together of fragments of science, philosophy and spiritual or cosmogenic concerns or utraquism, in an attempt to answer some of the big questions of the world may in fact be the way forward. Darwin's work covertly suggests in a section on "Belief in God" from the *Descent of Man*, belief in unseen spiritual agencies is almost universal (814) and therefore must be considered in imaginings on creation, although he strongly maintains the biological stance. Edward O. Wilson, editor of the 2006 version of Darwin's complete works, reports in the Afterword of the *Expression of the Emotions in Man and Animals* in a chapter called "Evolution and Religion"

Both of these world views, God-centered religion and atheistic communism, are opposed by a third and in some ways more radical worldview, scientific humanism ... The shedding of blind faith gave him [Darwin] the intellectual fearlessness to explore human evolution wherever evidence and logic took him. (1481)

[26] It is the legacy of Darwin's intellectual fearlessness that has spurred on more current and diverse investigations. Divinity, wisdom and evolution make for an engaging discussion in contemporary times, but while one school of thought or discipline refuses to embrace the wonderings of the other, there is a limit to what can be understood and reconfigured. As Grosz suggests

We need to return to, or perhaps to invent anew, the concepts of nature, matter, and life, the most elementary concerns of the cosmological and the ontological, if we want to develop alternative modes to those ... that currently dominate the humanities and social sciences. (2)

[27] Contestations of Darwin, for instance, from outside of scientific discourse have been poorly regarded until his 200th anniversary year in 2009 when new critiques appeared. 'Darwinism' has taken a strong biological hold in the sciences not necessarily aligned with the broader intentions of Darwin's wonderings. The same is true for other lay people arguing for an interstitial reasoning between disciplines of which hard science is not considered the root cause. The utraquistic approach I employ (following on from Freud and Ferenczi's earlier musings) seems increasingly more crucial to the broad-spectrum inquiry that cross-current discourse inadvertently demands.

Darwinism Meets Psychoanalysis: Ferenczi's regressive thalassal trend and utraquism

[28] In his seminal work, *Thalassa* Sándor Ferenczi formulated his ideas on the 'regressive thalassal trend' and 'amphimixis' partly in answer to the questions that Darwin had left unanswered, and partly to elaborate on the work of Lamarck. He wrote during a period of relative isolation while on military service in 1914. His access to texts was limited to the Zoology of Hesse, Darwin, Lamarck and Haeckel, a fitting scientific nursery for an inquiring mind that sought to mingle the suppositions of 'hard science' with the comparatively new science of psychoanalysis.

[29] Lamarck, in his work *Philosophe Zoologique* was concerned with the idea of movement from the simple to the complex. He supported Darwin's theory of evolution but was less convinced by the mechanism of natural selection. Lamarck believed that new species could arise out of older more obsolete forms, a view not shared by Darwin or Ferenczi.

[30] But as psychoanalyst Péter Hárs points out, Ferenczi exploded Lamarck's viewpoint through phylogenesis. What Lamarck says is

The effect of physical factors on psychic ones has already been known, but I think the effects of psychic factors on physique itself have not been engaged yet in a sufficiently careful way. Albeit, these two factors – having a common origin – produce a mutual effect on each other, even if they seem to be totally independent. (64)

[31] By reading Ferenczi through a Lamarckian lens, we can see how he came up with bioanalysis, mutual analysis and overall utraquism. So too his physician friend Georg Groddeck, who articulated the idea of psycho-somatics and perceived, as did Ferenczi, a relationship between things rather than a linear idea from the Cartesian dualistic model.

[32] Haeckel became famous for his teleological assertion, that ontogeny (history of the embryo) recapitulates phylogeny (history of race). While this is currently regarded as incorrect – although adaptation within any one species is feasible and provable – Ferenczi was only privy to limited readings of the time.⁸

[33] Ferenczi takes up these bodies of work from a psychoanalytic position concerned with phylogeny as a psychological circumstance as much as a biological one. The combined science, philosophy and physiology, enabled him to insert his own bioanalytic wonderings into the discussion on evolution, building on historical and scientific knowledge of water and land-based migrations of particular species.

[34] In *Thalassa*, Ferenczi proposes a significant analogical ripple between scientific and psychoanalytic inquiry. Among other things, Ferenczi suggests that both normal and pathological desires to return to an intra-uterine environment are most often expressed through the symbolism of fish through the dreams of his clients and friends. This accentuates in his view a human affinity with water worthy of investigation, beyond historical documentation (of Haeckel) on embryo development (ontogeny). He argues that the connection between penis and vagina (in his discussions of amphimixis and phylogenetic regression), the foetus in the uterus, and the fish in the water, expresses a proclivity for a phylogenetic recognition of the aquatic descent of vertebrates

For the human being ... is in fact really descended from the fishes, and the famous *Amphioxus lanceolatus* has the honour of being the ancestor of all the

vertebrates and therefore also of the human species. (45)

[35] Biblically speaking, the great flood made famous through the story of Noah's Ark (see The Book of Genesis), mythically represents the great catastrophe of the aboriginal piscine period. Later, the recession of the ocean forced various animals to adapt to land existence. Equally 'the raising of Mount Ararat out of the flood-waters could be read as a great deliverance' (49). Hence, the earth and the sea act as a necessary doublet, analogous with the embodied foetus emerging from the watery womb into a terrestrial world, utraquism in evolutionary action. Symbolically, Ferenczi suggests that such stories represent the act of birth as an enduring archaic motif of catastrophe. *Thalassa* seeks to understand why the catastrophe of birth or expulsion from the ocean is such a repetitive theme in normal and pathological humans. He addresses ocean dwellers as a forerunner to his inquiry into human psychic and evolutionary behaviour, and challenges Darwin's argument that humans descended from the African savannah, and further, that our ancestors may have evolved partially at least, in aquatic environments.

[36] The great flood of millions of years ago required gill-breathing animals to develop the ability to breath air through mouth and nose out of water. In the case of historical reasoning, Ferenczi expands on the analogy between the protective adaptations of the embryo and the aquatic mode of existence of fish. In citing the example used by Haeckel, of the salamanders' adaptations from entirely gill-breathing to partial gill-breathing, he says, 'The uterus became the puddle of the salamander; it passed through the gill-breathing stage entirely within the uterus' (47). Gill breathing and lung breathing in intermediary species demonstrates the necessary relationship between solid earth and fluid ocean. Although water comprises 70% of the planet, it does have a necessary relationship (as well as adaptive ability) with terra-firma in terms of diversification and survival of species. It is this relationship, this utraquistic association that is so vital to life, as Ferenczi's examples show.

[37] For humans, the circumstances of adaptation are equally engaging. While acknowledging that normal as well as traumatised subjects experienced ontogenetic (individual desire to return to the womb) and phylogenetic (species desire to return to the sea) desires, Ferenczi explored his thesis primarily through adults suffering from hysteria and neuroses resulting from traumatic early childhood events. In the face of such evidence, he argues

Individual observations of the symbolism of dreams and neuroses reveal a fundamental symbolic identification of the mother's body with the waters of

the sea and the sea itself on the one hand, and on the other with 'Mother Earth', provider of nourishment. (47)

[38] In human maternity, Ferenczi explains, the foetus acts as a water-inhabiting endoparasite. Later, in its antenatal phase, it becomes an air-breathing ectoparasite that feeds off the watery breast of the mother via her corporeal and instinctive generosity. In line with embryology and comparative zoology, drawing particularly on Haeckel and Darwin's earlier suppositions, Ferenczi proposes that, 'A further analogy between the foetus in utero and aquatic animals is exhibited in their oxygen and food supply' (45) occurring at first in a watery environment and developing later in a terrestrial environment, thus demonstrating a maternal application of utraquism. In such cases, in utero nourishment is provided by osmosis, with nutrients transported through the chorionic villi and the placenta. This differs from animals that use nesting or terrestrial based nurseries and whose young are external from the parent body during gestation. The case of frogs only adds diversity to these transitional species. As a tadpole, the young frog is water borne and breathes through gills. As it matures, however, it becomes land-based, breathing through the mouth. The frogs, among other species, represent a peculiar class of creatures that might be called 'intermediate vertebrates'.

[39] Humans too fall into this category of 'intermediate vertebrates' motivated by evolution and survival. Currently we are considered to be land-dwellers, but Ferenczi's thesis suggests that attachment to the primary water environment is never completely given up and part of the utraquistic relationship. The thalassal regressive trend (phylogenetic regression) doesn't end its activity and remembrance at birth. Ferenczi's work argues that coitus, as the act of the terrestrial penis searching for the ontogenetic womb, is necessary for survival of the human species (and as such has phylogenetic undertows) as well as expressing a desire to return to the mother's womb, representative of the phylogenetic ocean from which human mammals have allegedly evolved. Ferenczi says

Merely in passing I will refer to the peculiar fact that the genital secretion of the female among the higher mammals and in man, the erotically stimulating effect of which ... may be traceable to infantile reminiscences, possesses a distinctly fishy odor (odor of herring brine), according to the description of all physiologists; this odor of the vagina comes from the same substance (trimethylamine) as the decomposition of fish gives rise to. (57)

[40] Ferenczi also mentions the relevance of the moon's phases to the twenty-eight day cycle of

human female menses. This may seem a little quirky at first glance, however, the fact that the moon controls the ebb and flow of oceanic tides cannot be ignored.⁹ This inter-relationality between the cosmic and natural world and the corporeal organism provides provocation that Ferenczi leaves as a legacy for his intellectual progeny to take up, particularly in terms of the broad application of ultraquistic method. He further considers whales, walruses, turtles and seals as transitional or intermediate species that live in water yet seek land or sea-shores to copulate. Such species he says are 'impelled by a "geotropic" regressive trend which forces them to re-establish for their offspring the situation which they had most recently won free of' (57). He also considers the plight of the salmon that swims against all odds upstream to the place of its own birthing from roe, providing more evidence of ontogenetic and phylogenetic desire.

[41] In his conclusion, Ferenczi critiques Darwin for not sufficiently considering the return of new products to old settings and functions (as in the cases mentioned here), and adds the worthy explorations of psychoanalysis to his conclusions

Darwin would probably deny the fact of regression, which psychoanalysis can under no circumstances do without ... let us adhere to the assumption that in genitality is to be found the expression, and perhaps even the belated abreaction, of not alone an ontogenetic but also a phylogenetic catastrophe.
(51)

[42] The ideas expressed in *Thalassa*, around psychological regression as well as evolutionary regression, have not been widely taken up by psychoanalytic clinicians or other related scientific fields. Yet I think this is the invitation that both Darwin and Ferenczi leave us, each in their own way, to consider the whole through the merging together of the sum of its parts. In an evolutionary sense Ferenczi was more than perceptive when he considered phylogeny as psychic as well as biological.

The Aquatic Ape and its Sisters

Some groups of mammals became completely aquatic like the whales and the Sirenia (dugongs and manatees), others like seals almost so, and many others such as Polar bears, otters, beavers, water voles, etc., became partially aquatic. I then put forward the thesis that perhaps man himself had such a phase of semi-aquatic life. (Alister Hardy 1960)

[43] Feminist thinker, Elaine Morgan, argues for a later stage in evolution in *The Descent of Woman*. In this she considers the adaptation to the ocean, of the aquatic ape, consistent with Ellis' findings.

[44] Morgan's work, which is an elaboration of the almost universally ignored 'aquatic ape theory' (AAT) of Alister Hardy seems to confirm Ferenczi's psychoanalytically based intuitions about the aquatic origins, or at least the 'intermediacy' of humans (hominids), although she extrapolates along a bio-social trajectory rather than a psychic one (she doesn't however, discount the psychic entirely).

[45] Morgan was not a scientist by training (she read English at Oxford, and for this reason alone her work has been poorly regarded by science), but in her book *The Descent of Woman* she put forward a feminist theory of human origins in contradiction to what she terms the 'Tarzan' school of zoology and anthropology.¹⁰ Morgan's treatise is a feminist equivalent of Darwin's *The Descent of Man*. She suggests Darwin didn't consider the female of the species as an afterthought, but as an equivalence lost in discourse by semantic accident and the generic use of 'he' or 'man' to stand for all human beings.

[46] This style of investigation perceives Man, the hunter on the savannah, as the central figure in the story of human evolution. Yet there is a huge epistemological and ontological gap in what occurred between the migration of the amoeba to land, and the human being's journey. As her inquiry shows, there is more to the story than a male hunter and a woman waiting in the wings for her walk-on part in the history of evolution. Morgan argues, 'It's ... hard for man to break the habit of thinking himself as central to the universe ... He will be the hero of the story: everything and everyone else in the story will relate to him' (2-3).

[47] Women have not been located historically as central, repeatedly cited as satellites orbiting around man like a moon with the earth. (Nowhere is this more evident than in the myth of Zeus and Metis, with Metis repudiated at best and at worst rendered obsolete.)¹¹ Yet as Morgan argues, 'Archaeologists, ethologists, paleontologists, geologists, chemists, biologists and physicists are closing in from all points of the compass' (4) to reassert that man's [sic] evolution still remains a mystery. She suggests some of the clues to evolution are bedded in the physiological characteristics of women, such as hair, specificities that Darwin didn't account for in his summing up.

[48] Morgan critiques the long upheld Tarzan Theory of man descending from the trees of the African

Savannah, but as the mythic correlatives in this research already show, life began in the sea. Drawing on the work of renounced marine biologist, Hardy, Morgan notes the lack of hair on humans advanced the thesis of the ape moving from the trees to the sea. Hair, for instance, is unnecessary in water and wet hair is a hindrance on dry land. Hardy believed, and Morgan concurs, that the arrangement of hair on the aquatic ape and early hominids follows the streamline of a body moving through water, unlike the hair on other primates. And further that the longer hair on the head of the female of the species was designed specifically for infants to grasp hold of in the water. This may be where stories of mermaids originated. Dugongs have also been compared to mermaids as they roll over on their underbelly so that their young can feed from the breast. The existence of subcutaneous fat on humans as insulation against cold water further enhances Morgan's argument.

[49] Water habitat explains not just hairlessness and fat, but erectness or vertical bipedalism, as in the case of humans and penguins. Being able to wade is not consistent with a hairy creature travelling on all fours through the shallows, although the ape certainly made developments in this direction. Further, Hardy claims that the ape adapted quickly to the water environment and learned to clean and cut fish with stones, as otters had been known to do. The comparatively fine and sensitive digits of humans and aquatic apes make it possible to grasp objects underwater, not the least of which is the mother's hair. Hardy also reports on the ability of the seal to hold its breath at length and in depth of water (bradycardia) and that this was a feature also of man born of a physiological mechanism that slows down metabolism:

When a man [sic] dives, his heartbeat slows down – not by any means as dramatically as a seal's, yet undoubtedly in human beings such a mechanism at some stage did at least begin to evolve. (26)

[50] Even infants otherwise perceived as helpless have an ability to dive beneath water without drowning in modern times as well as pre-historically. Adaptation and exchange between water apparatus and air apparatus are crucial to Morgan's inquiry into higher mammals and human's ability to negotiate both fields.

[51] Morgan claims that research undertaken at the revolutionary Peckham Health Centre (USA) shows that very young children introduced to water in a large swimming bath, if un-interfered with by an adult, taught themselves to swim within the bounds of their own innate perceptions of safety. Michel Odent and Jessica Johnson's (1994) research into water babies and underwater birth is consistent with these findings.¹² Morgan says, 'If pre-hominid's babies could do this, that Pliocene beach was the safest place for them in the whole world.' (26) 'Mrs Australopithecus' as Morgan calls her, left the ocean ten-twelve million years later and has only dwelt terrestrially for one million years, yet human babies still re-member an affinity with the water environment from which they were wrenched a million years ago.

[52] In terms of adaptation to wet and dry habitats and the leftovers from former evolutionary eras, Morgan reports that Basler examined one thousand schoolchildren and found, '9 per cent of the boys and 6.6 per cent of the girls had webbing between the second and third toes and in some the webbing may have extended between them all' (in Morgan 34). As Odent and Johnson suggest, regarding webbing, 'a congenital abnormality that takes the form of adding a feature usually means the feature had a reason for being there during the evolutionary process' (116). It doesn't mean, as Lamarck might suggest, that new species evolve through a process of adaptation. Adaptation occurs in relation to an environment, not solely or unilaterally within a species. Surfer's Ear, for example, is a current adaptation in which the ears of surfers bend inwards as protection against relentless, cold from air and water.

[53] Between Morgan and Hardy's work and Ellis' recent uptake of both, it seems possible that a greater reading of both genders in evolution might solve some of the mysteries that baffled Darwin and others of his time. Darwin's voyage and careful annotations and observations are a remarkable record of the planet and its species in process. Technological developments in more recent times and Morgan's controversial consideration of removing gender bias¹³ from the study open up very new and exciting conditions of possibility. Morgan, however, didn't stop her evolutionary thinking at the sea and the possibilities of an aquatic ape. To add weight to her hypothesis, she considers the relationship of other bodies to salt water not satisfied to rest in oceanic explorations but to delve into the flesh of humans and the teardrops they produce.

The Work of Tears

[54] What is remarkable in Morgan's research is the discovery of tears and the place they play in evolution and healing, their use as eradicators of over supply of sodium chloride and as a response to stress or distress. Odent and Johnson also consider the role of tears and emotion, as do Masson and McCarthy and affect theorist and ficto-critical writer Anna Gibbs. Odent and Johnson, suggest that through the existence of tears that adaptation to or from the sea for humans is credible and possible

since iguanas, turtles, marine crocodiles, sea snakes, seals and sea otters weep salt tears ... land mammals have no tears or any sort of nasal gland. Their existence in humans might be interpreted as a vestige of an extra mechanism for eliminating salt. (113)

[55] Too much salt in the system causes the kidneys first to fail, followed by other organs. The implications of Morgan's work, in conjunction with more recent discussions, allows us to think imaginatively about the evolution of tears. This is particularly relevant to my research interest because of the analogies between tears and oceans: firstly in consideration of the mythic association and the tears of Metis over her forced relinquishment of Athena, as covered elsewhere (see Hawke 2008);¹⁴ secondly, through the optic of phylogenetic psychoanalysis, tears open up the space between psych and soma that was so important to Ferenczi and other analysts of his era.

[56] In one of Morgan's subsequent books, *The Scars of Evolution*, she specifically addresses the question of the evolution of human tears, envisioning their development as 'an extra mechanism, in addition to the kidneys, for eliminating salt' (96). This too demonstrates Ferenczi's notion of *utraquism*, that is, the necessary elimination of water from the solid body. As with *amphimixis*, the tension between retention and expulsion of fluids is contingent on the relationship with the solid body. While marine birds deal with the problem of salt water eradication by nasal dripping, Morgan argues that marine reptiles and some marine mammals weep salt tears. Humans, however, are the only primates to do so.

[57] Research carried out on birds produced some startling results. In the laboratory, the double crested cormorant was fed through naso gastric means seawater amounting to about 6 per cent. As expected, the birds excreted large amounts of sodium chloride through urine.

But what came as a complete surprise was the secretion of clear water-like liquid by two glands in the head which drain into the internal nares ... 'nasal glands.' This liquid ran from the nasal openings and down the beak to accumulate at the tip from which drops were shaken off by sudden jerks of the head. The secretion proved to be an almost pure solution of sodium chloride. That bird was weeping salt tears. (Homer W. Smith in Morgan 42)

[58] Anatomists it seems had long known about those glands and the fact of their propensity for enlargement providing a rich arterial blood supply and advanced glandular structure not found in terrestrial species. Other species were found to have the same highly developed nasal glands, such as the Malacolemys terrapin, salt-water crocodiles, marine iguanas. But as Morgan wryly suggests, humans are neither reptiles nor birds, yet it is clear that the commonality in the species mentioned, including humans, is that somewhere in the area of the eyes, nose or beak, saline liquid is produced. The human ability to develop this quality to the same extent as birds and reptiles was hindered, Morgan suggests by our relatively short stay in the aquatic environment.

The Different Qualities of Tears

[59] Psychoanalyst and Sanskrit scholar, Jeffrey Masson, reports (as Darwin did before him, albeit it in a more biological context) that tears have been observed in animals and humans, but that they serve different functions. Primarily tears keep the eye moist. Reflex tears flush foreign objects from the irritated eye. Further they are considered a cooling mechanism, for instance, in the case of seals: 'Seals which have no naso-lacrymal ducts into which tears drain, are especially apt to have to have tears rolling down their faces. This is thought to help them cool down when they are on land' (132). Moreover, however, in the case of human beings, tears express emotion. Interestingly, these tears contain a higher chemical percentage of protein (about 20% more) and higher levels of manganese than other tears, suggesting they are produced by other stimuli, for instance, emotion.

[60] Darwin also looked into weepers but concluded that weeping was one of the special expressions of man, born primarily of habit. Darwin outlines his position in his chapter "Suffering of the Body and Mind: Weeping" (1344-1361). He describes weeping as wet while crying is dry. In arriving at this conclusion he gives the example of the young infant (approx two months) who cries and screams but due to the immaturity of the lacrymal gland, doesn't produce tears. For the lacrymal glands to be stimulated to produce tears, the infant screams from hunger, discomfort, and pain. As Darwin says, 'It would appear as if the lacrymal glands required some practice in the individual before they were easily

excited into action, in somewhat the same manner as various inherited consensual movements and tastes require some exercise before they are fixed and perfected' (1348).

[61] Darwin's observations only went as far as noting the development of weeping in infants and children. Once the habit is acquired it is reproduced almost without thinking, as second nature, although he did note a difference in the production, visual and auditory, of tears from grief and tears from passionate rage or frustration. To certify his position, Darwin engaged with specialists and physicians of all kinds. He found that once tears had begun their run and knew when to respond and what to respond to, they were best left to fall: 'A single effort of repression brought to bear on the lacrymal glands does little and indeed seems often to lead to an opposite result' (1350). The crying of copious tears then, once they have welled, is the best action for an upset and affected person. Tears do have a purpose, both physical and psychical, such as emotional relief.

[62] Apart from his brief study of human tears, Darwin noted the exception of the Indian elephant from Ceylon in whom it had been observed that copious tears flooded from the eyes of creatures that had been captured. Masson and McCarthy suggest that the weeping of the Indian elephant was as much from separation from loved ones as it was from capture and confinement (133). In *The Descent of Woman*, Morgan also argues for the marine origins of the elephant partly on the basis that, although elephants have no lacrymal apparatus and use a Harderian gland to do so, they also cry when upset (138-40).

[63] Darwin considered this example contentious because the evidence was too anecdotal, although it is widely known in India and Ceylon that elephants weep. Perhaps there was a hint of Occidentalism in Darwin's acceptance or rejection of local knowledge that lacked western scientific rigour. Masson and McCarthy, however, give several examples of cruelty and separation in animals that allowed humans to witness the emotions of animals. Elephants, giraffes, dogs, seals and camels have also been found to weep emotional tears, psychically and physically produced.

[64] Returning to the hypothesis about the aquatic ape and the explanation of the origin of tears Morgan suggests, 'That since the only weeping birds are marine birds, the only weeping crocodiles are marine crocodiles, marine snakes, marine lizards, marine turtles, and marine mammals, it is surely not beyond the bounds of reason to suppose that the only weeping primate was once a marine primate' (44) This is consistent with what Ferenczi proposes about phylogenetic regression. Endless tears from trauma as observed by clients leads us ultimately back to the aquatic environment from

whence we came. Further Ferenczi says that we desire to return to the salt-water home of the womb (the consistency of amniotic fluid is similar to a milky salt) or the larger phylogenetic ocean pre birth and pre trauma.

[65] If Ferenczi and Morgan are right about the watery origins of humankind (and elephants), it may be that the protection of the eyes by contraction of the muscles around them was originally due to the need to keep salt water out of them at moments when it was most likely to enter them. This calls for further explanation than Darwin, with his reliance on the notion of 'habit', provides.

[66] Morgan argues against the view that human weeping is merely an increase in the level of activity of the lacrymal glands possessed by almost all mammals. Gibbs explains Morgan's position

She [Morgan] qualifies human tears as 'psychic', insisting on the specificity of both their stimuli and the nerves that induce them, which are quite distinct from the 'reflex' weeping in response to irritants, which is controlled by the trigeminal nerve leading from the brain to the eye, or the basal tears that continuously lubricate our eyeballs. It transpires that the connection between distress (or at least stress) and tears is also there in marine mammals. (Gibbs and Hawke 98)

Further, Morgan speculates that weeping and sweating may have evolved at the same time - both involve the excretion of salt, since, unlike other terrestrial mammals, humans have no instinct for the need to regulate their salt levels. She concurs with the view that one function of tears is to excrete stress-related chemicals, which is why, as folk wisdom suggests, crying brings emotional relief, but makes no further argument however about the evolution of crying as an affective response, which Darwin attempts to explore. As Gibbs (and Hawke) ask through research into Morgan's work and her own interest in the psychic volition of tears

What then, might be the nature of this strange and puzzling connection between weeping to excrete salt and the tears of distress? Why are they apparently evolutionarily linked in this way and what might it possibly mean for clinical practices that must continually operate on the boundary of psyche and soma and provokes questions about the nature of interaction between them? (28)

[67] I also ponder again the question of the mythic correlative of Metis mother of Athena. Did she intentionally reproduced her watery self by weeping an ocean into existence over the loss of Athena to Zeus, a womb-like safe-harbour in which she and other creatures could take refuge? Could this be an originary phylogenetic regression on which aquatic ape theories and phylogenetically concerned psychoanalysis might mingle its suppositions? Such questions are not easily answered, but wonderment seems a worthy labour.

[68] What I am trying to ascertain here, is whether tears constitute precisely the signs of a trauma that the individual body (or collective species) has been unable entirely to assimilate, and of which there is no memory (as passed down unconsciously from Metis), in an evolutionary and psychic sense. Ferenczi's biological unconscious is a little more comprehensible in the light of contemporary formulations of the 'psychosomatic network' that insist as Morgan, Ellis, Masson, and Gibbs do on the psychic and physical volition of tears. ¹⁵

[69] The following snapshot of everyday beach life shows how erratic life and water and their relationships are. Even though we know the tide will turn, its sudden change can be as surprising as a summer downpour from a sky that moments before was blue. Our knowledge and the recording of it can also be erratic and incoherent. We rarely remember the events of a situation exactly as they happened; the fragments of memory and evidence are often displaced, just like the fragmented scatterings of fossils and the subjective notes of Darwin.

Tidal Pull, Crescent Head 1996

Two mothers and five children go to Crescent Head for a day at the seaside. They perch themselves on the sand between the open beach and the footbridge that runs across the inlet. The oldest child - a boy - is seven. His two sisters are five and four respectively. Their baby sister is one and the other child, a girl, is three. It's an ordinary Australian summer day, a mosquito-ridden scorcher. The sandy beach is filled with people, the water is like glass, and the tide still.

Or so it seems.

The three older children play in the shallows and on the sand bar in the middle of the inlet. The other two play with spades and sand beside their mothers who chat, watch and soak up the sun under the protection of hats and suntan lotion. Both mothers frequently look up to check the location of the children.

All is well.

Then one mother looks up and sees the girls floating upstream towards the pylons that hold up the footbridge. They're too far away and one of them looks distressed.

The tide has turned against them.

The rush of the current slams the girls into the oyster-clad pylons, their little hands sliced as much from their steadfast grip as from the cutting shells.

But they lose their grip.

Their brother watches helplessly and waves frantically at the mothers, his yelling made mute by the distance. The look on his face tells all. One mother sprints up the river bed but by the time she gets to where the girls were, they're gone, submerged. She tells the boy to stay on the sandbar, gauging that he has about ten minutes before it disappears beneath him.

Drowning is a silent death.

She plunges into the water where she last saw the girls and gropes around for their bodies. Down, then up for air and down again. How far have they gone? She goes beyond the pylons and plunges in again, groping desperately until she finds their limp and bleeding bodies. With the superhuman strength that affects the body in such dramatic situations, she hauls them, one under each arm, up the bank and out of the water and drops them onto the sand.

No longer superhuman, just a mother.

She turns them over and clears their mouths and they both vomit up their own tiny sea. They're alive but disoriented. The mother huddles them together and signals for help as the older one starts bleating from the stinging pain of oyster-shell cuts, and the horror of her experience. She coughs and splutters and clings to the togs of the rescuing mother. The younger girl dusts the sand off her wet body, seemingly unaware of her bleeding hands and legs and says, 'That was fun. Can we do that again.' She tries to re-enter the water but is tripped up by the mother's foot. The other mother approaches with towels, having left the three year old to keep an eye on the one year old, with strict instructions:

'Don't move till I come back.'

The other mother swims out to the sandbar to rescue the boy from his fast disappearing island. Eventually they re-group. The mother of the girls who went under offers chips and cordial to the older girl who is still whimpering and clinging, and says,

'Oh come on, a bit of blood won't hurt you.'

The younger girl dangles her feet in the shallows, watching her blood mix with seawater. The three year old sits in her mother's lap, both of them open-mouthed as if they're still taking in what has just transpired. The two families leave Crescent Head and drive home.

It's quiet in the car.

Later at home, the two mothers discuss the day and remember the details quite differently. Ten years down the track, the four-year-old girl has never fully recovered from the experience, having an enduring fear of water. The younger one remains fearless in all things. Several years after the event, the two mothers get together for a cup of tea. The mother of the submerged girls talks about how the older child has a fear of water that she doesn't understand. The other mother reminds her of the traumatic day at the beach. Their recall is as different as two different situations in time and place. One describes it as a traumatic near-miss drowning, the other describes it as the day the girls got cut by oyster shells. ¹⁶

[70] Just as the fossils that Darwin, Ellis and others have examined seem to have been slammed into bedrock by the violent elemental forces of water and volcanic activity, so too were the girls' bodies slammed (on a much smaller scale) by the unexpected rushing movement of water. The girls too remember the events of that day as differently as the two mothers in attendance. The older girl doesn't consciously remember it at all.

[71] What I'm trying to demonstrate here (apart from disparate recall) is that the same type of creature (and in this instance from the same family time and place) can experience things differently. One girl was at home in the deep, the other frightened into amnesia by it. The girls were not fossilised into the pylon or the seabed but as Ellis reports, our ancestors were, "From the fossil evidence, stratigraphy, and molecular analysis, it is difficult enough to understand the evolution of the past." (258). We can only really speculate about the result of major cataclysms between the stars, terra firma and the watery depths. And while Darwin's theory of evolution remains the cornerstone of modern biology and associated fields, the 'true' evolution of species remains vastly uncomprehended. This is not to discount past and present information about the evolution, particularly of water, but to show how incommensurable and unreliable the fragments of recovered story are.

[72] Remnants of same species have been found in different conditions in different locations around the world; fossilised organism dispersed and forced into stone by the violent waters of the great deluge and beyond. We don't have whole families of fossils, neatly placed together from which to piece together the evolutionary puzzle. We just have fragments, differently effected and located across million year time-spans. Nowhere in these collections can we estimate the psychic component of our ancestor's love of water, or their capacity for tears; such conjecture is available only from comparatively recent technological advances and observations of current species.

[73] Whether it is Scheuchzer's 1725 discovery and study of 'Man: a witness of the deluge' in Germany (in Ellis), or Köhler and Moyà-Solà's 1997 discovery of *Oreopithecus bambolii* in Sardinia (as an intermediary between ape and early hominid, in Ellis), or Donald Johanson's discovery of the 3 million year old 'afarensis' skeleton called 'Lucy's Child' found in Africa in the 1970s, the puzzle of evolution is and always will be incomplete, its watery components as fluid and un-capturable as waves on the ocean. We cannot examine the emotional and affective responses of fossilised early hominids (our water and land-based ancestors). We can only surmise from our too few fragments of the greater cosmological and evolutionary puzzle about the crucial place of water in this picture as the *élan vital* of life on earth, as well as being the great shifter. To put the incompleteness and at-odds-ness of the whole story into perspective, I imagine the entire cosmos as a million-piece jigsaw puzzle of which we only have forty-two actual pieces, weathered by time and tide.

About the Author

Shé Hawke is a cross-disciplinary scholar currently working in the Department of Gender and Cultural Studies at Sydney University. Her research interests include the genealogy and poetics of water and Greek cosmology. She is also a ficto-critical writing practitioner. Her novel *Depot Girl* (2008 Picaro Press) was nominated for the Miles Franklin Literary Award and shortlisted for the Colin Roderick - Foundation for Australian Literary Studies Award in 2009.

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¹ Originally a Christian Hussite term from the 15th century AD, utraquism refers to the holy communion of consuming symbolically the body and blood of Christ that ensured reunion with the divine in the after life. See Christian Advent Encyclopedia *The Catholic Encyclopedia, Volume XV* (1912) for a thorough discussion on the Christian understanding of utraquism.

Freud and Ferenczi in the early 1900s mused over its possible application to psychoanalysis. Ferenczi expanded on it in *Thalassa* to explain the amphimictic relation that allows reproduction of the species. He also applied it in analysis – mutual analysis – that according to Peter L. Rudnystky's interpretation in *Reading Psycho-Analysis: Freud, Rank, Ferenczi, Groddeck.*: New York: Cornell University Press, 2002 provided the 'wine of sympathy and the bread of insight' from analyst to analysand.

² According to Robert Graves (1956; 1960) *Greek Myths and Legends*. London: Cassell, informed by Apollodorus and Hesiod's theogonies, Metis is the cosmological deity responsible for all creation. She reappears in the fifth reign of the Olympian dynasty as the first wife of Zeus and mother of Athena. Zeus consumed Metis in an effort to embody all her creation wisdom and knowledge.

³ See Everett Schock (1992), *Origin of Life and Evolution of the Biosphere*, particularly the chapter on "Chemical Environments of submarine hydrothermal systems". In this chapter he proposes that 'the early atmosphere of the of Earth would have been unwelcoming to life because of the constant bombardment by ultraviolet radiation, but deep in the ocean, as hydrogen sulphide spewed from cracks in the sea floor, it mixed with seawater to provide the chemical energy for the synthesis of life.' See also Huber and Wächtersäuser (1998) for laboratory recreation of these chemical reactions.

⁴ The Big Bang Theory originally articulated by Georges Lemaître, in the early 1920s, perceived through astronomical information that the universe had been around for at least 10 billion years. The 'Bang' was the result of primordial interaction of matter, density and temperature and is not confined to Earth but involves relationship with the whole universe as we currently understand it.

⁵ Metis/Ericapeus/Phanes could be equated analogously with hydrogen, carbon and oxygen.

⁶ See George B. Dyson (1997) *Darwin Among the Machines: The Evolution of Global Intelligence*.

⁷ Such sources explain Noah and the flood as one man, one day, one boat. Equally through the optic I employ this could be transposed to be one woman, one egg, one universe?

⁸ Ferenczi and Freud originally intended to write the bioanalysis (read as utraquistic analysis) book together, extending Lamarck and Haeckel, but both were distracted by other projects. It took Ferenczi another ten years to pen *Thalassa* and Freud never took up this particular concern again.

⁹ Ferenczi makes these comments in the footnotes of Chapter 7, “Evidence for the ‘Thalassal Regressive Trend’ in *Thalassa* (1924). Wed to Morgan’s contemporaneous comments about human adaptation, Ferenczi once again appears to be prescient in his biogenetic reckonings. Regarding the moon, considering the extensive bombardment of comets and meteors between earth and moon, it stands to reason that a radiation link might exist between the earth and the moon, making sense of the tidal pull.

¹⁰ This scepticism didn’t, however, stop Sir David Attenborough from making a documentary about Hardy and Morgan’s Aquatic Ape Hypothesis for the BBC in 1999.

¹¹ More latterly still, Metis is located by astronomers merely as the peripheral moon of Jupiter (Roman for Zeus), not central to her own being or cosmogenic genealogy and creation.

¹² Jessica Johnson & Michel Odent’s (1994) book *We Are All Water Babies*, shows textually and photographically that infants can successfully be born under water and if not interfered with can spontaneously swim, remembering an evolutionary proclivity for water activity.

¹³ See Elizabeth Grosz (2004) “Darwin and Evolution” in *The Nick of Time: Politics, Evolution and the Untimely* for a strong feminist interaction with Darwin’s suppositions. See Also Gibbs and Hawke “Ferenczi’s Thalassal Trend, the Evolution of Tears, and the Role of Affect in the Psychosomatic Relation”.

¹⁴ In which I suggest Metis has cried an ocean of tears alluding to the first case of evolutionary longing and mythic phylogenetic regression.”

¹⁵ My thanks to Anna Gibbs for accompanying me in this research component. As a ficto-critic and analyst Anna has been the perfect scholarly companion. I am also indebted to Ann-Louise Silver for introducing me to the work of Elaine Morgan and Jeffrey Moussaieff Masson.

¹⁶ An earlier version of this narrative has appeared as “Tidal Pull.” *Kurangabaa* <http://wordpress.com>: 31st March, 2009.