A teleological metaphysics for biology: Hierarchical, purposive, conscious, governing entities direct evolutionary processes.

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I will argue that modern biology — initially established by Darwin’s *Origin of Species* in 1859 and fully implemented by the Neo-Darwinian synthesis of natural selection with genetics which solidified in the middle twentieth century — is based upon fundamental assumptions (metaphysical assumptions, in a strict philosophical sense) that render formally-insoluble some of the major theoretical problems of biology including the major transitions of evolution, the origins of life, the origins of sexual reproduction and of species, and the basic mechanism behind ‘group selection’. The fundamental deficit of the current metaphysics of biology — rooted in natural selection — is that it lacks teleology (direction, purpose, goals) this renders it formally impoverished and radically inadequate. I advocate a new and teleological metaphysical basis for biology which subordinates natural selection to an evolving hierarchy of purposive and conscious governing entities that are located outwith biological systems, which have shaped the direction of evolutionary history, and are the basis for the underlying cohesion, specialization and cooperation of the living world. A system directed by governing entities is, of course, not a ‘biological’ theory; but then, neither is natural selection a biological theory: these are both metaphysical frameworks for the science of biology.
various types), computers, statistics, economic theory and a range of other non-biological perspectives and technologies.

As I say, the triumphs are well known – but the major unsolved problems of biology from 1950 remain unsolved; however, mainstream attention has simply shifted elsewhere and there is currently perhaps less interest in these matters than at any time since before biology became a separate science.

Such lack of interest – and of knowledge – has meant that most people are not even aware, have not even noticed, that these problems are unsolved. Because, so long as an ‘answer’ to such problems is good enough to survive a couple of minutes semi-attentive and unfocused consideration by someone who is not really a biologist, and is adequate to support and sustain a program of publication and grant-getting (which are regarded as sole and the necessary requirements of modern science), then this is regarded by modern biological researchers as sufficient proof of that answer’s validity (Charlton, 2012).

But the problems remain – and they are so fundamental as to cast doubt on the whole basis of the ‘paradigm’ that defines, controls and validates modern biology (Kuhn, 1970).

ORIGINS OF LIFE, SEXUAL REPRODUCTION AND MAJOR TRANSITIONS OF LIFE

An example: what is life? – which is the title of that influential book by Schroedinger (1944). The current answer is, implicitly: that is ‘life’ which reproduces or replicates and is subject to natural selection.

But this answer includes viruses, phages and prions – which hardly seem to be ‘alive’ in that they lack a dynamic metabolism; and also some forms of crystal – which are usually regarded as certainly not-alive (Cairns-Smith, 1990). Furthermore, some economic theories and computational programmes explicitly use the mechanisms of natural selection - and these are not regarded as part of biology.

Strikingly, there has been no success in the attempts over sixty-plus years to create life in the laboratory under plausible ancestral earth conditions – not even the complex bio-molecules such as proteins and nucleic acids. It has, indeed, been well-argued that this is impossible; and that ‘living life’ must therefore have evolved from an intermediate stage (or stages) of non-living but evolvable molecules such as crystals – perhaps clays (Cairns-Smith, 1987). But nobody has succeeded in doing that either, despite that artificial selection can be orders of magnitude faster than natural selection.

Since there is no acknowledged boundary dividing biology and not-biology, then it would seem that biology as currently understood has zero validity as a subject. What are the implications of our failure to divide the living from the non-living world: the failure to draw a line? Well, since there is no coherent boundary, then common sense leads us to infer in that case either everything is not-alive or everything is alive. If nothing is alive, not even ourselves then seems to be no coherent possibility of us knowing that we ourselves are not alive, or indeed of anything knowing anything – which, I take it, means we should reject that possibility as a reductio ad absurdum.

Alternatively, the implication is that if anything is alive, then everything-is-alive, including the mineral world – so we dwell in a wholly animated universe, all that there is being alive but – presumably – alive in very different degrees and with different qualities of life. This inference is one to which we will return later.

And what of sexual reproduction – how did such a massively inefficient reproductive mechanism arise in the face of its immediate short-term damage to reproductive success? The great evolutionary theorist William D Hamilton recognized sexual reproduction as a major unsolved
problem, and worked on it for decades (2002) – but neither this recognition, nor his attempted
solutions in terms of ways to combat parasites and pathogens, has attracted much interest or
acceptance.

And indeed, Hamilton did not really solve the problem of how sexual reproduction arose – but
only clarified its advantages (in terms of resistance to pathogenic infection) once sexual
reproduction had already arisen, and already become established. The mechanism of how
natural selection managed to cross the formidable short-to-medium-term barrier of vastly
reduced reproductive success (caused by the need to find a suitable member of the opposite
sex with whom to reproduce, and the approximate halving of potential reproductive units)
remains utterly unclear.

The same problem applies to the ‘Major Transitions’ of evolutionary history – which include
sexual reproduction but also the evolution of the simple (prokaryotic) cell, the complex
(eukaryotic) cell, multicellular organisms, and social organisms (Maynard Smith & Szathmary,
1997). Each of these transitions requires overcoming the fact that natural selection operates
much more powerfully and directly upon the lower, simpler and smaller levels of organization
that replicate more rapidly; so that there is a constant pressure and tendency for these lower
levels to become parasitic upon higher levels. In sum: natural selection is much more rapidly
and powerfully dis-integrative than integrative. Yet, nonetheless, these transitions did actually
occur in evolutionary history (Charlton, 1996).

For example, in a multi-cellular organism, the dividing component cells are constantly being
selected for neoplastic (e.g. cancerous) change – such that they cease to cooperate with and
contribute to the organism, and instead exploit it as a ‘host’ environment. How, then, did
multicellular organisms evolve the many integrative systems (e.g. nervous, paracrine, hormonal
and immune systems) designed to impose cooperation of specialized cells and suppress non-
functional and actively parasitic (e.g. mutated) cell variants; bearing in mind that all such
systems are themselves intrinsically subject to neoplastic evolution?

The same phenomenon and problem must (according to the theory of natural selection) apply to
the genetic organelles of the complex cell (such as chloroplasts and mitochondria; Charlton et
al, 1998); and also to the individual organisms in a social organization (such as human society).
Yet eukaryotic cells actually did arise – despite their innate and intractable tendency to self-
destruct; and there are numerous highly evolutionarily successful social animals among (for
instance) insects, birds and mammals. Indeed, it has been calculated that ants and humans are
the two groups with the greatest biomass among animals on earth, with ants dominating the
tropics and humans the temperate zones – termites are also highly numerous in the tropics;
Ridley, 1996.

The general problem is therefore that the net effect of natural selection is to break down the
major transitions of evolution before they can be established – unless (as I will argue later) this
tendency is overcome by some as-yet-unknown purposive (and indeed cognitive) long-termist,
integrating and complexity-increasing tendency.

THE NATURE OF SPECIES

Darwin’s first great evolution book was termed On the Origin of Species by means of Natural
Selection… (1859); and that is a clue to the next unsolved problem – which is: ‘what is a
species?’

Darwin was trying to explain how ‘species’ (in a very general sense of the major, as well as
minor, sub-divisions of living things) originated. To do this he already had to assume that he
knew, more or less, what species were.
In other words, natural selection was proposed as a historical mechanism (in practice the only mechanism) which led to modern species. In yet other words; natural selection was supposed to explain species – and species was the thing that was explained (Panchen, 1993).

Unsurprisingly, therefore, there has never been a principled explanation that was based on natural selection of what species actually are and how they are divided (Hull, 1988). At root, my understanding is that *impasse* happens because species are being used both as that which explains, and as that which is explained – which is circular reasoning.

And, in practice as well as in theory, all possible suggestions for such a definition are refuted by data. For example, the idea that species cannot interbreed to yield fertile offspring is untrue with numerous exceptions - some natural and some artificially generated. And the systems of differentiating and classifying species on the grounds of ‘homologous’ anatomy, physiology and genetics do not map-onto the classification of species in terms of their inferred lineage (e.g. cladistics) – and the identification of homology has itself (like species) never been objectively defined (Horder, 1993).

Furthermore, there is no more evidence now than there was in 1859 that natural selection is capable of being the sole and sufficient ‘explanation’ for the diversity of life upon earth. I put ‘explanation’ in quotation marks, because it is debateable whether natural selection – being based upon contingent and variable selection acting upon undirected (aka.’random’) variation (Hull, 2001) - is actually a real explanation; because then the ultimate explanation is apparently that there is no explanation. Natural selection does not say ‘why’, but instead ‘how’ evolution occurs. The nature of change is contingent upon undirected events shaped by contingent processes, and therefore is essentially non-predictable in its specifics. In some senses, therefore, natural selection does not genuinely ‘explain’.

In effect, with natural selection, *at most* one can only say: Many things might have happened for many reasons, but as an historical fact ‘this’ is what actually happened.

Certainly natural selection can coherently describe the historical situations leading to relatively small differences between organisms – perhaps up to the level of creating new and related species. This was already known to Darwin and was indeed the basis of his evidential argument – e.g. he described the nature and scale of effects of artificial selection done by animal breeders, plus some effects on the shape and size of beaks among Galapagos finches. To this, modern biologists could add observations on the modification of microorganisms under laboratory conditions, for instance the evolution of bacterial resistance to antibiotics. And there are also within human racial differences of skeleton, teeth, skin and hair, brains and behaviours and many others – probably amounting to sub-species levels of differentiation – again these were (approximately) noted by Darwin.

But all these are quantitative, not qualitative, changes; changes in magnitude but not in form. Neither natural selection, nor indeed artificial selection done by Man, has been observed creating a new genus, nor any taxonomic rank more fundamental such as a new family or phylum. There is no observational or experimental evidence which has emerged since 1859 of natural selection leading to major, qualitative changes in form – nor the originating of a novel form. Nobody has, by selection, changed a cat into a dog, let alone a sea anemone into a mouse (or the opposite); nobody has bred a dinosaur from a bird, nor retraced, by selective breeding, a modern species to its assumed ancestral form. There have, at most, been attempts to explain why such things are impossible in practice – why, for instance, the linear sequence of evolution cannot be ‘rewound’.

**THE PROBLEM OF GROUP SELECTION**

The final example concerns group selection. My impression is that the most thoughtful and
perceptive theorists such as WD Hamilton and GC Williams intuitively recognized that group selection was like a thorn in the flesh of Neo-Darwinism, because true group selection (when properly understood) entails a purposive cognitive mechanism that can predict, can ‘look ahead’ several generations, and infer what is likely to be good for the survival and reproduction of the species (ie. future descendants) rather than for the specific individual organism under here-and-now selection – and can therefore impose this long-term groupish direction to evolutionary change, in the face of evolution that benefits the individual in the short-term (Hamilton, 1998).

Whether or not it is due to the built-in ‘spooky-spiritual’ aspects of group selection, there has been and is a powerful and almost moralistic desire within biology utterly to purge group selection from Neo-Darwinian theory.

Altruism is behaving such as to increase the reproductive success of others at the expense of one’s own reproductive success (for example, sacrificing a young and potentially fertile life for the benefit of the group – perhaps in defence against a predator). Altruism indeed calls-out for explanation, since it is very frequently, almost universally, observed – e.g. multicellular animals depend on it for continued existence, social animals depend upon it for the continuation of sociality. But the proposed solutions – inclusive fitness/kin selection and various types of reciprocal benefit (Dawkins, 1976; Ridley, 1996) – do not explain the origin of altruism, but instead explain why altruism – once established, may be advantageous to sustain.

The problems are at root the same as the previous examples – favouring the long term over the short term: in this instance imposing cohesion and cooperation that benefits the whole against the tendency of natural selection to favour the part at the expense of the whole. For example, preventing the amplification of selfish, short-termist, parasitic variants and lineages (which are immediately advantageous, and much more strongly selected-for), so as to pursue the long-term cohesion, survival and reproduction of the group. Lacking such a mechanism or tendency, any groupishness and long-termism would continually be undermined, and would tend rapidly to be undone by the strong selection pressure for individuals to exploit and parasitize the group (Maynard, 1996; Maynard Smith & Szathmary, 1997).

THE NECESSITY FOR TELEOLOGY IN THE METAPHYSICS OF BIOLOGY

Natural selection is an inadequate metaphysical basis for biology because it lacks teleology - a goal, direction or purpose.

This means that the potential for meaning - for knowledge - is excluded from the system of biology, and from any other system which depends upon it.

Thus natural selection is radically too small a metaphysical frame - it leaves so much out, that is so important, that what remains is not even a coherent subject. This is revealed in the undefinability of biology and the incapability of biology to understand the meaning of life and its origins, major transitions and categories. Without teleology, biology is self-destructive.

Indeed - without teleology we cannot know. I mean we cannot explain how humans could have valid knowledge about anything. No knowledge of any kind is possible. If Natural Selection is regarded as the bottom-line explanation - the fundamental metaphysical reality (as it is for biology, and often is with respect to the human condition) then this has radically nihilistic consequences. This is a paradox – if natural selection was the only mechanism by which consciousness and intelligence arose then we could have no confidence that the human discovery of natural selection was anything more than a (currently, but contingently) fitness-enhancing delusion.

The reason is that natural selection is at best – and when correctly applied - merely descriptive of what-happened-to-happen. There was no reason why things had to be as they actually were,
there is no reason why the present situation should stay the same, then there will be no reason to suppose that the future outcome is predictable. There is no greater validity to what-happened-to-happen compared with an infinite number of possible other things that might have happened - so there is no reason to defer to what-happened-to-happen, no reason why what-happened-to-happen is good, true, just, powerful or anything else - what-happened-to-happen is just what led to greater differential reproductive success for some length of time under historical (and contingent) circumstances. Nothing more.

Therefore - if humans are nothing more or other than naturally-selected organisms - then there is zero validity to: cognition, emotions, intelligence, intuitions, morality, art, or science - including that there is no validity to the theory of evolution by natural selection. None of the above have any validity - because they all are merely what-happened-to-happen (and are open-endedly liable to further change).

In sum - Without teleology, there can be no possibility of knowledge.

(This is not some kind of a clever paradox - it is an unavoidable rational conclusion.)

If and only if biology includes direction and purpose, is the subject compatible with the reality of knowledge. A new and better metaphysics of biology must therefore include teleology.

**POTENTIAL BENEFITS OF A TELEOLOGICAL METAPHYSICS**

The fact that such a large number of the most fundamental problems of biology have remained essentially untouched during more than half a century of bioscience research on a truly massive scale (and still growing) suggests that they are intractable – and will not be solved under the current paradigm. However, that is only my assumption, the evidence is compatible with the idea that the fundamental problems of biology are insoluble under the current paradigm – however, the scientific evidence does not, and cannot, amount to empirical or rational proof.

Metaphysics is the branch of philosophy concerned with basic assumptions – descriptive of the fundamental nature of reality. Science takes place within metaphysics, and therefore the results of science cannot imply a new metaphysics, and cannot refute an old metaphysics.

For example, the evidence that these fundamental problems are unsolved amounts only to the fact that they are as yet unsolved – failure to explain can never 'prove' that an explanation is impossible. Only that nobody has yet come up with a satisfactory explanation.

In this sense metaphysics (or a paradigm) is not 'testable' by science. This is because metaphysics itself defines the definition of science (or a specific science such as biology), defines what counts as a test, and also how to interpret the results. For instance, no amount of biology can ever decide whether biology is 1. the science of alive things or 2. the science of replicating things. This is not possible since definition 1 leads to one kind of biology using one type of expertise and methods; but definition 2 to another kind of biology with very different personnel and methods as we have seen emerge over the past 70 years.

I therefore suggest that a new paradigm – or, more strictly, a new metaphysical basis or frame - for biology is required to address these and other fundamental defects and deficiencies in modern biology; and to place biology honestly, accurately and fruitfully in context of the total field of human discourse in general. In a nutshell, I will be arguing that the overall shape of evolution across history is best explained as a directional process of development – somewhat like the metamorphic unfolding of a fertilized egg via an embryo towards sexually mature adult and parenthood. Processes of selection occur within this teleological development – but are subordinated to the overall goal and sub-goals.

However, an important difference between a strict model of development on the one hand, and on the other what I am here proposing (the theory of an evolving system of ‘governing entities’),
is that evolution is and must be open-ended: it has a direction, but its instantiation in living things is continually dynamic and tending towards change and innovation of forms without necessarily reaching a point of closure. Development is direction aimed at an end point, but governing entities provide directionality that may itself develop.

But of course there is a cost – and that cost is an intellectual one which most modern biologists would utterly refuse to pay – since they are, as a strong generalization, the most materialistic and positivistic and anti-spiritual, militantly un-religious people the world has yet known! It is no coincidence that so many of the best known and most effective public dissenters from Christianity since Darwin have been recruited from a tiny minority of eminent evolutionary theorists – past examples include Darwin’s ‘bulldog’, the early agnostic TH Huxley, and his grandson the humanist Julian Huxley; current examples include the campaigning anti-religion activists Richard Dawkins and Daniel C Dennett.

The intellectual cost to be paid is to restore purpose and ‘life’ to biology, to regard natural selection as taking place within an over-arching cognitive environment, and indeed to assume that consciousness precedes life and controls the emergence of life, its major transitions and – in general – life’s ability to counteract the dis-integrative tendencies of natural selection. In other words, the outrageous ‘cost’ (as most biologists would see it) or minimal necessity (as I see it) is to restore a spiritual dimension – not indeed within biology – but as the framing metaphysic of biology.

I should state immediately that although this perspective of the primacy of consciousness, purpose and life is indeed spiritual, it is not necessarily religious in the sense of associated with belief in any actual religion. There are great physicists (such as Einstein) who saw reality in this ‘Deist’ way (using the shorthand of ‘God’ for the inbuilt tendency of the universe) – and a modern physicist as great as Roger Penrose is an acknowledged Platonist, in the sense of regarding observable reality as based upon, and an imperfect picture of, an ultimate world of underlying archetypal forms. So, regarding ultimate reality as acting as if it has purpose, consciousness and life does not necessarily require (although it might lead to the further step) of a belief in any specific God or gods.

Nonetheless, honesty compels me to suggest that abstract Deism has historically, and in the lives of many individual scientists and other intellectuals, been a metastable state which sooner or later falls one way or the other: either into atheism or religion. And in that case, I am suggesting that, in the end, an adequate metaphysics of biology must be compatible-with (if not contiguous with) religion.

STATEMENT OF THE NEW TELEOLOGICAL METAPHYSICS

The chronology of the new metaphysics is the reverse of the usual in biology. Biology usually assumes that matter precedes life; life precedes the brain; the brain precedes cognition – ie. brain comes before mind; and minds were around before consciousness - including purposiveness - emerged. By contrast, I suggest that consciousness and purpose are the starting point – and that consciousness therefore operates upon matter with the purpose of sustaining and developing itself via instantiations in matter (instantiation here meaning the specific and actual realization of an abstraction). Therefore, consciousness ‘organized’ brains, as a stepping stone to a further development of consciousness.

Furthermore, consciousness evolves by this development – beginning as something very general and simple - like a basic tendency pushing towards more of itself; but becoming more subdivided and specific by building upon each phase of instantiation. Thus, consciousness evolves by realizing itself in the stages and transitions of life – each step building-upon what was achieved before. And this stepwise process is necessary – consciousness is understood as
having foresight and knowledge, but these are both limited. (The above conceptualization owes much to the work of Owen Barfield, who was himself expressing ideas of Rudolf Steiner, who was in turn JW von Goethe’s scientific editor for the standard collected works – so this theory has its ultimate roots in Goethe’s biology; see for example Barfield, 1982; Naydler, 1996).

Consciousness is here understood as able to see some way ahead, and purposively shape evolution towards this limited goal, but only to a finite, and in practice rather limited degree. Perhaps we could suggest (approximately) that foresight stretches (probabilistically) a few or several generations ahead, but not hundreds of generations into the future. Therefore it was not possible to go directly from the primal general consciousness to me or you; and in fact there were numerous intermediate stages.

So that initially consciousness sufficed to organize, to arrange matter into what we recognize as the emergence of life in its most basic forms; but later consciousness was subdivided and specialized into an hierarchy of directing consciousness’s; for example regulating the basic transitions and divisions of life, and beyond them the further groupings down to species, then particular human groups.

**THE HIERARCHY OF PURPOSIVE AND CONSCIOUS GOVERNING ENTITIES**

This can be imagined as an hierarchy of conscious, purposive governing entities which operate to shape and frame the structure of reality, including biological reality.

These governing entities have various properties including the ability cognitively to model future possibilities (i.e. to have foresight, to make conjectural predictions) and choose between them on the basis of innate purpose. In essence, governing entities can understand (to a limited but significant extent) the current situation, and look ahead several (or many) generations towards probable outcomes – and then arrange reality to reach the preferred possible outcome (thereby tending to overcome both random errors and natural selection).

So these governing entities are assumed to have the same kind of role as the human mind does in relation to the human body; or as a good, wise and competent human leader has in relation to the society he rules. That is, the ability to infer that if X continues then Y will probably result – which means the decline or demise of the cell/organism/group/society; but that if instead we do A we should arrive at B – which offers a much better prospect of survival and continued or enhanced reproduction than does Y; and then the governing entity has the power to impose A upon the system.

What then, actually, are these governing entities – how can we imagine them? I suggest that different people may imagine them in different ways which suit the workings of their own minds. Some may ‘imagine’ (or understand) them in a mathematical or computational way; some see them as akin to ‘laws of nature’; some may understand them to be fields of force – like Sheldrake’s morphogenetic fields (Sheldrake, 1981) but with a primary role in imposing purpose rather than form; some may understand them as immaterial but personalized entities – rather like the medieval astrological model of angels who inhabited (or rather actually were) the planets and stars – but in a realm beyond and with different properties from worldly (‘sublunar’) place, and outside of Time, and who influenced from this realm all manner of events on earth and inside Time (Lewis, 1966).

I personally have a very literal, simple mind; and cannot for long refrain from anthropomorphic representations of any cognitive and purposive entity – in other words, I imagine these governing entities as actual personages who are localized in space and time, and in some fashion material although invisible and undetectable. This is of course a child-like way of
thinking (although not really child-ish) — but perhaps not so uncommon as may superficially appear. After all, neuroscientists are always accusing each other of treating the brain as if it was inhabited by a ‘homunculus’ (little man) which is meant to be both irrational and rather disgraceful — and indeed they are usually correct in this accusation; because avoiding this ‘anthropomorphic’ way of thinking while yet retaining a firm and imaginative grasp of science is all-but impossible.

After all, Einstein reasoned about relativity by imagining a man (a homunculus perhaps!) riding in a tramcar away from the medieval clock in the Swiss city of Berne at speeds approaching the speed of light (Hoffman, 1972). If Einstein apparently needed (or, at least wanted) to do the most advanced and abstract theoretical physics by anthropomorphic metaphors, then maybe biologists should not be ashamed to follow his example?

‘EVERYTHING IS ALIVE’

The above metaphysical scheme describes purpose, but gives no clue as to mechanism. Indeed, it seems initially puzzling as to how a purposive consciousness — which is being assumed to precede the reality of organized matter — could exert any influence on ‘things’. It seems like there is a qualitative gap — a difference in kind — that needs to be bridged between that which influences and that which is influenced.

The answer I suggest is that everything (including unorganized ‘stuff’) needs to be regarded as — to some extent and in some way — alive, purposive and conscious, and made of matter. And therefore consciousness is able to influence everything, because both consciousness and ‘things’ are some kind of matter (albeit very different kinds), and everything is conscious. There is therefore no gap, and no need for a bridge — there is simply an interaction between two entities of the same basic nature.

(This solution to an ancient conceptual problem comes from Mormon metaphysical theology; McMurrin, 1977.)

This ‘animistic’ idea that everything is alive, purposive and conscious (although in widely differing ways and degrees) sounds strange to modern adult ears, but was the basic assumption of many or most societies in the past — especially the type of hunter gatherer societies in which it is thought humans evolved (Charlton, 2007). And it was also the original childhood assumption and belief that both you and I will have had in our early lives before it was suppressed by socialization — assuming that you can (like myself) remember that far back.

That everything is alive is also, as mentioned above, one of the only two possible consequences of the fact that we cannot divide living from non-living things — we have no grounds for such a division. The alternative inference is that nothing is alive — but that, if true, negates any possibility of knowledge or understanding of anything, so it can be ignored. Simple logic seems therefore to entail the assumption that everything is indeed alive, purposive and conscious — and even when we cannot currently detect or measure such attributes, they must be assumed to be latent or covert.

What is added here is merely that there are also other living entities, imperceptible but real — that is, the hierarchy of conscious, purposive entities — and it is these whose activities may be detected by inference (in terms of explaining what we observe) throughout the whole living world.

So the trajectory of evolution does not involve the creation or emergence of life or consciousness, but instead their amplification, differentiation and specialization. And the history of the ‘origin’, major events, transitions and stages in the evolution of life (including altruism and group selection) is therefore driven by the evolution of consciousness; as consciousness...
develops its hierarchy then this draws life along with it - so long as it is appreciated that the ‘evolution’ of consciousness refers to a purposive, directional, developmental un-folding of changes: it is much more like embryonic growth and specialization than a process of selection between ‘random’ (undirected) variants.

WHAT DO GOVERNING ENTITIES DO?

In summary - starting from some large scale purposive, conscious and unified entity (such as the sun, or the earth - somewhat as envisaged by ‘Gaia’; Lovelock, 1989), consciousness differentiates and specializes to direct and shape the first and most basic forms of life, then prokaryotic then eukaryotic cells, followed by the major divisions or classifications of living things down to (real) species, sexual reproduction, individual organisms and social groups.

Each of these life stages can be imagined as preceded and guided by the emergence of a further conscious, cognitive, purposive entity which has tended to shape things in a particular direction conducive to the survival and further extension and detailed sustaining of consciousness; life being coordinated by, and in overall harmony with, the work of hierarchically superior purposive governing entities.

Governing entities are located functionally-external to the group they govern – they are not a part of that group. Also they are a focus – thus can be imagined as a point of reference, both afferent and efferent. Further; they have positive and negative functions.

Positively the main role of a governing entity is to impose goals, direction, purpose – in a word: teleology. This entails imposition of form, cohesion, cooperation – and identity. Identity is the process by which the group is defined – the choice of inclusion and exclusion, the drawing of a boundary.

Negatively, the governing entity will observe, monitor, integrate the group (constituting for example a cell, multicellular organism, species or social group). Within that group there will be – always potentially and often actually – competition, conflict, free-riding, exploitation, parasitism and many other dis-integrative tendencies.

In sum, it is the governing entity that make a group a real group in the true sense of the word ‘group’ – and not merely an arbitrary, temporary or expedient line drawn around a collection of autonomous entities: it is the governing entity which makes the group a unit. Unity derives from unity.

A group of many entities (such as a collection of components in a cell, of cells in an organism, or organisms in a society) is itself a unified entity only when it is governed by a single purposive, conscious entity.

THE COHERENCE OF EVERYTHING

It is the hierarchy of governing entities which ensures that overall and in the long run, all directions of all sub-entities are coordinated and integrated. This can be imagined on the lines of a military hierarchy of orders coming down from a General through the branching ranks of Colonels, Majors, Captains, Lieutenants, and Sergeants to the foot soldiers.

Vertical, multi-level coordination therefore comes from the teleology branching-out from a single locus. And horizontal coordination within-hierarchical-levels comes from the mutual reciprocity and complementarity of functions.

This is the organizing principle which enables groups under direction from governing entities to be recognized and understood (to some significant extent); it is what roughly corresponds to intuitions that there is an underlying order to the world: notions such as ‘the balance of nature’, ‘the circle of life’, the principle of ‘compensation’, or the earth conceptualized in terms of a
Thus the universe of reality broadly hangs-together, as we observe it does; and does not utterly collapse into a chaos of ever-smaller and faster-replicating, more mutally-exploiting purposeless entities, as we observe it does not. There is a background tendency to homoeostasis and elaborated specialization and coordination – and there is, both overall and at each level and each individual unit of organization – organizing purpose and direction.

Of course, in particular times and places, natural selection may be amplified, may become powerful enough to overcome the cohesive and integrative influence of conscious, purposive entities; and consciousness diminishes, and cooperation, complexity and order begin to break down. The purpose is then not attained but instead thwarted.

It can happen at any level. Ultra-selfish genes (such as transposons or segregation distorters) may potentially lead to intra-genomic conflict with loss of informational-identity, functional corruption and cell death; rogue malignant (or selfishly non-functional) mitochondria may kill their symbiotic host cells; connective tissues may become sarcomas and kill the organism; or successful psychopaths may exploit, parasitize and lead to the destruction of their social group.

CONCLUSIONS AND IMPLICATIONS

In sum, the new teleological metaphysics of biology would not affect the perspective of biology in terms of the study of evolution by natural selection, nor in terms of the day by day activities of biological researchers.

So much for what it does not do! But metaphysics is relevant insofar as natural selection would henceforth be assumed to operate within purposive cognitive processes that have foresight and are able to organize, coordinate, and either counteract or use natural selection as a means to its own ends. This background would be assumed – and we would not suppose that natural selection ‘has the last word’.

For example, governing entities may use natural selection as a means of genetic ‘quality control’ to filter-out spontaneous mutations by replicative over-production and strong selection for fitness. But the complexity-destroying tendency of natural selection acting upon lower level, smaller and more rapidly reproducing sub-components; is something that is counteracted and, at times, overcome by the governing entities orientating the situation towards more secure and sustained existence - and towards a greater quantity, complexity and specialization of consciousness. Presumably this is achieved via potentially multiple interactions between governing entities, structured by their hierarchy: the higher entity net-influencing the lower, and each entity directing its biological group.

So, governing entities sometimes use, sometimes oppose, natural selection in pursuit of their over-arching goals.

Perhaps most importantly, the new metaphysics of biology can explain how it is that humans could have valid knowledge of biology itself - for example, how humans might have validly discovered a true theory such as natural selection. If humans were merely evolved to optimize reproductive success, it is not formally impossible but it is vastly improbable that we could have valid knowledge of anything - including natural selection; since a mechanism for discovering valid knowledge could only have happened by undirected chance and if it also happened to optimize reproductive success in the immediate short term of generations.

However, if by an astonishing coincidence, it happened-to-happen that humans had had naturally-selected the ability to have valid knowledge – knowledge for instance of the theory of natural selection; then we could not know we knew this this for a fact without a further astonishing coincidence of knowing that we had happened to evolve this way.
But - if our metaphysics posits the existence of purposive, conscious governing entities outwith the boundaries of biology, and to that extent independent of (controlling of) the vicissitudes of natural selection; then valid knowledge might be assumed to originate from that external source. In other words, we can know about natural selection and that it is true, only because we ourselves are something more than merely naturally selected.

I am, of course, fully aware that the above purposive metaphysics of biology sounds bizarre, supernatural and indeed just plain absurd from the perspective of modern biology! I have, after all, been thoroughly educated and acclimatized to that world, and have worked within it for several decades, both teaching the subject of natural selection and publishing many papers including many which metaphysically-assumed that natural selection was indeed the last word on things – the exact framing assumptions that I am here and now criticizing as mistaken; for example my books Charlton, 2000 and Charlton & Andras, 2003 - especially the Appendix to 2003.

However, stepping outside of that professional ghetto, I am also aware that this general type and nature of metaphysical explanation that I am now proposing has a long and continuing pedigree among mathematicians and physicists – and indeed within a strand of theoretical biologists which includes such figures as JW von Goethe and his scientific editor Rudolf Steiner, D’Arcy Thomson, Conrad Waddington (and other members of the prestigious, albeit heterodox, Theoretical Biology Club of Cambridge University), and in recent years Brian Goodwin, Stuart Kauffman and Rupert Sheldrake.

Such individuals (to a variable degree) have recognized that – if it is to be coherent - the subject and methods of biology must be conceptualized within a larger (and, as I term it, metaphysical) framework or paradigm which lies outside the discipline of biology; however the above-named biologists were primarily concerned with integration, organization and the development of form – while my focus here is on the need for an externally imposed purpose.

The axiomatic assumptions of this paradigmatic purposive framework are the basis for all scientific work. Science is always and necessarily subordinated to philosophy, even when that philosophy is unacknowledged - or even when it is denied. Many clever and successful - but unreflective - modern scientists believe themselves to be superior to metaphysics, to have transcended and replaced it with ‘solid’ empirical scientific ‘proof’. All this really means is that they do not understand, and do not want to know about, their own metaphysical assumptions – because they want to believe that these are just-plain-true, rather than the consequence of non-scientific but instead philosophical choices made by actual people at some particular time and place.

But different choices yield different consequences; and the choice of natural selection as the bottom-line explanation of biology has had an intellectually stunting and transcendentally crippling effect on the discipline.

My hope is that this new, teleological metaphysics of biology will provide a framework within which biology can operate in a coherent and contextualized fashion; rather than, as in recent decades, simply ignoring its major problems and deluding itself with assertions that its partial and incomplete explanations - based on the dogmatic assumption that natural selection is the one and only true mechanism of evolution and the bottom line reality of everything - have universal applicability and eternal validity: However, I think I have demonstrated that this is merely an assertion, and indeed an arrogant, uninformed, arbitrary and indeed utterly absurd assertion! Let us then acknowledge that there are metaphysical choices that have-been and must-be made – and try to evaluate and compare these choices.

Finally, it is necessary to recognize and make clear that the above metaphysics of hierarchical,
purposive and conscious governing entities is not a 'biological' theory. But then, neither is natural selection a biological theory. Instead, both these are potential metaphysical frameworks for biology. Biology cannot exist without a metaphysical framework – and the current one may not be the best, since it has so many, such serious, failures to its name.

With that in mind, potentially valuable debate may commence.

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