

every means to reach the furthest extremity of everything it can attain: the ultimate, externally, of complexity, internally of consciousness [p.35]' (*Man's Place in Nature*).

³³⁸ Plato was another who recognised this inherent limitation of the Integrative-Meaning-denying mechanistic approach when, long ago, he wrote that **'the Good [as explained in par. 331, the Good is Integrative Meaning]...gives the objects of knowledge their truth and the mind the power of knowing...[just as] The sun...makes the things we see visible...The Good therefore may be said to be the source not only of the intelligibility of the objects of knowledge, but also of their existence and reality'** (*The Republic*, c.360 BC; tr. H.D.P. Lee, 1955, 508-509). Yes, this loss of **'the power of knowing'** has been very serious indeed. Koestler also who felt it, bemoaning the crippled, stalled, atrophied state of all of science, but of biology and psychology in particular, when he said that blind, reductionist, mechanistic science's denial of Integrative Meaning has **'taken the life out of biology as well as psychology'**, writing that **'although the facts [of the integration of matter] were there for everyone to see, orthodox evolutionists were reluctant to accept their theoretical implications. The idea that living organisms, in contrast to machines, were primarily active, and not merely reactive; that instead of passively adapting to their environment they were...creating...new patterns of structure...such ideas were profoundly distasteful to [Social] Darwinians, behaviourists and reductionists in general [p.222 of 354] ...Evolution has been compared to a journey from an unknown origin towards an unknown destination, a sailing along a vast ocean; but we can at least chart the route...and there is no denying that there is a wind which makes the sails move...the purposiveness of all vital processes...Causality and finality are complementary principles in the sciences of life; if you take out finality and purpose you have taken the life out of biology as well as psychology [p.226]'** (*Janus: A Summing Up*, 1978).

³³⁹ As was pointed out in par. 188, towards the end of *The Origin of Species*, Charles Darwin anticipated that **'In the distant future I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history'** (1859, p.458 of 476). Given Koestler's comment that **'if you take out finality and [the 'integrative tendency' or] purpose you have taken the life out of biology as well as psychology'**, what was required to bring about Darwin's **'new' en-'light'-ening 'foundation' for 'far more important research' in 'biology as well as psychology'** was not only acknowledgment of the involvement of our conscious **'mental power'** but also of **'integrative' 'purpose'**.

³⁴⁰ So, what *is* the **'far more important research'** that results from thinking from the **'new' en-'light'-ening 'foundation'** of accepting the truth of **'integrative' 'purpose'**?

Chapter 4:4 The denial-free history of the development of matter on Earth

³⁴¹ In commencing this denial-free analysis of the development of matter from a perspective that takes into account the truth of Integrative Meaning, we first need to replace the word **'evolution'** with the word **'development'**, for while evolution implies that organisms *do* change or evolve it avoids acknowledging that there is a direction and purpose to that change, which is to *develop* the order of matter.

³⁴² As the study of physics has shown, our world is made up of three fundamental ingredients — time, space, and energy — with, as Einstein revealed in his famous formula $E = mc^2$, energy taking the form of matter, which comprises the 94 or so naturally occurring elements that, when subjected to the laws of physics, particularly the law of

Negative Entropy, became ordered or integrated; they formed more stable or enduring (in time) and ever larger (in space) arrangements.

³⁴³This development of order of matter involved the initial mixture of the Earth's elements and their gradual formation into stable arrangements called molecules—earlier I provided the example of a water molecule being the stable arrangement of two single positively charged hydrogen atoms with one double negatively charged oxygen atom. In time, through the mixing of different elements, each with its own particular properties, many stable arrangements were found or developed, leading to even greater order and complexity of arrangements in the form of very complex macromolecules.

³⁴⁴The problem, however, was that the more complex these macromolecules became, the more unstable they tended to be. Highly complex macromolecules would only occasionally form and, when they did, they didn't tend to hold together for long before breaking down into their separate parts. Eventually an impasse was reached where the degree of instability imposed a limit on how complex macromolecules could become. When this ceiling was reached it appeared Negative Entropy—or 'God' if we were to personify the process—could not develop any more order of matter on Earth. And yet matter *did* continue to 'develop' beyond this apparent impasse, with the emergence out of the primordial soup of a complex macromolecule with an unusual property—DNA, or deoxyribonucleic acid. What was unusual about DNA was that it could replicate. It could split, allowing the two halves to draw material from the environment to build two complete DNA molecules. The significance of this replication was that it meant DNA could defy breakdown. It could turn a relatively brief lifetime for a complex macromolecule into a relatively indefinite one. DNA's ability to replicate meant that even though some of the replicates disintegrated into smaller parts, others would survive and go on to replicate further. With slight variations called mutations occurring from the effects of solar radiation, replicates were 'found' that were even more stable/enduring (in time) and more ordered/complex/larger (in space). The process of natural selection of more stable and larger arrangements of matter—and the origin of an indefinite lifetime, or 'life' as we call it—appeared.

³⁴⁵In this process, each replicating arrangement of matter or reproducing individual was, in effect, being tested both for its ability to survive and reproduce in its lifetime and, over generations of offspring, for its ability to adapt to changes in the environment in which it lived, with those that managed to survive and adapt inevitably, whenever possible, finding/refining/achieving/growing/developing even greater order of matter. The effect of this process over time was that more and greater order of matter was integrated. It was the ability to survive and adapt that supplied the opportunity for more and greater order of matter to develop. Thus, using the tool of replicating DNA, Negative Entropy was able to integrate matter into larger wholes; it was able to develop ever more and ever greater order of matter on Earth.

³⁴⁶DNA is actually a very complex crystal. Crystal molecules abound—common salt, sodium chloride, for instance, is one—and in a suitable nutrient environment they all have the capacity to reproduce; to grow their structure from their structure. However, being much simpler than DNA—having fewer elements within their molecular structure—they have little or no potential for adaptation and, it follows, for the development of greater order.

³⁴⁷ Indeed, variability is so critical to this DNA process of developing greater order of matter that ‘sexual reproduction’ of DNA molecules developed, where the split halves from two compatible DNA molecules were made, through natural selection, to come together (be ‘attracted to and mate with each other as males and females’) to form a new, slightly different DNA-based sexually reproducing individual. This greatly increased the variety of a particular DNA type or ‘species’ and, by so doing, greatly increased its chances of finding/achieving/growing/developing larger and more stable arrangements of matter. Sexual reproduction, therefore, soon replaced non-sexual or ‘asexual’ reproduction as the most successful or effective form of DNA reproduction in this business of finding or developing greater order of matter.

³⁴⁸ It can be seen then that Negative Entropy’s development of order of matter really comes down to being a product of possibilities. The differing properties of matter mean some arrangements of matter break down towards heat energy, while others stay stable and still others become part of larger and more enduring associations of matter. In time, all the possible associations of matter will be automatically or, as Charles Darwin called it, ‘naturally’ investigated until the largest, most stable association is left or found or, as Darwin described it, ‘selected’. What happened with DNA was that it not only turned a relatively short lifetime for extremely complex molecules into a relatively indefinite one, it also made a business, as it were, of this ‘negentropy’ direction—both of resisting breakdown and of developing order. The replicating DNA molecule gave rise to a process that actively resisted breakdown and actively developed ever more and greater order of matter. This is ‘**the active striving of living matter towards order**’, ‘**a drive towards synthesis, growth and wholeness**’, the ‘**active**’, ‘**creating**’, ‘**purposiveness**’, ‘**vitalisation**’ of life about which Koestler and de Chardin wrote.

³⁴⁹ The DNA unit of inheritance is called a gene, with the study of the process of change that genes undergo termed ‘genetics’. As a tool for Negative Entropy’s development or refinement of the order of matter on Earth, the genetic process was very powerful—it was able to develop the great diversity of matter that we term ‘the variety of life’. From DNA, virus-like organisms developed, then from virus-like organisms developed single-celled organisms (such as bacteria), and from single-celled organisms developed multicellular organisms (such as plants and animals). The next level of order to be developed or integrated by Negative Entropy was societies or colonies or ordered arrangements of multicellular organisms. It was at this point, however, that Negative Entropy (or God) encountered another major impasse.

³⁵⁰ While genetics has proved to be a marvellous tool for integrating matter it has one very significant limitation, which arises from the fact that each sexually reproducing individual organism has to struggle, compete and fight selfishly for the available resources of food, shelter, territory and the mating opportunities it needs if it is to successfully reproduce its genes. What this means is that integration, and the unconditionally selfless cooperation it depends on, cannot normally develop between one sexually reproducing individual and another. Indeed, the competition between sexually reproducing individuals is the basis of the natural selection process that gave rise to the great variety of life on Earth. The word ‘selection’ in ‘natural selection’ implies competition—a comparison between sexually reproducing individuals for their ability to survive, adapt and develop greater order of matter. So integration beyond the level of the sexually reproducing

individual—that is, the coming together or integration of the sexually reproducing individual members of a species to form the next larger and more stable whole of the Specie Individual—could not, normally, develop (the *Development of Order of Matter* chart included earlier shows where the Specie Individual appears in the hierarchy of integration). This was the second major impasse that Negative Entropy (or God) encountered: the development of order of matter on Earth had seemingly come to a stop at the level of the sexually reproducing individual.

³⁵¹ To elaborate, each sexually reproducing individual normally has to ensure the reproduction of its own genes, which means sexually reproducing individuals cannot normally develop the ability to behave unconditionally selflessly towards other sexually reproducing individuals—which, as has been explained, is what full cooperation and thus complete integration requires. Certainly sexually reproducing individuals can develop *conditionally* selfless behaviour towards other sexually reproducing individuals. Situations of reciprocity can develop where one sexually reproducing individual selflessly helps another on the proviso that they are selflessly helped in return, which, in effect, means both parties are still selfishly benefiting. So sexually reproducing individuals *can* develop reciprocity because it is, in essence, still selfish behaviour: it doesn't give away an advantage to other sexually reproducing individuals and, therefore, doesn't compromise the reproductive chances of the sexually reproducing individual practising the behaviour. Unconditionally selfless, altruistic traits, on the other hand, do give away an advantage to other sexually reproducing individuals—that being the meaning of unconditional selflessness, that you are giving without receiving—and, therefore, unconditionally selfless, altruistic, self-sacrificing traits *do* compromise the reproductive chances of the sexually reproducing individual practising such behaviour and, therefore, cannot normally develop.

³⁵² So cooperation between sexually reproducing individuals cannot normally be developed beyond a situation where there is reciprocal/conditional selflessness, and, since conditionally selfless behaviour is still basically selfish behaviour, full cooperation and thus complete integration cannot normally be developed between sexually reproducing individuals to form the Specie Individual. This inability to develop unconditionally selfless, altruistic behaviour leaves sexually reproducing individuals competing relentlessly with each other for available resources of food, shelter, territory and a mate. So much so, in fact, that what we see happening between sexually reproducing individuals as they try to develop more integration under this limitation of not being able to develop unconditionally selfless behaviour is that the competition between them becomes *so* intense that the only way they can contain it at all is by establishing a dominance hierarchy, where each individual accepts its position in a hierarchy that is ordered according to the competitive strengths of the various individuals involved. The benefit of a dominance hierarchy, or a so-called 'peck order', is that once established the only time competition breaks out is when an opportunity arises to move up the hierarchy; for the rest of the time there is relative peace. The emergence of a dominance hierarchy is a sign a species has developed as much integration as it possibly can.

³⁵³ It should be pointed out that in situations where competition between individuals breaks out—when, for instance, male elephants or whales or kangaroos or birds or solitary insects, etc, etc, chase a female in estrous—it's not simply because the female wants to

discover which is the strongest male with which to mate to ensure her offspring is the strongest, most competitively successful individual it can be, as is currently taught, but because the Negative Entropy integrative tendency has driven the males and the females to that extreme state of competition. Such extreme competition is, in truth, a result of trying to develop greater order of matter. More will be said about this shortly, but the real story of life on Earth is *not* about selfish competition but integration.

³⁵⁴ So although dominance hierarchy hides it from view for most of the time, the reality is that *extreme* competitiveness characterises the behaviour of the more cooperative and thus integrated, or what has evasively been called ‘social’, species. In my youth I remember feeding hens in our hen house and seeing a hen twist her leg and become temporarily crippled, at which point all the other hens immediately attacked her. In that instant it was suddenly apparent to me just how closely and intensely each hen was watching all the other hens for an opportunity to literally move up the peck order. The hen house was not at all the gregarious, peaceful community I thought it was; rather, it was a place of absolutely fierce competition! Charles Darwin recognised this truth about the real struggle in the lives of most animals when he wrote that **‘It is difficult to believe in the dreadful but quiet war of organic beings, going on [in] the peaceful woods and smiling fields’** (1839; *The Complete Work of Charles Darwin Online*, ed. John van Wyhe, 2002, *Notebook E*, line ref. 114).

³⁵⁵ This situation where sexually reproducing individuals relentlessly compete for available resources is the situation, the condition, that almost all animals have to endure—it is the great, agonising ‘animal condition’. When humans become free of our numbed, alienated human condition we are going to be shocked by the agony of the animal condition; we are going to *feel* the distress all non-human animal species live under, where each sexually reproducing individual, through its Negative Entropy-driven commitment to achieve greater integration, is having to relentlessly and fiercely compete to reproduce its genes. Unfortunately, because animals’ innocence (lack of the psychological upset we humans suffer from) confronts us with our lack of innocence (our vicious angry, egocentric and alienated state), we humans have so hated, despised and resented animals that we have hunted and shot them for ‘sport’; but one day we are going to have so much sympathy for animals because of what they have to endure trapped in a life of having to relentlessly compete with each other, often with their closest friends! (‘Friends’ in the sense of those with whom they have shared their life and developed emotional bonds.) Certainly the same extremely competitive state exists for plants and microbes, but, not having the developed nervous system that animals have, their awareness of the agony of that horrifically competitive existence could obviously not be anywhere near as great as it is for animals. (The other issue about the life of non-human animals is that they rarely die peacefully; as soon as they grow old they are ruthlessly picked off and eaten by a lion or fox or mongoose, often while they are still alive. Thank goodness they can’t reason and thus look forward in time. As the poet Robert Burns wrote about non-rational animals, **‘Still thou art blest, compared with me! The present only touches thee: But och! I backward cast my eye, on prospects drear!’ And forward, tho I cannot see, I guess and fear!’** (*To A Mouse*, 1785).)

³⁵⁶ What now needs to be explained is, firstly, that while sexually reproducing individuals cannot normally be integrated, the sexually reproducing individual itself

could be elaborated, enlarged, expanded—developed further to become bigger—which, as will be explained next, is how single-celled organisms developed into multicellular organisms, and how multicellular colonial ants and bees integrated into their fully cooperative and thus completely integrated colonies. Significantly, in these ‘elaborated sexually reproducing individuals’, the cells of the multicellular body, or the individual ants and bees in their fully integrated colonies, are no longer sexually reproducing individuals themselves, but part of a larger sexually reproducing individual, which is the body, or, in the case of ants and bees, the colony. Secondly, it has to be explained why I have been saying it is ‘normally’ not possible for sexually reproducing individuals to become fully integrated to form the Specie Individual. There was, in fact, one species who managed to achieve the development of the next larger whole in the integration of matter on Earth of the integration of sexually reproducing individuals to form the Specie Individual: our ape ancestors. As will be explained in chapter 5, this amazing step in the development of matter was achieved through maternalism—the nurturing of our offspring—which has been another of those unbearable truths that humans couldn’t face until we could explain our divisive, unloving human condition.

³⁵⁷To summarise what has been explained so far: in the development of order of matter on Earth, all non-human animal species are stuck in the ‘animal condition’, with each sexually reproducing individual member of the species forever having to compete to ensure its genes reproduce and carry on. *That* is the essential fact or rule of the gene-based natural selection process—genes are unavoidably selfish; they have to ensure they reproduce if they are to carry on. It is important to reiterate, however, that even though this selfishness—and the extreme competition between the sexually reproducing individuals it gives rise to—is characteristic of virtually all of nature, such selfishness is *only* occurring because of the *limitation* of the genetic process of *normally* being unable to develop unconditional selflessness between sexually reproducing individuals. In his 1850 poem *In Memoriam*, Tennyson famously wrote: ‘**Who trusted God was love indeed / And love Creation’s final law / Tho’ Nature, red in tooth and claw / With ravine [in violent contradiction], shriek’d against his creed.**’ While Integrative Meaning or ‘God’ and its theme of unconditional selflessness or ‘love’ is the ‘creed’ or ‘final law’ of ‘creation’ that the competitive, selfish and aggressive, ‘red in tooth and claw’ characteristic of so much of ‘Nature’ seems to be in violent contradiction ‘against’, we can now understand that this selfish characteristic doesn’t mean that the *overall* biological reality of existence—life’s meaning and theme—is to be selfish, as the dishonest theories of Social Darwinism, Sociobiology, Evolutionary Psychology and Multilevel Selection would have us believe. As will be explained in chapter 5, in the case of humans, we don’t have selfish instincts like other species, rather we have *unconditionally selfless* instincts. And the selfishness that is characteristic of so much of nature is *only* occurring because of the *limitation* of the gene-based refinement process—its inability, in most situations, to develop unconditional selflessness. The genetic process would develop unconditionally selfless, fully cooperative behaviour between all sexually reproducing individuals if it could—because such selflessness is what is required to maintain a fully integrated whole—but, because of its particular *limitation*, it normally can’t. Integrative selflessness, not divisive selfishness, is the *real* nature or characteristic of existence, the theme of life.

³⁵⁸ Incidentally, in par. 195 it was mentioned how, in describing his concept of natural selection, Darwin originally left it undecided as to whether individuals who managed to reproduce are ‘fitter’ or better than those who don’t, but was later persuaded by human-condition-avoiding, mechanistic biologists to describe natural selection as a competitive, ‘survival of the fittest’ process. Well, we can now see why it was right for Darwin to leave it undecided as to whether individuals who manage to reproduce are better or ‘fitter’ than those who don’t. As has now been explained, it can be completely consistent with the integrative meaning of existence for an individual to give their life for the purpose of maintaining the larger whole of their society and thus not reproduce. Unconditionally selfless, self-sacrifice for the good of the whole, is the very theme of existence. It is only because of the *limitation* of the gene-based natural selection process that unconditionally selfless behaviour normally cannot be developed between sexually reproducing individuals. Selfless cooperation, *not* selfish, competitive, ‘survival of the fittest’ behaviour, *is* the real characteristic of existence, the theme of life.

Chapter 4:5 Elaborating the sexually reproducing individual

³⁵⁹ As stated, while sexually reproducing individuals cannot normally be integrated, the sexually reproducing individual itself could be elaborated, made bigger, which, as will now be explained, is how single-celled organisms developed into multicellular organisms, and how multicellular colonial ants and bees integrated into their fully cooperative colonies. Struggling to find a way to develop greater order of matter by integrating sexually reproducing individuals, it was as if Negative Entropy (or God) decided, ‘Well, what I’ll do is develop greater order of matter *within* each genetically reproducing individual, making it bigger.’

³⁶⁰ As was also mentioned, in these ‘elaborated sexually reproducing individuals’, the cells of the multicellular body, or the individual ants and bees in their fully integrated colonies, are no longer sexually reproducing individuals themselves, but part of a larger sexually reproducing individual, which is the body, or, in the case of ants and bees, the colony.

³⁶¹ The biological mechanism for elaborating the sexually reproducing individual involved the body’s cells, or the colony’s multicellular bees/ants, delegating the task of sexual reproduction to a distinct part of the whole that *specialises* in reproduction. In the case of the integration of single-celled organisms, the green alga known as *Volvox* provides an example of an organism in transition from the single-celled to the multicellular state, as this quote describes: ‘**Volvox is...a small, green sphere...composed of thousands of flagellates embedded in the surface of a jelly ball...Volvox is a colony of unicellular animals rather than a many-celled animal, because even the simplest many-celled animals have considerably more differentiation between cells than appears among the cells of Volvox. The colony swims about, rolling over and over from the action of the flagella; but, remarkably enough, the same end of the sphere is always directed forward...Its behaviour can be explained only by supposing that the activities of the numerous flagellates are subordinated to the activity of the colony as a whole. If the flagella of each member of the colony were to beat without reference to the other members, the**