development. Thus the underlying 'force' in 'existence', its theme or meaning, is to develop order, to bring about the integration of matter, which we have long metaphysically personified as 'God'. We can see here that monotheism or belief that there is only one God was correct.

We evaded admission of this purpose, the development of integration, and of its reconciliation with 'God' because we could not explain why, in apparent contradiction of it, we humans practised divisiveness. We have been upset, in particular egotistical (in competition with the implication that we were bad, preoccupied with establishing our worth, concerned with self, in other words, selfish), aggressive (angry with the unjust criticism of our efforts to self-adjust), alienated (denying the truth of integration) and superficial (refusing to consider profound things – such as integrativeness). Because these are mostly divisive or disintegrative rather than integrative traits we have lived in fear of integrative meaning or God. However, while we apparently have been unGodly we have always 'known' that the full truth, when found, would explain our upset human condition. Our task has been to learn why we weren't bad, to understand what caused us to behave the way we did. If we admitted to integrative meaning, to purposeful development, without explaining our divisiveness we only added to our sense of guilt. This was the paradox within which we struggled. Before humanity and its tool, science, could admit to meaning and purpose we had to be able to explain rather than criticise our condition. We had to get through to the whole compassionate truth because partial truths often left us unbearably criticised. Critical partial truths such as integrative meaning had to be evaded.

**Paradox of the Human Condition**

The way we scientifically evaded the existence of purposeful development was to admit only that there had been change, which we termed 'evolution', without acknowledging it had any meaning purpose. Evolution was our evasive scientific word for development, while 'God' was our safely abstract (sufficiently remote not to directly criticise us) 'fundamental' admission of the 'absolute' fact of the development of integration and thus purpose. We enshrined the absolute truths in our religions. In this way, with the absolute truths as goals before us, but with excuses or evasions for our condition to sustain us, we strove forward, progressing in hope and faith that we would find the full truth before our upset condition led to our self-destruction as a species. We progressed towards a day of eventual enlightenment or reconciliation – which has now arrived.

**The role of religion**





The hierarchy of development of systems or of integration which has already been outlined is: energy forms fundamental particles → (which integrate to form) simple nucleii → complex nucleii → atoms or the 109 known elements → molecules → compounds → virus-like organisms → single-celled organisms → multicellular organisms → (A) → the integration of multicellular organisms (formation of societies of members of a species, called species societies, leading to the integration of all the members of the species into one individual called the specie individual) → integration of all species → integration of all things (the maturation of the development [of order] of the universe). Humans are currently in the final stage of the development or integration of the specie individual of humanity (transition point 'A').

## The Two Refinement Mechanisms

There are two main mechanisms or tools for the refinement and development of the integration of matter – of learning 'Godliness'. These are, first, 'natural selection' of arrangements of matter or information and, following this, mental (or intellectual or brain or mind) selection of information. In the past we have evasively referred to these mechanisms as 'biological' and 'cultural' evolution.

## 2(a) Genetic Refinement of the Integration of Matter

Initially information refinement proceeded by chance. Random formations of molecules occurred and were destroyed. The information represented by each arrangement or system of matter was confined to itself. This random selection of information was dramatically improved upon with the advent of reproduction of information, DNA replication. The property of replication of the macro-molecule called DNA (deoxyribonucleic acid) turned a brief lifetime into a relatively indefinite one. Replication allowed DNA to defy breakdown in spite of its instability. If the DNA molecule replicated, as it could do, before breaking down and if, in turn, some of the offspring or replicates similarly replicated before they broke down and so on, an idea for a particular arrangement of matter could survive in spite of the instability, the short lifetime, of any example of that arrangement. DNA could cheat instability. Further, if the replicates occasionally varied slightly in their arrangement and properties the process of natural selection would gradually refine surviving down to an art. This is what science tells us did happen. DNA was able to make a business of defying entropy. With its advent, the development of greater stability and order of matter became purposeful.

This property of replication or duplication (called 'reproduction' in single-celled organisms and 'growth' in multicellular organisms), which had the effect of turning a brief lifetime into a relatively indefinite one, was the advent of what we call 'life'. (Although this is now an unnecessary demarcation in the story of development. Life or lifetime existed before this in all systems of matter, even those below the development level of DNA, but the systems were either relatively simple in the variety of matter involved — simple molecules — or relatively unrefined in their ability to develop the order of matter — for instance, they couldn't

**Explains Life**





replicate). With reproduction, the earliest form of which was asexual, came generations.

DNA is actually a very complex crystal. Crystal molecules abound (common salt, sodium chloride, is one) and, in a suitable nutrient, they all have the property of reproduction (of growing their structure from their structure). However, being much simpler than DNA (having far less variety of elements within their molecules) and therefore having little or no potential for adaption/refinement, all the other known crystal forms are much inferior to DNA in their development potential.

Biologists think that the strips of DNA (or its prototype) which were the first replicating organisms would have been similar to today's viruses except that they would have possessed the necessary enzymes or catalysts for their reproduction. (Viruses can only exist within living cells where they use the cell's enzymes to reproduce themselves.) From this early virus-like organism natural selection proceeded to develop all the forms of 'life' that we now have on earth. Very briefly, this development involved refining single cells, integrating them to form multicellular plants and animals then integrating the multicellular animals. (For a relatively unevasive biological analysis of what happened in the step from molecules to single-celled organisms see Chapter 6 of the book *Darwin to DNA, Molecules to Humanity* by G. Stebbins, 1982.)

To describe what happens with DNA replication in a slightly different way. Reproduction of information involves separating the information from the matter. An individual DNA molecule might not survive but the 'plan' or 'blueprint' which details the way in which the matter is arranged within that molecule, that is, its information, carries on or survives in its replicates. At a more developed (what we used to term 'evolved') level, a zebra might die but the 'idea' or system that is the zebra species survives, maintains its stability, although modified or refined by the loss of the individual. So the benefit of this separation of information from matter was that it allowed information to be modified or refined. It allowed an arrangement of a system of matter

to adapt to the present and thus persist in time and where possible grow in size. It allowed an arrangement of matter (information) to develop.

At first reproduction was asexual. It became sexual because the mixing of genes in mating contributed extra variety to select from, which speeded up refinement considerably.

The 'natural selection' of arrangements for their stability or durability can also be called 'genetic learning' or genetic refinement since the information is recorded on the genes.

## 2(b) Genetic Refinement's Limitations

Genetic refinement has three important limitations which inhibit learning about stability and thus limited development of 'Godliness' or integration or order among multicellular animals.

### First Limitation

In natural selection (genetic refinement) the male and female pair constitute the reproductive whole and this must remain selectable. Natural selection selects wholes; it cannot select/compare parts of a whole. This means the specie members cannot become exclusively specialised as a part of a larger specie individual. Imagine if one lion were to become exclusively specialised as the food gatherer for its pride or group and in so doing relinquished its ability to reproduce. Such specialisation assists integration because it is more efficient (it is why the parts in our beautifully integrated body all specialise) but, since the lion won't reproduce, that exclusively specialised trait will not be carried on in subsequent generations. It therefore cannot become established. This inability to make it possible for members of the species to specialise was a severe limitation to full integration and one of the limitations of the genetic refinement process.





There are two means of getting around this limitation. The first is where the specialisations are sex-linked, exclusive to one or other of the sexes. Being sex-linked the trait is assured of being reproduced. The second is where the member becomes part of an 'elaborated reproductive unit'. In this situation the part of the whole responsible for reproduction reproduces all the other parts as well as itself.

This latter was the means by which single-celled organisms integrated to form multicellular organisms such as the human body and the way ants and bees achieved integration. In groups or colonies of ants and bees, the sexual development of workers and soldiers is retarded, 'enslaving' them to their queen ('enslaved' because they are dependent on their queen to reproduce them). They foster her and she reproduces them. By doing this they overcome this first limitation of genetic learning.

**Ant and bee societies explained**

Elaboration of the reproductive unit was not an option for large animals because it drastically reduced the variety of the species on which genetic refinement depended. (For example, instead of 1000 sexual individual zebras being sustained on the African plain there would have been only say 10, each with 100 workers.) Being unable to develop exclusive specialisation or division of labour, larger species were denied the opportunity to efficiently organise their available resources, which limited their integration or development. In particular, where each member of the developing specie system or individual had to remain a whole and do everything itself (get its own food, space, shelter and mate), conflict or competition was inevitable. This generally meant each animal had to remain relatively isolated from the others, non-social and unintegrated (except in times of mating) because increased proximity normally meant increased competition for available food, shelter and space. This problem of having to remain isolated could and was overcome to varying degrees and some integration achieved. Lions for instance were

**Intense mating competition**