Dr. A.E. Wilder-Smith

The Scientific Alternative to Neo-Darwinian Evolutionary Theory:

Information Sources & Structures

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TWFT Publishers
Costa Mesa, California

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Published in collaboration with
Pro Universitate e.v. Roggern,
CH-3646 , Einigen am Thunersee, Switzerland
TWFT Publishers, PO Box 8000,
Costa Mesa, California 92683

ISBN 0-936728-1B

"...To the *thesis* of Darwinian evolution ... has been added a *new cladistic antithesis* which says that the search for ancestors is a fool's errand ..."

Thompson K. (1981) "*A Radical Look at Fish-Tetrapod Relationships*", Paleobiology, 7:153-156, p. 153. Cited from M. Denton, *Evolution: A Theory in Crisis*, Burnett Books, London, p. 139.

"Chance and design are antithetical concepts, and the decline in religious belief can probably be attributed more to the propagation and advocacy by the intellectual and scientific community of the Darwinian version of evolution than to any other single factor."

"It was because Darwinian theory broke man's link with God and set him adrift in a cosmos without purpose or end that its impact was so fundamental. No other revolution in modern times (with the possible exception of the Copernican) so profoundly affected the way men viewed themselves and their place in the universe."

Michael Denton, *Evolution: A Theory in Crisis*, Burnett Books, London W.1., England, 1985, pp. 66-67.

"The decline of active faith among the Muslim intellectuals is surely as catastrophic as is the decline in the Christian faith in the universities of Europe or the United States of America. The Muslim intellectuals still cling to the outward trappings of their traditional religion and will not under any circumstances permit any Christian or believer in alternative religions to question the Koran. But their living faith (as opposed to fanaticism) has to a large extent evaporated just as effectively as the erstwhile Christian faith of London or New York. This decline in the Muslim faith is probably to be attributed to the Darwinian theory of Evolution and its various outworkings among the educated classes more than to any other single factor."

A.I.D. professor at Haceteppe University, Ankara, Turkey.

"No species can be considered ancestral to any other . . ."

Beverly Halstead, "*Halstead's Defence Against Irrelevancy*", Nature, 292: 403-404, (1981).

"No longer in contact with fact of any kind, faith stands now and for ever, prouc inaccessible to the attacks of the infidel"

T. H. Huxley 1890, *Science and Hebrew Tradition IV, Huxley's collected essays*, Macmillan, London 1902. Cited from Francis Schaeffer, *"Escape from Reason"*.

"Undoubtedly, one of the major factors which contribute to the immense appe of the Darwinian framework is that, with all its deficiencies, the Darwinian model is s the only model of evolution ever proposed which invokes well-understood physical a natural processes as the causal agencies of evolutionary change. Creationist theori invoke frankly supernatural causes, the Lamarckian model is incompatible with t modern understanding of heredity, and no case has ever been observed of t inheritance of acquired characteristics; and saltational models of evolution can nev be subject to any sort of empirical confirmation. Darwinism remains, therefore, the or truly scientific theory of evolution. It was the lack of any obvious scientific alternati which was one of its great attractions in the nineteenth century and has remained o of its enduring strengths ever since 1859. Reject Darwinism and there is, in effect, scientific theory of evolution."

Michael Denton , *Evolution: a Theory in Crisis*, Burnett Books, The Hutchinson Publishing Group, 17-21 Conway Street, London W1P 6 JD, 1985, England.

In the following pages we propose, therefore, to advance the first truly scienti alternative to Darwinism. The thesis advanced here involves the today well understo scientific "factor I" developed by Shannon and Weaver in their development Information Theory[1]. Factor "I" is lacking totally in Darwinian Theory.

1 See *"Mathematics of Communication"*, Claude E. Shannon and W. Weaver, *The Mathematical Theory of Communication*, University of Illinois Press, Urbana/Chicago/ London, 1971.

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ACKNOWLEDGEMENTS

I would like to thank the staff at TWFT for its efficient help during the production of this book. Without their help the project would never have materialized.

Messrs. Jim Johnson and Perry Sherman have made many helpful suggestions both with regard to the text and the various graphs and set up the computers to print the latter.

And last but not least, my good wife Beate, who spent many weeks analyzing and correcting the text of the manuscript. Without her help little would have been achieved in these matters.

Foreword

Some two hundred years ago there raged a fierce controversy in scientific circles concerning the validity or non-validity of the phlogiston theory of combustion. Priestley, at that time a recognized authority on this subject, was more or less pressured into leaving England for America just on account of his adherence to the phlogiston theory. He remained in America until his death there and never changed his opinion about the validity of the theory. He stuck to his guns even after Lavoisier and others had shown by the use of the balance that Priestley's phlogiston, if the theory was correct, must have a negative weight!

It had long been known that if zinc metal was heated to redness it burned with a brilliant flame, which observation was interpreted by the adherents of the phlogiston theory to be due to the escape of phlogiston from the zinc during combustion. The resulting white residue left after combustion was known as calx of zinc. According to the phlogiston theory, zinc calx was then zinc minus phlogiston. That is, metallic zinc = calx of zinc minus phlogiston, which latter escaped during combustion. Phlogiston made, as it were, the flame - one could even "*see*" it escaping by watching the flame during combustion!

Further experiments bore out this interpretation of the facts! For, if calx of zinc was heated with a substance rich in phlogiston, then some of the phlogiston in that phlogiston rich substance was transferred to the calx of zinc to yield zinc back again. So the phlogiston interpretation of the experimental facts was "clinched".

Phosphorus shows the same behavior. For phosphorus on combustion loses, allegedly, phlogiston forming thereby an acid - phosphorous acid. Thus phosphorus consists of acid plus phlogiston!

The real state of affairs was, of course, inverted by the phlogiston interpretation of combustion experiments. The alleged loss of phlogiston during combustion was, in fact, the gain of oxygen. It had been known since the sixteenth century that the calx of a metal was always heavier than the metal itself, showing that, if the phlogiston theory of combustion was true, then the phlogiston allegedly escaping during combustion must have a negative weight, for the metal was *lighter* than the calx. When phlogiston was combined with the calx to give the metal, the latter weighed less than the calx! Lavoisier and others showed that the alleged loss of phlogiston during combustion was, in fact a gain of oxygen and that this oxygen produced the increased weight of the calx.

Oxygen was then generated as a gas and duly weighed. Needless to say it showed a healthy positive weight, thus utterly discrediting the whole basis of the phlogiston theory, which had held sway so long in the scientific world of experiment.

But Priestley was just as utterly adamant as was the Lavoisier party. He (Priestley) died as an ardent, though frustrated, embittered protagonist of the phlogiston theory of combustion. However, the younger generation began gradually to be convinced by the force of experiment and by the use of the balance. Priestley's inability to shape his theories according to ever advancing experimental facts had apparently incapacitated his thought processes. He just could not see all this new fangled reasoning based on balances and gasometers. It is, of course, a fact that, after puberty has been reached in man and animals, the plasticity of the mind in dealing with new facts and theories can become impaired. The old adage has it that "you cannot teach old dogs new tricks." Truly, a warning to all of us as we advance in age! But it need not be so - if one learns the discipline of strict and experimentally conditioned thought from youth up. The laying down of *set ideologies* during youth, according to which one learns to think, appears to block the mind for new thought. A student asked me recently (he was about 23 years old), what theories was he to believe on origins. I told him to set his mind on none until he had gathered a lot more evidence on all the possibilities. The secret is to keep one's mind effectively open while gathering the relevant facts.

Priestley's mind was so obsessed with the evidence of the phlogiston theory of combustion that he was entirely incapable of appreciating new evidence pointing in the reverse direction. We find ourselves today in a similar position with regard to the Neo-Darwinian Theory of Evolution. A positive and clinching example of this assertion will not be out of place. Here it is:

It has been discovered in recent years that the genetic programs (genomes) of higher biological organisms consist of something close to a thousand million bits of information (cf. Michael Denton, Evolution: a Theory in Crisis, Burnett Books, 1985, p. 351), information which a library of about one thousand volumes could just about contain. Genomes are known which may contain more than one thousand million bits of information. They include intricate algorithms in *encoded form* specifying the growth, development and probably also the death of billions of cells.

It must be steadfastly kept in mind that were comparable information storage and retrieval systems to occur in any machine made by man, their attribution to random Darwinian processes followed by selection would be treated as a disorder of the central nervous system. The biologist today will remember that the basis of Darwinian theory was developed a hundred and more years ago, that is, at a time when the information theoretical aspect and nature of the genome governing all biology was totally unknown. The chemical basis of the genetic code with its supreme information storage and retrieval system, its replication mechanisms and its self-diagnosis of defects and the chemical repair systems were all undreamed of. At that time not even the term information theory had appeared in the scientific literature.

Surely, viewed realistically and in the light of modern information theory, it is an affront to simple common sense and to basic reasoning processes to postulate that the structure of the information storage and retrieval system common to all biology lies in randomness. For the system builds, services and generally monitors all the biological mechanisms we at present know about in the most complex von Neumann type of machine[1] known to science - the biological cell. For, as we shall see, the biological machine belongs exactly in this category with, however, the faculty of consciousness tacked on to the machine in its more developed categories. How could such a complex machine ever have arisen in random processes subject to natural law only, followed by natural selection seeing that even a simple machine cannot and does not so arise?

The more things change, say our friends the French, the more they remain the same. How could any scientist with the superior intelligence of a Priestley ever have dared to propagate in the face of clinching evidence to the contrary - and to propagate all his life - the phlogiston theory of combustion, when it had been known for years that the calx of a metal was heavier than the metal itself? However, Priestley performed precisely this feat of intellectual acrobatics right up to his dying day. He performed it with energy, venom and sarcasm, too. All reason and evidence towards the untenability of the phlogiston theory of combustion was totally lost on him, so intellectually blind did his crazy theory involving the negative weight of phlogiston make him and his thought processes.

May not a future generation well ask how any scientist, in full possession of his intellectual faculties and with adequate knowledge of information theory could ever execute the feat of cognitive acrobatics necessary to sincerely believe that a (supremely complex) machine system of information storage and retrieval, servicing millions of cells, diagnosing defects and then repairing them in a teleonomic von Neumann machine manner, arose in randomness - the *antipole* of information? An information storage and retrieval system allegedly arose in randomness, the opposite and antipole of the information with which it deals! This latter day Neo-Darwinian theory beats Priestley's intellectual feat by a considerable lead! For to propose that just one single book volume edited in a specific language and code wrote itself by entirely random processes followed by selection would surely produce raised eyebrows even in Darwinian scientific circles - but that 1000 just such volumes should have arisen so, really does go a little far. Yet the Darwinian Establishment still thinks this is the case, so it must be so!

Over and above this, the situation is such today that any scientist expressing doubts about evolutionary theory is rapidly silenced. Sir Fred Hoyle[2], the famous astronomer, was well on his way to being nominated for the Nobel Prize. However, after the appearance of his books expressing mathematically based doubts as to Darwinism, he was rapidly eliminated. His books were negatively reviewed and no more was heard about his Nobel Prize. The case of the halo dating methods developed by Robert V. Gentry[3] tell a similar story. Gentry gave good evidence that the earth's age, when measured by the radiation halo method using polonium, might not be so great as had been thought when measured by more conventional methods. A postulate of this type would have robbed Darwinism of its main weapon, namely long time periods. Gentry lost his research grants and job at one sweep.

It is by such methods, often bordering on psychoterror, that the latter day phlogiston theory (Neo-Darwinism) still manages to imprint itself in pretty well all scientific publications today. I myself gave the Huxley Memorial Lecture at the Oxford Union, Oxford University, on February 14th, 1986. My theses were well received even by my opponents in the debate following the lecture. But I have been to date unable to persuade any reputable scientific journal to publish the manuscript. The comment is uniformly that the text does not fit their scheme of publications.

I recently (Dec. 1986) received an enquiry from the Radcliffe Science Library, Oxford, asking if I had ever really held the Huxley Memorial Lecture on February 14th. 1986. No records of my having held the lecture as part of the Oxford Union Debate could be found in any library nor was the substance of this debate ever officially recorded. No national newspapers, radio or T.V. station breathed a word about it. So total is the current censorship on any *effective* criticism of Neo-Darwinian science and on any genuine alternative. Ineffective criticism of evolution is lampooned *ad nauseam* by all the media. *But why then does the Establishment stick to Evolutionary Theory?*

Certainly not because experimental evidence encourages the establishment to do so. Why then? Apart from the fact that the destruction of Darwinian thought would at the same time destroy the so-called scientific basis of the Marxism and Socialism under which both East and West languish and which govern not only their science but also their politics and finances, there is another important reason for sticking to Darwin. It is as follows:

There exists at present no other *purely scientific* alternative to Darwin which postulates a purely scientific materialistic basis for biogenesis and biology. To repeat: There is at present no *purely scientific alternative to Darwin*. Creationism, being religious, is of little use to the materialistic thought of today. It is simply an irrelevant subject worthy only of ridicule[4]. For Darwin himself destroyed the necessity of believing in God. He explained the world of biology with the help of purely naturalistic materialistic forces. After Darwin, nothing in the way of supernaturalism or transcendence to explain biology was required. God and allegedly supernatural forces are not amenable to scientific manipulation or experimentation, they are on principle far too elusive to be considered seriously by the pragmatic materialistic mind of our generation. They are therefore irrelevant.

We are left then with the natural forces as the sole biogenetic agents. These then are the forces with which Darwin[6] proposed to explain biology. He largely created thereby the atmosphere of present day naturalistic materialism. If these forces did not produce biology, what else did? Scientists whose upbringing and education are Darwinian and therefore naturalistic, have for this reason no real alternative to Darwinism. Here we have perhaps one of the main reasons for the victory of Darwinism even today, even though the accumulating evidence of science is steadily against the theory. This is the reason why the Establishment sticks to Darwinian theory. In their eyes there is nothing else on offer to be taken in the least seriously. (But compare W. Paley[7]).

It would not be true, however, to say that all the evidence was against Darwinism in Darwin's own day and age. For Darwin could gloss over the difficulties presented by the fossil record which then, as today, gave no sign of the gradualism, step by step change of one species into another and higher one, which Darwin had proposed. Today we know for certain that gradual change is not that which the fossils bear out. In Darwin's day one could not yet be sure of this. They speak today unanimously of the sudden appearance of brand new species in the fossil record. For this reason Stephen J. Gould and Niles Eldredge[8] have had such success with their punctuated equilibrium brand of Darwinian evolution. But the overwhelming evidence against Darwinian theory today lies in the discipline of which Darwin and his contemporaries knew just nothing, namely in the discipline of information theory.

It is this new dimension opened up by information theory which has overwhelmed all types and all vestiges of Darwin's type of thought. For it alone explains the sudden arisal of new species in the fossil record. It is information theory alone which is able to present reasonable ideas on its own subject as seen in the DNA molecule.

Only information theory can explain the genesis of self replicating *information* storage and retrieval systems in biology.

In the present volume we have, therefore, endeavored to present and to develop a scientifically sound theory based on the information factor as a *scientific alternative* to Darwinian hypotheses. Darwin thought that natural random phenomena, sifted and filtered by natural selection, could turn up biology. We know today what Darwin did not and indeed could not know, namely that biology's very heart depends upon an information storage and retrieval system which cannot conceivably arise in the stochastic (random) forces of natural law, but must arise in surprise effects or information which *cannot be derived from natural law*[5]. Darwin, had he lived in our era, would have put biology and its genesis down to the following formulae:

1) Matter + time + energy = primeval life (= eobiont, protobiont). This formula would be succeeded by evolutive speciation (sic) according to the formula:

2) Primeval life + time + natural selection = evolutive speciation or "evolution".

In the light of today's understanding of information theory and its surprise effects these two formulae must be supplemented today by the factor "I" or informational effects. Thus:

3) Matter + time + energy + I = primeval life. This formula would be followed by the one for evolutive speciation or "evolution":

4) Primeval life + time + energy + I = evolutive speciation or "evolution" where I = information, surprise effects or "know-how" according to Shannon and Weaver.

It is a fact of science that in order to generate any *machine* the factor information "I" must be hybridized with matter. In the following text we suggest that in order to arrive at the mechanisms (i.e. *machine* phenomena) of biology, the same factor "I" is just as necessary as factor t (= time) and factor energy.

(For literature on recent developments in so-called molecular evolution see Note 9).

Darwin's theory is not so much wrong as it is deficient in the one vital factor necessary to arrive at any teleonomic apparatus such as a machine, including the biological machine. It is not our business as scientists to specify just where factor "I" came from, (although we hint at some possibilities) just as it is not the business of the information scientist to specify just where the information, with which he earns his daily bread, originally came from. Noam Chomsky believes that the *origin of information*[5] is a subject beyond the capacity of the human mind to grapple with. However, regardless of the origin of the information necessary to generate any machine, one fact remains crystal clear. It is that, before matter can be aggregated to any teleonomic machine (biological or otherwise) it must first be hybridized with the surprise effects known as information = "I".

The alternative we here offer to Darwinian theory remains strictly scientific in that it recognizes one vital fact: - the necessity of factor "I" before any machine can be generated from raw matter. This generalization comprises and includes biological mechanisms. *We offer no explanation as to the source of factor "I"*. That is a matter, according to Noam Chomsky (private communication to the author)[5], beyond the capacity of the human mind, because it is and remains a true *surprise effect i. e. not derived from natural law in its generation*. It would need therefor genuine revelation to solve the problem of the *origin* of factor "I" - a matter which every scientist must on principle reckon with. In this volume we offer no speculations on the origin of these surprise effects - though we do give some scientifically valid hints. What we do say is, that without factor "I" the genesis and evolution of no machines, teleonomy nor biology (an example of teleonomical machinery) can possibly be conceived. This is a theoretical and an experimental fact. The alternative we offer concerns simply the common sense necessity today in the age of computers of such a factor "I" in the synthesis of all machines including the mechanical and biological ones.

The above facts have nothing to do with religious convictions, though, of course, they may, like all other facts, eventually lead to such. The facts are simply a scientific matter and as such we present them here as leading to a scientific alternative to evolutionary theory.

1 J. von Neumann, (1966) , *Theory of Self Reproducing Automata*, University of Illinois Press, Urbana, Illinois, USA.

2 Sir Fred Hoyle and C.Wickramasinghe (1981) , *Evolution from Space*, J. M. Dent and Sons, London.

3 Robert V. Gentry, *Creation's Tiny Mystery*, 1986, Earth Science Associates, Knoxville, USA.

4 Stephen Jay Gould, *The Fossil Fraud that never was*, New Scientist, March 12th., 1987, pp. 32-36. Creationists are referred to here as "baddies" (p. 36). See also "*The Panda's Thumb*", W.W. Norton and Co., Inc., New York and London, 1980.

5 See private communication from Noam Chomsky of the M. I. T., Boston, USA. "I am afraid that I cannot suggest anything that seems to me of any value on the topic you mention (the ultimate origin of information). I've written myself on the topic, but only to suggest that I doubt that the human mind can come to terms with the problem - or "mystery", as I called it trying to distinguish approachable problems from impenetrable mysteries, in a chapter of my book "*Reflections on Language*" (Pantheon. 1975).

6 Darwin, Charles, *Origin of Species*, 1859, "I can see no limit to the amount of change to organic beings which may have been effected in the long course of time through nature's power of selection". (cf. 6th. edition, ed. 1962, Collier Books, New York).

7 W. Paley, (1818), *Natural Theology on Evidences and Attributes of the Deity*, 18th. Edition, Lackington, Allen & Co., and James Sawyers, Edinburgh. "We would never infer in the case of a machine, such as a watch, that its design was due to natural processes such as wind and rain; rather, we would be obliged to postulate a watchmaker. Living things are similar to machines,. . . we must therefore infer by

analogy that their design is also the result of intelligent activity. . . David Hume. . pointed out that organisms may be only superficially like machines but natural in essence. . . Hume's criticism is generally considered to have fatally weakened the basic analogical assumption upon which the inference to design is based. . ." "Nor has there been during the last two centuries sufficient evidence for believing that living organisms were like machines in any profound sense." Quoted from M. Denton, *Evolution, a Theory in Crisis,* Burnett Books, Hutchnson Publishing Group, 17-21 Conway Street, London W1P 6 JD, England. Scarcely anyone today who knows his biology and biological chemistry would doubt today that the biological cell is a metabolic machine, which fact reestablishes the validity of Paley's long ridiculed argument and silences David Hume finally and totally.

8 Eldredge, N. and Gould, Stephan Jay, (1972) *Punctuated Equilibria: an Alternative to Phyletic Gradualism in Models in Paleontology,* ed. Schopf, Freeman, Cooper and Co., San Francisco, pp. 82-115.

9 It is commonly asserted in certain molecular biochemical circles that molecular evolution can be followed by the changes in sequences and substituents on nucleotide molecules. Dates have been calculated for the time required for such alleged chemical evolution. Christian Schwabe's work at the Department of Biochemistry, Medical University of South Carolina, USA, throws very sanguine new light on the validity of such speculations on chemical evolution: See: Christian Schwabe, *Trends in Biochemical Sciences,* July 1986, p. 280 for an enlightened assessment of the value and validity of such work on molecular evolution. The varying substituents on hemoglobin and other molecules have been used for the above mentioned purposes in illustrating trends and time requirements for such alleged evolution.

Introduction

Before Darwin and his "Origin of Species", leaders of scientific thought generally believed that the teleonomic (telos = aim) and other creativity observed in the inorganic as well as in the biological world was reasonably attributable to a Supreme Creator. Otherwise they could not reasonably account for the teleonomy (order and purpose) seen throughout the Creation they knew. Their scientific observations forced the majority of scientists and philosophers of those pre-Darwinian times to believe in a Supreme Planning and Executive Creator, almost regardless of their particular purely religious convictions. It would probably be fair to state that a man such as Linnaeus and many others with him believed in a Creator as a First Cause on scientific grounds. They believed too that the biological species we have with us now are substantially the same as those existing at the Creation because they never had observed either in fossils or life any *interspecies* change.

To put the matter more lucidly, typological thought and the idea of the relative fixity of species governed biological creed from the time of Aristotle (cf. Michael Denton, Evolution, a Theory in Crisis, Burnett Books, p. 19, Hutchinson Publishing Group, London WIP 6JD, England). That is, it was believed that there were fixed bounds to species variation determined by the form of the underlying type, beyond which biological variation could not go: nature was, therefore, fundamentally *discontinuous* (M. Denton, loc.cit. page 19) and not *continuous* as Darwin thought.

Such pre-Darwinian thought attributed, then, creativity to a Supreme Creator and held that this Source was also responsible for the maintenance of the Creation too. Variations within strict typological limits were possible, but certainly not *unlimited* interspecies *evolutionary changes.*

However, after Darwin's voyage on the Beagle, this type of thought changed radically. Darwin himself, from being originally an orthodox Christian believing in the relative fixity of species, came later and gradually to believe that species were variable to an *unlimited degree*, (see foreword Note 6)) given time spans which were extended enough. Interspecies change supplanted the already recognized idea of intraspecies change. Darwin's so-called gradualism postulated that in the last analysis all forms of biology were derived from a single simple cell which, by an *unbroken series* of small gradualistic changes, gave rise to an *unbroken chain of steps* from the original cell up to man himself. Biology was, in fact, strictly continuous.

There was one great aspect of reality about which Darwin - and indeed everyone of his epoch - knew nothing. I am referring to the modern science of information theory. For, if a primeval kind of amoeba is to develop up to a primate, that primeval cell will have to gather all sorts of *new* holistic information on how to make kidneys, livers, four chambered hearts, cerebra and cerebella etc. For the synthesis of such reduced entropy systems, as for example a primate brain, requires all kinds of solid actual holistic information which neither the matter of which the primeval amoeba consisted nor the intact amoeba cell contained. Similarly, inorganic matter will have to assemble huge numbers of bits of holistic information before it can synthesize an amoeba.

Assuming that the original primeval form of life was a kind of an amoeba, where did it obtain the almost infinite number of bits of holistic information required to be stored on its DNA information storage and retrieval system? In order to transform the amoeba type of cell to a mammal, a primate, an octopus or a bee orchid more and new bits of holistic information are required. Neither the primeval amoeba type of cell nor the inorganic matter of which it is constructed, contain such highly specialized holistic information which is necessary to transform the alleged amoeba into say an anthropoid ape. Is it legitimate to assume that such incredible amounts of information arose spontaneously out of thin air, that is, by pure chance and natural selection, as Manfred Eigen maintains? Some scientifically credible postulate on such specialized information must be sought *by science*, if the riddle of *macroevolution* and indeed of *biogenesis* too, is to be credibly solved. Later sections of the present work will go into some of these problems.

Darwin observed very closely breeding experiments in domestic animals and noted that quite large change within species limits was possible and within relatively short time periods. He studied the various types of pigeons pigeon fanciers produced. He observed horse and cattle breeders doing the same. But up to Darwin's time breeders had believed that there were strict limits set to the distance such change could go and that the limits were those of the species itself.

Darwin (see foreword Note 6) unhappily for the whole post-Darwinian world of thought, proceeded to extrapolate his domestic breeding observations to include *unlimited variation* - in fact *variation from the amoeba to man type*. He taught that, just as controlled selection in domestic breeding over short periods of time could bring about the observed changes within a species, so natural selection and the survival of the fittest over long periods could bring about *unlimited evolutionary change* from one species to another - in short, from amoeba to man.

It is just at this point - unlimited variation - that Darwin extrapolated too far. For controlled breeding experiments and the accompanying selection certainly bring about species modification, that is, modification *within* a typological form. The horse could be modified from the Shetland Pony type to the shire horse by such selective breeding. But the product of this breeding work was always a horse. Pigeons could be modified from the wild wood pigeon type to exotic pouter types. Wild dogs can be similarly modified to the Pekinese, the terrier or the fox hound by variation and selective breeding. But they are all definitely dogs. No dog has ever been made to move into the cat family by selection, no horse has ever been modified towards the cow and no amphibian has ever been observed to tend towards becoming a reptile.

These facts are all well known. But in order to render the reasons for these phenomena clearer I wish to introduce an alternative nomenclature so as to prepare ourselves to think in terms of information theory in respect of evolutionary speciation problems. Changes within a species are usually referred to as examples of *microevolution*, as intraspecies changes, that is, the change from a wild dog to a Pekinese. However the change from a frog to a reptile or to a bird would be referred to as interspecies evolution or as *macroevolution*.

In the following pages I would like to introduce the term *evolutive speciation* for what has usually been referred to as *macroevolution.* The reason for this proposed change is simple: if a species moves *upwards* in respect of its quantity and quality of genetic information (genome), then that type of speciation will be termed *evolutive speciation.* The new species resulting will contain more specific holistic information than the species from which it was derived. If a monkey were to move up to a man, (evolutive speciation) it would require, to achieve this feat, an enormous amount of additional information to build for example the speech center and the specialized neural co-ordination between buccal cavity, lungs and vocal cords, so as to confer the ability of speech. This capacity of speech, grammatical speech, requires very extensive new information over that which the monkey possessed in his genetic code. Therefore the transfer from monkey to man would require quite incredible amounts of new and specialized holistic information just to wire the neural apparatus behind speech. In our terminology such upward speciation would, then, be termed evolutive speciation. *Macroevolution* is the older, less specific term.

On the other hand, if a wood pigeon is changed by breeding into a pouter, or a wild dog into a Pekinese or a terrier, the general level of holistic species information remains about the same in both new strains or species, though the distribution and grouping of genetic information is certainly altered. This type of change involving only new groupings of already present information we will term *static speciation*, to indicate that the *species level of genetic information* has not been radically changed or raised, even though a new species may result. This term then will correspond to what is generally termed, albeit less specifically, *microevolution*.

Selective breeding or natural selection can both, then, certainly achieve static speciation. Evolutive speciation can, however, be achieved only, if new information required for the construction of new organs, which characterize higher biological order and necessitating increased information has been obtained. That is, evolution in the wider sense of the term - amoeba to man type - will occur only when new holistic information to finance new structures and organs has been obtained somewhere down the line. Since holistic information does not arise spontaneously, this problem of the information required for evolutive speciation must be squarely faced. Mere selection and mutation are here insufficient agents. Static speciation will occur where information redistribution can take place and will generally not alter a species substantially, though viability may be impaired. Regrouping of genetic information may produce a new species without raising the overall amount of genetic information involved in making up such a species. But evolutive speciation will only occur where basic new information is acquired. An earthworm would require quite a lot of new information if it were to develop a new eye to replace its old pigmented light sensitive spot. It would also need some more hydraulic information if it were to be in a position to develop a functional four chambered mammalian heart.

Obviously, then selective breeding in domestic animals and plants will be able to produce static or horizontal speciation. The total information content in such a process will remain substantially constant, although the internal grouping of such information will change. In such processes some information might even be lost without sacrificing the typology of the species. But evolutive or vertical speciation will take place only if additional new information for new organs and new structures to give new and more evolved species becomes attached to the new genetic apparatus in the new species.

In the following pages we propose to illustrate the basic mechanisms governing creativity in general, applying such later to biological problems. However, since the genetics of biology is an exceedingly complicated subject, it is often difficult to treat it pedagogically in a satisfactory manner. We propose, therefore, first of all to treat the subject of creativity and information storage and retrieval systems as applied to the synthesis of simple machines. We consider that it is justified to proceed in this way, since the biological cell, as well as the multicellular organism, are both, in the strict sense of the term, metabolic machines of extraordinary complexity. For this reason, we have thought it as well not to begin by tackling our subject of biological creativity and creation directly with the biological machine as our illustration. Instead we use a graduation in machine complexity first, to serve as an introduction to evolution in biological machinery. Thus, we begin with the simple machine, moving on then to the von Neumann machine. Then we proceed evolutively up towards the biological cell as a metabolic von Neumann machine. And finally we will examine creativity in the multicellular hierarchy of multicellular organisms.

We propose to take this pedagogic pathway for other reasons too: In the first place a simple machine is a teleonomic aggregate of matter which, however, does not reproduce and is therefore unlike and unequal to even the so-called simple biological cell, which does. The biological cell and the simple mechanical or electrical machine are classed as machines because they are both teleonomical. (See foreword Note (7)). But the simple mechanical or electrical machine does not reproduce itself. To render any machine self-reproducing will involve the addition of innumerable new component parts. Von Neumann, see foreword Note (1), worked out the theory and mathematics of man-made machines which could reproduce themselves. He found such machines to be so complex and to contain perforce so many new component parts over those of a simple non-reproducing machine, that they would theoretically become defective more quickly than they could be built and reproduce themselves. The more component parts a machine possesses the quicker it will be likely to go wrong. A point in complexity is soon reached at which such a machine, with so many component parts, will become defective before it can have worked at all.

Von Neumann recognized this practical difficulty and overcame it by introducing two new factors into such a self-reproducing machine. The first new factor that von Neumann introduced - by adding even more and suitable component parts - was the ability of his machine to detect and to diagnose the defective components in its own anatomy which are faulty. This extra diagnostic faculty makes the self-reproducing machine even more complex. The second factor which von Neumann introduced was that of the ability to repair the defective part automatically. The theory and mathematics behind these three abilities of the von Neumann machine are then expressed by self-diagnosis and self-repair of defective component parts, followed by self-reproduction. Such machines are termed, then, von Neumann machines.

The complexity of a man-made-machine possessing these three faculties over and above that of being a mere teleonomical machine, is, of course, phenomenal. In fact, such complexity resembles in many ways the complexity of a "simple biological cell", which also is a metabolic teleonomical machine which detects defects and repairs them and reproduces itself at the same time. In view of the theoretical likeness existing between the biological cell and the von Neumann machine I have chosen to examine creativity, biogenesis and evolutive speciation in the light of the simple machine and the von Neumann machine.

Extrapolating from work of this kind it is relatively easy to proceed to the nature of creativity and the time factor related to it. After this the final step can be taken to the problem of the accession of information in biology. A summary of this step at this stage of our thesis development would involve too many explanations which suffer under the process of summarizing. Thus the following text will have to be consulted for light on these further steps.

PART I

Chapter I

Principles of Creativity

1 *Some Basic Considerations*

Perhaps a preliminary clue would be useful to help to ensure a non-traumatic reading of the following thesis. It is: while turning over in the mind the various principles underlying all creative processes - not excluding the Darwinian postulates on this subject -, it should be remembered that no specifically teleonomical (telos=aim), that is, purposeful aggregate of matter has ever been known to arise spontaneously from what may be termed raw (i.e. non-teleonomical) inorganic matter.

That is, no machine (a machine being defined as a teleonomical aggregate of matter) has ever been known to arise spontaneously from the raw matter of which it is constituted. By just leaving raw inorganic matter to its own devices for long time periods and then sorting out the most useful of any allegedly spontaneously occurring machines afterwards, no genesis of any machine has ever been observed. In the whole world of mechanics and of metabolic motors there has been to date no experimental observation of any machine-type creative properties ever having been evolved by random changes having taken place in raw inorganic matter over even long time periods followed by selection of allegedly randomly produced machine aggregates. On the other hand, in order to produce any machine, inorganic matter always requires hybridizing with extrinsic information (teleonomy) before it can be modelled into any specific machine structure. *Machines are never made of mere matter. They are always made of matter combined with information (= teleonomy) which was not originally present on the raw constituent matter of which the machine is constructed.*

To belabor the point - for it is certainly worth this effort even at the risk of turning off the reader thereby - *inorganic matter never spontaneously buds or sprouts any machines. . .* no matter how long it is left to its own devices. On the other hand, it may give rise to machines of all types if supplied with suitable purposeful information or teleonomy from without. *Inorganic matter plus teleonomic or purposeful information of an extrinsic nature makes machines of all types. As far as I am aware, no real exceptions to this rule are known*[1]. No other mechanism for machine synthesis of any type has yet been uncovered by science.

The above facts concerning the genesis of machines must, however, be extended to the related problem of deriving more complex machines from simpler ones. If any simple machine is to evolve upwards to a more complex one, the same process which we have outlined above for machine genesis, must be repeated for machine evolution. That is, more extrinsically derived information is required before the simpler aggregate of machine matter can assume the more complex properties of the more highly teleonomic machine.

There is no way of avoiding the above conclusion on machine evolution. No trained person would, for example, ever dream of attempting to use chance modifications to a simple machine in order to derive a more complex machine from it. One might be able to *change* existing simple machines by chance modifications to arrive at new machines. But these new machines would be on the same informational or lower level than the starting machine, unless extra quanta of information were added. Chance mutations would not add the information for building, say, new machine organs. Any new machines resulting from chance mutations to the old one would not be informationally more complex than the starting machine. The above summarizes the genesis and speciation of machines but also comprises the formation of new biological species from existing ones by mutation and selection. The new species formed by mutations are on the same or lower informational level than the starting species.

The method of choice for the evolution of every type of machinery is perfectly plain: select the basis machine, add suitable information to the same to build new organs or parts of the machine, then use it teleonomically.

All these considerations presuppose, of course, that all machines are teleonomical and that therefore basic purpose or teleonomy must be added to non-purposeful aggregates of matter if any real purposefulness (i.e. machine function) is to arise in matter. Lower than these basic axioms in machine genesis and machine evolution one can scarcely go. In short, machines and better machines are always products of extrinsic creativity or information being applied to matter according to the quite primitive formula: Matter (non-teleonomical) + t (= time) + teleonomical information = machine teleonomy.

2 *The Biological Organism and the Machine. David Hume's Objections.*

According to Paley[3] (W. Paley, Natural Theology on Evidences and Attributes of the Deity, Allen and Co. and James Sawyers, Edinburgh, Chapter 1, 1818) one may never assume that the design of a watch can be due to natural processes. It would be much more realistic to postulate that the extrinsic informational forces of a watchmaker on the metal of the watch account for the watch. Living things are, according to Paley, analogous to the watch and demand the postulate of a Creator to account for them.

David Hume[2], in early 1779, raised objections - in fact before Paley's time - to this type of argument by pointing out that biological organisms may be only superficially similar to ordinary machines but natural in essence. That is, only if organisms were deeply analogous to machines as we know them, would Paley's type of analogy hold true. David Hume's argument fatally weakened the force of Paley's argument (which appeared later) until quite recently.

The molecular biological revolution of the past 20 years or so has produced a change in theory in that it has shown that the biological cell is truly and in the deepest sense of the word *a machine.* This fact alone brings with it the necessity of accepting Paley's argument in its full force. The cell is certainly an artifact of machine type and could therefore never have been produced by natural forces alone. The deep analogy between cells and machines has been finally established by purely materialistic science beyond any doubt whatsoever, so that today the above consequences must be accepted. The biochemist daily sees appliances, devices, feed-back *mechanisms* and enzyme-substrate *mechanisms* (i.e. machines or their component parts) wherever he carries out his researches. Research papers are full of them. All of these do remind him forcibly of the twentieth century world of advanced technology, for he calls his discoveries *mechanisms.* (cf. Michael Denton, Evolution: A Theory in Crisis, Burnett Books, 1985, pp 339-340). One result of these advances in molecular biology is, among other matters, certainly the general conviction that the biological cell and multicellular organisms are indeed none other than artifacts commonly known as machines. Which fact, of course, establishes the truth of Paley's argument more firmly than at any time in the past one hundred and fifty years. If in doubt, consider the four chambered heart as an hydraulic *machine* for efficiently pumping blood without breaking the "eggs" (= red corpuscles) suspended in the fluid !

Hume's materialistic explanation of the origin of biology is fundamentally the same as that of the pre-Socratic materialistic philosophers. It is that the world is composed of a finite number of particles which are in perpetual random motion. In due course every possible combination of these particles will occur: "A finite number of particles is only susceptible of finite transpositions, and it must happen in an eternal duration that every possible order or position must be tried an infinite number of times. . . the continual motion of matter therefore, in less than infinite transpositions must produce this economy or order and by its very nature that order, when once established, supports itself for many ages." (D. Hume, Dialogues concerning Natural Religion, Fontana Library, ed. 1963, Collins, London pp 155-156 (1779), cited from Evolution: A Theory in Crisis, 1985, Michael Denton, pp 39-40).

Thus, the random movements of matter may theoretically, according to Hume, produce spontaneously in the course of time, aggregates which give the appearance of design and which are teleonomic. Machines show the appearance of design, but design itself can, according to Hume, be fortuitous. One may not forget that the near infinite amounts of time and matter which would be required for Hume's postulates are, however, not available in the space/time continuum as we know it[4].

There is nevertheless some force to arguments of these kinds and such are employed almost universally today to support the idea of evolution by natural forces rather than by design. But there exists one great difficulty which effectively blocks the validity of this kind of naturalistic thought. It is: Certainly, most aggregates of matter could be produced by purely random movement and recombination of the material parts of machines, including those of the biological machine. Thus, one could account certainly for most aggregates of matter on naturalistic grounds. But machine aggregates of matter, that is, teleonomic machine aggregates of matter are, compared with non-teleonomic aggregates, i.e. non-machine compositions of matter, exceedingly and indeed vanishingly rare. Teleonomic structures of matter, in comparison to non-machine arrangements of matter, are relatively speaking, as rare as are the galaxies in cosmic space and as planets in the solar system[4]. The vast majority of space is, apart from dust and solar winds and radiation, empty.

If now one compares machine or teleonomic structure of matter with the galaxies in space or the planets in the solar system, which comparison is mathematically highly conservative, then it will be seen with what sort of probability one could aim at random a rocket "into space" and hope that it would hit Mars or Uranus with no other guidance than that of randomness to ensure a hit. Machine structures, among all the possible structures of matter, are perhaps even rarer than planets or galaxies in space, so that the chance of hitting one of such machine structure by random natural forces is even less than that of hitting Mars or Uranus by pure chance. In order to ensure that the some 2000 enzyme and substrate systems necessary to guarantee the correct functioning of any "simple" cell be correctly synthesized prior to construction of the "simple" cell, one would have to hit "Mars" successively some 2000 times by purely random shots of rockets directed "somewhere into space." There would not be enough matter or time in the whole universe to ensure the production of just one such enzyme system, let alone 2000 simultaneously with their perfectly fitting substrates, on the basis which D. Hume, in his total ignorance of the complexity of biochemistry, suggested. *(But see Note 4).*

All the above expressed doubts on Hume's naturalistic postulates are born out very effectively indeed by laboratory investigation: for never has anyone ever observed the synthesis of any real machine by Hume's natural random forces. Just as rockets have to be aimed and guided by forces outside the matter of those rockets, if they are ever going to hit the Moon or Mars, so matter has to be guided by forces external to it (i.e. by extrinsic information), if it is ever going to form a functional machine aggregate such as an enzyme or a DNA molecule charged with the fabulous holistic information necessary to synthesize a cell or an organism. Since when have postulates and theories taken precedence over experimental facts?

3 *Apparent Exceptions to Section 1*

A wedge may arise fortuitously, i.e. without any specific extrinsic information or teleonomy being added to the matter of which the wedge is made. Yet the wedge may certainly be used as a tool, that is, teleonomically, to split wood. In the same way a tree may be used as a lever without having been constructed specifically, i.e. teleonomically, for that purpose. Pebbles formed fortuitously on the sea shore or in a river may be used as mallets, that is, as tools for the dressing of stones for building. With their help the stones may be chipped into shape and dressed for building construction purposes.

Countless other cases could be cited, as, for example, the thorn used by certain birds as a tool to extract insects from wood. Such objects may be used for a certain kind of machine or tool type of activity but without being specifically formed as machine tools. That is, objects, which have undoubtedly arisen, from a machine viewpoint, fortuitously, may be applied as machines or at least as tools.

Are such objects machines in the strictly specified sense of the word, or are they only tools, not possessing their own positive teleonomy?

In considering such cases it should be kept firmly in mind that the very nature of even a tool presupposes the *application* of teleonomy during its use. Some tools may be specifically fabricated as such by the application of teleonomy to aggregates of matter, just as in the fabrication of true machines - consider the chisel or the punch. But wedges, thorns and tree trunks used as levers do not always possess such specific teleonomy and yet may be used as tools. The application and fabrication of a machine presupposes teleonomy being applied to matter, both, during its use and also before its use to fabricate the machine. For instance, the automobile motor, the sewing machine or the crane all require teleonomical information being applied to matter, both, *during* their construction as machines - and also *after* their construction during their use as machines. The machine requires, then, information, both, to fabricate it and also to use it after fabrication. The tool, if it is specifically fabricated as a tool, requires too its information beforehand, during construction and afterwards during its use. But the fortuitously fabricated tool (the wedge, the thorn etc.) may require information and teleonomy only for its application.

The vital point in our consideration is, however, that when an aggregate of matter is classified either as a fabricated tool or as a machine, that aggregate of matter always requires the addition of teleonomical information somewhere down the machine or tool application line, that is maybe during its construction and for certain during its application. So that neither the machine nor the tool application of matter is ever feasible without teleonomy being applied to it somewhere down the line. . . either to construct the tool or the machine or to use either of them. *Teleonomy is mandatory wherever tools or machines are applied. Without it, machines and tools are therefore quite inconceivable as such.*

As we shall see in the following considerations, this means that if, say, *biological enzymes are true metabolic tools (as they most certainly are) and if biological cells are metabolic machines (as by common consent they absolutely certainly are), then a world of biological machines and tools could never have arisen or have come into use without teleonomy having played a basic role in their genesis and use.* Darwin's main thrust, even today, is that his concept of evolution *eliminated* the necessity of any postulate of extrinsically applied information or teleonomy either in genesis, in the evolution or the application of biology[8]. But Darwin's natural law, which *in itself* is never teleonomical, could therefore never on Darwin's postulates have built or evolved any machine. Which latter statement will, by force of sheer logic as well as of common sense, have to include the teleonomical machines or tools known as enzymes, the biological cell and its aggregates known as the multicellular organism. Thus the necessity of applied teleonomy in biology, which Darwin thought he had eliminated, has been shown by modern research to apply even more strongly than ever before. The above are axioms on which further reasoning can now be safely based, both with respect to the inorganic as well as to the biological world. But before proceeding on these lines we must turn our attention to the urgent problem of the *time* required for any and all machine type synthesis.

4 Time, Creativity and the Evolution of Machine Structure

From a consideration of the above theses it will be clear that mere time as such will have little basic influence on the genesis or evolution of any machine structures from non-teleonomic aggregates of matter. Only time coupled with suitable information or surprise effects not derivable from natural law (but acting within natural law) will have this capacity.[5]

A consequence of this fact is that *simple* machines (i.e. machines which do not possess the functions of the *self-diagnosis* of defects, *self-repair* of defects and *self-reproduction*, that is machines which are *not von Neumann machines)* possess no autogenic evolutionary ability, i.e. they cannot improve or evolve themselves with time. They all *lose* structure with time. To put this quite vital point in another way: the simple non self-reproducing machine possesses no means of extracting any evolutionary progress from the survival of the fittest (according to Darwin) in competition with other simple machines. It is only when simple machines have become self-reproducing machines, that is, von Neumann machines (= self-diagnosing, self-repairing and self-reproducing) that the possibility of upward machine evolution by Darwin's postulate of the survival of the fittest coupled with mutatory changes and selection arises. This postulate is the very basis of Darwin's evolutionary postulate and his explanation of *creativity* in nature by natural law.

Let us take a closer look at this *sine qua non* of Darwinian thought. Since a simple machine does not reproduce itself, it does not pass on to any progeny any mutations good or bad - it has no progeny! The less well adapted non-reproducing cell or machine (a cell is a machine, a metabolic machine, of course) maybe will live for a shorter time than the better adapted one. But both will cease to function (= die) sooner or later and leave no progeny. So that no evolutionary advantages or disadvantages can accrue in a simple non-reproducing machine by the alleged creative Darwinian process of mutation followed by natural selection.

It will thus be apparent that Darwin's small inherited changes (mutations) followed by natural selection could on principle *only become evolutionary after the cell (or machine) has reached the enormous degree of complexity known as that of the von Neumann (self-reproducing) machine.* Simple machines (i.e. those not reproducing, repairing or diagnosing themselves) *cannot* evolve upwards by Darwinian creative mutations followed by natural selection, simply because they do not reproduce. *On simple theoretical grounds, then, upward evolution can only occur in any machine, biological or otherwise, once it has reached the truly enormous complexity of the von Neumann machine.* This subject is treated more fully in the section on von Neumann machines (pp. 22-23). *That is, the evolution of any machine, including the biological one, by the Darwinian scheme could only occur after the most important stages in biological evolution, namely those up to the von Neumann self-reproducing stage, have already been reached. Darwin, then, has no offers to make on just these vital and most intricate evolutionary stages and by what mechanism they may have oc-*

curred simply because he never understood anything at all about these stages.

The next question in this section concerns the influence of "mere" time on a) the genesis of any machine structure *de novo*. In biology this would be classed as the influence of time on abiogenesis. And b) the influence of "mere" time on the genesis of further complexity (evolutive speciation) in the machine, once it has arisen. a) Time itself, as we have seen, does not build any machines - not even simple non-reproducing ones. Engineering experience for many generations proves this point beyond any reasonable doubt whatsoever. In biology everyone knows that spontaneous generation and the self-organization of inorganic matter to living metabolic motors (the biological cell) just does not occur - in spite of Manfred Eigen's heroic efforts in this direction (hypercycles) to save materialistic and naturalistic views on this matter (cf. Das Spiel, Manfred Eigen und Ruthild Winkler, Piper, Müchen, 1975). Time does not produce even the simplest of cell or machine structure from inorganic matter. This point can surely be taken as established by now.

b) This second point is again a simple one: Time itself has never been shown to be capable of building more evolved, that is, more complex machines exhibiting new teleonomic organs from simple ones. This point applies to the biological von Neumann machine as well as to complex mechanical or electronic machines. Time certainly is capable of *degrading* (or simplifying) any complex machine, that is of "devolving" but not of evolving such. The idea that random changes in simpler machines could make new, more complex machines exhibiting new organs and therefore new teleonomy, would not be taken very seriously in engineering circles - although biologists almost universally swear by it for their subject . . . as *the* creative method behind all biological evolutionary processes.

However, as we have repeatedly seen, time, *coupled with the application of teleonomical information*, or know-how, does produce all kinds of machine structures - structures varying from the motor car engine, the sewing machine (simple machines) to the biological self-diagnosing, self-repairing and self-reproducing complex machine (the von Neumann type of machine). Experiments in virus synthesis (Sol Spiegelman synthesis, Kornberg synthesis etc.) have shown this observation to be pretty universal.

But a second factor connected with time must now be taken into account. It is: the time required to synthesize any given machine from its basic raw matter is *inversely* proportional to the quanta of suitable bits of information applied. The time required to reach any synthetic or machine goal is certainly flexible, but it usually shrinks as the amount of applied information or know-how expands. The more refined or concentrated the know-how or information applied to matter in "machinogenesis" is, the less synthesis time, in general, will be required. To put this principle very crudely, "high tech" applied in "machinogenesis" or biogenesis can build *better* and *more complex* von Neumann or other machines, including biological ones in less time than "low tech".

"Low tech" (or "no tech" = randomness, mutations etc.) will be proportionately to the information applied, progressively slower. And "no tech" (= randomness) will yield no machine at all!

Extrapolating the above factors we must now ask ourselves one further question: for the synthesis of any machine of an infinite number of component parts there will be required a corresponding number of bits of information (= so many bits required per component part). According to the theory governing the structure of von Neumann machines (i.e. self-diagnosing, self-repairing and self-reproducing machines) the number of bits of information required to align each component part will be a multiple of the component parts themselves. That is, several bits of information will be required to synthesize and place each component part in the hierarchy called the machine. So that if the number of component parts of an average von Neumann machine approached infinity (as von Neumann himself postulates - see section on von Neumann machines (pp. 22-23) the bits of information required to synthesize and place the components into the machine hierarchy of such a complex machine will be a multiple of infinity! To blandly propose (as Darwinians unwittingly do) that the von Neumann machine known as the biological cell or the multicellular organism could have obtained the required multiple of infinity bits of information from the stochastic processes of natural law, which information is not derivable from natural law, is simply to display an abysmal lack of knowledge of information theory and of what is involved in the construction of a self-diagnosing, self-repairing and self-reproducing machine, be it the biological cell or any other mechanical von Neumann machine.

Obviously the time required for any such synthesis of von Neumann machines will be dependent on the quanta and the quality of the information being applied to the constituent raw matter, which is in process of becoming a machine. *It will surely be clear by now that time itself will be totally impotent in any machine synthetic work of this kind. For if no information is to be applied in the synthesis of a machine consisting of well nigh infinite numbers of components, there certainly the time required will be as relatively infinite as the number of component parts multiplied by a factor giving the bits of information required per part. That is, a multiple of infinite time would be necessary for any such synthesis, which simply means that any such synthesis is purely timewisely impossible.*

This reasoning brings with it further consequences, which also must be faced: Since our universe possesses neither infinite quanta of time units nor infinite quantities of atoms, then the spontaneous synthesis of any simple machine or von Neumann machine (such as the biological cell) is quite simply not feasible. There is not a sufficient supply either of time or of atoms to complete successfully any such spontaneous but random syntheses. Time and atom numbers being strictly limited forbids Darwinian speculations on spontaneous biogenesis and evolutive speciation from a theoretical point of view and from experimental observations. If such huge amounts of information quanta are required for the synthesis of any von Neumann type of machine, then building such machines with the help of no information input is simply vacuous speculation based on ignorance and untenable materialistic ideology. Darwinians today are invited to seriously reconsider as scientists these facts.

5 Infinite Time and Infinite Quanta of Information. Inorganic Matter

In bygone ages the vocabulary used for such concepts such as infinite teleonomic information and infinite time included terms like omnipotence, omniscience and eternity. Due to the prevailing materialistic philosophy which governs the thought processes of our modern world, words of this type have long since disappeared from use and lost their meaning. They certainly no longer figure as part of our scientific vocabulary. However, the development of Weaver and Shannon's information theory together with the evolution of von Neumann's postulates on the nature of self-diagnosing, self-repairing and self-reproducing machines will probably require their resurrection in the relatively near future!

Until now we have considered the synthesis of machines in general, von Neumann machines and the organic biological machine known as the biological cell. When we turn our attention to the synthesis and structure of the inorganic world, strangely enough very similar features turn up again. For the inner structure of matter itself betrays similar phenomena to those we have considered for machines. For example the genesis of matter shows some surprising parallels with those of biogenesis and "machinogenesis". If one regards matter, crudely speaking, as structured energy, (just as a machine is teleonomically structured matter) the structure turns out in the last analysis to be expressible mathematically and therefore to be the result of teleonomy - the structure is *not* random. Consider that the electron orbitals around the nucleus capable of being described mathematically are not random and therefore arose in law. Physics is grappling today with just such mathematical problems in elucidating the ultimate structure and nature of the sub-atom, which necessitates the application of the most abstruse types of higher mathematics to describe their realities[6].

Thus, both, machine structures of the various types as well as the structure of matter itself appear to be based on extrinsic information describable mathematically. It is this fact that precludes the generation of information spontaneously from random or stochastic processes (cf. the section on information, its various types and its origin, Chapter II). No informed person would expect matter to arise spontaneously from energy, if energy were just left for long enough to its own devices. For similar reasons the von Neumann machine and its analogue the biological cell, being dependent on the hybridization of matter with extrinsic information can never arise - or evolve upwards in complexity - by stochastic processes. This is the case even if selection is applied after mutations to an original structure. Vertical evolution upwards (= evolutive speciation) will always depend upon the addition of extrinsic information or surprise effects, although horizontal speciation both in the von Neumann machine and in the biological cell may take place by such stochastic processes, as we have already seen, since such contribute nothing to the sum total of information in which the machine participates.

On the above basis it will be clear how small is the role played by the time factor alone in the creative processes resulting in the formation of matter, von Neumann machines or biological cells.

6 The Hybridization of Information with Matter and its Connection with the Definition of the Term "Miracle".

Biogenesis and evolutive speciation, then, both require the addition of surprise effects or information to matter.

This fact brings with it some important consequences. The circumstance that information is, by definition, a genuine *surprise effect* means, in the last analysis, that information as such is *not derivable from known natural law.* For if one bit of information, that is one genuine *surprise* effect, were *coupled* or were *derivable* from natural law - that is, if there were a causal chain between the bit of information and some natural law, then, since natural law is a known and calculable value, such a bit of information would thereby (i.e, by the causality) be *robbed of its true element of surprise.* One could in such a case very easily calculate it beforehand from the natural law from which it was allegedly derived, thus destroying all element of surprise. The surprise element of all information, if coupled with natural law, would have been lost by the coupling with non-surprise natural law, which always remains constant and therefore devoid of surprise effect. Such facts must be quite clear. For photographs or works of art are not derived from the natural law governing the paper, cloth or other matter on which they appear. Motor cars quite obviously contain information not derived from the natural law governing the matter of which they are made. The car information is with respect to the metal of the car of a *true surprise nature.* Similarly the text (i.e. the information) on the paper of newsprint is a true *surprise to the natural law governing the paper.* These surprise effects are *additional* to all the properties of the paper. Similarly the properties of biological cells and organisms are additional and true surprise effects to the raw matter of the cell. They have been hybridized with the matter on which the life of the cell rides.

Thus, information *cannot* be derivable from natural law - or indeed, according to Noam Chomsky - from the *laws* governing the time/space continuum in which we live. For the latter (space/time continuum) is governed by natural law. Accordingly, Noam Chomsky writes in private communication[7] that the origin of information is a *last mystery* (i.e. it is *not derivable* from the natural law governing our space/time continuum. A.E.W-S.). It is therefore not amenable to natural human thought *processes* in so far as these latter are governed by natural law. Their processes and mere transmission are matters of law - not surprise effects. This must be the case, if Shannon and Weaver's conception of information as a *true surprise effect* is correct.

At the risk of being tedious but because the matter is so vital to our argument, may we emphasize again that information really is a genuine surprise effect (or consists of surprise effects) not derivable from natural law. Thus, genuine information must be derived from *outside* natural law, in order to retain its surprise value in nature. On this basis the hybridization of information with matter always brings with it an *outside* interruption in the normal devolution of natural law. That is, such a hybridization of information with matter in the synthesis of machines or cells brings about an extrinsically derived interference with the normal processes of natural law. Such interference does not necessarily *contradict* the normal processes of natural law of course, but it guides or shepherds natural law to produce structures such as those of a machine which natural law, left to itself, would not produce. All this happens maybe totally *within natural law but superimposed secondarily upon it*. Such secondarily interfering information may work teleonomically on natural law - as in the case of machine production during the hybridization of certain information with matter. Or it may produce works of art as in the painting of a masterpiece by Rubens or Leonardo da Vinci on a canvas. Thus creative works of art are produced by processes of hybridization of this type and not from unassisted natural law.

Now, the definition of a *miracle* is that it is an unexpected and indeed a surprise event generated from outside natural law. It may even guide genuine natural law into unexpected pathways. A miracle, then, is an unexpected, extrinsically guided (i.e. one not guided by natural law alone) operation guiding natural law from without natural law into unexpected teleonomy of one sort or another. Just as matter left to itself produces no machine, so matter left to itself produces no miracles. But if outside information acts on natural law, then a machine - or a miracle - may arise. Similarly extrinsic information acting on matter, machines or the biological cell may produce evolutive effects, which the natural law governing these systems would never produce.

Thus, there is a certain parallel existing between the genesis of miracle by the interaction of outside surprise effects and the work which hybridization of bits of information with matter can produce in machine genesis or biogenesis and evolutive speciation. As already remarked, we know about as little concerning the ultimate origin of information surprise effects as we do about the origin of the motive force behind surprise miracles. But both obviously do operate by the application of information from outside the scope of natural law and both guide natural law into potentially teleonomical paths.

It would seem, then, that the information actuating miracles - in so far as such may be genuine - must arise from behind dimensional event horizons (sic) and constitutes an interaction between the events of one dimension on those of another. The same applies for teleonomy resulting in machine genesis. The consequence of this insight is also far reaching. For, if human or other intelligence is directly or indirectly coupled with creative bits of information producing thereby teleonomy, then creativity in itself may have, in the last analysis, a similar extradimensional source to that of information itself and of miracle.

In the above case, creativity itself would seem to stem from "windows" in dimensional event horizons which divide between our dimensions of natural law in the space/time continuum and the other dimensional source(s) of information. If such "windows" between the dimensions do, in fact, exist, their becoming for any reason "opaque" towards the passage of information would be followed by a concomitant loss of creativity in time and space. If miracles follow a parallel pattern, miracles will become rarer whenever the "window" between the dimensions responsible for the information becomes for any reason "opaque". Maybe the genius among men possesses a large window connecting him with the source of information supplying the creativity. On the other hand, the miracle-working capacity of the prophet might be enhanced by an "open window" on the transcendent. Maybe the prophet's communications through this event horizon will be influenced by his life style in the space-time-continuum!

The creativity which produced the heavens and the earth together with that needed to generate biogenesis and evolutive speciation would then appear to have originated as a true surprise effect or effects from outside natural law and therefore the space-time-continuum. In which case the information required for these types of creativity would have to have been injected into the space-time-continuum from outside it. The space-time-continuum is separated from the other dimensions supplying the surprise effects by event horizons (sic) and these event horizons will be pierced by "windows" through which the surprise effects can be injected from one dimension into another - in this case, the space-time-continuum. This injection of surprise effects will appear in the space-time-continuum in the same light as a miracle as described above (see chapters IV and V on Event Horizons).

It is known to today's physics that behind any event horizon other dimensions can and do exist which are, of course, not accessible to from our dimensions. Such dimensions cannot according to theory, be investigated interdimensionally, so that the event horizons existing between dimensions are impenetratable to all information in the normal course of events. "Windows" as mentioned above would provide the exception to this rule. We will discuss these matters more fully when we treat black holes, dimension theory and their meaning today (chapters IV and V).

Physicists today have few difficulties concerning the real existence of other dimensions, event horizons and the consequent inaccessibility of other dimensions to our research methods from our own laboratories in the space-time-continuum. For further work on this and related subjects consult Paul Davies1, and "The 11 Dimensions of Reality", New Scientist, 9th February 1984, pp. 31-33 and "Dimension Theory ", Science, June 1st 1984, p. 224.

1. Paul Davies (*God and the New Physics*, Penguin Books Ltd., Harmondsworth, Middlesex, England, originally J. M. Dent & Sons Ltd., 1983) suggests (p. 50) that the Second Law of Thermodynamics applies only to isolated systems. Since there is no such thing as a gravity shield to isolate a system from gravity, gravity will penetrate into all systems. Davies believes that since gravity can penetrate into all systems (one can protect no system from its own gravity, and therefore no system is really a closed one) gravity will be able to inject order into cosmic material. Frankly and with all due respect to the new physics, I personally just do not believe that we have any evidence at all that gravitational fields could be responsible for introducing the type of holistic genetical information in the DNA or any other molecule by sequencing it with surprise effects arranged holistically so as to produce,say a heart or a kidney. I do not believe that gravitational forces have even the most remote influence on holistic sequences in a nucleotide or any other molecule for that matter. Nor do I believe that even given a supply of any other external energy order of the genetic sequential type (see Davies p. 50) can be produced even at the expense of increased disorder in any other part of the system. Davies writes: "An expanding universe can generate order in the cosmic material (p. 50). What evidence can Davies produce to the effect that expansion of the above type can produce

genetic sequencing? And yet this is the type of order mandatory for any biogenesis. Certainly no machine, to my knowledge has ever been produced by the mechanism of Davies' postulate.

2. David Hume, *Dialogues Concerning Natural Religion* (ed. H.D. Aiden, Hafner, 1969, First published 1779 Part IV). *A Treatise of Human Nature* (ed. P.H. Nidditch, Oxford University Press, 1978, First published 1739, Book 1, Part 4).

3. *The Works of William Paley* (Oxford Clarendon Press, 1938, vol. IV).

4. Hume's argument here is fallacious, for no matter how long molecular movement takes place, that movement will never produce say, a piston fitting into a cylinder or a watch full of intermeshing cogwheels. For these shapes which make up the parts of a machine are not dependent on intrinsic molecular forces but on extrinsically applied teleonomy. A crystal will grow into a specific shape because valencies control that shape intrinsically. But cogwheels, pistons, valves and cylinders are not dependent on the expression of internal chemical order such as crystal structure and shape is. Shapes of machine parts are entirely dependent on externally imposed information and not on internally imposed order. Therefore Hume's assumption that even machines will arise in the course of time spontaneously, is totally fallacious - and there is no experimental evidence for it. Machines accordingly do not arise by chance in the course of time. The reason is that machines need the external imposition of order. Crystal shapes arise from internal order. Natural internal valency forces produce crystal shapes and structures. External forces or information iimposed on matter from without produce the machine. This is the case even when valency forces, by being guided from without, produce the enzyme which functions as a machine - enzyme and substrate. Enzymes and their allosterical arrangements, often including optical stereoisomerism, do not produce themselves from internal forces but from externally imposed asymmetry. . . i.e. by synthetical optical resolution. Thus, no machine structures will exist even in the outer reaches of space unless externally imposed information has been hybridized with the matter concerned. This information must be used to complete the text concerned. All machines require extrinsic directional information to manufacture them. No machine ever arose from intrinsically derived forces.

5. Paul Davies (loc. cit.) labors under the severe delusion that if God created life, he must have done so by violating the laws of physics and chemistry: "Is life divine? Did God literally manipulate molecules of non-living matter in violation of the laws of physics and chemistry to produce miraculously, the first living thing?. . . Or is life the result of purely natural, of complex, physical and chemical activity . . . Can life be created artificially, in the laboratory, or must it contain an added ingredient - a divine spark - before it can be viable?" These thoughts are so common and so fallacious that a word must be added to clarify. The laws of physics and chemistry are never violated in the building of any machine mechanical, electrical or biological. They are, on the contrary, shepherded or manipulated to produce all machines. Similarly in biogenesis: no laws are violated when the chemistry and physics governing matter are guided into the left and right-handed mirror images of amino acid necessary for producing any viable proteins. In a similar way, miracles of any type can be looked upon as a shepherding of the laws of chemistry and physics to producing otherwise unexpected results. Where the shepherding by surprise effects originates - either from man or God - is not primary here. Gene manipulation has shown that genes and chromosomes can be produced by added external surprise effects or information to matter. Similarly with the synthesis of enzymes and their substrates, imposed holistic information shepherding natural law is required to synthesize many of the highly complex structures which do not and cannot arise if natural law is left to itself. But natural law is not violated in any machine genesis.

6. Paul Davies (loc. cit., p. 133) writes: "Many would argue that God is not really needed as a creator at all except to create time (strictly spacetime) . . . It is hard to see how a timeless God can act at all in time . . . If he is timeless he cannot be said

to think, for thinking is a temporal activity." Obviously if God cannot think, he cannot do higher mathematics. The concept that thought is bound to time is surely an error, for it would mean that thought is connected to increasing entropy whereas, as we shall see, thought and information reverse entropy - see chapters VI and VII. I personally would have thought then that thought, creativeness and information are not at home in space/time at all but rather outside it in timelessness! That is, that thought is primarily not temporal! Paul Davies says in effect the direct opposite of this view.

7. See private communication from Noam Chomsky to the author under note (5) of the foreword.

8. See also Richard Dawkins' book "*The Blind Watchmaker*" lecturer in Zoology at Oxford University (*The Blind Watchmaker*, R. Dawkins, Longman, Scientific and Technical Group, 1987, London, England). Dawkins concludes that, since a watch, being a machine (no matter how "defective"), demands a watchmaker to have made it. But since the watch is obviously defective, the watchmaker must have been blind and impersonal - just as demanded by the evolutionary hypothesis. "The whole book has been dominated by the idea of chance, by the astronomically long odds against the spontaneous arising of order, complexity and apparent design. We have sought a way of taming chance, of drawing its fangs." Everybody knows that the odds against chance mimicking design are so astronomically high that they can be discounted. Besides the odds against being so long, there are, however, other reasons for rejecting chance as a synthesizer of any types of machines, including the biological one. They include: the random molecular forces, on which Dawkins and his friends count, never produce at any time in our experience the niceties of machine design. To clinch this matter of chance never producing machine structure, consider an example with which we are all very familiar: Chance and random molecular movement, on which Hume, Darwin and now Dawkins rely, never can produce, say, the piston rings and the corresponding grooves in the pistons, the camshaft and the timing gear, the carburetors and jets, the electronic make-and-break gear for spark plug timing, the gears, back axle and differential necessary for the machine structure of the automobile. Chance and randomness in natural forces just do not produce watch springs, integrated intermeshing watch cogwheels, hair springs and escapement mechanisms. These mathematically designed parts are dependent on holistic information which no "taming of Chance and drawing its fangs" could ever be expected, even in billions of years, to produce. In just such a similar way no scientist who knows his organic chemistry would ever dare to maintain - as Dawkins implicitly does - that the forces of chance could be so tamed as to produce the 100% optical purity so necessary for any and all optically active enzymatic systems in the cell. For details see my "*The Natural Sciences Know Nothing of Evolution*", (loc. cit.).

The plain fact is that the claim that chance can produce machines and machine parts is based on plain ignorance of the synthesis of mechanical, electronic and biological machinery. Valencies and stochastic natural forces never produce any machine, biological, mechanical or electronic. No amount of the "taming of chance" can produce their necessary bits and bytes of informational surprise effects, for such do not arise in natural law or stochastic molecular movement. To make the "watchmaker" behind the "watch" (the biological cell) blind, is merely to insult him to his face - in spite of the incredible foresight he showed in making the "watch". To say that the watch is degenerate is one matter, but it is another to say it was made that way at the start - by a blind watchmaker, implying an incapacitated one.

Dawkins maintains that a defective watch implies a defective watchmaker who designed it defectively, i.e. that he was blind. Has Dawkins never thought of an equally plausible or better theory to explain the defectiveness? Namely that the most perfectly designed von Neumann machine, if it were fitted with a truly free programming device known as free will, could very easily make itself defective? In such a case the "blind watchmaker" would not account for the defectiveness but the fact that the perfectly autonomous "Watch" elected to make itself defective, thereby showing how perfectly autonomous (in God's image?) the watchmaker had made the watch. Dawkins gives only one possible explanation of the defectiveness as if it were the only one possible, which it is quite obviously not.

Chapter II

Primary and Secondary Information and its Sources. The Origin and Development of the von Neumann Machine up to Consciousness

1) *Theoretical Considerations*

As we have seen in the foregoing text, the construction of all machines and teleonomic aggregates of matter - and even energy - requires an external source of information - a source which is not derivable from natural law. The question now arises as to the source of those necessary surprise effects.

Some scientists still believe that the necessity of assuming an *extrinsic* source of information may be obviated by the postulate that information in general, like mutations and entropy, arises spontaneously by stochastic processes. Manfred Eigen[1] among other savants freely admit that the biological machine requires information of some sort - extrinsic or intrinsic - for its synthesis. The question of the *source* of such information loses its sting - and incidentally its embarrassment too, for materialists - if the necessity for such a source of information becomes self-cancelling in that ubiquitous randomness generates information everywhere spontaneously. This self-cancellation is achieved by proposing that information pops up anywhere and spontaneously. Indeed, it is proposed that information, like entropy, increases ubiquitously and spontaneously within and according to the principles laid down by the Second Law of Thermodynamics.

It will be remembered that the Second Law of Thermodynamics teaches that, although the total energy of the cosmos remains constant, the amount of energy available to do useful work in the cosmos is always diminishing. There are, of course, many ways of formulating this universal observation, but it really means that, all things being equal, that which is likely to occur will occur - which is of course the destructurization of all structure. This destructurization tendency would include the loss of the structure of information. Thus, according to the Second Law, one would not, on the surface of things, expect information and its *unexpectedness* to occur spontaneously coupled with the *expectedness* of natural law.

If, however, information, like entropy, really does arise stochastically, as Eigen maintains, then matter should, under the correct conditions, be able to undergo self-organization even to machines, just as Eigen maintains. This means that spontaneous generation and evolutive speciation, both of which require additional information to be hybridized with matter, should be feasible - which is just what Darwinians and other materialists wish to establish, even though no one has ever experimentally observed such processes. Manfred Eigen's famous hypercycles[2] constitute an example of this wish to establish the self-organization of matter right up to biology. For only by establishing the feasibility of the self-organization of matter does Darwinian principle itself become feasible.

In order to resolve this question of the theoretical and experimental feasibility of self-organization of matter we must consider first of all the nature of *potential information* and then that of *actual* information[3].

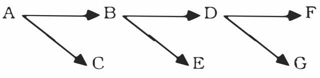
2) Actual and Potential Information [3]

First of all, it should be clearly kept in mind that, if information, like entropy, arises spontaneously, then it can under no circumstances be a true *surprise effect.* It would have to be in that case a *non-surprise effect* for it would be under any circumstances *expected* according to the Second Law. *If information, like entropy were to arise stochastically, then the basis of Shannon and Weaver's definition of information would be fundamentally and thoroughly destroyed.*

Secondly, there are two forms of information which must be strictly differentiated and kept apart. They are potential and actual information. First of all we must look at the term known as *potential information* and then compare it with the term *actual information.*

The term potential information, as we shall see, is certainly comparable to the concept of entropy, whereas the term actual information is the antipole, as it were, of entropy. Actual information could thus be compared to negentropy whereas potential information would correspond to entropy in many respects. The former can never be synthesized by stochastic processes, whereas the latter may. Let us explain this matter, which I have pointed out in detail in my book "Planender Geist gegen planlose Entwicklung" (Schwabe Verlag, Steinentorstrasse 13, CH-4000 Basel, Switzerland)[3] In the above book I have shown, how effectively Manfred Eigen confuses the above two terms in order to arrive at his conclusion that information, like entropy, arises spontaneously and that therefore spontaneous abiogenesis is theoretically feasible. Eigen makes his point that "information" arises spontaneously by not specifying whether he means potential or actual information. He is correct, - if he means potential information -, but seriously in error when applying his reasoning to imply that actual information arises spontaneously - just like entropy.

The following reasoning will clarify this issue: If one bit of information represents one surprise effect, then the following considerations will demonstrate the surprising fact that this bit can, in fact, arise spontaneously. As an example let us take the synthesis of substance F from substance A via the steps B and D as shown below:



Let us assume that for the synthesis of B or C from A two synthetic routes are *equally* likely , but that *either* B *or* C must be formed - and with exactly *equal likelihood* - from A on reaction. Normally, then, where many molecules of A are present, 50% B and 50% C would result from normal reaction. But where *one* molecule of A is present - and no more - then *either* B *or* C will be formed. Whether B or C is formed will depend on one bit of information or one surprise effect. For one cannot tell as an observer outside the system which will result. One bit of information tips the result of the synthesis *either* to B *or* to C. If, in fact, C is formed, then there can be no further chance of the synthetic chain ever reaching the desired substance F.

Our synthetical example here is by no means purely hypothetical, for during the synthesis of optically active isomers carrying just one asymmetric carbon atom, a similar situation will result. If just one molecule of a precursor of such an asymmetric substance were present in our system, whether the levo or the dextro molecule is formed will depend on similar informational considerations.

Similar situations will result in the further synthetical steps from B to *either* D *or* E, for either D or E will be formed with equal facility. To ensure that either D or E were formed would require one bit of information. But if E is formed there will be no further chance of F ever being achieved in the synthetic chain. Similarly for the steps leading from D to either F or G.

It is clear that the route from A to either B or C may be decided by a 50% chance occurrence, for both syntheses are equally likely on statistical grounds. If it is, then, it will be 50% possible to arrive at B (in many reactions) by random processes which will simulate the work of one bit of information or surprise effect per molecule. By the addition of one bit of extrinsic information (by guiding the synthesis externally) per unit, it would be possible to guide the synthesis from A to B with 100% certainty.

The point here is, that the correct route *can* be reached with a 50% certainty by chance, that is, by random processes. Consider, too, the fact that the next stage from B to either D or to E can also be reached by random processes. Each stage thus offers a 50% chance of reaching the required synthetic goal.

In proceeding from A to B then, there is a 50% chance of reaching B. In the next step from B to D there is also a 50% chance of being successful by random processes. The overall chance for the two steps will thus be 25% for reaching the goal. That is, each leg of the synthesis reduces the chance of the synthesis going the correct way by one half. That is, the more steps in a synthetic chain the less the chance of reaching the synthetic goal. Each step costs a 50% less chance. The longer the synthetic chain the less the chance of arriving where one wants to be.

We conclude then, that the results of *single* bits of information can be arrived at randomly. But each successive step in any cumulative synthesis of the type cited halves the likelihood of the following required synthetic stages being reached.

This brings with it the following consequences: When one considers the multistage syntheses involved say in the construction of an eye, a kidney or a heart - or even of a brain with its billions of teleonomically interconnected neuron nets[15], each step of which can go in the wrong direction - it will be clear that well nigh infinite numbers of separate synthetic steps are required to accomplish each synthetic goal. Thus, almost infinite numbers of synthetic steps can go wrong in such a sequence. There is an additional complication in such steps, which is often forgotten:

- where asymmetric carbon atoms are involved in such syntheses, it is well known that dextro and levo configurations are synthesized with equal facility. If the levo molecule is "correct" then the dextro molecule will be "wrong" with exactly equal facility!

As a result of these considerations it will be clear that the chances of reaching any synthetic goal in a synthesis chain involving an almost infinite number of synthetic steps of the type under discussion will be almost infinitely small. For precisely this reason, to build a heart or a brain both involving asymmetric carbon atoms and large numbers of steps by randomly formed bits of information would require an almost infinite number of atoms, bits of information and an almost infinite amount of time. To supply the matter for the almost infinite number of synthetic pathways which went wrong, would require an almost infinite amount of matter too. According to the calculations of Sir Fred Hoyle (The Intelligent Universe, Holt, Rinehart and Winston, New York, 1984)[4] our present space/time continuum could supply neither the time nor the atoms necessary for the synthesis of even one cell using random processes to do so.

A further aspect of information in all synthetic work must now be examined. In order to carry out successfully any multistage synthetic work the individual bits of information we have looked at must be integrated with one another holistically. That is, a total, holistic concept must be superimposed on to the separate individual bits of information (however formed) to produce an overall statistical synthetical informational picture.

To render this concept of holistically orchestrated information clearer, consider for a moment Mozart's "Eine Kleine Nachtmusik". This masterpiece consists in the last analysis exclusively of the individual notes present on any piano or other keyboard. Each note corresponds, as it were, to one bit of information, i.e. to one surprise effect. For one note, in contrast to mere noise, corresponds to one surprisingly constant wavelength (and maybe its harmonics). But although notes make up the masterpiece known as "Eine Kleine Nachtmusik" they alone certainly do not contain the whole essence of the work. To achieve "Eine Kleine Nachtmusik" the constituting notes or surprise effects have to be holistically integrated with one another - or sequenced. The *melody* has to be imposed on to sequential groups of keyboard notes. Only then does Mozart's immortal work disentangle itself from the mere notes. Put another way, secondary actual sequential information has to be imposed on to the primary information of the separate individual notes. Bits of information in themselves will never build "Eine Kleine Nachtmusik" - or a four chambered heart. To achieve this end, the bits have to be secondarily sequenced. Secondary information has to be superimposed on primary bits of information - just as in the Mozart masterpiece, so in constructing a four chambered heart.

Thus there are two levels or hierarchies of information which have to be taken carefully into account: the simple bit of information or surprise effect. This would be the primary information. And the secondary or orchestrated holistic information which is superimposed on to many bits of individual primary information. This produces a new hierarchical level of information - just as "Eine Kleine Nachtmusik" was imposed upon ordinary keyboard notes to produce the masterpiece not present in its individual notes.

This situation is, in principle, no different from the A to F syntheses we have been considering in this section. The single chemical bondings leading to simple synthetic results or substances correspond to the primary information. The whole train of sequenced information producing an overall synthetic product or melody would answer to the secondary information. Single substances would be synthesized by primary information, whereas the synthesis of a four chambered heart, a fully wired brain or a speech center with its coupling to lungs, tongue and vocal cords would correspond to "Eine Kleine Nachtmusik".

Such being the case, we are now in a position to understand why Eigen's claim that "information" arises like entropy stochastically is indeed a dangerous half-truth. The basic "notes" of primary information can certainly so appear, but never the orchestrated bits of secondary information imposed onto the primary "notes". It is these secondary effects which carry out the synthesis of brains, hearts and kidneys, to say nothing of eyes and ears - and melodies.

The important question is therefore: where did such secondary orchestrated holistic information, information, which is necessary to synthesize concepts such as a biological cell, a species, or a melody arise? Mathematically it is not reasonable to attempt to conceive of this type of secondary information, information which is required to synthesize machines, melodies or von Neumann machines, to arise stochastically. *This is why machines and von Neumann machines have never been known to arise spontaneously.* Machines - and melodies - of all types need secondary, that is orchestrated information, both for their genesis, repair (together with associated defective diagnosis) and evolution. The reproduction of von Neumann machines is very especially dependent on such secondary information.

It is certainly no trivial matter, therefore, when we address ourselves to the question of the source of this highly conceptional secondary information. For it concerns the origin of all machines, including that of the von Neumann machine, be it purely mechanical or be it biological.

But before we leave this subject, there is one example we might perhaps cite to bring out even more decisively the difference between primary and secondary information. Non-orchestrated primary "information" (mere notes, surprise effects) could be produced by a cat randomly walking up and down on the keyboard of a piano. Each note struck would be a true surprise effect even though stochastically triggered. The piano is built to produce relatively constant surprise wavelengths on being suitably (even randomly) struck. But such a technique of producing primary non-orchestrated information would never produce "Eine Kleine Nachtmusik". Secondary information has to be imposed on to the primary information to achieve that high end.

This principle lying behind primary and secondary superimposed information is quite general. A half-toned picture, for example, is made up of black dots on white paper. Black dots on white paper evenly distributed are, strictly speaking, evenly distributed surprise effects. If, however, the black dots are shepherded into groups, a picture of yourself can arise. This is the basis not only of half-toned newspaper pictures but also the basis of television screen images, with the difference that lines instead of dots are used in groups to produce the TV picture. In each case the surprise effects of black dots or lines are used as the basic image carrying material. Information imposed on to this basic raw material gives the picture consisting of secondary information. The information does not arise in the notes or lines, but in their grouping secondarily.

What materialists among our eminent scientists are in fact maintaining is that the laws of inorganic matter are entirely responsible for all the teleonomic properties (i.e. pictures, melodies) of biology round about us. But it must be remembered that it is certainly not the paper and its laws which are responsible for the dots and their distribution on the paper. They were put there by agencies outside the paper. And agencies outside the paper took care of the grouping of the dots (or the lines in the case of television) to produce the pictures and images seen in our newspapers and on TV-screens. Similarly, in biology: it is not the inorganic matter alone which carries all life as we know it which made the basic bits of information or their groupings and sequencing, but surprise effect producing agencies not governed by natural law, which shepherd or group natural law - that is, sequence it.

One further illustration will suffice us to crystallize precisely the difference between potential and actual information. Again I risk turning my readers off by belaboring this matter to such an extent. But world leaders of Darwinian theory, who have as it were the run of the scientific literature which pours daily from the printing press (and which is denied their gainsayers) continually maintain that, since information arises spontaneously, therefore there is nothing unscientific about maintaining that spontaneous generation and evolutive speciation arise according to Darwinian theory from natural law. As we have already seen, this is a particularly vicious half-truth.

The illustration: if one takes a photographic plate say 5 cm X 5 cm and fills it with randomly distributed black dots, say one thousand of them, so that the plate appears slightly fogged by the thousand black dots, the paper will be half-toned. Each of the one thousand randomly distributed black dots is in itself a surprise effect, even though its *distribution* is random. The film or plate itself is white, so that a small area of black is a surprise effect in itself.

These one thousand random dots could be used to make, by suitable grouping, a picture of say yourself - the newspapers make their pictures in this way by simple grouping. But out of those very same identical one thousand dots one could by suitable alternative grouping make any pictures in the world - it might be a cow, a Bentley racing car, a boat, a piece of landscape, a tree, a wedding, a house, a motor cycle - or indeed whatever. The *potential* for making pictures out of the one thousand randomly distributed dots is *infinite*. For the image of a mowing machine, the picture of a car engine, a baby or an old man can all be built out of the potential of these one thousand dots. Although the randomly distributed dots show *actually no picture* (they resemble nothing so much as a slight but indescribable fog!), *potentially* they could build an infinite number of images. Although each dot represents one surprise effect, the conglomerate of random dots depicts no picture, gives therefore no *actual* picture or *actual information*. However, the dots, randomly distributed, do possess *the* *capacity* for infinite amounts of information - but communicate none. A random distribution of one thousand dots possesses therefore *infinite potential information* but *no actual information*. As we have seen, the single bits of information or dots can arise by chance processes, they can "fog" the paper. But the picture, which could be obtained from these random dots, - the cow, the old man or the mowing machine - cannot arise by random processes. This means that potential information (the random dots) can arise like entropy does, i.e. by random processes (cats walking on piano keyboards!), but actual information (the actual pictures obtained by grouping and shepherding the dots into specific shapes and images) never arises by random processes working on natural law. This is merely another way of saying that natural processes and randomness may well "fog the paper", but they never produce photographs - we are aware that clouds may simulate vaguely pictures - and the moon may remind us of a face!

Exactly the same considerations apply in the synthesis of the information on the DNA molecule. The various letters of the genetic code (guanine, thymine, cytosine and adenine) can certainly get randomly into position on the molecule, in fact they can as it were "fog the molecule", just as the random dots on the paper "fog" the paper. But the sequencing of the dots to code the information to make a heart, an eye, a kidney or a brain requires actual i.e. sequenced information, otherwise no genetic "picture" will ever appear.[5] If DNA molecules appear from random chemical processes, there may well be all the "dots" on it, but in a random distribution, which merely "fogs the paper" and produces no genetic picture. The secondary information resulting from sequencing or shepherding the "dots" (= letters of the genetic code, the four bases) represents actual information. The potential information (= the random distribution of dots) may be infinite in the random distribution of genetic code letters and yet no organs such as kidneys or hearts will ever be produced, because such require "pictures" resulting from actual information. No picture ever results from "fogging the paper". Manfred Eigen and others in their support of the Darwinian line of thought, are, in fact, maintaining that random processes (potential information) produce increased negentropy and therefore increased information. They forget to specify that it is potential information which is thus produced and not actual information - fogging the paper rather than photography!

If the 26 letters of the alphabet or the total keyboard notes on a piano are taken as our "dots", = basic bits of information, then mixing up the letters (or notes) randomly in a revolving drum will produce a maximum amount of *potential information*. For out of all the letters of the alphabet and of all the notes on the keyboard of a piano one could obtain potentially all Beethoven's or Mozart's masterpieces or all the masterpieces of Shakespeare, C. S. Lewis or of Mark Twain. But one little necessity for the obtaining of these two types of masterpieces (of music and of literature) may never be overlooked: it is the necessity of *shepherding* the potential information on to the primary, so as to obtain the "photograph" of actual information out of the "fogging" of potential information. Eigen and others, in their fervor for Darwinian materialistic doctrine, which insists on information arising spontaneously like entropy, maintain that no extrinsic shepherding of information is necessary in order to obtain the "images" (= photographic images) of biology.

3) Some further Details on the Actual Information required for the Synthesis of von Neumann Machines

Some of the basic merits of von Neumann's work[6] lie in the fact that he brought into clear relief the informational differences between a simple machine and the self-reproducing one. For the simple machine to become a self-reproducing one requires the addition of a vast number of new component parts to the simple machine. This fact brings with it the absolute necessary of vastly increased complexity. The increased complexity can be viewed, of course, as an increase, a vast increase, in negentropy. A consequence of this inflated negentropy is an increased liability to lose or shed complexity. That is, put crudely, for the machine to go wrong - because some of the component parts go awry or become defective quicker than the machine can be built, then there comes a stage in the increase of complexity at which the machine can never work. For it becomes defective quicker than it can be built.

Von Neumann found that building a self-reproducing machine involved so many component parts in the process of making it self-reproducing that it could theoretically never reach a functional state - it would become defective more quickly than the designers could build it. Therefore von Neumann came to the simple and yet highly complex conclusion, that, in order to obtain a self-reproducing machine, that machine had to be made even more complex! For it would have to have an inbuilt system of a) self-diagnosis of defective component parts and b) a self-repairing mechanism to repair the component parts found to be defective. a) and b) added enormously to the complexity of the already supercomplex machine. These facts mean that the complexity of a mere self-reproducing machine is such that it would never suffice in itself - as a purely self-reproducing machine - to act as a functional machine. Such an exclusively self-reproducing machine (i.e. without self-diagnosis and self-repair), in itself could not be viable - without the additional factors of self-diagnosis and self-repair. *That is why one does not find a biological cell which is self-reproducing but not self-diagnosing and self-repairing at the same time.* The whole "treatment" i.e. self-reproduction, self-diagnosis and self-repair has to be an integral holistic mechanism, otherwise the Second Law catches up with a mere self-reproducing machine.

Thus, there are three dimensions in complexity necessary to render any "simple" machine self-reproducing. The first dimension in the complexity of component machine parts confers self-reproduction on the machine.

But such a machine cannot, on theoretical grounds, be self-maintaining as we have seen. Self-reproduction has to be supplemented by a second dimension in number of component parts, namely that of self-diagnosis. This is followed by the third dimension (or order of complexity), that of self-repair. The three orders or dimensions of complexity in numbers of component machine parts are so incredibly high, that it is difficult to even conceive of such degrees of negentropy.

Von Neumann examined the mathematical problems involved in all these orders or dimensions of complexity and concluded that they were feasible and that such machines would function at least for a time. Our present knowledge of biology with its self-reproductive. self-diagnostic and self-reparative properties - all integral with one another have only gone to show how right von Neumann was in his mathematical treatment of these problems. For a thorough understanding of von Neumann's genius helps us today to comprehend the absolute genius behind all biological organisms - even to the separation in viruses of the self-reproductive capacity (for which the host cell supplies the metabolism) from the other two functions. The vast dimensions of additional complexity required for each horizon of activity and complexity excludes any likelihood whatever of any of them being arrived at by stochastic processes followed by selection after Darwinian modes of thought. And as we have already seen, until the super-complexity of self-reproduction has been achieved, *no evolution at all according to the Darwinian scheme of mutation and selection is possible*.

Many engineers will, I imagine, concur with these ideas on the nature of the von Neumann machine and the analogies to be found in the biological organism. Yet some engineers still pay at least lip service to the Darwinian scheme of things when applied to biogenesis and evolutive speciation. Such is the case even though they would never hesitate for a moment to reject the Darwinian scheme, if they were asked to apply it anywhere outside biology. Why? What difference of principle separates the two areas of any machine genesis and evolution - biological, mechanical or electronic?

4) The von Neumann Machine and the Phenomenon of Consciousness [7]

At this juncture there is one proposition which we dare not leave untouched. It concerns the fact that no machine ever constructed or conceived of by man has ever shown the slightest provision for any sign of awareness, that is self-awareness or consciousness. Plenty of machines constructed by man today show signs of artificial intelligence, that is, they are able to profit from past experience and can therefore lay claim to intelligence[7]. But self-awareness, self-consciousness is an entirely different phenomenon. No one to date has ever succeeded in even defining the conditions necessary to develop even artificial consciousness, let alone biological consciousness. In fact, it is not yet known exactly how to define what this property of consciousness exactly is.

Much work of a pioneering nature in this area was done by James T. Culbertson in the University of Illinois some years ago (cf. The Minds of Robots, Sense Data, Memory Images etc., Urbana, Illinois, University of Illinois 1963, See also A. E. Wilder-Smith, The Creation of Life, TWFT Publishers, P.O. Box 8000. Costa Mesa, California, 92628, Fourth Printing, 1988.)[8] Culbertson believed that suitably coupled or staggered nerve nets would automatically produce consciousness, but gave no concrete evidence for the experimental success of his theory. There seems to be, in fact, little clinching evidence at all that consciousness is irrevocably coupled to matter or even to nerve nets, but one can be dogmatic about very few aspects of the nature or mechanisms of consciousness today.

However, it must be remembered with respect to the matter of consciousness that the von Neumann machine known as the biological cell is by no means just a "simple von Neumann machine". It is a von Neumann machine endowed with an additional property not foreseen in any theoretical model developed by von Neumann, namely that of self-awareness or self-consciousness. Even the so-called "simple" biological cell shows some signs or evidence of some sort of self-awareness in its behavior towards certain external stimuli. The raw matter of which such simple cells are constructed shows certainly no experimental signs and is - apart from Alfred North Whitehead's and others' work to the contrary - not experimentally conscious.[9] It must be remembered in this respect that there is some rather diffuse evidence to support the view that even single cells can display behavior apparently signalling hunger and the accompanying frustration. The view is, that, although *behavior* does not consist in consciousness itself, behavior *may* signal consciousness. A dog or horse when hungry express their consciousness of hunger by certain behavioral patterns. To watch a starving horse's behavior is an experience never to be forgotten.[10] This evidence of the connection between behavior and consciousness is, of course, not clinching, for one could build a robot dog which barked if its tail were trodden upon. But no one would ever believe that the robot dog experienced the real pain of a tail being trodden upon, although its pure behavior might be mistaken as a signal of the *consciousness* of pain. Reports of signs of frustration shown by a hungry monocellular organism must therefore be treated with caution - for the amoeba so watched might be behaving like the robot dog when its tail was trodden upon!

In all discussion about consciousness, percepts of pain, hunger, joy or sorrow one has, therefore, to *assume* that, when an animal or a human writhes in agony, both are *consciously* experiencing the same kind of pain percept. Thomas Hobbes in the Leviathon made the point few philosophers since have risked making, namely: "*Assuming* the similitude of the thoughts and passions of one man to be the thoughts and passions of another, whoever looketh into himself, and considereth what he doth, when he does think, opine, reason, hope, fear &c. and upon what grounds he shall thereby read and know what are the thoughts and passions of all other men upon the like occasion." (cf. Nicholas Humphrey, New Scientist, 19th. August 1982, p. 474).

When a pigeon appears to show insight (New Scientist, 29.3.84, p. 22) or a hungry amoeba apparent frustration, Thomas Hobbes's statement must be remembered: we *assume* the parallel nature of percept across the species barriers from man to animals or other organisms and across the individual barriers between separate human beings. It is always an *assumption* with which we have to do - for consciousness must remain the secret of the individual experiencing it.

If one describes consciousness as Karl Popper[11] describes his Worlds I, II and III, then consciousness could be designated as the *area of percept* which experiences pain, memory, joy, sorrow, hunger, satiation - in short all the areas of percept which experience the nervous impulses fed into them by the five senses of the nervous system. And these areas of percept must be coupled by memory so as to ensure individual continuity of experience. But, as we have already seen, inorganic matter could only function as an area of percept (as a memory machine, for example), if it first became hybridized with extrinsic surprise effects or information. So that information is a precondition of consciousness. Therefore. randomness cannot produce consciousness after Darwin. The same principle must, then. apply when inorganic matter is first organized teleonomically to produce a machine structure. Sufficient extrinsic information when hybridized with matter may produce the von Neumann machine, i.e. a structure more teleonomical than the simple machine. The question now then is, can increased information when hybridized with matter go on to produce the self-consciousness which we have been discussing? On the surface of things this assumption may appear to be correct, for more information produces in principle more negentropy even up to the von Neumann machine. May one extrapolate further and assume that sufficient organization of matter by sufficient hybridization with surprise effects produces the phenomenon of consciousness? On purely scientific grounds there would seem to be insufficient justification for regarding self-awareness as a mere property of sufficiently organized matter, for we have no experimental evidence for this step.

On the other hand, *if* a von Neumann machine such as an amoeba really does display primitive but genuine self-awareness (as some scientists maintain) and *if* (a big if) such an amoeba could be chemically synthesized (modern gene technique is still a very, very long way away from such a possibility) then consciousness would have been produced by organizing matter with the help of information hybridization. This idea of organized matter as a source of consciousness is not so *materialistic* as some may imagine. For, if in other dimensions in which matter and time as we know them may not exist (see chapter on blackholes. chapter IV pp. 47-58) then perhaps some sort of timeless "super-matter", if suitably organized by the same information hybridization might perhaps be capable of generating and supporting consciousness. But this is pure speculation. of course. For readers who are not atheists or materialists. but believe in the reality of the transcendent, this might help in coping with the problem of the alleged consciousness of immaterial beings such as angels. who are assumed to be - with God and demons - *conscious* beings (see chapter on dimension theory and black holes. loc. cit.).

We now leave speculations of the above kind and return to a summary of our more experimental conclusions to date: to account for the existence of biological machines, such as cells or organisms, which are able to self-diagnose errors. self-repair the same and then self-reproduce from component parts available in the environment by self-assembly of such. Such machines can be. into the bargain. self-conscious. Up to consciousness (and maybe including consciousness) all these attributes require the collaboration of actual information in almost infinite quantities. To propose, therefore. that such masterpieces of teleonomy arose by leaving their component parts to the influence of randomness and of long time periods followed by natural selection. turns out to be a simply monstrous affront to all informational science and indeed to common sense. Such a Darwinian ideology (for it is little else than an ideolgy and certainly not a science) insults the human computing system. But just about the last straw in this affront and insult to human intelligence is supplied when the suggestion is made that biological *consciousness* too arose in the same way.

Some may consider the above language too strong. It will be therefore in order to give one or two quotations from accredited evolutionists on the factuality of their doctrines on origins and evolution, which they themselves teach as facts.

1) "That evolution, so stated, is an indisputable fact, is accepted by all but one or two of those who are accredited experts in the study of biology. . . of the *fact* of organic evolution there can at the present day be no reasonable doubt; the evidences for it are so overwhelming that those who reject it can only be the victims of ignorance or of prejudice." (M. J. Kenny, Teach yourself Evolution. 1966, pp. 1 and 159, cited from "The rise of the Evolution Fraud", M. Bowden, Sovereign Publications, P. O. Box 88, Bromley, Kent, BR2 9PF, England, 1982).

2) "Darwin... finally and definitely established evolution as a fact." (George Gaylord Simpson, cited from M Bowden, loc. cit. p. 214).

3) "Only ignorance, neglect of truth, or prejudice could be the excuse for those who in the present state of knowledge without discovering new facts in the laboratory or in the field, seek to impugn the scientific evidence for evolution." (Sir Gavin de Beer, A Handbook of Evolution, British Museum (Natural History), 2nd Edition, (1958).

4) "The first point to make about Darwin's theory is that it is no longer a theory but a fact. No serious scientist would deny the fact that evolution has occurred, just as he would not deny the earth goes round the sun . . . all scientists agree that evolution is a fact . . . there is absolutely no disagreement." (Issues in Evolution, 3, of Evolution after Darwin, Sol Tax Editor, Chicago University Press, 1960).

5) "Today, a century after the publication of the *Origin*, Darwin's great discovery, the universal principle of natural selection, is firmly and finally established as the sole agency of major evolutionary change." (Introduction to the Mentor edition of the Origin of Species, Mentor, New York, N. Y.).

After all the above dogmatism and denigration of those who beg to differ on the subject of the origin of the von Neumann machine known as the biological cell, it really is difficult to account for such authors' claim to scientific respect. For the actual scientific facts are perfectly clear and they do not establish but rather demolish Darwinian evolution. What are then the real facts:

a) that there is a *gradation of complexity* from inorganic matter to "simple" viruses, upwards to pro- and eukaryotic cells, from monocellular organisms up to multicellular organisms, from simple plants up to complex ones. The same gradation obtains for animals up to homo sapiens. But why do the evolutionists infer from this perfectly lucid *gradation* in complexity that the simpler forms of this gradation *developed spontaneously* into complexer forms simply from the fact of gradation! Given gradation in complexity by no means leads to the conclusion that the complexity developed gradually by mutation and selection as Darwin surmised. The fossil record tells us unmistakably that complexity arose suddenly and early. Darwin's surmises are certainly not facts and to impute ignorance and prejudice to those who point out this difference is neither scientific nor gentlemanly. Going back even earlier, Darwin's primeval soup in a pond is geologically the purest myth.

b) In the present state of knowledge it would be more correct to maintain that Darwinian theory is a fiction and certainly not a fact. The present state of knowledge concerning the structure of the cell and its relationship to information theory exposes Darwinism for what it is - one huge error based on lack of knowledge of information theory and of the fossil record!

c) In David Hume's days it was not possible to maintain with absolute certainty that the biological cell was a true but almost infinitely complex machine and therefore it was not possible then to refute him. Today this is no longer the case, for those who know their biology recognize that the biological cell is a true but almost infinitely complex machine and that machines are synthesized by the hybridization of surprise effects or bits of information (*not* natural law) with matter. Thus the spontaneous generation of cells from stochastic phenomena and their evolutive speciation up to man by the same Darwinian *mechanism is, in today's state of knowledge, little less than pure nonsense. It belongs into the same category as an assertion would that car engines, von Neumann machines or computers arise by chance followed by selection.*

d) To state that evolution up to man from inorganic *components by chance and selection is a fact, is today frankly unconscionable. For how can any real scientist ever maintain that self-awareness - one of the most developed attributes of man - developed by Darwinian mechanisms when no one knows even of what self-awareness consists or whence it came?*

The above sample of statements on evolution as a fact and to the effect that all who dissent are prejudiced and ignorant shows that biology is today living in a period of the sheer travesty of facts.

5) Accounting for the Origin of Information - coupled with Dimension Theory

Without the interaction of actual, holistic information (= surprise effects not derivable for natural law, which latter is known and therefore not of surprise value) with matter, there is, then, no accounting for the genesis of any teleonomic aggregates (machine structures) of matter. This fact of life applies to all types of machines, be they purely mechanical, electronic or biological metabolic machines. The basic principle remains the same for all types of machines in that they are all teleonomic. The hybridization of extrinsic, actual, holistic information with non-teleonomic raw matter is basic to all the types of machines mentioned.

Before abiogenesis took place obviously non-teleonomic raw matter could not generate spontaneously *surprise effects* of the teleonomic type required for any machine structure. This principle accounts for the fact that neither mechanical, electronic nor biological metabolic machines have ever been observed to arise spontaneously in actual practice . . . i.e. without the addition of extrinsic information and its hybridization with matter.

And yet we still find all over the world recognized scientists maintaining that life and biological cells will arise spontaneously all over the material universe where time enough is given and where conditions of temperature and water content etc. are favorable. This is the burden of the beliefs published on the widest possible scale by celebrities such as Carl Sagan, Professor C. Ponnamperuma (U. of Maryland), A. I. Oparin[12] etc. among many others. Such Darwinians propagate the discipline of exobiology and search for life all over the universe "because life will and must arise spontaneously wherever the external and chemical conditions for it are favorable." It was at the prompting of such men that the Viking laboratories[13] were sent to Mars. For if their thesis were correct such an old planet (in their view) must at least show the beginnings of chemical evolution in the production of suitable organic raw material for life. Perhaps, they maintained, the first primitive cells on Mars have already arisen from these organic chemical precursors. Great was the disappointment when the laboratory results came through - and showed neither a trace of organic matter nor a trace of life in Martian soil. Such is the power of ideology, however, that Darwinians are still trying to reinterpret this perfectly clear reality as meaning that both organic materials and life may be present! If experiment does not suit your ideology, then so much the worse for the experiment! Deny your experimental results and let your theories stand! But why spend billions of dollars of taxpayers money to send two laboratories to Mars if you have not the slightest intention of modifying your theories in the light of this expensive experiment? Presumably because it is other peoples' money! Here modern day scientists do not differ much in principle from Priestley (Dr. Phlogiston, as he was known to the day of his death.).

Darwinians and others rightly maintain, however, that if actual information (as opposed to potential information) really is necessary as a prerequisite for abiogenesis and evolutive speciation, then the scientist should be in a position to name a scientifically credible source of such information. It is, it goes without saying, completely useless to offer such Darwinians the possibility of God being such a source of information. For, after all, He is known as the Logos, or the source of the information known as the Word or concept. But Darwinian ideology took on so rapidly and thoroughly among scientists precisely because it obviated the necessity of any and all appeals to God as a source of any biological or other activity.

This is the reason why Creationism, especially the term "scientific creationism" is such an abomination in the eyes of the majority of scientists today.[14] For 150 years now (since Darwin) the appeal to Divinity for any scientific reason has been disallowed in all materialistic science - so think and teach the consequential Darwinians - amongst themselves at least. The very name "scientific creationism" implies a Creator as source of the information for all biology and the structure and maintenance of the universe. For this very reason the term "scientific creationism" is anathema and totally unacceptable in most scientific circles. In fact, it is a source of universal and utter derision including undesirable emotion in even otherwise staid academic circles, for it fails to show any understanding on the creationist's part of the false ideological position in which Darwinians find themselves, namely that *natural law is the exclusive source of all information, structure and biology!*

Natural law is an axiom, it is maintained, and has therefore always existed and needs for this reason no Creator to account for it. The "scientific creationists" do not seem to have understood the perfectly clear position of their opponents, namely that it is today considered to be an absolute anachronism to introduce any idea of a Creator into today's science. For the aim of science since Darwin has been to remove *all imponderables (i.e. surprise effects)*, such as God, from all laboratory based science. For this reason the term "scientific creationism" must, in the present climate of opinion, act like the proverbial red flag to a bull when offered as a credible alternative to Darwinians, Marxists and others.

Nevertheless, the average theist (the Christian, the Jew or the Muslim) will probably support the foregoing text as far as it goes. For the representatives of the three faiths mentioned seem to understand that an extrinsic and holistic source of information (Logos?) is a prerequisite for generating any machine - like biology - and for any raw matter with its mathematical preconditions. They all will therefore understand that an intelligent Godhead must have supplied this scientific necessity by delivering the actual information, which is a prerequisite for both aspects (organic and inorganic) of the creation.

The representatives of these three faiths may even go further in maintaining that their God is eternal, that is outside the space-time continuum (or transcends it). They may say that, if He is eternal, his thought life will also be eternal too and therefore not conditioned or restricted by the time factor which governs and limits all our thoughts and activities.

Christians, Jews and Muslims will often go even a stage still further and maintain that the thoughts of God being eternal, and biology and matter being an expression of God's thoughts, both will have been conceived, not in the dimension of time, but in the dimension of timelessness, that is, in eternity. Such, therefore, reject evolutionism (believing Muslims reject Darwin just as believing Jews and Christians are inclined to), for evolution ascribes the structure of man and of all biology to evolution *which took place strictly in time.* That is, the universe and biology are strictly products of time. Long time periods are a *sine qua non* for all true Darwinians, who ascribe evolution and its increasing complexity to time. That is, they regard time and matter as the basic raw materials for evolution. The three faiths mentioned above believe *eternity* and *eternal thought* supplement space/time with information in creation. For the evolutionist the concept of man is a concept of time, starting in time, conditioned by time and ending in time. The Jew, the Christian and the Muslim believe that the concept of man, of biology and of the creation in general is a concept of eternity, starting there, conditioned there and ending there.

This means that for such faiths the space/time continuum is not the originator of all we see, but dimensions outside the space/time continuum are. Now, years ago, before physics had developed as it has done today, talk like this would have been considered strictly untenable and unscientific. But not so today. This matter concerning the concept of dimension theory we must look at in one moment, but there is one other problem that must be looked into, before we go into the question of dimensions.

What shall we as scientists do about the above kind of concepts arising outside the space/time continuum? Is there any ring of truth about them? Obviously we need to find a reasonable *scientifically* tenable explanation as to any dimension where the well nigh infinite actual information required for the construction and functioning of even the simplest cell might originate.

As far as we can see in the known universe there is no specific location where almost infinite information of the type we need could possibly originate. We write this in spite of Fred Hoyle's book (The Intelligent Universe, Holt, Rinehart and Winston, New York, 1983) in which he categorically states that life did not and indeed could not originate on earth at all. Natural law does not suffice, intelligence is, for him, needed. Hoyle regards the whole idea that biology arose on the earth and in time as a left-over from medieval thought, which allegedly believed that the earth was not only the geographical center of the universe but also its biological center, too.

Hoyle then goes on to suggest that out in the far galaxies of the universe there exist what might be termed gene or information factories which shed genes all around them. These genes would be of approximately the size required to allow them to be transported on certain radiation wave lengths throughout the universe. According to Hoyle some of these genes thus reached the earth and account for certain hitherto mysterious outbreaks of epidemics which afflict us here from time to time. These DNA or RNA strands of "adventitious information" are supposed to act pathogenetically in the same way that certain viruses do. Hoyle and others have searched for experimental evidence for such information strands in the stratosphere, where some structures of this type have been reported. But whether they came up from the earth or down from outer space (if one can speak in terms of "up" or "down" in this context) is still a moot point.

On earth, once safely arrived here from outer space, these strands of information are supposed by Hoyle to have assembled themselves progressively into higher and higher organisms until the present day organisms we see on earth were built up. Evolution, then, according to Hoyle, did not occur by random processes on earth but rather by the building up of preformed information from outer space over the course of millions of years.

Hoyle cites as an example of this spontaneous building up of information the development of resistance to certain antibiotics by the inclusion of freely occurring plasmids into micro-organisms which supply the latter with the information necessary to achieve resistance to certain chemotherapeutical medicaments.

Now all this speculation on the part of Sir Fred is most interesting in so far as it is a tacit recognition of the fact that an evolutionary theory which presupposes the gradual development of holistic actual information from processes of natural law is totally sterile mathematically, chemically and from the principles of information theory. But without experimental evidence as to the whereabouts of these "gene factories" and without evidence of an experimental sort as to their structure, Hoyle's theories are just as sterile as evolution itself. For, if natural law here on earth cannot develop surprise effects producing intelligence, how can we expect to solve the problem of the origin of actual information by just pushing it millions of light years away from us into outer space? We should have to change the natural laws of outer space into laws which were not laws - but pure surprise effects and therefore not natural laws at all, i.e. intelligence. So he believes too, for he speaks a great deal about the "intelligent universe". Natural law does not, in our experience, produce intelligence - although it may well serve as a carrier of intelligence, as in the human brain or in certain types of artificially intelligent machines. Just by projecting matter far enough into outer space and galaxies does not make it a producer of gene strands packed full of surprise effects. Hoyle offers little explanation of this aspect of the problem of the origin of his proposed and postulated intelligence.

But why does Hoyle go to all these speculative extremes? Simply because there is no way of accounting for the machinery and the information of biology (and the mathematics of matter) by mere natural law. The origin of information is the great problem, for it is not derived from natural law though natural law can serve as its carrier. Why, having recognized this problem, just push it out into outer space and hope that that manoeuvre alone will solve the problem with no further effort?

We now return to the subject of dimension theory itself. The materialists have long maintained that the space/time continuum in which we live, the here and now of our existence, is the only reality or dimension which exists. For the reasons given above we have no means of accounting for the origin of the information, which, of course, is a scientific necessity, if we are ever going to account for the information and machinery of biology. For space/time is governed strictly by the natural law we have studied here in our space/time continuum. For this reason space/time alone without the help of extrinsic surprise effects - cannot generate life or any sort of other machinery spontaneously.

What then might the solution to this problem of the origin of information be? One thing is today absolutely certain: it is not the Darwinian one supported by practically all scientists today, including Nobel Laureates such as Manfred Eigen. For Darwinians still believe that the superbly metabolic complex machinery of biology arises stochastically and is then merely sorted by natural selection. Many of the more thoughtful scientists disregard the raucous propaganda which dominates some scientific literature today and maintain, that in view of this dilemma, the only alternative to Darwinian theory lies in the doctrine of special creation. But, for the pure materialist such a thought is simply unthinkable. For there is no dimension in which any such intelligence could exist. The here and now, the space/time continuum, is all there is. And God surely does not inhabit time/space as we do, or he would be as mortal as we are. The very idea is unthinkable in all its aspects! For we are just not capable of thinking about anything *eternal* or *omnipotent* or *omnipresent* or *omniscient*, for all such attributes are infinite and our computer governing our thought processes is definitely finite, for which reason it cannot handle such concepts reasonably. We just cannot think logically about any God-originator of infinity, infinite thought, power or prescience. We are therefore in no position to test any such concepts in our finite laboratory facilities - or indeed in our finite minds either. Therefore, argues the materialist, the whole idea of any special creation by an infinite God is simply and clearly unthinkable. It is therefore unfit for any scientist even to consider such. Such ideas of infinite thought must be meaningless, for it would totally exceed the capacity of all our thought processes.

What, then, might be the solution to this total impasse? Certainly not the Darwinian answer. For even with our finite minds and thought processes we can see that to be untenable on purely scientific grounds. It seems to me that there is at the very least one viable and scientifically tenable alternative to the Darwinian one - and therefore to the purely materialistic postulate. It is as follows:

Since we today know for certain (in contradistinction to knowledge at the time of Darwin) that there are at least 11 dimensions of reality - including our reality of space and time - and that each dimension is separated from all others by an "event horizon" (sic) - there are plenty of other realities besides our own which exist and with which we can have no direct contact. We can know little about such other realities or dimensions except that the laws of time and space are not valid or functional in them. Time, for example, need not flow there as it does in the here and now. The question we must ask ourselves is: is it conceivable that any such other dimension could house sources of surprise effects - i.e. effects outside natural law such as we know it - of which the synthesis of biology and other phenomena requiring information stands in need? For it must be remembered, in support of this concept, that *the total properties of such extra-dimensions are apparently all surprise effects in that such are not dependent on any natural law as we know it.*

The term "event horizon" signifies that one such dimension is totally separated from others. Indeed they are so separated, so "hermetically sealed off" from others, that one dimension thus separated can know nothing of its "neighbor". The meaning of this fact is that information cannot normally pass from one reality to another - except under very special circumstances or under the influence of special surprise effects! *Such dimensions must be replete with surprise effects.*

Some literature on this subject may be read in the work carried out by Professor Paul Davies: see "The 11 Dimensions of Reality", The New Scientist, 9th February 1984, pp. 31-33: See also "Dimension Theory", Science, 1/6/84, p. 971.

It will be necessary now to show the nature of such dimensions and how they transcend our space/time continuum. The problem of how physicists study them indirectly - because no direct information about them can be obtained from them - must also be considered.

Since the teaching of dimension theory in ordinary university classes and schools (it is still taught, of course, in some physics classes) was abandoned at the begining of this century (the curriculum came to be too crowded to include such esoteric subjects) pupils and students have been nurtured intellectually almost entirely on the dimension of space/time. The consequence is, that the minds of intellectuals have been fed only on plain materialism, space and time. Nothing else in their thinking can exist. Nothing else is conceivable to the unstocked mind. Most find it extremely difficult to conceive - scientifically at least - of anything but the here and now of space and time.

In the following text we hope to overcome some of these difficulties by supplying further well founded scientific facts about these and related subjects. In the pursuit of this course of study it will be necessary to study the nature of black holes and the theory of event horizons which an understanding of these phenomena demands. Then we shall be in a better position to couple dimension theory with information theory in our search for a viable alternative to materialistic Darwinian theory of origin and evolution or evolutive speciation. In this manner we hope to be able to demonstrate a viable alternative to Darwinian theory. To achieve this purpose we need first of all to demonstrate an alternative supply of actual holistic information suitable to account for the almost infinite information needed to synthesize biology and its evolutive speciation. For we have to account for information to build the super and conscious von Neumann machine of biology. This problem will comprise the subject matter of Part II of the present book.

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PART II
Dimension Theory and possible Sources of Actual Information

Chapter III

Materialism and its Relationship to Information

1) *Materialism and Positivism*

Positivism[1] is a theory according to which theology and metaphysics are imperfect and incomplete frameworks of knowledge. The latter must be replaced by positive knowledge which accumulates from the study of natural phenomena. In other words, theology and metaphysics must be replaced by experimental knowledge which has been gleaned from the experimental methods practised by pure science. The empirical sciences bring to us reliable knowledge and this must replace unreliable theological and metaphysical views.

Most representatives of the Establishment today - that is, the Nobel Laureates and others who are considered to be the captains of science - usually believe in some form of positivism. The exceptions prove the rule. In the eighteenth century David Hume[2] formulated the main postulate of positivism, namely that experience (experiment) offered us the only existent form of real knowledge. The scientific experiment offers us, according to Hume, the sole method by which men can learn to understand the world round about them.

Scientific materialism is a branch of positivism which was developed to a considerable extent, perhaps unconsciously, by Charles Darwin and by T. H. Huxley[3] and many others of their calibre during the past one hundred and fifty years. It has been this development of scientific materialism in the hands of Darwin and his disciples which has served perhaps more than any other factor to remove most kinds of theism from intellectual circles at the present time. This applies not only to the West, which was formerly stamped by Christian values and beliefs. It also applies to Eastern religions like Judaism and the Muslim faith, where one finds among the university intellectuals little of the former faith or personal trust in their holy writings.

These developments in the scientific world have brought the following situation with them: The origin of matter and of biology is no longer seen in any plan (i.e. in a preconceived intelligent concept which was then executed in matter and life) nor in a *fiat* ("let there be"). The beginning began rather to be conceived of as being the result of an interplay of randomness (cf. Das Spiel, Naturgesetze steuern den Zufall, Manfred Eigen, Ruthild Winkler, Piper, München, Zurich, 1975, pp. 1-404), natural selection and natural law. Natural law allegedly guides matter up into life, and biology guides randomness to order, as Eigen formulates his thesis.

By using the concept that randomness guided by natural law produced the order of biology and by using the thesis that matter is eternal and therefore an axiom which needs no explanation, the necessity of postulating a creator was short circuited and the concept of a planning God as a First Cause destroyed. Abiogenesis is conceived of as the result of a planless interaction of molecules. Eigen shows the distinction of believing that natural law itself did the teleonomic guiding necessary to produce the structure of life. He seems to forget that;

a) natural law is never teleonomic---science has convinced many knowledgeable and thoughtful scientists of that fact. Therefore natural law cannot guide randomness into teleonomy or to machines. And

b) that there has never been the slightest shred of evidence that natural law has ever guided inorganic matter into life in any laboratory in the world. Pasteur demonstrated this experimentally in the last century and experimental observation has confirmed the fact to the hilt ever since.

c) The idea that natural law guides the random movement of molecules up to biology destroys the statistical meaning of randomness itself. *If randomness is guided by anything except utter and total randomness surely randomness utterly ceases to be randomness!* The origin of life, being the grand mystery that it is, ought never to be obscured by weasel words such as randomness *guided* by natural law. For such words deny the very meaning of words and therefore destroy all real progressive thought.

The above ideas destroyed - from David Hume onwards - the very concept of God. For if God created by randomness and planlessness, then He is not using methods compatible with intelligence and personality to do so but those compatible with lack of both. Thus Darwinian thought destroyed the very basis of theism.

Later on "progressive" thought of this type went a step further. It began to teach that the totality of reality was restricted to our space/time continuum. Metaphysical postulates of realities and dimensions beyond our space-time reality were allegedly fictions of metaphysical and theological thought. They were but figments of the imagination. The material reality of space/time was the only one to really and scientifically exist. For only such space/time could be demonstrated experimentally. Metaphysical constructions could not be so demonstrated and therefore did not really exist at all. In the course of time it began to need strong nerves and a firm character for any scientist to doubt the precepts of materialistic positivism. To do so began to mean that the holder of Christian or theistic views was a person who belonged to the eternal yesterday of intellectual thought, And such persons were certainly not considered to be fit leaders of progressive thought. In view of the huge material successes in technology and research shown by the "scientific method" the positivistic materialistic view soon eclipsed metaphysics and theology. Few took them seriously any more, for materialistic science celebrated victory after victory.

This trend to materialistic positivism has been hastened by ever new and useful results pouring out of the laboratories of the world. In addition it has been found that matter possesses certain specific chemical properties and that these properties are vital for the maintenance of biological life as we know it. Life rides exclusively - as far as the space/time continuum is concerned - on matter and its chemical and physical properties. In fact, biological life is now said to be exclusively chemical. Life as we know it here on our planet is inconceivable without chemistry. And chemistry is bound up with matter itself. Therefore, -- so runs the natural logic -- life must be a purely material, chemical phenomenon.[4]

The trend goes even further: Life rides on matter and its chemistry. Matter and chemistry are a part of our space/time continuum. Therefore life must be a property of matter. Take away from life the matter on which it rides and life is automatically destroyed at the same time. Life must then be an expression of matter - i.e. of the space/time continuum - alone.

The consequence of thought of this kind is, of course, that positivists refrain from using old terms such as Spirit, Soul or God[5] in which former theologians and metaphysicians were at home. All these expressions are, in the materialistic view, mere indirect projections of matter, for spirit and metaphysics have no real existence of their own. Matter, space and time are the only realities. "Soul" is therefore a non-reality. Transcendence and "supernature" are mere projections of the human brain. Experimental science will in the course of time and progress fill out all the gaps in our knowledge which we have up to present stuffed out with meaningless words such as soul or spirit. All these metaphysical expressions will soon be explicable in terms of pure matter and its properties.

Thus the trend to materialism has always been at the same time a trend away from God, from transcendence and from anything supernatural. The trend has, then, been perforce a trend to perfectly pragmatic atheism.

2) Scientific and dialectical Materialism

As we have seen, the scientific materialist - including the positivist who thinks things through to their logical conclusion - believes that matter and its space/time continuum comprise the totality of all reality. The dialectical materialist goes a step further in that he endeavors to explain how matter spontaneously became more complex. The methods dialectical materialists use in order to explain the autogenous self-organization of matter were extended by Karl Marx among others.[10] The grave problem facing atheists such as Karl Marx and his followers was how to explain the self-organization of inorganic matter up to life. Once life and the primitive cell were present, then mutation and natural selection explained the rest - according to Darwin. But how to obtain increased negentropy and the upward organization of matter prebiotically - that was the grand problem. Chemical evolution before life had already been tackled by David Hume as we have already seen. Marx developed his dialectical materialism more specifically than Hume, who saw the continual combination of matter as producing by pure chance the specific combinations which resembled teleonomy and design, but which were not the result of design. Marx wished to explain the development of human society to ever higher levels - not only of matters chemical but also of matters social - by means of his dialectical materialism.

The old idea used to explain the evolution of society comprised such concepts as acts of God, of angels or of devils who all secretly guided human society. Human conspiracies played their role too! It was difficult to supervise what these powers did because they worked from their secret "hide-outs" in nature or supernature. God had worked in the same way by secret "fiat" in creating both matter and life. Marx altered all that, particularly in respect of the historical evolution of human society. He did for human society what Darwin had done for biology. But Marx had to overcome considerable scientific resistance towards his theses. For this was the age of Clausius[11] and Clapyron who, with the development of their laws of thermodynamics and their steam engines showed that matter, when left to itself, never could spontaneously develop itself up to higher complexity and increased negentropy. So both Marx and Darwin had to fight severe battles against serious science in proposing that society and matter spontaneously evolved upwards with no interference from outside. For the physicists taught convincingly and even dogmatically that entropy (a measure of the energy of the universe which was no longer available for useful work) always tends to increase. Which means that order and structure will always, in the long run, spontaneously tend to decrease.

If, then, in our space/time continuum matter is the sole reality and if matter left to its own devices always tends to show a decrease in order or structure, how can one account for the ever increasing complexity in society and in matter? There must be some sort of interference from without matter to account for these two aspects of our reality. Both Darwin and Marx set about to solve this apparent collision with the then newly discovered facts of physics. Matter itself left to its own devices undoubtedly produces spontaneously increasing chaos. How then are we to account for the manifestly increasing biological order without invoking anything outside matter? How is one to circumnavigate the necessity of the supernature postulate?[6]

For this precise purpose Marx developed his theory of dialectical materialism, just as Darwin had developed his theory of small random changes separated out by natural selection to produce the desired evolution without outside interference. Marx developed his theory of evolution in sociology while Darwin conceived of his theory for biological evolution.

Just how did Marx explain his evolution in sociology?[7] What was his evolutionary mechanism? On principle it was similar to that developed for biology. Marx' mechanism is: The various parts of society work on and against one another on dialectical principles, that is, they work in opposite directions against one other. Dialectic is the art of carrying on a conversation in opposites. Thought in antonyms of this type is the essence of dialectical materialism. Thus dialectical materialism is a philosophy according to which every material and sociological increase in order is the result of the interaction of opposing principles in that material or society. All progress in society and material is due, according to Marx, to this interaction of opposing principles, that is to dialectic. As nothing else but matter is, according to Marx, reality, such dialectical processes in matter produce all the observed progress and increase in structure and order, be it in society or in matter itself. Such dialectic needs no interference from extrinsic sources, it is entirely autonomic and intrinsic. Since the establishment of this philosophy it was, according to Marx, possible, and indeed necessary, to dispense with all superfluous ideas such as those of God or supernature to account for structure and order.

Thus, the dialectical materialist is, on principle, an atheist in the normal sense of the word. He is also an enemy of all religious belief - if only because all such is merely the intellectual lumber society has allegedly inherited from past generations. Communist ideology has adopted thought of this type hook, line and sinker, as it were, although it is today far less monolithic than it was at the beginning of the Marxist era. As an example of this I personally know of a communist working within the German evangelical church (a deacon) who confesses to be Christian Marxist. On being asked by myself how he could be Christian if he was an atheist and a dialectical materialist (in the above sense of the word), I was given the answer that he believed in God but not as a person. On being asked to be more precise, I was informed that God was the future, so that belief in the future qualified him as a Christian and a theist! A deacon in a German evangelical church held views of this kind!

3) Communism and positivistic Ideology

Positivistic ideology denies, then, everything and anything which cannot be verified by scientific observation in the laboratory by the so-called scientific method. It will be clear at once, then, that it is going to be very difficult, if not quite impossible, to gather evidence for the supernatural directly by the scientific method. Take an example to show the depth of this difficulty: try to deduce from an ordinary *two dimensional picture* of the Matterhorn the true nature of the real three dimensions which go to make up the real mountain known as the Matterhorn. For only two such dimensions exist in the paper - length and breadth - the third (the depth or the height) is a pure illusion in two dimensions attained by shading and light patches in two dimensions. But in the picture (two dimensions) there is not the slightest *reality* about the third dimension, which is in the two dimensional picture a mere optical illusion.

Materialistic philosophy says about the same of nature and of supernature as we have said above about 2 dimensional pictures of a 3 dimensional Matterhorn. It may look in 3 dimensional nature as if there were a supernature transcending it, just as the two dimensional picture of the Matterhorn creates the optical illusion of a third dimension - which is in reality not present in the picture. For this reason say the positivists, a scientist can know nothing positive about supernature or "super-dimensions" on principle. He therefore has to explain the structure and teleonomy of nature without presupposing any supernature. The Darwinian does precisely this with his Darwinian theory of small random changes which are inherited and then selected by natural selection. The Marxist does the same but goes further and explains even the "evolution" of human society with the help of his dialectical materialism.

But are these two philosophies, - the Darwinian and the Marxian - scientific in that they can be shown to be falsifiable or experimentally functional? Philosophically, they both are fascinating, but that is not another way of saying that they are experimentally falsifiable or verifiable.

It is, of course, true that biological organisms do find themselves in a dynamic struggle for existence - the fight of opposites for the necessities of life. The "oppositeness" in this struggle consists in the fact that one organism allegedly lives at the expense of the other. The obtaining of the life - giving necessities of one is for the other, (the one which is denied these same necessities), the denial of life. Herein lies the Marxian "oppositeness". This, to bring out how much Marx with his dialectical materialism owed to Darwin's methods of thought.

Perhaps a further example may be permitted in order to show the parallelism between Darwinian and Marxian dialectical materialistic thought. If we compare scientific materialism with a fish, then the dialectic of this materialism may be likened to the fishes swimming fins and his tail, Both Darwinism and Materialism can, like the fish, be alive even without the fins and the tail. But without the latter they cannot progress forwards or even backwards. The tail and the fins supply mobility to the fish. Without them the fish remains static. The dialectic in dialectical materialism and natural selection in Darwinian thought function like the tail and the swimming fins of our fish. The materialistic scientific "fish" becomes "mobile" when it receives the "swimming fins and tail" of dialectic (one part pushing and working against the other) and selection which then allegedly produce biological evolution and sociological progress.

Karl Marx fitted the materialistic scientific "fish" with "fins and tail" and gave it the dynamical properties which accompany dialectical materialism even today over a century later. This Marxian "fish" (way of thought) has overrun by one means or another more than the half of the inhabited world today. Precisely the same - or one might even risk saying more so - has happened with Neo-Darwinian thought, for it has conquered today practically the whole "thinking" world with its superficially attractive methods of thought. David Hume was among the originators of both Darwinian and Marxian thought, for he postulated that the essence of all structurization lay securely in *molecular movement* which produced all the material structures which allegedly mimic design. In many universities of the world today a student will very possibly not pass his entrance examination unless he subscribes to one or other - or both - of these attitudes to the evolution of progress in biology and/or sociology.

The whole matter is so simple that not even the mentally retarded could miss its significance. The struggle for existence - one part of the animal or vegetative world pushing its interests through dialectically against the other - with its resulting victory for the fittest, sums itself up in survival for the victor. It is all a dialectical process: one side acting against another progressively stage by stage upwards. That is, the seesaw struggle results in progressive evolution. In dialectical materialism the same seesaw struggle appears in its sociological form. Society thinks in terms of opposites, one part against the other, as precisely as in the case of class warfare, one class working against the other, ever upwards until the revolutionary situation is reached, when allegedly - according to Marx - a new society is born as a direct result of this seesaw dialectical struggle, Dialectical materialism and the survival of the fittest fit together like the proverbial hand in the glove,

The capitalists, according to Marx, exploit and suppress the workers until the workers rebel. As a result of this rebellion the capitalists react by suppressing the workers more drastically. The workers then react more drastically too. The chain reaction or seesaw mechanism produces ever more rebellion and ever more suppression until the tension is maximal, at which time the "revolutionary situation" is allegedly reached. Out of the ashes of the revolution and general destruction arises, phoenix-like, the paradise of the classless state when such dialectical processes bear their alleged fruit.

It will be clear that progress and evolution are supposed to arise in both cases from tension, attempts at mutual destruction, the misery of death coupled with the struggle for existence of the vaious parts of a system (biological or sociological). It is therefore - in the eyes of the dialectical materialists and the Neo-Darwinians - a contraproductive process to be *peaceable, either in biology or politics.*[12] Stagnation will allegedly be the result if the struggle for existence - the struggle even to the liquidation of one party - ceases. The consequence is, that struggle, war, revolution, "destabilization" of other states, which have not yet reached the "happy" state of permanent revolution, must follow wherever dialectical materialistic philosophy rules. The present state of the world, which is dominated by terror, hostage taking and "destabilization" of one state after another by Marxists and other terrorists proves my point. And yet the victims of these planned processes still trust those making war against them, make agreements for "mutual" profit, lend them huge amounts of taxpayers money - all in the effort to placate those Marxians who are determined, by their own confessed policies, to destroy the capitalist givers of credit.

All this happens in the name of specific positivistic ideology, that is, of ideology which is supposedly based on scientific experiment. But is this, in fact, the case? Does scientific experiment support the view that the struggle for existence with the destruction of the less fitted produces *evolutive speciation* in biology and the evolutive paradise in sociology? The short answer to both questions of biological and sociological evolution is certainly negative. For, although natural selection will certainly *stabilize* the *status quo* and hinder the degeneration of a species, there is little or indeed no evidence that it can support evolutive speciation, that is the production of newer, higher species. There is little or indeed no evidence that it can support evolutive speciation, that is the production of newer, higher species . . . as far as biological areas are concerned. We refer to previous sections on this subject. Looking at the sociological and political areas the short answer is also not far to seek. *Everywhere* where Marxian communism has taken over power, there the working classes have certainly not become wealthier but definitely poorer. In communist countries the lot of the average person in all classes is materially and culturally much less desirable than in countries which have not adopted Marxian dialectical doctrine. A main reason for the ability of the Marxian countries to function at all lies in the huge credits of both finances, technology and farm products (wheat and maize) which non-Marxian states have afforded them. The *dictatorial* nature of Marxian doctrine stems from the ideology of war and struggle, so that the freedom of human intellect to develop has not been permitted in countries adopting these beliefs. The result is that Marxian technology - and other activities of the intellect - is lagging, which fact brings with it the well known financial disadvantages - the inability of left wing states to pay for even the bare necessities of life and commerce.

We may therefore sum up by concluding that the positivistic element in Darwinian and Marxian ideology is - to put it mildly - somewhat ailing. Western states following left wing ideas are following faithfully in the same direction.

4) The Effectiveness of political Dialectic and of Natural Selection

What has recent science got to say about the effectiveness of materialistic ideology from the standpoint of accounting for the evolution of complexity and structure in biology and sociology?

I have dealt with its effectiveness in biology in my books "The Creation of Life", "Man's Origin, Man's Destiny", "Basis for a New Biology" and "God: to be or not to be?",[8] so that I do not propose to go again into the details of these matters here. It will suffice to say that Natural Selection, as a creative mechanism, is strong enough to prevent *decay* of biological structure, i.e. to maintain species at the *status quo*, but is insufficiently powerful to raise say the structure of an amoeba to that of a man. Fundamentally Natural Selection is a mere tautological statement which maintains, in effect, that a form which survives in the struggle for existence survives. Theories of this standard of content are not falsifiable - and therefore not scientific and can never explain the prodigious negentropy of biology. For tautology can *explain* nothing.

But more must be said about the general thesis that automatic evolution upwards can occur theoretically and experimentally both biologically and sociologically. For the whole world (relatively speaking) has been captured by this thesis both in the Eastern and Western political and biological fields. Darwinian and Marxian thought both demand a spontaneous upward evolution of complexity by means of spontaneous and random movements - be that movement molecular or expressed in sociological trends, without the addition of extrinsic teleonomy. Clearly, if random movement can bring the system upwards, it can and will just as effectively bring the system downwards. For upward and downward random movement will always be to an equal and opposite effect, so that any resultant upward movement will be exactly countered by the corresponding downward shift. The result will be no progression at all.

The only method of extracting trend or progression from a random system will be by applying external "rectification" or sorting to that system. By precisely this means the old automatic self-winding mechanical watches extracted order out of the random movements of the wrist in such a manner as to wind up the main spring. That is, they established a trend out of randomness. Such watches effect this feat by applying a ratchet system to the random movements to sort them, that is, to rectify them. If a downward movement of the wrist causes the weighted lever in the watch (which is coupled to the mainspring) to fractionally wind the mainspring up, then the corresponding random upward and compensatory movement would unwind the mainspring to exactly the same degree. The secret of the automatic self-winding watch lies in its ratchet, which is so arranged that it allows say the downward movement of the wrist to be stored in the mainspring as energy but rejects all upward movements, which would correspondingly unwind the mainspring. That is, the ratchet sorts and separates the upward from the downward movements, *a feat, which no random system in the world can achieve*, - although randomness provides the upwards and downwards movements. Randomness cannot *differentiate*. It takes *ratchets* to achieve differentiation between upward and downward movements. *Only such differentiation can take care of progression using randomness as the source of energy.* In other words, *evolution* on the basis of randomness requires as a *sine qua non*, a "ratchet system" of some sort. That is progression, trends or evolution all require *rectified* energy or rectification to achieve any increase in complexity or any rising negentropy.

But what exactly are the theoretical reasons which lie behind an obvious conclusion of this sort? How do they fit in with the requirement of *information* as a *sine qua non* for all types of evolution - including even the evolution of matter to any and all machine structures? It is at this point that a confirmation of the necessity of information - such as we have already discussed - becomes apparent. For, every time a ratchet differentiates between the upward or the downward movements of the wrist, so as to wind up a self-winding watch, it is, in fact, introducing a true and genuine *surprise effect* (information) into the system. Randomness itself does not and cannot do the differentiation between upward and downward movements of the arm, or (speaking purely chemically) between right-handed and left-handed amino-acid molecules in protein synthesis. A suitable ratchet can perform this feat of differentiation, for it is a producer of simple *surprise effects*. It carries out the quite surprising feat of sorting out favorable random movements from unfavorable ones. A self-winding watch does not achieve its "winding up" (progression or evolution of structure) by random processes (such as mutative processes in biology are random) but *by the rectification of such random processes* by means of the surprise effects *introduced by the ratchet*. That is, increased negentropy or structure synthesis occurs with the help of random processes as raw material, rectified by true *information introduction* by the ratchet.

Thus, we return to the formula for evolution we have already noticed: Random energy + time + matter = evolution. This formula is deficient. It should read: Surprise effects (information) + natural law + randomness (energy) may give evolution. But no one factor can function successfully alone. All random factors require the addition of surprise effects, not found in *random* nature, in order to produce negentropic upward trends. Actual information, like the ratchet, does not arise randomly and is not derivable from natural law - otherwise it would lose its genuine surprise effect value. Ratchets make automatic self-winding watches capable of "feeding" themselves from random sources - and actual information does precisely the same in biology. Both Marx and Darwin knew nothing of these principles, with the consequence that both their ideologies are deficient in these vital factors. This applies with equal force both for biological and for sociological evolution. Dialectic and random seesaw molecular movement (D. Hume)[9] are theoretically and experimentally insufficient for evolution in either sphere. Information, surprise effects from *outside natural law* are vital factors (like ratchets) for both types of evolution. Deficient theories are an over-simplification of the facts - and therefore highly dangerous to reality.

To put the matter more crudely: The ratchet of the self-winding watch is really a very simple type of *thinking machine*, i.e. it is a machine for producing binary surprise effects or information. The consequence of this fact is, of course, far reaching. It is: *without "thought" (= here binary surprise effects or all or nothing information) there can be no progressive evolution either in sociology or biology*. Without an external source of information, i.e. surprise effects or thought (logos is the ancient word) neither Darwinian evolution nor Marxian dialectical materialism can, on sound but simple theoretical considerations, work. It was, of course, just exactly the necessity of outside logos to account for biology and nature which Darwin and Marx aimed at avoiding or cancelling. After the passage of 150 years, science has now proved to scientific satisfaction that thought, logos or information is the deficient factor in all materialistic systems of the Darwinian and Marxian category.

The above conclusion brings us again to the problem to which we have addressed ourselves in the foregoing pages. We need a feasible source of such fabulous information as we see both in the structure of matter, in the universe and in biology. If our space-time continuum does comprise all reality, as our materialistic colleagues believe and teach with all vigor, then we have absolutely no degrees of freedom left to account for the origin of such information. For information does not arise in *natural* law such as we know it here in our space/time continuum. Information is for this continuum a true *surprise* effect, i.e. one not related or irrevocably coupled to or derived from the natural law which governs all matter here. The above applies even though surprise effects can *shepherd* natural law into the synthesis of machines which use natural law but which natural law alone cannot synthesize.

We must therefore examine in the following chapters a little further the foundations of scientific materialism itself, thereby exposing the fact, well known today in physicist circles, that our time/space continuum is only a fractional part of the totality of reality. The remainder of reality outside the space/ time continuum is thus available as a source or sources of information.

1 Davies, Paul, *God and the New Physics*, Penguin Books, Ltd., Harmondsworth, Middlesex, England 1983, pp. 171 and 219.

2 Davies, Paul, loc. cit. pp. 33, 37-38, 143, 190. cf. David Hume, *Dialogues Concerning Natural Religion* (ed. H.D. Aiken: Hafner, 1969, first published 1779.

3 Huxley, T.H., *Man's Place in Nature*, Collected Essays of T.H. Huxley, 9 Vols., Macmillan and Co., London, vol. 7, p. 146. (1894).

4 Crick, Francis, *The Origin of the Genetic Code*, 1968, J. Mol. Biol., 38, 367-79.

5 Davies, Paul, *God and the New Physics*, loc. cit., pp. 72-87, 89, 92. *Survival of the soul*, p. 86-89, 98-99. *Immortality of the soul*, 81, 86, 92.

6 Locally, of course, order may increase at the expense of the generality of the system concerned, which will show overall increased disorder or increased entropy.

7 cf. Raphael, M., *Theorie des geistigen Schaffens auf marxistischer Grundlage*, S. Fischer Verlag, Frankfurt am Main, 1974.

8 Wilder-Smith, A.E., *Man's Origin, Man's Destiny*, Bethany House Publishers, Mnneapolis, Minnesota, 55438, USA.

Wilder-Smith, *The Creation of Life, A Cybernetic Approach to Evolution*, TWFT Publishers, P.O. Box 8000, Costa Mesa, Ca. 92628.

Wilder-Smith, A.E., *God: to be or not to be*? Telos International, Hänssler Verlag, 1975, Neuhausen-Stuttgart, D-7303, Western Germany.

9 Hume, David, *Dialogues Concerning Natural Religion*, (ed. H.D. Aiken, Hafner, 1969, First published 1779.

10Raphael, M., *Theorie des geistigen Schaffens auf marxistischer Grundlage*, S. Fischer Verlag, 1974, Frankfurt/Main, B.R.D.

11Clausius, Rudolf, *The Definition of Entropy*, see Eigen M. and Winkler R., Das Spiel, R. Piper Verlag, München and Zurich, 1975, p. 164, see also p. 174, 175, 180 and 189.

12Could this doctrine be the originator of today's epidemic of violence and terror? cf. A.E.Wilder-Smith, *Terrorismus: Das kriminelle Gehirn*, Schulte und Gerth, Asslar, Western Germany, 1981, 2. Auflage, Wilder-Smith A.E.

Chapter IV

Materialism in the Light of Modern Physical Research

1) Factors which have led to the Abdication of Scientific Materialism

What sort of recently discovered factors have cast doubt on the scientific validity of the scientific materialism of the nineteenth century? It would surely be taken as remiss of the present author if the modern research on psi-phenomena such as telekinesis, telepathy, telesthesia and on the ability to look forward or backwards in time (telecognosis) were not mentioned in this connection. The work of Rhine and Soale (Soale S.G. and Bateman F., Modern Experiments in Telepathy, London, Faber, 1954) has become widely known and also extended by the use of purely physical methods, so that we do not need to dwell on it here. There are, however, a number of reputable scientists who do not accept the evidence for these phenomena as clinching, for the simple - and valid - reason that the results are not always easily repeatable. For this reason we do not intend at this juncture to use work of this kind in accounting for the abdication of scientific materialism. The whole subject of psi-phenomena has been a playground for fakirs and magicians for years, in spite of the good work done by some scientists.

But to offset this rather negative attitude - and in an attempt to be just towards psi-phenomena fans - we may mention that we have in our family experienced what to us are undoubted cases of telepathy (see "Der Mensch im Stress", A.E. Wilder-Smith, Edition C. Hänssler Verlag, Neuhausen-Stuttgart, 4. Edition, 1987, pp. 60-63). However, since one cannot repeat these experiences under experimentally controlled conditions none of us would ever dream of citing such undoubtedly valid phenomena as scientifically clinching - even though they may, in our view, be entirely genuine. So we will leave psi-phenomena out of our arguments against materialism for the time being. We wish, on the other hand to draw on some developments in Astronomy to state our case.

2) Recent Developments in Astronomy and the Validity of Scientific Materialism

During the nineteen-sixties the first large and functional radio-telescopes were brought into use. These instruments "see" with the aid of radio waves rather than with light waves. In 1967 one was built and installed at Cambridge. It showed intriguing results very quickly. Remarkable morse-code like impulses were received when the instrument was directed towards certain nebulae. The impulses sounded rather like a coded morse message concealing an intelligent content. Physicists listened to these impulses and recorded them with the immediate result that all information on this work was classified, that is, it was declared to be top secret.

The reason for this action was that it looked as if some cosmic intelligences were trying to contact the rest of the universe by broadcasting code messages. If these intelligences were hostile and if they possessed a more advanced technology than our terrestrial industry had developed, they might attack the earth, conquer it and destroy us! Science fiction had effectively done its work in the minds of the public - and in the minds of government authorities too - so that a secrecy clamp was laid down on all the findings of this new radio telescope instrument and the project was referred to as L.G.M. (= Little green men - the Mars men of science fiction fame!). This ban lasted some time until further work and the elapsing of time had unequivocally demonstrated that here was no case of extraterrestrial intelligence (ETI), but rather proof that what Robert Oppenheimer had foreseen was true.

In reality Lovell and his colleagues, using their radio-telescope, had hit upon the remnants of a supernova which the Chinese astrologers had observed in the Crab Nebula in the year 1054 and suitably recorded. The seat of this activity lay about 6000 light years from the earth. But the radio impulses which sounded so much like the Morse code had nothing in common with foreign extraterrestrial intelligence.[2] They arose from a pulsar or a white dwarf, that is from a rather special kind of heavenly body or singularity. Such bodies are neutron stars and consist of incredibly compressed forms of matter as we shall now see:

Any star which has a solar mass of at least 1.4 times the mass of our sun may show, according to Einstein's relativity theory and Oppenheimer the tendency to collapse under the influence of its own gravity. That is, the gravity of the solar mass in excess of 1.4 times that of our sun tends to cause the mass to collapse on itself. That is, such a mass tends to be unstable and to compress itself on itself. This occurs without any outside influence.

An illustration will be necessary to make this phenomenon clear. Take a child's rubber balloon, nicely blown up with helium. It is unstable in reality, for if the gas leaks away it will collapse to a very small size indeed. Prick it with a needle when it is fully inflated and it will collapse under its own elasticity instantaneously. That is, its "density" increases exponentially and suddenly.

There would, however, be another way of getting the balloon to lose its size and increase its density without letting the gas out. If one were to put the balloon into an atmosphere of higher pressure than that exerted by our own atmosphere, the more the outward pressure increases the more the helium in the balloon will be compressed on itself and the smaller and heavier the balloon will become. The molecules of the gas become compressed on themselves, reducing the volume of the gas and increasing thereby its density. The molecules are pushed nearer and nearer to one another, just as happens when one blows up a car tire. The molecules are pushed nearer and nearer together, reducing their volume thereby.

This process can be compared to the collapse of a star with the difference that in compressing the gas of a balloon the molecules are forced nearer together, molecule is pushed nearer to molecule. In the case of the gravitational collapse of a star it is, however, not the molecules that are pushed closer to one another, but the particles of the constituent atoms are pushed towards the atomic nucleus. It is, in the case of the balloon, that the molecules approach one another more closely, whereas in the case of gravitational collapse it is the orbital electrons of the atoms which are forced to approach the nucleus more closely. In the case of the compressed balloon we have *inter*- molecular compression, while in the case of the formation of a white dwarf or neutron star it is a case of *intra*- molecular compression - the atoms themselves become smaller or more compressed and therefore much more dense.

After such a gravitational collapse to produce a neutron star the matter of which it is composed becomes very much more dense indeed and therefore inconceivably heavy. The consequence is that the neutron star is itself incredibly heavy. Its gravitational force is enormously increased, so that it attracts other objects much more strongly.

This increase in the gravitational force of a white dwarf or a neutron star has a very serious consequence. It is: If the original solar mass was above 1.4 the density will have now so increased that the neutron star will proceed to collapse on itself even one stage further. The neutron star undergoes further gravitational collapse on itself resulting in the formation of a singularity known as a black hole, which shows the quite remarkable tendency to infinite mass and no dimensions. The more such a singularity collapses on itself, that is, the further it collapses. For, the more it collapses the greater becomes the gravitational force inducing collapse. And the greater the collapse the more collapse there will be, for the greater will be the gravitational force. The resulting black hole does, in fact, tend to infinite density and no dimensions. The smaller it gets, the heavier it becomes in an ever increasing mass and ever decreasing dimension or size.

Robert Oppenheimer foresaw this type of gravitational collapse[2] in the course of his work somewhere round about the nineteen forties. He foresaw the existence of the neutron star and noted that, as it rapidly turns on its axis (it can rotate much faster than lighter stars since the gravitational force holding it together against the centripetal force produced by spinning is so much greater) it will by spinning emit radio pulses of the type which Lovell and his colleagues observed and which caused the project to be coded under the name L.G.M.

We must now briefly inspect the type of physical measurements accompanying singularity phenomena of the above type. The neutron star radiates very large amounts of energy as it rotates - including the radio impulses. It is formed when a solar mass of 1.4 or more collapses to a diameter of about 10 km. It is as if our sun were to collapse to a ball of about 10 km diameter, which would give us the weight of the sun compressed into a globe of less than 10 km size.

No material on earth would be strong enough to contain matter of such a weight, for it would simply fall through any materials we have at our disposal. Let us make this clear with an illustration. When we were students we suffered under a professor who never laughed and whose lectures were miserably boring and often totally incomprehensible. So when Christmas came we thought up a practical joke in a vain attempt to make our mentor and oppressor laugh. The idea was to fill a child's rubber balloon with mercury (quicksilver), put it thus "inflated" onto his desk so that he would attempt to pick it up and put it into the waste-paper basket. He would expect a feather weight balloon which would turn out to be as heavy as lead. But alas, we students forgot one rule of physics. We poured lots of quicksilver into the opening of the balloon, but it never filled up. I do not know how much mercury we lost into the sink (a cardinal sin in any laboratory, for mercury attacks many metals forming amalgams and making the pipes leaky). The rubber just simply was not strong enough to hold the mercury.

So it would be if one tried to contain the incredibly heavy material of a neutron star in any terrestrial material. All terrestrial material would just sink through it out of sheer gravitational force - just like mercury through thin rubber. In fact, just as an airliner sinks through a cloud, so neutrons sink through matter. The airliner has a so much greater density than the cloud that the machine sinks through it - even though the cloud looks so firm and inviting - almost as though one could lie down quite comfortably on it. As soon as the airliner approaches the apparently so substantial cloud it melts into mist and the plane sinks through it like neutrons through terrestrial material. Such neutron material would arise if one could compress the total matter of our earth into a ball of about 100 m. diameter.

We need a few more weights and measures to gain a better idea of the huge forces at work which cause such types of intra-molecular compression. 1) The material compressed to form a white dwarf is 10^{15} times harder than the best steel. 2) It has practically no viscosity. 3) It is one million billion times heavier than water. 4) One teaspoonful of neutrons would weigh a billion (American) tons. 5) If one spoonful fell onto the earth, the contents would penetrate the earth right through until Australia and land up where the gravitational force of the earth is greatest.

One cannot extrapolate these figures for gravitational collapse further to include the black hole for the simple reason that there the tendency is to infinite gravitational force and no dimensions. Thus figures fail to serve any purpose when it comes to black holes, for infinity tends to become involved. The important point to remember here is that *infinity* does tend to become involved when we reach the phenomenon of black holes. This fact will have, as we shall see, consequences for materialism and dimension theory which are astounding when applied practically and theoretically. To bring these facts into focus we need, however, to examine some more physical measurements which will allow us to draw quite remarkable conclusions with respect to dimension theory.

3) Light Refraction and Gravitation

If a beam of light is passed over the rim of, say, the sun, the beam is refracted to a small extent. This refraction is, of course, due to the fact that light may be regarded either as particulate or as a wave function. Both interpretations of the properties of light are correct. If, however, light is regarded as particulate it will obviously tend to be attracted by the gravitational force of the sun, which influence will result in the slight bending (refraction) of the beam of light. The stronger the gravitational force and the nearer the beam to the gravitational source, the greater will be the refraction or bending of the beam. Figure 4.1 shows this effect. This refraction was experimentally proved to be correct during various observations of eclipses of the sun. This is the first important physical measurement.

Now for our second physical measurement: If a beam of light is passed over the rim of a pulsar, white dwarf or a neutron star, the beam will be subjected to the influence of gravitational forces of a far higher order, for the pulsar is incredibly heavy and will therefore attract light, regarded as particulate, to a far larger degree. The refraction of the light beam passed over the rim of a pulsar will be correspondingly larger. This extra bending of the beam of light is shown schematically in figure 4.2.

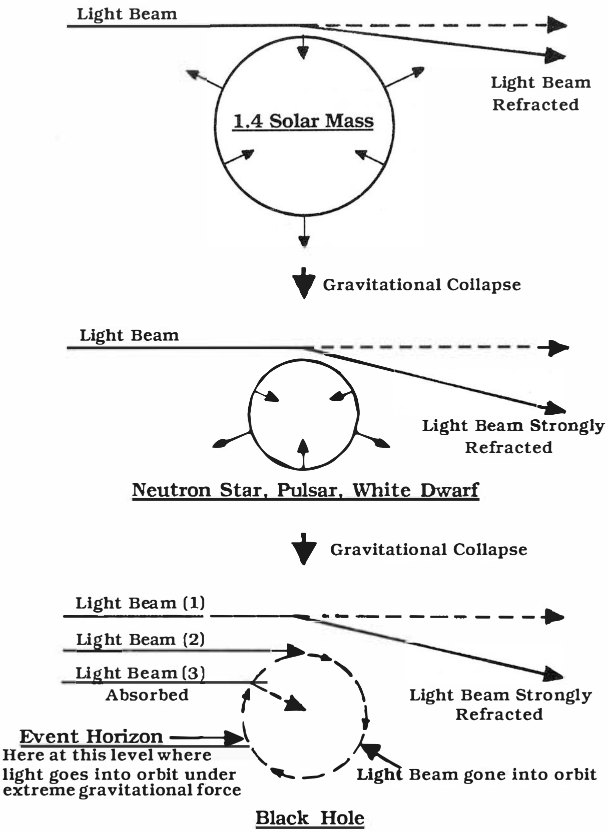
And our third physical measurement brings us to the culmination of the physical measurements which lead us directly into dimension theory: If a beam of light is passed at varying distances over the "edge" of a black hole - as shown in Figure 4.3 (in this diagram 3 beams of light at varying distances from the center of the black hole are shown) even the outermost beam (beam 1) will be much more refracted than in the case of the quasar. If we now move the beam of light nearer to the center of the black hole to the beam shown as beam 2 the gravitational attraction of the black hole on the beam of light becomes so strong - because the beam is nearer to it - that the light is so strongly bent by it that the whole beam of light is forced to go, as it were, "into orbit" around the black hole.

This fact can be easily illustrated: when the U.S. astronauts approached the moon there came a time when they became so strongly attracted by the moon's gravitational field that they went into orbit around the moon. There were only two ways of getting out of that orbit: a) either they decelerated and fell to the surface of the moon - which they did by applying retro-rockets. Or b) they applied their motor rockets to accelerate and thus escaped the gravitational pull of the moon - which they did when they left the moon. But the important point to remember here is, that, when the gravitational field just matches the velocity of light, the light beam promptly goes into orbit around the gravitational field source - just as the astronauts did around the moon.

If a light beam is passed towards the black hole nearer than the distance from the center at which it would go into orbit, the beam falls into the center of the gravitational field source. See Figure 4.3, beam 3. This involves the absorption of the mass of the particulate light beam into the black hole, thereby increasing the gravitational force of this body.

For our present purposes the important point to remember is the following: The point or distance at which a light beam will go into orbit around a source of gravitational field - in this case, around a black hole - is known as an *event horizon.* This concept of an event horizon is absolutely vital to understanding anything about dimension theory and its relationship to the principles behind scientific materialism. At the distance where light goes into orbit around a source of gravitational force there arises an *event horizon.*

But we may well ask ourselves now why it is so named. The following considerations will supply us with the answer to this question: 1) Since all light at or within the distance of the event horizon from the center of the black



FIGURES 4.1 (Top), 4.2 (Middle), 4.3 (Bottom)

Light Refraction and Gravitation -- The Black Hole

hole either goes into orbit or is absorbed totally by that body, the black hole itself must be permanently invisible from outside of this area. Light, reflected or emitted, allows us to see an object. The light reflected from my forehead, allows others to see my forehead. Light emitted from a light bulb or from the sun - allows us to see the light bulb - or the sun. If no light escaped from the bulb or from the sun, both would be totally invisible. If my forehead reflected no light at all it would be totally invisible. All light nearer than the event horizon of a black hole is either absorbed or goes into orbit, with the remarkable consequence that the black hole itself is permanently invisible from outside the event horizon.

Thus the first consequence of the existence of an event horizon around a black hole is that the latter is permanently and on principle *invisible* from outside it. The best telescopes in the world cannot see it, for there is no light for the instrument to work upon . . . not even the best instrument.

2) What applies to light applies also to other radiations (like light) which might be carriers of information out from the black hole to us observers outside it. All radiation from the black hole is swallowed up in the gravitational field of the black hole, so that, on principle, nothing escapes from the black hole which could carry information out and by means of which we could study black holes. There are certain exceptions to these rules and some radiations do escape, but it is precisely the exception that proves the rule.[1] The rule is, that nothing escapes the attraction of the gravitational field surrounding a black hole. For some exceptions to this rule see the following literature: New Scientist, 23.10.75, p. 196, Black Holes exploding; New Scientist, 15.1.76, p. 134, Black Holes and Quasars; New Scientist, 13.10.83, p. 88, Black Holes and Quasars; Science, 7.6.85, p. 228, Second Black Hole discovered; New Scientist, 23.1.86, p. 33, Black Hole at Center of Milky Way; New Scientist, 21.8..86, p. 21, Black Holes can radiate energy shrinking at the same time, eventually exploding; New Scientist, 25.9.86, p. 25. The above references include just a few on the subject of black holes, but provide further cross referencing for the interested reader.

If now there are no radiations normally escaping from black holes, then there are no information carriers which might carry information to allow us to study the inside of black holes. This fact bears with it the following and the second most important consequence: At the event horizon there arises a *cosmic censorship.* No information can pass this information barrier at the event horizon for the simple reason that there is no information carrier or radiation which can pass this barrier.

Thus, at the event horizon there exists a barrier to the passage of any and all information. We, on the outside of the event horizon, cannot then, on principle, study any processes occurring inside the black hole on the other side of the event horizon. There are, on principle, no scientific or other means by which science could study the dimensions inside an event horizon from the outside. That is, to put the matter plainly, there are scientific *last mysteries* which are today well known to science as last mysteries. Such are not merely metaphysical or theological, they are scientifically well founded.

It is of no use for materialists today to claim that all last mysteries are exploded myths of theology or metaphysics. Such are hard scientific facts today. It is unscientific today for materialists to protest that what cannot be examined in the laboratory does not exist for them and is not science. The area beyond any event horizon is a last mystery which cannot be investigated from anywhere outside that event horizon. And yet such an area is perfectly scientific. Such an area which cannot be investigated from within the natural law of our dimensions of time/space is in fact a true last mystery - just as the origin of the surprise effect known as information is a true last mystery, as we have already observed. In fact, the areas of known last mysteries are continually increasing today with the increase of scientific knowledge and bear out what metaphysics and theology have been trying to tell scientists for years. Now materialistic science is teaching materialistic science about these last mysteries. Reluctantly science is beginning to listen to its own voice, and scientists like Paul Davies are trying to teach liberal theologians about the reality of God (Paul Davies, "God and the new Physics", N.Y., Simon and Schuster, Penguin Books, 1983).

Our second point teaches us then that within the area of an event horizon a region of *cosmic censorship* exists, which is, to science, indeed a last mystery - just as the origin of information is a last mystery.

3) This brings us to the next and third important point, a point which is in practice difficult to understand fully, and yet it is a theoretically well understood fact: As a time piece, say an atomic clock, approaches the event horizon around a black hole, the passage of time slows progressively down until it stops flowing altogether when it reaches the event horizon itself. In other words, time stops flowing at the same place where invisibility and the cosmic censorship start.[3]

Sebastian von Hoerner showed some time ago, that by applying Einstein's theory of relativity, the relative flow of time was coupled to the speed of light. In his article in the journal Science Sebastian von Hoerner, (Science, July 6th, 1962, p. 18) showed on theoretical grounds that if someone entered a rocket and travelled outwards into space for 5 years at the speed of light and then returned to earth at the same speed, so that the person had spent ten years in space at the speed of light, that person on arrival back on earth would be just ten years older. However, if his wife had remained on earth during her husband's ten years at the speed of light, she would have become 24 years older by just staying relatively put.

If, however, the journey in space at the speed of light was lengthened to twenty years (i.e. ten years outward bound at the speed of light and ten years back at the same speed), then those who remained on earth during this period will have become 270 years older - while the astronaut is just 20 years older.

Should the space travel at the speed of light be extended to 40 years (20 years outward bound and 20 years homeward bound) the astronaut will find to his dismay that his wife had died during his absence some 36,000 years ago. Finally should the space travel be increased to sixty years at the speed of light, the astronaut himself will find that he has become 60 years older, but his wife, who stayed at home, will have died some five millionyears ago. Time is a reality, but its rate of flow is dependent on external variables[3] a fact often forgotten by those who like bandying around with millions and even billions of years to assess the time require by randomness to become creative! We will have more to say on this subject at the appropriate place in a later chapter.

The important point to be remembered at this point is that where the speed of light is held in check by orbiting - as at an event horizon round a black hole - there time is known to cease all flow. Time stops. It reminds one of the passage in the Revelation of St. John, where the angel calls out "that time should be no more." (Rev. 10.6).

Now this fact has very important consequences, some of which are as follows: The dimension in which we live is a space/time continuum. Where matter and space are, there decay with time takes place. Time measures the rate of decay. In fact decay provides us with a reliable measure of time flow. Time is measured by decay rate. But time and matter are inseparable entities. One cannot have time without matter and there can be no matter without accompanying time. Matter without time just cannot exist. Similarly time cannot flow without matter on which its flow can be measured. Here then we have come to a limit or boundary of the space/time dimension where time ceases to flow.

4) This *ceasing of the flow of time* brings us to our next vital point: It is: Where time flows no more, there matter as we know it cannot exist either. *At the event horizon, where time ceases to flow, precisely there also matter ceases to exist too. All the properties of matter cease to exist at this event horizon.* Carbon with its four valencies ceases to be carbon. Oxygen with its two bonds ceases to be oxygen. Even if antimatter were to pass such an event horizon, there, at this horizon, it would also cease to possess the properties of antimatter. That is, at this horizon, time *and* matter cease to exist.

Now, if our dimension is characterized by time and matter as a space/time continuum, then the event horizon described above describes a frontier of our dimension of space/time and other dimensions. Here, then, is the end of our material space/time dimension. Here is a border of our space/time continuum. Here ends *all reality as we know it in space and time and other dimensions commence.* The dimension of space/time is surrounded by a boundary at which time and space end and timelessness begins! Beyond this boundary another dimension starts where time and matter, as we know them, cannot exist and are replaced by some other reality which we cannot, on principle, examine.

The "scientific materialistic reality" (that our space/time continuum is the *only* reality), is then today no longer tenable. There may be an infinite number of other realities beyond the space/time continuum and indeed transcending it. But from a scientific standpoint we cannot on principle investigate these other possible realities. They must remain, on scientific principle, "last mysteries" with respect to all our science, but none-the-less highly real realities. *The materialistic credo* that the "here and now" comprises all that exists in the creation/universe reveals itself to be what it is - the product of sheer *scientific* ignorance.

Consider for a moment some of the consequences of this last conclusion. Take Atheism, Marxism and its related Communism. All are coupled with or based on Scientific Materialism, as most textbooks on these subjects will proudly and dogmatically tell their readers within the first few pages. The "here and now" of these ideologies (or religions) is everything, such books maintain. The idea of "other worlds", or other dimensions is for " the birds", for there are none such, books of this type say. But our own *materialistic scientific thought* speaks a vastly different language today, for we now know that there are many other realities, realities beyond event horizons and therefore cut off from our reality by total cosmic censorship - just as effectively cut off as the theologians have declared to us for centuries that heaven is forever cut off and hermetically closed to certain aspects of fallen man! Other worlds there are - and they are worlds beyond event horizons.

Might it be that death offers us one one-way bridge through such event horizons into other worlds of reality? For death, according to ancient wisdom, was the door of entrance to an *eternal*, that is, timeless, reality. And by the term "other worlds" I do not wish to imply the world behind the event horizon surrounding a black hole! I have used the black hole merely as an example to establish the concept behind the word "event horizon". Other event horizons, not merely those surrounding a black hole, certainly exist. Professor Paul Davies and others believe, on physical and mathematical evidence, that there are at least eleven dimensions of reality including that of time/space. (see P. Davies, Science, 1.6.84, 224, p. 971. Also New Scientist, 9.2.84, pp 31-33 and 29.9.86, p. 55).

5) This section brings us to our fifth parameter of phenomena occurring at an event horizon. It is: *From within the event horizon of a black hole there exist an infinite number of tunnels to an infinite number of other dimensions.*[4]

This means that physical science has come to the conclusion that, far from our dimension of space and time being the only reality and dimension which exists - as the scientific materialists, Marxists and others have so long erroneously taught - there exist perhaps an infinite number of other worlds besides our own reality and time/space dimension. And all these other realities are separated from our reality by event horizons, so that they will ever remain last mysteries to us in our time/space dimension.

If now scientific materialism has shown itself to be so much in error on matters of physical fact of the above sort, how much more may it be wrong on the purely ideological side of its philosophies? In fact, the Good Master maintained that "the Truth will set us free" (John 8:32). If, now, the truth will shake the shackles off our feet, hands and thought, the corollary will be *that error (scientific as well as religious) will enslave us.* It is a remarkable fact of history that *wherever practical and ideological atheism and materialism have held sway they have always politically and ideologically enslaved the people who suffer under them!*

As an example consider the universal slavery which always takes over wherever communistic atheism holds sway over men. But it is never moral nor even safe to point to erroneous systems other than our own without considering first the necessity for reform at our own centers of thought. For, as Churchill once remarked, creeping socialism in the West as elsewhere leads to creeping slavery too - or words to that effect. For one of Socialism's chief principles consists in robbing Peter to pay Paul - i.e. making the wealthier pay the debts that the poorer have often incurred by consuming more than they have earned and should have worked for to pay off. That is, supplying the less wealthy with a higher standard of life than they in fact have earned, is a fundamentally erroneous principle. In other words, taking care that the masses consume more than they have actually produced, i.e. at the expense of those who produced more than they consumed and so could lay by for a rainy day. I am not speaking of the morality or immorality of wealth at all, but merely of the possibility and consequences of producing less than one consumes at someone else's expense. This is commonly practiced on a wide scale to buy socialistic votes on a mass scale today. The whole arrangement is an economic lie which is enslaving the West (and the East) in financial and ideological slavery (see my "Infiation; der Dieb im Haus, 1983, Schwengeler, Berneck, Switzerland). Which musing brings us to our last and sixth parameter!

6) The more matter the black hole swallows, the greater becomes its gravitational field, with the consequence that its size becomes ever smaller. As we have already remarked this process of swallowing ever more and more matter is followed by the tendency to infinite density and to no dimensions at all. The black hole becomes smaller and more invisible (!) the more it "feeds" on the matter or anything else which is sucked into it.

In fact this situation reminds one of Pharaoh's dream cows which so frightened him in his fateful dream (Gen. 41). He, Pharaoh, saw the seven lean kine, so lean that they were horrible to look upon. The remarkable thing about these animals was that the more they ate, the thinner they became! They even ate up the seven fat kine Pharaoh saw by the Nile. But even after they had eaten the fat kine, they looked no better, but rather more woebegone than before their rather substantial meal. It all reminds one of the "physiology" of the black hole - the more it devours the smaller it becomes![5]

With these 6 points we have summed up what we set out to show, namely that scientific materialism, which has taught us for over a century now that the idea that there are other worlds, realities and other dimensions beside our own is mere religious nonsense, turns out, in fact, to be sober scientific sense. And this same materialistic untruth has already enslaved large areas of the world both economically and ideologically.

The way to combat the errors of atheism, communism and materialism is not by the sword or censorship but by replacing them with better, that is, truer scientific ideas and ideologies. It is time that some of the billions of dollars spent on "defending" the ideologies of the West (ideas of freedom etc.) with guns, should now be spent on the root of the matter, namely on *wrong thinking*, which has allowed such erroneous and therefore tyranny producing ideas to multiply because the mass of the peoples simply does not know the truth. The spread of the truth is the best way to prevent and unsaddle the tyranny of wrong ideologies and therefore of political tyrannies. As it is, the wealth of the West has been used to hold the peoples of the East down in communistic slavery by supplying Western technology and armaments to the tyrannical atheistic bosses which the East is unable (because of its wrong economics based on collectivism) to provide. The West has, by supplying a wrong system with credits (at below market prices often), taken care that the tyranny of perverted ideologies can be firmly established. If this money were to be cut off and applied to the spread of scientific (maybe as well as ideological) truth, we would be well on our way to a better state of affairs in our political time/space continuum!

May I be permitted here to emphasize once again that I do not believe that the black hole is the reality behind theological dimensions such as heaven or even hell. I have used it here merely to establish the correctness of the idea of last mysteries and event horizons from a scientific point of view and to show that the basic concepts behind current scientific materialism are scientifically incorrect. There exists infinite numbers of other dimensions which could supply the information necessary to construct biology and the DNA molecule and its stored information.

We need now to turn to other analogies and pictures to develop further the scheme we have so far arrived at.

1 For a discussion of Black Holes and Lovell's work with radio-telescopes see Davies, Paul, *God and the New Physics*, Penguin Books Ltd.,Harmondsworth, Middlesex, England. 1983, especially pp.6, 9, 32, 52-55, 122-123, 177-89, 208. See also *Black Holes and Quasars*, New Scientist, 13th. October, 1983, p. 88; Also Science, 2nd. December 1983, p. 222. *BlackHoles andQuasars*, Science, 7th. June 1985, p. 228. *Second Black Hole Discovered*, New Scientist, 23rd. January 1986, p. 33. *BlackHole at the center of the Milky Way*, New Scientist 21st. August 1986, p. 21. *Black Holes can radiate energy shrinking at the same time, eventually exploding*, New Scientist, 25th. September 1986, p. 25.

2 Wilder-Smith, A.E., *Die Demission des wissenschaftlichen Materialismus*, Telos International, Hänssler Verlag, Neuhausen-Stuttgart, D-7303, Western Germany, 3rd. edition 1979, pp. 1-136.

3 The reason for this fact of science is that the flow of time slows down under increasing gravity. That is, where the gravitational field decreases, there time flows faster. At an event horizon surrounding a black hole, there the flow of time stops - and its flow is stopped within a black hole inside such an event horizon. See Davies Paul, God *and the New Physics*, Penguin Books Ltd., Harmondsworth, Middlesex, England, 1983, p. 122.

4 Davies, Paul, New Scientist, 7th. August 1980, 405. Once within a black hole it would take an infinite amount of time to get out again by reaching the surface, for time flows no longer there. That is, from within a black hole there can be no return to the universe from which the intruder came. But within the event horizon of a black hole there exist tunnels to an infinite number of other dimensions.

5 Davies, Paul, loc. cit., see chapter on Black Holes and Cosmic Chaos, 13, pp. 177-189.

Chapter V

Evolutionary Theory, Abiogenesis and Evolutive Speciation

1) The Irrelevance and Impotence of Evolutionary Theory in Matters of Experimental Abiogenesis

The clinching proof of the correctness of any chemical structure has long been regarded as its total synthesis in the laboratory under controlled conditions. Accordingly - and logically - Darwinian scientists set about synthesizing life chemically in the laboratory under conditions given by evolutionary theoretical leads. We must, therefore, look first at some of these leads and then pass on to the results gained by following them.

The first evolutionary lead, of course, stemmed from the fact that the organic compounds obviously required for the synthesis of the proteins of life are amino acids, the building blocks of all proteins. So Fox, Miller, Urey and others[1] set about the problem of abiogenesis as any classical Darwinian might have done so. They mimicked, therefore, the lightning bolts in an assumed primitive primeval reducing atmosphere by passing various forms of electrical discharges through methane, ammonia and water vapor in a suitable piece of apparatus incorporating a chemical cold trap designed to separate from the reaction mixture any products formed. After each batch of gas had been subjected for some days to electrical discharges, the products were removed from the cold trap and analyzed. (See S.L. Miller, Science 117, 528 (1953)[1]. Also Bruno Vollmert[3], Das Molekul und das Leben, Rowohlt, 1985, pp. 1-255).

The leading thought behind experimentation of this kind, is, of course, purely Darwinian. For *chemical natural law plus time and energy* are considered by Darwin and his myriads of modern followers today to be the sufficient *chemical basis* of all life. Therefore, let natural chemical law plus energy plus time react with matter and find out what substances result - perfectly logical!

The vital point is, what *did* happen on applying this purely Darwinian materialistic premise? Just what any chemist, who knows his subject, would have thought, namely: certain substances were formed as "entropy holes": - some monofunctional, relatively simple substances like acetic acid, formic acid, and certain amines. Some bifunctional substances, like the amino acid alanine turned up in the mixture. Glycine turned up, too, together with traces of higher amino acids. (Compare the table of products (Table I) which, although fairly common knowledge among the instructed, I have taken from Bruno Vollmert. (Das Molekul und das Leben[3], Rowohlt, 1985, p. 42).

Now, as B. Vollmert points out repeatedly and very clearly, although these simple substances and their synthesis under Darwinian conditions

TABLE 1

FROM THE PRIMEVAL ATMOSPHERE TO THE MACROMOLECULE*

Type and Relative Number of Molecules in the Solution

Bifunctional Molecules		Monofunctional Molecules	
$H_2N\text{-}CH_2\text{-}COOH$ Glycine	1.0	$HCOOH$ Formic Acid	3.0
$H_2N\text{-}CH\text{-}COOH$ CH_3 Alanine	0.54	$CH_3\text{-}COOH$ Acetic Acid	0.3
		$CH_3\text{-}CH_2\text{-}COOH$ Propionc Acid	0.3
Total Amino Acids	1.54	Total Mono-Carboxylic Acids	3.6
$HO\text{-}CH_2\text{-}COOH$ Glycolic Acid	0.9	$CH_3\text{-}NH_2$ Methylamine	5.0
$HO\text{-}CH\text{-}COOH$ CH_3 Lactic Acid	0.73	$CH_3\text{-}CH_2\text{-}NH_2$ Ethylamine	0.5
Total Hydroxy-carboxylic Acids	1.63	Total Monoamines	5.5
$HOOC\text{-}(CH_2)_2\text{-}COOH$ Succinic Acid	0.5		
Nucleosides (Below limit of resolution)	< 0.003		

*Typical results obtained in the Miller experiments-Courtesy Professor Dr. Bruno Vollmert, Karlsruhe, German Federal Republic.

are certainly highly interesting, they are also illuminating from a Darwinian point of view with respect to abiogenesis in a primeval ocean as Darwin imagined ("in a warm pond"). Why so? Not in the manner Darwin thought, however. To save space and time we will just construct a list of the various points emerging from this work, which ought to have warned Darwinians such as Ponnamperuma[1], that chemistry does not support Darwin. Oparin[2] and many others should have known that Darwinian theory was not so much wrong as deficient from the standpoint of chemistry! Herewith the various points for careful consideration from a chemical point of view: -

1) In the presence of such a large percentage of *monofunctional* molecules in Fox and Miller's experimental products, no polymerization to the macromolecular type of protein molecule needed for life to start could, according to the well known principles of polymer chemistry, (see B. Vollmert, loc, cit.) ever, on theoretical grounds, result.[3] For polymer chemistry forbids the formation of any vital or other macromolecular proteins under the experimentally simulated Darwinian conditions used by Fox and Miller. Bruno Vollmert (loc. cit.)[3] explains exactly why this is the case. However, as this is perfectly clearly a chemical matter, I leave those sufficiently interested in chemical matters to look the matter up in Vollmert (loc. cit.) *Suffice it to say that the high percentage of mono-functional molecules forbids all macropolymerization of the bifunctional molecules.*

An interesting matter needs pointing out at this juncture. It is, the following: - Because Darwinians *expected* some macromolecules to be formed under such simulated Darwinian conditions, they profess, to have found some (see M. Eigen, cf. W. Frese reporting on M. Eigen in "Selecta", 26, 30.6.80, in the Max Planck Institute for Biochemistry in Martinsried, 6.12.79; also Bruno Vollmert, Das Molekul und das Leben, Rowohlt, 1985, p. 43. Compare also R. Riedl, Die Strategie der Genesis, R. Piper & Cie, Munich, 1984). Vollmert makes the following statement: "All reports according to which the Miller experiments yielded proteins or nucleotides (DNS/RNA) such as reported in the Eigen lecture above mentioned . . . do not correspond to the facts. M.W. Irvine, Amherst/U.S.A.; J.M. Greenberg, Leiden, Holland, report[4]: "On the other hand, one must keep firmly in mind, that biologically important macromolecules such as peptides, proteins, nucleotides, nucleic acids, saccharides and similar complex compounds *have in not a single case been discovered in meteorites, on other planets, or even in older sedimentary rocks on our earth."* (compare B. Vollmert, Das Molekul und das Leben, Rowohlt, 1985, p. 43, emphasis added by A.E.W.-S.). In other words, Eigen and others have reportedly altered known chemical findings to suit their own particular ideologies. According to Darwinian theory, proteins, nucleotides and nucleic acids ought to be formed under Miller's conditions. So we shall have to find some somewhere! No one has ever experimentally confirmed these "findings", of course. Chemists in the know, are indeed surprised that non-chemists have risked "confirming" such reports! But, in view of the strong tide of opinion interested in confirming Darwin at all costs, the "finds" of macromolecules in Fox and Miller's mixtures even by illustrious men have gone almost uncommented on.

2) Under the ordinary conditions of the chemistry such as used by Fox and Miller, any amino acids such as alanine containing one or more asymmetric carbon atoms (and therefore capable of forming the mirror

image type of molecule, i.e. left-handed and right-handed molecules, molecules whose relationship to one another is that of the relationship of my left hand to my right hand, my left foot to my right one, my left eye to my right one) *a racemic, optically inactive mixture of 50% left-handed and 50% right-handed molecules, that is to say, a racemate, is always, without any exception produced.* This is a well known fact of the organic chemistry of any substances containing one or more asymmetric carbon atoms.

This is not the place to deliver a dissertation on the formation of optically pure organic substances and racemates. Those interested may use my book "The Natural Sciences Know Nothing of Evolution"[5], to clear up this important matter so vital to Darwinian evolution and its scientific refutation. By taking the trouble to understand this piece of simple theoretical and experimental chemistry, the Darwinian postulates, as far as abiogenesis is concerned, can be settled for ever with no possible counter-argument. Darwinism, in respect of the postulate of abiogenesis by natural law, energy, time and stochastic processes turns out on experimental and theoretical grounds to be frankly and plainly erroneous as well as deficient. Darwin did not know - nor could he have the known chemistry involved in his postulates. For these things were discovered somewhat after his time by Pasteur and many others (Compare the classical works of Emil Abderhalden in any good chemical library, especially his works on optical activity in biological chemistry). Note 6 explains these points.

3) Biologically active proteins contain solely asymmetrical carbon atoms which are levorotary. This levo rotation is 100% optically pure, That is, such proteins must be 100% optically pure in order to function in the biological organism at all.[5] Biological proteins contain no mixtures (racemates) of left (levo) handed and or right (dextro) handed centers, otherwise their stereochemistry would not meet the stereo (position in space, shape of the molecule) chemistry required to fit on to the receptor sites of the living organism. Racemic mixtures will not suffice. This fact is particularly valid in the case of large molecules containing many asymmetric carbon atoms. Such a state of affairs can be fairly easily made understandable to the non-chemist if a little pedagogic effort is suitably applied:

Enzymes and other active molecules in the biological organism fit into their substrates and receptor sites in the cell much as a hand does into a glove. Remember, however, that a left hand fits only into a left-handed glove. A left hand will not fit into a right-handed glove any more than a left foot will fit into a right shoe - even though otherwise the sizes may be correct.

Now a long protein molecule may be viewed as a collection of thousands of left-handed hands all joined together through thumb and finger to give a line of left-handed gloves, say 10,000 hands long. In the body the 10,000 joined-up left-handed hands have to fit into receptors in the cells or substrate which consist of 10,000 corresponding left-handed gloves. So we are not considering just one left-hand fitting into one left-handed glove but some 10,000 left-hands all joined up in a row fitting into a row of some 10,000 left-handed gloves - without any jamming! Chemical enzymatic reactions function on this basis - a perfect fit of, say, some 10,000 left-hands into a perfect fit of some 1 0,000 left-handed gloves.

If now anything disturbs this perfect but delicate fit, the chemistry becomes blocked, the metabolism is stopped and the cell may die.

Consider now what would happen if just one left-handed hand in such a large molecule were to be replaced by a right-handed hand. The whole long molecule would no longer fit into one consisting of 10,000 left-handed gloves. Such a molecule containing but one hand or one glove of the incorrect configuration (i.e. right-handed or left-handed) blocks the chemistry of the cell, due to disturbance of the chemical fit.

Consider the following additional case: If, in the molecule of built up of "hands" there were to be a higgledy-piggledy mixture of left-handed and right-handed hands in the long chain of "hands", would any "fit" be possible under any circumstances? Where many or just one "hand" or one "glove" shows the wrong configuration (left-handed or right-handed), there no "fit" and therefore no corresponding cell metabolism in the area of that molecule is possible.

These considerations have been born out chemically and have been well-known for years now. Molecules of a protein (with very minor exceptions which prove the rule), which are optically impure, i.e. which contain racemates or mixtures of right-handed and left-handed asymmetric centers in the molecular chains show reduced or no ability to co-operate in the metabolism of the biological cell. Pretty well without exception all vital proteins are left-handed and optically pure. And pretty well without any exception all DNA molecules are right-handed and optically pure. Mixtures or racemates are of no use in vital metabolic synthesis.

What conclusions are to be drawn from these facts as to Darwinian postulates on abiogenesis by natural law alone? Since chemical natural law can *deliver only the racemates,* when natural law is left to itself, natural law, left to itself, *cannot* produce life spontaneously. For life cannot function on the racemates which unaided chemistry always delivers. There is no argument against this chemically based reasoning, for it is chemically absolutely sound.

But where, then, does biology obtain its chemical optically purity, if chemistry, stochastic chemistry, cannot deliver it? The optical purity is coded for in the information residing on the DNA molecule. Therefore, it requires the factor "I" to aid natural law in putting optical purity into biology's chemical syntheses. *Chemistry unaided by factor "I" just cannot do this feat of producing 100% optical purity. Only chemistry plus information can succeed here.*

Factor "I", discussed in the following chapter VII, is the parameter which describes surprise effects as opposed to natural law, such as valence, etc. Surprise effects govern or shepherd natural law into paths which natural law would otherwise not take. Thus, the intrinsic properties of steel are insufficient to build an automobile. But the surprise effects, or factor "I", from the blueprints of the design engineers shepherd the intrinsic properties of the steel to synthesize the cylinder block, valves, axles, etc. which make the car out of the steel. That is, such natural law as resides in the steel is insufficient to build the car. For that, "surprise effects", alias factor "I" are required additionally. It is just as nonsensical to maintain that natural law plus time unaided built the automobile as it is to maintain that natural law plus time built the biological cell. For detailed discussion see chapter VII.

Factor "I', or the surprise effect, does not, as we have already seen, arise in or out of natural law, it is a surprise effect *supplementary* to natural law. Chemistry itself and unaided has no "entropy handle" to get a "hold" on the left-handed or the right-handed molecules so as to separate them from one another. Chemistry itself offers *no distinguishing "hold"* to distinguish the left-handed from the right-handed isomer, for *there is no entropy difference* between the dextro and the levo forms. Thus, it is *theoretically impossible* for Darwin, Oparin, Ponnamperuma, (C. Ponnamperuma, R.M. Lemmon, R. Mariner, M. Calvin, Proc. Natl. Acad. Sciences, USA, 49, 737, etc.) to have been correct in their belief that natural law alone could explain abiogenesis. Even today Nobel Laureates teach the same nonsense. See also reference 6 at the end of this chapter.

The real answer is that only chemistry, time, energy *plus factor "I"* can achieve the job of abiogenesis from inorganic matter. But without factor "I",, which Darwin set out to totally avoid, (intelligence, i.e. information) there is no hope of progress in the abiogenetic field of endeavor.

2) Attempts at the Synthesis of Life in vitro

Many attempts have now been made at synthesizing biology from inorganic matter. The attempts we wish to look at here concern the more recent serious ones, which have, of course, not stuck to the narrow Darwinian doctrinaire view that Matter, plus Natural Law plus Energy and Time produce life . . . if left to themselves long enough under the right conditions. Would any serious scientist today ever think of trying the purely Darwinian technique out in his fine modern laboratory, equipped with super-centrifuges and all the other technical trappings? Any scientist risking trying out Darwin's abiogenesis and evolutive speciation literally today might possible run the risk of being certified insane by his peers and colleagues - if his Darwinian faith was so great that he tried it even in principle in today's laboratories! For stochastic chemistry produces no machines and therefore no life.

To return to the technique required for abiogenetic *in vitro synthesis: In the first place, there are probably no such things as single self-replicating molecules* - although one speaks a great deal about them today. To achieve self-replication in general, one needs more than single molecules, the interaction of several different types of molecules with one another is mandatory. Maybe a DNA or RNA molecule might be able to replicate itself but it will be in the presence of certain other molecules - such as enzymes or replicases.[7] Maybe the one molecule can act in several roles, of course. In this sense there have been reports, that some nucleic acids can act as their own catalysts. But it is usually the interaction of several molecules with one another that brings self-replication into play. The interacting molecules need not be all of varying analyses - as in the case of the molecules which act as their own catalysts. Varying roles are required for replication. We keep, then, in mind that the replication of one molecule entirely by itself is not yet known. Several molecules interact with one another to give the replication we ascertain in the von Neumann machine known as the biological cell. This interaction reminds us again of the machine nature of the self-replicating von Neumann machine, for the latter consists of an interacting multitude of component parts to achieve self-replication. The many different molecules correspond to the many different components of the replicating von Neumann machine.

The above being the case, the synthesis of a single molecule has little to do with the clever synthesis of just one super molecule which selfreplicates and hides the secret of life even though the literature speaks often of a primeval self-reproducing molecule arising.[8] A real synthesis of life will more probably lie in the synthesis and ordering or arranging of the many component parts (i.e. molecules) of the von Neumann machine. By interacting with one another these components will produce the dynamic metabolic machine.

Obviously the synthesis of a machine consisting of a multitude of mutually reacting component parts is an entirely different project to that which was formerly envisaged - the synthesis of one large macro-molecule. It is for this reason that, although the DNA molecule is vital for biology in that it is life's information storage and retrieval system, yet it itself has to provide somehow the various different molecules with which it can react, as life starts to develop from the zygote.

In the synthesis of the cell or the virus it is, then a question, not so much of the synthesis of any single macromolecule (although that will come into the solution of the problem) but the synthesis of a whole hierarchy of the information required for interacting molecules, that is, of a dynamically metabolizing, functioning machine.

In the course of investigating just what has been done in this area we need to look at the work of Dr. Arthur Kornberg and Dr. Sol Spiegelman.

3) The Arthur Kornberg and the Sol Spiegelman Syntheses [9,10]

In the year 1965 Sol Spiegelman (Sol Spiegelman et alia, The Synthesis of a Self-propagating and Infectious Nucleic Acid with a Purified Enzyme, Proceedings of the National Academy of Sciences, 54, 919-927, (1965)) announced that he had synthesized a viral nucleic acid (RNA), and that this self-replicated, that is, it could be regarded as a simple form of life.

This announcement was not made with a great deal of publicity and was accordingly passed over with brief announcements in a syndicated column by Ralph McGill (Indianapolis Star, April 8th. 1966). However, two years later Arthur Kornberg, (Nobel Laureate) Mehran Goulian and Robert N. Sinsheimer repeated the same experiment, this time, however using DNA - the basic active information storage and retrieval system of biology. RNA consists of pieces of information cut out of the DNA molecule and slightly modified (it contains uracil instead of the thymine in the DNA molecule) and is used on the spot for synthetic purposes and then destroyed. DNA is not so manipulated in the cell, but remains much more inviolate than the relatively short pieces of RNA, which may be sent to fulfill various missions in various parts of the cell.

Kornberg's work was reported in the same journal as Spiegelman's research (M.Goulian, A.Kornberg and R.L Sinsheimer, Enzymatic Synthesis of DNA XXIV, Synthesis of Infectious Phage, ϕx 174 DNA, Proceedings of the National Academy of Science, 58, 2321-2328 (1967). A huge amount of publicity was used to get Kornberg's message over to the public - namely that a simple form of life had been synthesized entirely by man and from scratch from non-living matter. UPI stated, for example that "Two Scientists create Living Virus - they had manufactured a simple or primitive form of life in a test-tube." Associated Press proclaimed: "Scientists synthesize infectious Virus." President Lyndon Johnson announced that the scientists had unlocked a fundamental secret of life and insisted that the story to be released would be "one of the most important stories you ever read" (quoted from Duane T. Gish, Spectrum, Winter, 1969, pp. 16-23).

What were the theoretical consequences of these and similar announcements? Ralph McGill, the columnist (loc. cit.) summed up the matter by saying that "Theology, too, will need to cope with this test-tube creation of a living, reproducing "thing". The fundamentalists will be the most strained by this awe-producing, secular success. Stuck, or bound, as he is by literalness, the fundamentalist will be troubled".

What did McGill mean by cryptic statements of this type? Surely that the creation of life in the test-tube will force religious people to revise their views on all purely religious explanations of life's origins, particularly those laid down in Genesis and Exodus 20.

One group of Marxists amongst my former students in Chicago visited me one afternoon in my laboratory there and informed me, that according to my own views, Sol Spiegelman must now be God Himself: for, they insisted, if I believed that God was the sole Creator of Life and Sol Spiegelman had now created a living thing, then there was no alternative to their new theory! Sol Spiegelman must be a god, a creator of life! I told them, that, if man was really constructed in God's image as Genesis maintained (the present state of the world shows that that image has been severely distorted - that granted), then I saw no reason at all why man should not be able to copy some, at least, of the smaller works of the Creator - even though in a very small way and very imperfectly. If man combined the same factor "I" with matter in the presence of time and energy as God did, I saw few difficulties in this matter.

Although this group had entered my laboratory with the widely proclaimed intention of murdering me (whether intellectually, symbolically or in the body, never emerged) they left my laboratory in a quite different and far more happy state of mind and asked the Dean for a course of lectures by myself on abiogenesis from a purely scientific point of view. With some of these young men I became very friendly later.

What McGill is probably meaning with his remarks above quoted is that Genesis states that God was necessary for its account of the creation of biology and that now scientists had done the abiogenetical trick without His help. So God and His Bible must be wrong! To believe such is, however, surely unwarranted. For the Genesis account and Sol Spiegelman's synthesis both specify the identical conditions for abiogenesis: both add factor "I" to matter. In one case, of course, the Creator supplied it, and in the other the scientist. The important matter from a purely scientific point of view is not, of course, who supplied the factor "I" but that factor "I" was in fact somehow supplied and with infallible results in both cases. For the metabolic machine was delivered as an experimental result in each case.

Having corrected Mr. McGill's minor misunderstanding - which is, however, an exceedingly common one today, especially in academic circles,-- we are now in a position to examine exactly what Spiegelman and Kornberg did achieve by adding factor "I".

The bacteriophage $\phi \times 174$ is a small, simple, circular virus infecting Escherichia coli. This latter organism was infected with $\phi \times 174$ in the presence of tritiated thymidine, which substance being needed for the DNA synthesis taking place in the organism, labels the phage DNA with tritium. The phage was then separated from the infected cells and the circular strands of DNA separated from the viral protein. Such strands are called the (+) strands.

This viral, labelled and isolated DNA was then placed in a flask with two enzymes both isolated from E. coli, namely E. coli DNA polymerase and E. coli polynucleotide joining enzyme. The DNA polymerase joins the nucleotide monomers together to form the DNA chain. The joining enzyme forms the bond that unites the two ends of the otherwise open DNA chain to close the circle and make the DNA ring.

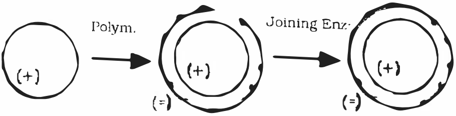
To make the synthetic abiogenetic experiment work four deoxyribonucleoside triphosphate molecules must be present in the reacting mixture to provide the energy required to make this synthesis "go". Another ingredient required for a successful synthesis is the presence of a boiled extract of E. coli. The reason for the necessity of this extract is not at present known.

It was found that, in such a mixture, the DNA polymerase using the (+) strands as a template, wraps the deoxynucleotides round the (+) strands and joins them to form a DNA ring that is complementary to the (+) strand - see figure 5.1.

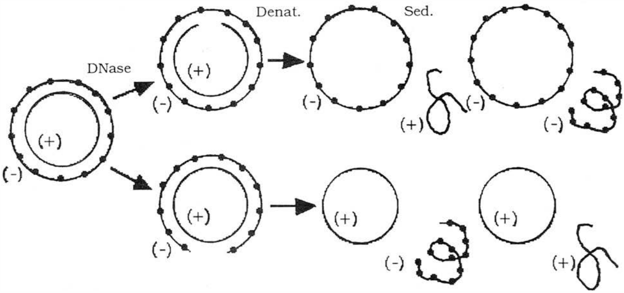
The result of this synthesis is a double stranded circular viral DNA known as the replicative form. In order to achieve success in this synthesis, consider for a moment just what ingredients have to be used: I) The (+) strands from the phage itself, 2) the E. coli DNA polymerase derived directly from living E. coli, and 3) E. coli polynucleotide joining enzyme (to join the open strands of DNA to form the closed ring).

Consider these necessary ingredients: The (+) strand used as a template provides the DNA information factor " I" for the complementary molecule formed by wrapping around it. That is, (+) also forms a part of the factor " I" necessary for the synthesis. Further, consider the E. coli DNA polymerase, derived directly from living E. coli, and the huge amount of factor " I" involved in synthesizing such a macromolecule from E. coli DNA information. Then, lastly, turn over in the mind the chemical complexity of the E. coli polynucleotide joining enzyme required to close the otherwise open strand DNA made on the (+) strands as template. This last ingredient was also derived from living, functioning E. coli DNA. It needed therefore quite a large and multiple factor "I" to get the replicative molecule safely and correctly synthesized. That is, for the DNA information involved to safely and surely shepherd the natural chemical laws inherent in the building materials into the correct stereochemistry and sequences required for the synthesis of such an active and specific enzyme, close adherence to the *information* residing on the living organism is mandatory.

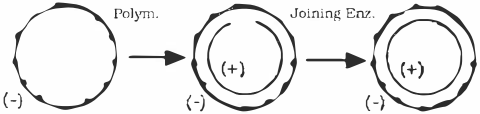
In order to separate the synthetic (-) strand from the natural (+) strand the synthesis was carried out in the presence of 5-bromodeoxy-uridine triphosphate instead of in the presence of deoxythymidine triphosphate. The spatial requirements of the bromoderivative and its non-brominated analogue are about the same, so that the bromoderivative bromouracil replaces the thymine in the DNA synthesis. Since the bromoderivative is a good deal heavier than the non-brominated analogue, the two molecules can be easily separated by centrifugation. The (-) or synthetic strand contained the heavy bromoderivative and was easily recognized. By this method a fully



A DNA polymerase uses the (+) strands as a template to join the deoxynucleotides together in a chain complementary to the (+) strand.



B The two strands are separated from one another by brief treatment with pancreatic deoxyribonuclease which results in some cases of opening the (+) circles leaving the (-) circles intact and in other cases opening the(-) circles leaving the (+) circles intact. The synthetic (-) circles were then isolated by density gradient separation.



C Synthesis repeated with synthetic (-) circular strands as template to yield fully synthetic double stranded circular replicative form.

FIGURE 5.1

The Kornberg Synthesis of a Synthetic Double Stranded Circular Replicative DNA (Figure Courtesy Dr. Duane Gish) synthetic double stranded circular replicative form of the virus was obtained. Truly a remarkable piece of synthetical chemistry.

Let us now look at some of the commentaries on this brilliant piece of work. Some fundamentalists maintain that the use of the natural (+) strand as a template for the DNA strands constitutes cheating. For the scientists made their synthetic virus only with the active help of the living natural one. Over and above this there is the question of the use of the natural DNA-polymerase and the E. coli polynucleotide joining enzyme, both derived from living organisms. So, such critics maintain, life has, in reality, been synthesized, just as usual - from prior life! They therefore dismiss the whole exercise as scientifically dishonest. Life synthesized life, just as heretofore - that is the accusation levelled against the virus synthesizers.

Personally I do not think that this attitude reflects the long or wise view to the whole abiogenetic synthesis. What Kornberg and also Sol Spiegelman have both really achieved is the following: they have both assembled the various necessary, partly biologically prefabricated, components of a metabolic machine system in such a way that the machine was able to function holistically again in that it replicated and was infective. Their genius lay in synthesizing or recognizing the function of each component part first and then modifying each so that the synthesized components could be easily identified and separated after the synthesis had taken place. E.g. the use of bromouracil. No one, of course, knows to date why the boiled extract of E. coli is necessary for success. Obviously some chemical constituent stable to boiling catalyses the whole synthesis.

The important point that has emerged from this whole synthetic exercise is that "living" life (!) is not necessary to synthesize replicating life in vitro. As long as *the results* of factor "I" are introduced into the system somehow (in the form of suitable syntheses), so that the component parts of the total metabolic machine can each take up their respective positions stereochemically in the system, the functional machine can be synthesized. The factor "I" is mandatory, however, for the synthesis, *natural law alone is insufficient.* Factor "I" can obviously be derived in some cases directly from man's central nervous system, as in the selection of unnatural bromo derivatives. Success in synthesizing this living metabolic machine from "dead" components (bromoderivatives) derived here from *human expertise* = "I". To put the matter technically, no *intact* living cells were required for the synthesis of biologically active DNA. This is a *new fact* and is one that is most valuable in establishing that factor " I" is the important parameter in abiogenesis and *not living cells themselves.* For just here lies the important point: The so-called *vitalists* among fundamentalists and others believe that life requires some important "vital" factor which cannot be chemically or scientifically described - in fact some living mystery. For this reason the vitalists maintain that only the Creator can make life. And just here lies an error which annoys evolutionists in dealing with creationists. Factor "I" itself is not a last mystery although it may be derived from one.

It is true that *no virus* was synthesized in these experiments but only intact DNA (or RNA as the case may be). A complete virus requires DNA or RNA plus a vitally important protein layer, which serves as a protective coat. Naked viral DNA would be readily inactivated. It was the living E. coli which, in fact, produced the complete virus together with its protective coat after the infective process had been initiated. Therefore, no complete virus was ever synthesized but only the DNA (or RNA) molecule. The living host organism did the rest of the synthesis.

Here again the position we have described above is re-confirmed. Given the viral DNA information as a pre-condition, the E. coli DNA information will produce the complete virus with its protective protein coat. The synthesis of the total metabolic machine known as the infective virus turns out to be in reality the synthesis of various components of a machine, some of which were prefabricated by E. coli DNA. If put together correctly, these components will work together to produce the total viral E. coli machine.

Strictly speaking, of course, no *primitive form of life* was ever synthesized either by Kornberg or by Spiegelman. Both scientists produced a virus DNA or RNA using a synthetic molecule which is capable of high-jacking the complex DNA system of an E. coli bacterium to produce an infection. Whether or not a "*primitive* form of life" has been produced, is really a question of definitions - what is the definition of life or of a living organism? Does such a definition include a totally parasitic form of DNA or RNA such as that of the virus concerned? If so, then, of course, a form of life ("primitive" or not is beside the point) has been produced. If not, then a mere DNA or RNA molecule has been produced. The cause of all this haggling about terms and whether life has been produced or not is due to a) inadequate definitions at the outset, together with an inadequately informed press. And b) a lurking tendency to vitalism among fundamentalists who believe there is some mysterious but vital factor in life, which is neither mere information nor chemical structure and not subject to natural law. It is considered to be a mysterious "principle" not capable of being rationally evaluated. This vitalistic factor can today be safely dropped and replaced by the scientifically tractable factor "I", for it is scientifically tractable, although and in spite of the fact that all information arises from last mysteries.

What, then, would be the most primitive organism which could be safely defined as "living"? Kornberg can help us here, for he writes: such a living organism must possess: 1) DNA 2) The four deoxyribotide pyrophosphates in abundance. 3) One molecule of the protein DNA polymerase. 4) Ribotide phosphates as precursors for RNA. 5) One molecule of the protein RNA polymerase. 6) A supply of 20 aminoacylnucleotides, or, failing these, each of the 20 enzymes which catalyze the condensation of an amino acid and corresponding RNA fragments, together with sources of these components 7) One molecule of the protein aminoacyl-RNA polymerase. Such a definition would exclude from the definition of "living", viruses consisting of just DNA or RNA and their simple protein coats.

Over and above this pretty large list, the boiled E. coli extract must not be forgotten, together with the necessity of membranes for separating the various systems. Whether genes themselves "know" when to turn themselves on and off is another point needing to be settled in defining life. Certain histones might be necessary for this process. These necessities require an incomparably complex DNA molecule to store all the information required to supply them all.[11] A constant supply of high energy phosphates would also be required for successful synthesis but poses the problem of their source at abiogenesis.

Until man knows the answer to all these complex conditions required for the manufacture of a machine as complex as the cell - the biological von

Neumann machine - he will not be able to declare with certainty just how life arose. One factor is, however, perfectly clear even today: Factor "I" is theoretically absolutely mandatory in order to assemble the metabolic machine known as the biological cell. This factor is mandatory for the production of any machine, simple, complex or of the self-replicating type known as the von Neumann machine.

1 Ponnamperuma, C., Lemmon ,R.M., Mariner ,R., Calvin M., Proc. natl. Acad. Sci., U.S.A. 49, 737, cited from Dose K., Rauchfuss H., *Chemische Evolution und der Ursprung lebender Systeme*, Wissenschaftliche Verlagsgesellschaft mbH., Stuttgart, 1975, 107.

Miller, S.L., Science 117, 528 (1953). Fox S.W. ed. *The Origins of Prebiological Systems*, New York, Academic, 1965, see also J. Amer. Chem. Soc., 82, (1960). 3745.

2 Oparin, A.I., Der *Ursprung des Lebens*, Moskau 1924

3 Vollmert, Bruno, *Das Molekül und das Leben*. Rowohlt, 1985, pp. 40-45.

4 Vollmert, loc. cit. p. 43.

5 *The Natural Sciences Know Nothing of Evolution*, TWFT Publishers, P.O. Box 8000, Costa Mesa, Ca. 92628. Or: *Die Naturwissenschaften kennen keine Evolution*, Schwabe & Co., Basel, Switzerland, 1978.

6 Kernforschungsanlage Julich G.m.b.H. *International Symposium on Generation and Amplification of Asymmetry in Chemical Systems*, 24-26th. September 1973, pp. 1-540, November 1974, edited by W. Thiemann. Obtainable from Kernforschungsanlage, Jülich, Western Germany.

This symposium represents a vital contribution to the problem of optical activity in abiogenesis. It states quite categorically that stochastic chemistry cannot and does not deliver the optically purity mandatory for biologically active proteins and nucleotides. Racemates, such as organic and biological chemistry left to themselves yield, could never produce vital proteins or nucleotides. This International Symposium gives the clinching answer to the fact that it is chemical nonsense to assert that life consists of only chemistry and physics and their natural laws, for these natural laws do not and cannot, on recognized theoretical grounds, deliver the optical activity mandatory for vital metabolism, enzyme systems and information storage and retrieval systems. This single fact of pure science negates all Darwinian postulates on abiogenesis by chemical and physical means alone. The surprise effect of factor "i" must be added to shepherd chemistry and biological cell function to become possible. Darwinism founders on this one fact as I have pointed out in a detailed manner in The Natural Sciences Know Nothing of Evolution.[5]

See also direct optical resolution, Science, 9/5/86, p. 356.

7 See *Replicase*, Science, 23rd. Dec., 1983, 222, p. 1313. And also *RNA at the beginning of Life*, Science 231, 7th. February 1986, p. 545.

8 *Evolution of the Cell from Primordial Living Systems*, Hanson E.D., Quarterly Review of Biology, 41, 1-12, (1966).

9 *The Synthesis of a Self-propagating and Infectious Nucleic Acid with a purified Enzyme*, Proc. of the Natl. Acad. of Sciences (1965). 54, 919-927.

10 Enzymatic Synthesis of DNA XXIV, Synthesis of infectious Phage $\phi \times 174$, DNA.

Goulian, M., Kornberg, A., and Sinsheimer, R. L., Proc. of the Natl. Academy of Sciences, 58, 2321-2328 (1967).

11 For a short review of present knowledge concerning the internal structure of the Cell: "*What's New with Cytoplasmic Organelles?*", Bernhard, R., Scientific Research, 3, 26-27 (1968).

PART III

Chapter VI

The Origin of the Genetic Code: an alternative View

1) *The Nature of the Genetic Code*

Essentially the origin of life is a problem of the origin of the genetic code. Someone has well said that "in the beginning was the DNA-molecule". For the information stored on the DNA-molecule is that which controls totally, as far as we at present know, by its interaction with its environment, the development of all biological organisms. But it is important to remember that the information on the genes alone is not sufficient to produce a biological organism. It is its interaction with the correct environment which effects the conversion of coded genetical information to the structured matter which makes up all biological organisms.

In principle, the coded information on the genome may be compared to a book or to a video - or audiotape, with an extra factor coded into it enabling the genetic information, under certain environmental conditions, to read itself and then to execute the information it reads. It resembles, that is, a hypothetical architect's plan of a house, which plan not only contains the information on how to build the house, but which can, when thrown into the garden, build entirely of its own initiative the house all on its own without the need for contractors or other outside building agents. Such a plan could, when thrown into the garden, build the house - providing it finds the correct conditions and energy supply for the "internal" contractors who build the house. It does this construction work entirely autonomously, working on the pure information which it contains.

Thus, it is fair to say that the *technology* exhibited by the genetic code is orders of magnitude higher than any technology man has, until now, developed. What is its secret? The secret lies in its ability to store and to execute incredible magnitudes of conceptual information in the ultimate molecular miniaturization of the information storage and retrieval system of the nucleotides and their sequences.

The above concept is by no means as forbidding as it might at first blush appear to be, though the technology is breathtaking. For most concepts can at least be stored and retrieved by man on similar principles, though the executing technology of biology is superb and exceeds all man has yet developed.

An example will serve us: - if I find myself in any emergency - say I have a flat tire on the expressway - I look around for a telephone marked with the code form known generally to the public as SOS. Now, SOS certainly does not look like a flat tire, which is the direct cause of my stress and which leads me to take up that telephone and signal an SOS. But SOS is a negentropic pattern which we have *perfectly arbitrarily* adopted to signal any such stressful event - from toothache, when I send an SOS to a suitable dentist, to throwing a life line with a cork ring on it and marked SOS to a person in difficulties in the water and in danger of drowning.

The important point to lay firm hold of in this matter is that the use of SOS involves first of all a *concept* (danger, stress, help needed from outside). Secondly this concept or idea is then *arbitrarily* coupled to a specially chosen *hieroglyphic or reduced entropy sequence* (something which does not easily turn up by pure randomness) SOS. Thus, a stressful situation (flat tire) is a concept or situation which is *arbitrarily* coupled (by the use of deliberation on the part of someone who wishes to store and to pass on this concept) to any suitable reduced entropy sequence (ordered structure) by means of a language convention.

This process can be illustrated by the Morse Code. In this code each letter of our alphabet is reduced to expression by four symbols - namely the dot, the dash, the interval between the dot and the dash, and the interval between separate words. The same concepts are expressed but in new symbols. Thus, in the Morse Code our concept known as SOS becomes by a perfectly arbitrary but mutually agreed upon language convention: • • • — — — • • •. The important point to notice is a) that the concept of the stress leading to the SOS signal is not directly connected to any natural laws (chemical or physical) we know of. That is, the symbol SOS is not *logically* related to any state of stress. And b) that the language conventions used to transmit the concept (SOS or • • • — — — • • •) are perfectly *arbitrary*. That is, there is no logical connection between SOS or • • • — — — • • • . The convention has nothing to do with natural law but is imposed by *arbitrary will* on to natural law governing matter. "Fiat" says: -" let S = • • • " which is, of course, entirely arbitrary from natural law standpoint. All languages show similar properties. Thus, the sign + signifies addition or a conjunction. It may be expressed (the plus sign) in English as AND - or French as ET, in German as UND, in Norwegian as OG, and in Finnish as JA. Thus, the constant concept of "plus" (+) is variously expressed by differing *arbitrary language conventions*. The sequences ET, AND, UND, OG or JA have *no* direct *resemblance* to the concept "plus" at all, but they all code for the same concept or idea. That is, the various language conventions take the same concept and express it differently but strictly within the particular language convention.

Having established first that an idea or concept must be present to initiate a language and secondly that this idea or concept may be expressed by differing but arbitrarily laid down language conventions, it becomes almost fatuously obvious that first of all a concept must exist and that secondly this primary concept may be expressed differently in different languages by differing reduced entropy sequences. The important point is to remember that *concepts always exist primarily* and *languages only secondarily*. In general languages do not generate ideas but ideas generate language - a vital matter in the case of the origin of the idea constituting the genetic code. Ideas, i.e. logos as the Greeks had it, exist *before* code or language. Concept or logos is therefore primary and code is secondary.

Now comes the question of the storage and retrieval of coded messages or concepts. Of course, normally one can write them down on paper or other material to store them and then read them to retrieve the message. But there are other ways of doing this. The Incas in Central America used to achieve this important activity of writing a message down and of retrieving it, by taking a grass rope and knotting it in sequences instead of using letters on paper. An example is better than many words:

Take our SOS message and translate it into Morse code: SOS then comes out as: • • • — — — • • • . Same concept or message but a different carrier, If we now make three knots in a shoe lace followed by three double knots and then three single knots, thus: - (Fig. 6.1) then anyone knowing the language convention of the Morse code will be able to read the message or concept of SOS carried by the shoelace. (Fig. 6.1A). The important thing here is that not only can the eyes decipher such a code, the sense of touch (one can feel the knots and thus read by the process of feeling) can do the trick of decipherment as well.

By using a system of dots and dashes for each letter of our alphabet the message of Goethe's Faust could thus be written down in knots and double knots on long pieces of rope. The Incas used precisely such a system of information storage and retrieval for their documentation.

To complete our picture, the system above could be modified to use two shoe laces between which the knots and double knots are suspended to achieve the same result. If, however, each knot were divided into two parts (similarly each double knot) and each half knot held together by a zip fastener, one could just by pulling the two shoe laces apart, replicate the message contained on them, because the *sequences* concealing and encoding for the message are still retained even by the half knots. The half knots could easily be built up to the full knot again after division by simple chemistry. The above sketch makes this clear (Fig. 6.1B).

This is, in principle, the method used in *all* biological organisms to store and retrieve the coded information on their genetic code or DNA/RNA system. The ribosomes in the cells mount the double stranded system (resembling in principle the double shoe lace system) and "feel" the sequence order of the four letter system of "knots" in groups of three (codons) which are used for storing the information (Fig. 6.2).

The letters (= "knots") used by the genetic code (DNA) are four simple organic bases known respectively as Adenine (A), Thymine (T) or Uracil (U) in RNA, Cytosine (C) and Guanine (G). These letters are read in groups of three holistically and are known as codons. When now the ribosome reads or "feels" these sequences of organic bases, their structure is, chemically speaking, such that on sensing GCC (in that order or sequence) in a codon it directs the synthesis of proteins under way to the fact that the next addition to the amino acid chain must be alanine.

On the other hand, if the ribosome senses GAC in the codon sequences then it takes care that the next member to be added to a protein being synthesized must be aspartic acid. If on the other hand GGC is sensed, then the next member to be added to the synthesis must be glycine.

Chemistry, organic chemistry and chemical structure *do* decide that GC and TA (in RNA TU) fit together. These particular pairs are *chemically*

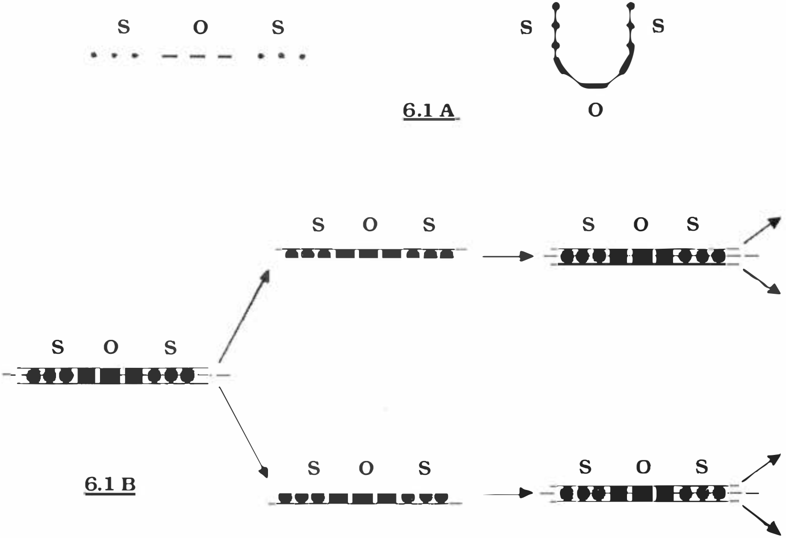
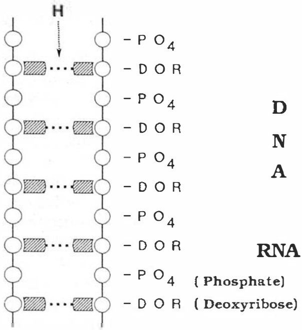


FIGURE 6.1

The Replication of Information in the Genetic Code.

The complete system may be built up again by rebuilding each half dot and dash to totality.



DNA

A = Adenine

T = Thymine / Uracil RNA

C = Cytosine

G = Guanine

RNA U = Uracil

GCC = Alanine

GAC = Aspartic Acid

GGC = Glycine

3 per codon
Ribosomes

FIGURE 6.2

DNA/RNA Genetic Code System

and sterically decided. But chemistry alone does not decide the codon sequences, which determine the encoded information. Thus, pure chemistry is not intrinsically decisive in questions of the nature of information. This latter is, as we have already seen, a true surprise effect. From a purely chemical point of view GC and TA belong together as pairs because they fit stereochemically. But the *sequences* are from a chemical point of view true surprise effects, that is, information is not *chemically* decided. The sequences are decided by a) the concept carried and b) by the language convention used.[1]

To make that simple, consider the sequences in English AND, DAN, NAD, DNA, ADN, NDA. The properties of the *letters* do *not* decide the information to be stored. Thus, AND as a sequence is not chosen because of any intrinsic properties of the letters A, N, or D, but because that sequence is required to meet the exigencies of arbitrary language convention which demands that the meaning of a conjunction or "plus" is expressed by A-N-D. DAN on the other hand means a boy's name and is as such a surprise effect not deducible from the properties of the letters but from their sequence as determined by pure convention. The other combinations may be nonsense sequences, unless like the sequence DNA a secondary meaning has been applied to it by pure convention, too.

Similarly the sequences GCC, GAC or GGC exigencies are not determined by intrinsic chemical properties.[2] They are the result of the exigencies of a language convention which specifies that particular sequence or order for that particular meaning. For this reason it must be a serious *interpretative error* to maintain that *all biology* consists exclusively of chemistry and physics only, simply because we can find nothing by purely chemical and physical means beyond chemistry and physics in biological organisms. Every function of a cell, they say, can be reduced to chemistry and physics. The fact is that we find meaning and language, language conventions and codes *in addition* to chemistry and physics. These codes all *ride* on chemistry and physics but are not chemistry or physics nor are they produced by chemistry and physics, though they are mediated by chemistry and physics.

If one considers a moment further the above facts concerning the genome and applies them to the analysis of an automobile engine the same principles become even more obvious. For if one takes the engine apart one can find physically and chemically nothing but steel, soft bearing metal, some copper wire shapes and maybe some plastic. Therefore pronounces the mechanic who did the analysis or taking apart, an automobile engine consists totally and exclusively of these materials and nothing else. But the designers come up to him and ask him to account for the shape of the valves and their seatings, the coiling of the valve springs, the slots for the piston rings, and the hollow ductings in the crank shaft for oil circulation. Did all these vital *component shapes* of an automobile engine arise, too, from the properties of the metal and other materials? Or are *these shapes real surprise effects,* that is, extrinsic information to be attributed to influences outside the properties of the metal and which have nothing to do with natural law although they are mediated and borne by natural law - like piston ring grooves are?

In a parallel manner arrangements, sequences, shapes and order of the organic bases on the DNA-molecule are as little a result of their chemistry as are the shape of the piston rings or the letter sequences on the newsprint of your morning newspaper *the result* of the properties of the paper on which they are printed.

Which subject brings us directly to the question of the structure and properties of the DNA-molecule itself.

The molecule, which may reach a yard in length in some types of biological cells (which may themselves be a few micrometers in size), looks when schematized somewhat as follows (Fig. 6.2):

Just as • • • — — — • • • expressed in knots and double knots on the double shoe lace codes for SOS, that is, the concept of emergency and stress, so GCC on the double helix of the DNA molecule codes for alanine as the next amino acid in the protein synthesis being effected in the biological cell. GAC as a sequence of bases on the DNA molecule does not specify for alanine but for aspartic acid and GGC codes for glycine as the next insertion into the protein synthesis.

It should be mentioned here that the genetic code is what is termed degenerate. That is, several sequences may, under some circumstances code for the same amino acid - just as A N D and P L U S (i.e. different sequences and letters) can both code for the + (plus) sign or concept.

We have now reached an important part of the argument with which this section is concerned. It is : - a series of non-random signals or, in this case, letters, is the basis for storing genetic information or concepts on a chemical DNA molecule, just as non-random series of alphabetic letters are used to store various concepts like SOS for example in spoken and written language. Each letter of such DNA series may be regarded as a separate, individual signal read in codon form which the ribosomes sense and then execute. It must be kept firmly in mind that books store information in principle in the same way, for books consist of long strings of signals (alphabetic letters) arranged non-randomly in sequences, so that with the help of a language convention such long sequenced strings of symbols may be both synthesized and analyzed. The key word at this juncture is, then, sequenced strings of non-random signals or impulses arranged according to a language convention so as to bear a concept, idea or thought. The next section will demonstrate the vital and indeed paramount importance of recognizing such a fact as the above in order to find our way through the ideological labyrinth of biological theory such as is circulating today in the highest academic circles. The above insight has, surprisingly enough, direct relevance to Carl Sagan's and others' theories on experimentation in the area of extra terrestrial intelligence (ETI) and their falsification or verification.[3]

2) Carl Sagan's and others' Views on Extra Terrestrial Intelligence, its Falsification or Verification [3]

Carl Sagan and many others with him are of the conviction that if matter is left for time periods long enough and if the external environment is suitable, then life must eventually appear and evolve spontaneously. This view is based as far as abiogenesis is concerned, on an erroneous application of the probability formula. This latter can be applied only to irreversible but not to reversible systems. Prigogine showed that it was only when a system is removed *far from equilibrium* that *spontaneous* synthesis is possible. However, since the organic chemical reactions involved in the syntheses of life are reversible (all enzymatic reactions, such as those used in biological synthesis, must *per definitionem* be such), then in such systems which are of necessity near equilibrium no syntheses such as those postulated by Darwinians, including Carl Sagan, can possibly take place spontaneously.[4]

The above fallacy in Darwinian argument on the spontaneity of biogenesis should have been obvious to anyone who is versed in the art of chemical synthesis and who has paid attention to chemical facts, separating such carefully from ideology.

This vital matter of reversibility in organic chemical reactions is so almost universally misunderstood that we must risk belaboring the point again. It can be made perfectly lucid even to the totally lay mind: every organic chemical synthesis may be likened to a journey, say from Miami to London by air. To start my journey I need to walk to the airport in Miami from my nearby hotel.

I set out on this little walk by taking one step forward. Immediately after this one forward step I take one corresponding and equal step backwards. Nothing deterred, I then take one step forward again but then take one equal step backwards. By repeating this process an infinite number of times over very many years of diligence how long will it take me to reach the airport in Miami?

The answer is, of course, fatuous and is "never". However, many have apparently reached the conclusion that the reversible reactions responsible for bearing all biological life will synthesize life eventually - *given time periods which are long enough.* In fact, such organic chemical reactions exactly resemble my activities in getting to the Miami airport by reversible walking exercises - such is the meaning of the term "reversible reaction" in chemistry. Unless means are found of stopping my backward steps I will *never* get to the airport. Similarly unless means are found (= surprise effects) of stopping the reversibility of otherwise reversible organic reactions, no synthesis of life in any primeval ocean will ever occur, no matter how long a time is allowed for the process. It is a function of the surprise effects on the genetic code, to interrupt the normal course of reversible reactions to stop the backward steps. Thus, the problem of the arising of life from non-life turns out again to be that of *suitable information outside pure chemistry* to modify normally reversible organic chemistry into truly synthetic non-reversible activities.

The above point had to be re-emphasized in view of the recent development of Carl Sagan's theories on ETI (Extra Terrestrial Intelligence), which we now need to discuss in more detail.[3]

Carl Sagan is well aware of the fact that it is of no use proposing any theories at all without methods being available to verify or to falsify them. Thus, if matter *must* give birth to life spontaneously, provided sufficient time is allowed and provided the environment is suitable, then life *must* have arisen elsewhere in the universe wherever those conditions are fulfilled. The universe is old (= abundance of time) and contains plenty of matter. Surely somewhere, therefore, life *must* have arisen spontaneously as, allegedly, it did on earth. Darwinian theory demands it.

That is our first point. The second point is: assuming a primeval cell to have arisen somewhere out there in the galaxies, then presumably natural selection and mutation will have acted on it similarly out there as here. Life allegedly evolved here on earth up to intelligence and to homo sapiens spontaneously. When it arises also spontaneously in the galaxies, it will presumably also develop by mutation and natural selection upwards to intelligent beings there, too. Thus argues Carl Sagan - and many with him. They come, therefore, to the conclusion that ETI *must* exist out there, since the same laws of matter and randomness and natural selection operate there as here. Darwinian theory demands it.

But it is all very well to say "*must* exist out there" and "Darwinian theory demands it". How is one to prove it experimentally? Theories need verifying or falsifying and Carl Sagan (and others) show us just exactly how as follows: -

If ETI does exist out there (and as we have said, according to present day ideology, it certainly ought to, if Darwin and his modern disciples are correct) then it may be further advanced than our terrestrial intelligence is, depending on the time and conditions under which it has arisen. If life there is sufficiently advanced in the galaxies it, too, will deduce that intelligent life, according to the Darwinian principles above mentioned, must exist elsewhere in the universe. For it, too, out there will have developed, by chance mutations and natural selection. So it will be the most natural thing in the world that all forms of intelligent life which have so arisen, will, in the course of time, endeavor to communicate with other intelligent life. For all life will, according to Darwinian principles, eventually become intelligent - at least according to thinking on the lines of natural selection coupled with mutation.

Since, allegedly, spontaneity governs the arising of all intelligent life everywhere, it is, it is argued, a fair conclusion to assume that technology, if not identical, nevertheless vaguely similar to our own, will also have arisen. This is a product of Darwinian ideology - that technology arises by natural law. Technology, perhaps vaguely resembling our own, would include such items as radio-telephony and the transmission of messages to other intelligences by that medium. If their technology even vaguely resembled that of our own, it would include (due to the same type of randomness coupled with natural selection) then, obviously, the information theory governing the development and use of codes and languages such as our own. They are certainly very likely to have developed there as here: That is, similar or comparable (as far as IQ is concerned) types of civilization and technology will have probably developed "up there" as "down here".

How, then, should earthlings study any possible attempts on the part of galactic ETI to communicate with other intelligences including our own? Many besides Carl Sagan (including Lovell of Cambridge who used the first radio telescope and discovered the LGM phenomenon of which we have already spoken - P. 48) have laid down the conditions under which they hope to be able to define the recognition of any messages from ETI. In general, most suppose that radio waves or even light waves might be used on which to insert intelligent messages.

But what would be the criterion for deciding that ETI had sent the message and not some form of natural source such as sent the "messages" in the LGM experiment? Sagan and others are very clear on this matter of the criterion necessary to confirm intelligence behind any emission. It is, that *a non-random series of impulses on some sort of carrier wave be received.* That is, that the reception of non-random sequences of some sort be the criterion. Random sequences, of course, can hide no intelligent message or messages. But non-random ones certainly can. The sequences of the letters of the alphabet making up any newspaper article are certainly non-random and carry a message. A careful study of their non-random sequences can reveal any language convention concerned. This latter knowledge of the language convention can, then, reveal the otherwise hidden message. Sometimes a deal of erudition is needed to derive from non-random sequences the language convention bearing the message. This high art is regularly practised in deciphering ancient documents written in unknown languages, for the frequency of certain letters and their sequences in a document sometimes betrays the language convention, which information then yields the meaning or intelligent message hidden in the composition. The secret services of governments use similar methods for decoding enemy and other messages.

One special point has clearly emerged in recent years of ETI research. It is a vastly important one and may be summed up in the following sentence: If any source of emission betrays non-random impulses or sequences which can be reduced to a code or a language, then, *that source betrays intelligent properties of some sort.* For, first of all, non-random sequence impulses could not originate in natural law. As soon as Lovell found out that his radio impulses were random, he dismissed the idea of LGM, and rightly so. It is only the *non-random radio impulses* which are of any interest to searchers after ETI.

If, however, the non-randomness can, then, be traced down to any common denominator such as a language convention, then the language convention, applied to the non-random sequences will reveal the message. *This latter is the final clinching point of the argument in the search for ETI.* Thus, to repeat: - if non-randomness in sequences of impulses or other units (such as the letters of any alphabet, like the Morse Code) coupled to a language convention governing the non-randomness can be established, it is by common *consent the absolute indicator of an intelligently governed source of emission,* be that emission radio emission or any other source of units or impulses.

Summing up, then, it may be confidentially stated that when radio astronomers or other scientists pick up any emission or emissions showing non-random sequences they will be hot on the track of ETI. If, following this discovery, these non-random sequences can - with or without suitable computer assistance - be coupled to a language convention, which enables the scientists to decipher the message carried by the non-random sequences, then, it is generally conceded in scientific circles, *the fact of ETI will have been verified.* For thought - intelligent thought - must have been at the back of the code or language - just as we have already concluded.

3) ETI and its Verification: its Consequences for Darwinian Theory

As far as I have been able to ascertain, the literature does not seem to have concerned itself with the consequences of reasoning such as that of Carl Sagan and others interested in investigating and verifying ETI. Yet the repercussions of such reasoning, as above set out, are for the whole Darwinian hypothesis indeed great, regardless of whether ETI itself is verified or falsified by the method outlined above. It is the consequences for the so-called Neo-Darwinian synthesis, which are so far reaching and not so much whether ETI exists or not.

This aspect of Sagan's and others' thought will become clear after a moment's consideration and indeed as follows: The base sequences of the genetic code, that is, the order in which adenine, thymine, cytosine and guanine appear in succession to one another, is certainly by no means random. DNA molecules can, of course, be synthesized in vitro by application of biological enzymes. Such synthetic molecules can show random sequencing. They therefore contain no messages or genetic information. It is true that GC and TA as pairs always appear together in DNA of synthetic or biological origin - just as th and qu usually appear coupled together in English. *But the sequencing of the whole long biologically active DNA macromolecule is certainly and totally non-random in nature.* We know this must be so because it is this non-random sequencing which determines the insertion of specific amino acid molecules into protein structures in course of synthesis.

But over and above this non-randomness of the DNA sequencing *hard work on the part of Crick and Watson and many others following them revealed that this non-randomness of the sequencing is contingent upon a language convention, parts of which we have already discussed.* For it was found that GCC signifies that the amino acid alanine is to be the next amino acid to be added to the protein synthesis. GAC means that the next candidate in the synthesis chain is aspartic acid. And GGC fixes glycine as the next member to be inserted into the chain. *This simply means that the non-random sequences in the DNA molecule are governed in no uncertain terms by a language convention.* I am perfectly aware, of course, that this convention in the biological genetic code is governed by chemical shapes, that is by stereochemistry - just as the profile of a Yale key fits that of the Yale lock. But the *stereomechanism* does not alter the fact that a *language convention* is here in action.

Thus, by using the techniques correctly applied in ETI research (and also applied in deciphering documents written in long since dead languages) to the genetic code non-random sequences, the key to language conventions has been discovered. *What other conclusion is possible from these facts but that behind such non-random genetic sequences governed by a language convention, intelligence or at least an intelligent source must with certainty lie?*

It would be interesting to suggest to the practitioners of ETI research the following experiment: instead of listening to their radio telescopes searching for non-random sequences issuing from the far galaxies as an index of ETI they might take a look into a suitable mount on an electron microscope focussed onto suitably prepared genetic code sequences. In many cases the non-random sequencing may be directly perceived!

When the ETI expert has thus convinced himself that the genetic code shows non-random sequencing governed by a language convention determining a synthetic organic chemical message, what must he conclude? Can he answer otherwise, when asked to formulate his theories on this phenomenon, than that *an intelligent source must be the initiator of this fact of nature? We see no other honest answer.* For if the ETI researcher is in process of collecting millions of research fund dollars, so as to be able to search the skies for signs of *non-random sequences governed by language conventions* as a means of falsifying or verifying ETI, *he will surely be forced to apply the same reasoning and conclusions to the non-random sequences of the genetic code.* For the genetic code demonstrates non-random sequences and language convention with a vengeance!

Might it not be a reasonable idea, therefore, to suggest to ETI researchers that they turn their eye from their telescopes and radio telescopes to the electron microscope by way of a change? If by so doing they then find in the DNA molecule the non-random sequences plus language conventions they allege they are looking for in the skies, - the clinching evidence for ETI - (which search is highly expensive), would they be willing to apply the same criteria to biological work which they apply to astronomical work? Because, if such researchers are unwilling to draw such biological conclusions and to apply their astronomical logic to biology, how can we be sure that they will apply the same logic to any non-random sequences which might be received from the galaxies? Why should researchers be honest and logical in one field but not in another mathematically and linguistically related one?

Eminent men such as Carl Sagan are extremely and profitably active in the field of ETI as well as in research into the possible consequences of nuclear war (nuclear winter etc). He and many of his colleagues are pressing for large research funding in ETI to settle the question once and for all on the basis solely of non-random sequences and language conventions. To do so they maintain they intend to apply the criterion of non-random sequences hiding language conventions as finally clinching evidence for revealing with absolute certainty the presence of intelligence at their source. I, personally, shall not doubt their integrity the day they openly and fearlessly apply the identical logical thinking to their evolutionary ideologies and among their Darwinian friends whom they so vociferously support. On that day all will know that ETI researchers are men of the very highest intellectual fibre and integrity - but not before.

The fact is, that if ETI is confirmed as existing "out there" in the galaxies, then that fact would be considered as supporting the conclusion that the laws of Neo-Darwinian biogenesis and evolutive speciation apply not only terrestrially but also cosmically. For this and other reasons Darwinians support the search for ETI, for it would, in their view, *be the grand chance to prove that Darwin was not only right for biology here on earth but also for the galaxies as well. Darwinism would, then, represent true cosmically valid science.*

Would it not, therefore, be more honest right now to apply the criterion to be used for ETI research to show it to be of perfect validity for *the biological* science we now practise and that this same criterion proves that *information* and *intelligence* are behind all biology and the genetic code rather than Darwin's randomness, that is, non-intelligence? For the same criterion which the ETI researchers wish to use, is certainly clinching in this matter. If the ETI research, then, turned out to be positive in its findings, then, the conclusion would be that life here on earth and life in the galaxies *both* arose as a result of intelligent information having been hybridized with matter *and not as a result of Darwin"s theories.*[6]

1 cf. Watson, J.D. and Crick , Francis H.C., Nature, (London), 171, 735, (1953) - the famous paper announcing the discovery of the DNA coding system. See also Watson, J.D., *Molecular Biology of the Gene*, 267, A. Benjamin, New York, 1965.

2 For Eigen's views on the origin of the genetic information, see: Eigen, M., Gardiner W., Schuster P., Winkler-Oswatitsch: *Ursprung dergenetischen Information, Spektrum der Wissenschaft*, Juni 1981, 37-56. Also Eigen M., *Selforganisation of Matter*, and the *Evolution of Biological Macromolecules*, Naturwissenschaften, 58, 465-523 (1971).

See also Crick, F. *The Origin of the Genetic Code*, 1968, J. Mol. Biol. 38, 367-79, 357.

3 Sagan, C., *Intelligent Life in the Universe*, 1977, Picador by Pan Books Ltd., London, p. 276.

See also Soffen, G., cited in "*Mars": The Riddle of the Red Planet*, Time Magazine, 2nd. August, p. 16.

Huygens, C. (1670) *New Conjectures concerning the Planetary worlds. Their inhabitants and Productions*, cited by Carl Sagan in *Intelligent Life in the Universe*, p. 212.

Whewell, W. *The Plurality of Worlds*, 1854, John W. Parker and Sons, London pp. 24 and 286.

4 See: *The Natural Sciences Know Nothing of Evolution*, Wilder-Smith, A.E., TWFT Publishers, P.O. Box 8000, Costa Mesa, Ca. 92628.

And "*Planender Geist gegen planlose Entwicklung*", Wilder-Smith, A.E., Schwabe & Cie, Basel, Switzerland. This book treats among other factors the effect of thermodynamic considerations on reversibility.

P. Glansdorf and I. Prigogine, *Structure, Stability and Fluctuations*, Interscience, New York, 1971.

5 Woese, C., *On the Origin of the Genetic Code*, Proc. Natl. Acad. Science, USA, 54, 1546-52, (1965).

6 See also T.H. Huxley, *Biogenesis and Abiogenesis in Collected Essays of T.H. Huxley*, (1894), 9 vols., Macmillan and Co., London.

Chapter VII

Origin and Function of Information in Abiogenesis and Evolutive Speciation: Ancient and Modern Wisdom on the Six Days of Creation and the Age of the Earth

1) Information Theory as the Decisive Factor Negating the Darwinian Evolutionary Concept but Suggesting a Scientific Alternative

Although the discontinuity of the fossil record has been known or suspected for many years as an important stumbling block in the way of Darwin's concepts and although scientists such as Duane Gish (D.T. Gish, Creation Research Society Quarterly, 12, (June 1975), 34) have used the negative evidence of the fossils to attack the Darwinian concept to the fullest possible extent, yet even the fossils and their discontinuity yield but with great reluctance any really clinching evidence for or against evolution.

The attack on evolutionary concepts using the fossil evidence has too often resolved itself into questions of conflicting interpretations of factual evidence and of varying opinions on such evidence. Using only the fossil evidence, no one has been able to prove clinchingly that lower levels of fossils are not ancestral to those of higher levels. . . or even *vice versa*. Added to this difficulty comes the well known fact that the so-called lower levels of fossils turn out sometimes to be inverted in their order, so that the lowest levels lie uppermost. Similarly, higher levels can lie directly on the bedrock. These and similar facts are well known and have often served as the basis for quite remarkable geological mental acrobatics. This state of affairs should be given sober consideration.

But, even if the lower levels of fossils really did seem to be ancestral to levels sometimes lying above them, no one has convincingly shown that any less complex living species has ever gradually or suddenly actually given rise spontaneously but under controlled conditions to any more complex species. Although Goldschmidt postulated his Hopeful Monsters to overcome the grand problem of the discontinuity of the fossil record, no one has ever produced the slightest factual evidence for such.

In spite of this situation, the postulate is freely made today - even in scientific articles - that one fine day a reptile egg hatched out spontaneously into a bird chick. Where the new bird's mate came from is, of course, the thousand dollar question. But more serious than the speculations themselves is the fact that biologists have now manipulated themselves into the intellectual position of not bothering, on principle, to look any longer for factual evidence for any such occurrence. They maintain that such events took place so suddenly and in such isolated circumstances that there just can be no fossil evidence for such happenings. It *must* just have been so! One does not seem even to have a bad conscience for suggesting theories which can, on principle, neither be falsified nor verified and which, therefore, are non-scientific in nature. So parlous is the Darwinian position that even non-science of this type is permitted and even encouraged without scorn. Something appears to be seriously wrong in Darwinian biology when its captains may without let or hindrance formulate unscientific theories, not on the basis of any hard or newly gained evidence, but out of the sheer desperation that there is none such to be found.

This impasse has been reached partly because there has for so long never been proposed any *scientifically* acceptable alternative theory to replace the 125 year old Darwinian one. Scientists are still clinging desperately to the rapidly sinking Darwinian ship simply because there is not the vestige of even a "barge" of a theory to take the sailors of the Darwinian man-of-war aboard. Certainly no uniform scientific creationist theories are at present extant to present any serious hope of saving the sailors. The creationists are, too, divided amongst themselves. Some believe in a "gap" theory, some believe in theistic evolution, others in progressive creation, others believe in a general flood, others in a local one, some believe in an old earth, some in a young one - etc, etc. The creationists are in disarray as well as the Darwinians and have little to offer the serious biological or other *scientist* who relies on his laboratory and its findings. So both evolutionists and creationists have given themselves up to philosophizing. From the results of this activity we may, I suggest, justly conclude that neither side on the bitterly warring fronts is very good at philosophy.

A few evolutionists admit that they can well see the difficulties of their theory. But even though their ship were sinking, they would not leave it until another reliable and trustworthy scientifically attested ship draws up alongside to take them all safely off. No one can expect them to just jump into the inhospitable sea of despair - at least not until the last possible moment of the sinking process arrives! Everyone holds on to the severely damaged Darwinian ship until some other *scientific* boat turns up to save them.

Thus the see-saw battle over fossils, dinosaur and human footprints and their evidence for or against evolution has been raging for generations now without any clinching or final evidence ever having emerged. For it lies in the very nature of fossil evidence in general that it is, first of all, incomplete and secondly that it is intrinsically just not capable of delivering, because of its apparent incompleteness, the type of evidence which would verify or falsify once and for all the Darwinian position. One can understand this inability better when one remembers that Darwin thoroughly believed in the capacity of small changes over large periods of time to effect interspecies change. This was one of his *main* postulates, which he expected the fossil record to clinch. Today we find no less a person than Stephan J. Gould, saying that Darwin's gradualism (small changes) is a total myth, stasis for millions of years is *the rule*, followed by massive catastrophic changes over very short periods. Thus, Gould's (and Niles Eldredge"s) position on Punctuated Equilibrium has *reversed one of Darwin's main postulates*. But the advocates of punctuated equilibrium still call themselves Darwinian evolutionists! How come? The whole theory seems so rubbery in nature that even a major structural change of such a grave import as the ditching of gradualism does not alter even its name!

The fossil record may, however, give pretty loud hints that Darwin was wrong. Unfortunately neither Darwin nor his present day friends heed such hints, - if it means that they will be left without any theory except the creationist one! A few Darwinians are, in my own experience, willing to listen to real fundamental difficulties in their theory. But that nobody is so deaf as the man who does not want to listen, is a true adage, even in some of today's science.

Of course, there is, on the other hand and as we have already seen, perfectly clear evidence, both in the fossils and in living biology today, of *a gradation in complexity.* The amoeba is separated from homo sapiens by huge gradations of complexity. Plant biology as well as plant paleontology show similar gradations in complexity. No one in his right mind will wish to deny such gradation in complexity throughout all known biology, such is a *fact* of all biology. The great question is, of course, does this *fact* of the gradation of complexity in biology clinchingly prove in its own right the "fact" of Darwinian evolution? Has one species of a lower grade of organization evolved into one of a higher grade, just simply because gradation of complexity characterizes their structures? Does gradation alone prove Darwin to have been correct?

Many scientists and others apparently think so. In fact, many who vociferously maintain that *evolution* is a fact, seem apparently to mean thereby that *gradation* is a fact. Perhaps this confusion is unconscious, but it is certainly extant. Looked at more narrowly, graded complexity has little to do either with abiogenesis or even with evolutive speciation. It is, therefore, an important issue to decide whether the fact of graded complexity in itself proves that the simpler species developed into more complex ones as Darwin thought. Again the issue is: does gradation itself and alone prove that any form of higher complexity has been ancestrally derived from a lower degree of complexity by evolutionary processes?

The above represents a very common form of confusion of thought, which must be taken into consideration. We can do this by calling to mind that the existence of any biology, or system which shows gradation in complexity *but which does not reproduce itself* in the way von Neumann machines do, would clinch the matter finally. For with no reproductive processes to cloud the issue, there could be no question at all of Darwinian evolution, as we have already seen. The matter is almost fatuously simple, yet it must be kept firmly in mind in view of this common confusion on the issue: - that gradation in complexity means that evolution is a fact. Without the prior utter complexity of the von Neumann machine to enable reproduction to take place, there can be no question of the Darwinian type of evolution. Self-reproduction, self-diagnosis and self-repair are therefore vital prerequisites of any evolution according to Darwin. Which means that the super-evolution required for the synthesis of the first biological von Neumann machine is a prerequisite for any Darwinian concept of evolution. We must first understand that Darwinian evolution is not feasible without reproduction. For Darwinism is totally dependent on the prior axiom of the von Neumann machine, and is indeed nonsense without von Neumann. Thus, by far the greater problem is that of the origin of the biological von

Neumann machine structure. And from the foregoing it will now be clear that the von Neumann principle is feasible only in the light of information theory. The real fact to be faced is that the mere presence of gradation in complexity gradation certainly does not prove that a higher grade arose from a lower one ancestrally.

The above facts leave Darwin and his friends with the great and clinching fact of the non-feasibility of Darwinian evolution, together with a total lack of real evidence for it squarely in their court. For only a preceding and vastly greater feat of evolution with the help of exogenous information to give the basic biological von Neumann machine, which Darwinians cannot explain on any count, makes Darwinian evolution feasible or even sensible. For who will risk arguing against the fact that the super-complexity of the von Neumann machine function must be present first, before Darwinian evolution can even be discussed, let alone verified or falsified? We risk turning readers off by repeating the fact that Darwin (and many Darwinians today are in the same position) could have had absolutely no conception of precisely this super-snag at the base of his theory.

But these Darwinian difficulties lead us directly to another non-Darwinian one, namely precisely how does information theory meet the specific difficulties treated above? How does information theory explain the supreme discontinuity of not only the fossil record but also of all nature? Any continuity seen in the fossil record is seen in intra- and never in interspecies fossil series. Snails develop new spirals but remain snails. Change remains internally within the species area and never creeps outside of it. How could, say, a frog or any other animal of that kind, change into, say, a reptile on the basis of the Darwinian scheme? Information theory suggests the following type of answer: Vast amounts of qualitatively new information would have to be gained by the frog before it could become a reptile. And a great deal of frog information would have to be lost at the same time - or brought into a condition of non-expression, i.e. turned off. Darwinians answer that such new and necessary information "arose". That is, chance and mutations supplied it. By answering thus, ignorance of the very basis of the nature of holistic actual information generation is displayed. It just is no answer to say that the antipole of information, namely stochastic phenomena, spontaneously produced the opposite pole known as holistic actual information. *Such an answer approaches that which might be given by dogmatic religionists on abiogenesis or evolutive speciation!* Chance processes, which are the antipole of holistic actual information, would have to supply the missing reptilian information. To realize the enormity of any such suggestion it must be kept firmly in mind that a reptile is also a species of von Neumann machine! We are changing one von Neumann machine into another and that by chance! *One might as well throw stones at a spring driven watch to make a digital quartz clock out of it!*

On the other hand, it must be remembered that the frog genome contains enormous quanta of two kinds of information: the first is information which allows the tadpole to live as a fish does, in water. This is what one might call specific holistic fish information. Then it contains information for a second way of life as an amphibian air breathing animal on land and in water. One may not forget that the change-over from an exclusively aquatic to a facultative aquatic land animal will be tricky, requiring the animal to survive the transfer successfully. So this change-over, too, will require extra actual information, which has to be provided for somehow.

Thus, in the postulated transfer from an amphibian to a reptilian animal a good deal of information for the amphibian type of life could be safely dumped for the reptilian condition. The question is, whether the superfluous amphibian information could be used to supply some of the required new reptilian information. There is a school of thought that believes that complex gene information can be built up on the building-block technique. This is certainly the case for certain types of stereotyped informational functions. Whether simple building blocks of information could be so assembled as to structure a reptile out of a frog would seem, on principle, to be doubtful, since all organisms require *holistically* structured information which the building-block technique forbids. Bruno P. Kremer, among many others, has suggested such mechanisms for abiogenesis (see: Neue Zürcher Zeitung, Forschung und Technik, 4.2.87, p. 69). Even if the so-called "Baukastenprinzip" (building-block technique) he describes were true, it still does not explain the origin of the holistic informational genes to start with, and which are supposedly used as building-blocks.

Thus, on this and other theoretical scores, one finds it difficult to explain, on the basis of information theory, how a frog could spontaneously and stochastically acquire the new and specific holistic actual information for the transformation to a reptile.

But this brings us to another and important aspect of our argumentation: *Does not the undoubtedly discontinuous nature of the fossil record hint strongly that the accession of the transforming information supply was attained discontinuously too? And does not this discontinuity collide frontally with Darwinian concepts which are basically and clearly those of continuity or gradualness?* Even Stephan J. Gould, Niles Eldredge and others have understood this hiatus, which has precipitated the postulate of punctuated equilibrium, i.e. *discontinuity in the fossil record and therefore surely in the acquisition of the information necessary for the changes also.*

But let us at this juncture look at evolutive speciation in the light of Darwinian mechanisms together with information-theoretical considerations: Gene manipulation has already shown biologists that, although E. coli itself cannot manufacture the human insulin molecule, for the very basic reason that it normally does not possess the genetic actual information necessary for such a synthesis, yet E. coli can be made to produce this important substance. If one splices the human insulin gene information into the genome of E. coli. the so treated E. coli can produce the required human insulin. Looked at narrowly. then, specific and indeed new metabolic properties have been by this piece of manipulation effectively conferred on the E. coli organism. The supply of the concrete information to do the syntheses allows the otherwise in this respect impotent organism to carry out the synthesis. The splicing in of this new synthetic actual information has then. *de facto*, produced a brand new species of E. coli. The same applies to interferon and the genetic information required for it.

These and other simple examples are probably the mere beginning of a whole new vista of theoretically founded possibilities for the synthesis of new biological species or even interspecies. We have already mentioned the theoretical possibility of splicing into an early monkey embryo the genes necessary for synthesizing, say, vocal cords capable of speech, together with the accompanying wiring of the brain to control speech, which the monkey in its normal state, of course, lacks. This latter ability would involve the computerization and coupling of the lungs and their output to the tension in the vocal cords to produce the intonation required for speech. Which computerization would mean the solving of a highly technical problem - that of voice production and concept coding. In fact, a problem which is currently just falteringly beginning to be resolved with the help of voice and sound synthesizers. The question presents itself as to whether Darwinians, in their heart of hearts, really believe that such complex technical problems as speech control of a physical and computerization type could ever arise adventitiously by means of the antipole of information, namely mutation? *Consider the possibility of any electronic speech synthesizer arising by Darwinian mechanisms! Yet the human synthesizer is technically far more complex.*

But pursuing this idea even further let us suppose that the genes for speech production and control could be grafted into a monkey embryo to confer on it the ability of adult speech. Would the rest of the old monkey brain be in a position to deliver the *thought* necessary to initiate the material for speech? For speech demands thought to be put into words, that is, coded. *Crudely put, what would such a monkey, with the new speech apparatus to produce language, actually talk about?* Would the rest of his brain match by thought production his new found ability for speech? For the *whole* brain is *holistically* conceived. One cannot just stick on extra bits (say for speech) without supplying the hinterland and infrastructure of speech, namely a suitable thought supply to fuel the speech capability. To use a speech apparatus successfully the monkey would need practically a new brain to back up the speech apparatus. The point we are wishing to make here is that the whole machine structure of the brain must develop holistically or not at all, just as all complex von Neumann machines are developed consistently and holistically or not at all.

Today, work is already proceeding on the above lines of thought. I am referring, of course, to the problem of amputated limbs, extracted teeth and lost organs such as eyes, hearts, kidneys and maybe livers, too. How useful it would be if, after the extraction of a decayed tooth, embryonic tooth bud tissue could be grafted into the empty space left by the extraction, so that a new, healthy tooth could grow naturally to replace the lost defective one. Lizards which have lost their tails in their efforts to escape their enemies can quite naturally grow new ones. Plants can do likewise - a new branch can grow naturally or be grafted on to the old place. Old cells containing the turned off genetic information for building limbs can dedifferentiate thus, being turned on to free the required information for producing the required new limb.

Should it not, therefore, be possible to dedifferentiate, say, turned off human genetic material in cells in which degeneration of genetic material has not taken place (in certain epithelial cells, red blood corpuscles etc. irreversible degeneration has taken place) so that the total 46 chromosomes become reactivated to express the information necessary to rebuild a total organism from one cell? This process happens in cloning and has apparently been carried out in the mouse already (Illmensee, New Scientist, 29.10.81, p. 207, but see also New Scientist, 2.6.83, 98, p. 609, and New Scientist, 15.3.84, p. 7, and Science, 2.3.84, p. 913, summing up). Theoretically, therefore, there is no reason why lost limbs and other organs should not regenerate - if the genetic information required could be freed for expression again after having been turned off during differentiation. How useful it would be to be able to grow a new leg, arm, heart, eye or even kidney from the genetic information present in all normal somatic cells . . . if one could reactivate such information. We would most of us profit from the ability to grow new teeth!

Work is at present going on in an effort to supply degenerate islets of Langerhans in the pancreas with new differentiated cells containing the full complement of information to synthesize human insulin. If one could introduce fresh embryonic islet cells, which could then proceed to recolonize the defective islet tissue areas, such might be able to produce the balance of insulin required to cure diabetes normally and at the root. Of course, other factors besides insulin concentration alone play a role in precipitating diabetes. Needless to say, such factors would have to be corrected, too.

Other sicknesses of genetic aetiology might also be treatable by a corresponding injection of genetic information into suitable tissues rather than by the supply of exogenous medicaments.

Other research projects look even further afield than the foregoing ones. For example, it may become possible to manipulate embryonic tissue by adding the appropriate genetic information to it in such a manner as to generate intermediate species, that is species lying between present species. By this I mean species half way between, say, a frog and a reptile or between a sheep and a goat (first reports of the latter are on hand). It might be difficult to manipulate the genome in such a way as to produce an interspecies capable of surviving. The genome would have to be holistically manipulated. But by manipulation of this type the gaps between the species produced, say, by the extinction of animals like the Dodo or the Dinosaur might be capable of reconstruction.

Cells have already been produced containing half human and half mouse DNA information. This type of hybridization might be extended to other combinations. The important point is, that, if hybridization of this type can be carried out for monocellular organisms, that is, in cells which are half mouse and half human, why not, theoretically speaking, eventually for multicellular organisms, too? It is indeed a horrible thought to imagine a multicellular being which is half human and half mouse!

But are such thoughts new, i.e. a speciality of the gene manipulation age? In no wise, for the ancient myths are just full of this kind of idea. Think of the centaurs, for example, the beings who were half horse and half human and who allegedly inhabited the mountains of Thessaly. Think of the fabled mermaids who allegedly possessed a woman's body but a fish's tail. There exist in ancient myths and literature whole series of such or similar interspecies. Thus, although the idea of a multicellular being which is half mouse and half man is revolting, the basic idea of interspecies is certainly not new,

Several points may be now noted in the matter of interspecies: 1) Darwin had no experimental evidence on the subject of transforming one species via intermediate genetic hybrids into another. He laboured under delusion that sex, which he knew was able, with the help of selection to cause *static* speciation, could also power the phenomenon of *evolutive* speciation. Sex and selection can certainly power the one form of intra-species transformation but certainly not interspecific evolutive speciation. *It is only in quite recent years, thanks to the progress in genetic science, that scientists have realized that it is not sex but rather the augmentation of holistic genetic information by non-sexual processes which is needed to power such inter-species evolutive transformations.* New holistic actual information is decisive in such matters and not the mere juggling of already extant information, such as is the case in sexual reproduction.

To put the matter perfectly simply, Darwin and Darwinians later made a non-permissible extrapolation of the postulate that sex, variation and selection suffice for inter-species evolutive transformation. Darwin, and his followers later, extrapolated intra-species to inter-species transformation using mutation to help them out with new genetic properties. The ancients may have thought the same way as Darwin when they dreamed about their centaurs and mermaids. Perhaps it might be helpful in this respect to point out that the Bible specifically forbids, on pain of death in some cases, any attempts at direct inter-species breeding (Exodus 22: 19, Lev. 18:23 (for man and woman) Lev. 20: 15-16, etc.).

2) The Alchemists and Their Investigations

Darwin had not an inkling of the far more fundamental changes in the quanta of holistic information which are necessary to cross the species barrier, for he did not even know, of course, the informational basis of sexual reproduction. He knew nothing even of Mendel. The half genomes of the combining gametes must be specifically and genetically matched to produce the whole organism on uniting. Where this matching of gamete information is lacking, there the fusion cannot successfully take place under normal circumstances (Cf. Mule-Donkey Fertility, New Scientist, 3.10.85, p. 29). If the evolutive speciation amoeba-to-man-type is ever to take place, the coded information on the DNA molecule must be *holistically augmented* in a manner that neither sex nor mutation and selection can ever effect.

If the central core of biological genomal information can be successfully augmented and holistically manipulated, then the dream of many biologists - evolutive speciation - might be realized, though it will take much time and hard work to achieve this end. It will be remembered in this connection that the alchemists of the Middle Ages aimed at the transmutation of one element into another. They would particularly like to have seen the change of the base metal lead into the noble metal gold and tried out all sorts of purely chemical tricks to achieve this end. But neither the chemistry nor the magic they used were sufficiently powerful to reach the desired end.

Little did the alchemists realize that there had to be a far more basic intrusion into the structure of matter than any mere chemistry could effect to convert a base metal into a noble one. How could they have realized such matters, for they had no idea of the basic structure of matter? So they thought that superficial chemical fiddling and perhaps magic as well would do the job. Energy of magnitudes undreamed of by the alchemists would be needed to effect the desired transmutation. In fact the energy required would be so great that the whole transmutation process would never have been economical in any case. High energy physics would be needed to do the alchemists' work and to fulfill their dreams and not mere low power chemistry. They had no idea of what they were aiming at - what is involved in transmutation.

It is interesting to muse that Darwin and the alchemists have much in common. For Darwin wanted to"transmute" the amoeba to man with the help of "low power sex, mutation and selection", i.e. mere "chemical" juggling. Breeding and mutations (inherited variations) were his very low powered tools for this transmutation. Little could he have imagined the almost infinite magnitude of the quanta of genetic information stored on the DNA molecule, information which would have to be "transmuted" and augmented if evolutive speciation were ever to occur. How could he have realized the factors which would have to be involved if holistic genetic information were to be generated to convert an amoeba to a man or even to a frog or to a chimpanzee? He knew nothing of these vital matters of the information required, so that he developed his theories on the only basis he knew of, that is, on low power selection and variation, just as the alchemists did when they wanted to convert lead into gold without knowing what was involved in such a transformation.

The very core of biology - the information on the DNA molecule - would have to be manipulated and augmented in a manner parallel to the high energy physics necessary to, say transmute the nucleus and electrons of uranium into plutonium. It is the opening of this new informational vista of the genome which is promoting today the demise of Darwinian speculations more than any arguments about fossil evidence. High energy physics explains today why the alchemists had no luck - and indeed could never have had any luck, no matter how long they had persevered. In a similar manner the "high energy science" of information theory, with its well high infinite quanta of holistic information, hints to us rather broadly today that present day Darwinians (including Darwin himself) are precariously near the alchemists' position. For they had about as much knowledge in Darwin's days of the basic structure of the DNA information governing biology as the alchemists had about atomic theory.

One final thought in this area: - it concerns the hybridization of inorganic matter with information (as in the genome) that has rendered matter *creative*, that is, *teleonomic* or *purposeful*. Matter, with the correct information indwelling it, produces the whole series of biological species - from plants, man, animals, down to monocellular beings and viruses. Thus, the matter of the genome of a species has, with the help of the informational hybridization, become, in effect, creative. Such hybridized matter can build out of a single minute cell or zygote an adult human organism - or indeed any other species of biology. The hybridized matter does this practically autonomously, needing only a few specific chemicals and the correct conditions of moisture and temperature. *It is, then, the hybridization of information with non-teleonomical inorganic matter which renders matter in itself creative.*

Has not the time now come for biological scientists to recognize that mere fiddling with the "low power energy" of mutations, breeding and natural selection must be insufficient to account for 1) abiogenesis itself and 2) for evolutive speciation, i.e. the "transmutation" of biological organisms up to man? This latter needs an entirely new and fundamental reassessment in the light of information theory as we now understand it and the results of gene manipulation.

3) *Hindrances Standing in the Way of the Development of New Theories of Abiogenesis and of Evolutive Speciation*

It should be amply clear by now that neither abiogenesis nor evolutive speciation can be explained on the basis of mere chemistry and natural law. For neither can supply the *necessary holistic surprise effects.* Natural law and the chemistry it governs does not supply holistic biological information in general, let alone the vast quantities of teleonomic information required for any biological genome. Since natural law does not supply Weaver and Shannon's information (surprise effects), it *is now clear that scientists will have to look beyond natural law, with its mere chemistry and physics, to get to the bottom of both abiogenesis and evolutive speciation.*

The above new knowledge, first of all unearthed with the advent of Information Theory, demands a thorough revision of scientific attitudes towards biology, materialism and its relation to creative mechanisms and creation. Obviously the very thought of having to look *outside and beyond natural law for evolutive mechanisms* brings us perilously near special creation theories - or at least such will be the conclusion of many learned people in this area of science. And that subject is anathema to positivistic scientists. *But if information does factually arise beyond the laws which govern mere inorganic matter (which is entirely governed by natural law - and not by surprise effects), where else may one turn?* For if inorganic matter is governed in biology by surprise effects rather than by known natural law alone, and thereby becomes creative, then, *the inadequacy of natural law alone to explain biological surprise effects and their origin becomes clear.*

The reader is respectfully requested to bear with the repetition of thought on this point. It is necessary, because just this point marks the watershed dividing the old materialistic thought from the thought behind the origin of all holistic actual information. If this point is read over, or otherwise ignored, progress in the area becomes absolutely impossible. Is it, then, reasonable to ask any self-respecting scientist, who works on the basis of repeatability in his experimental work to step beyond natural law, which works on repeatability, into the area of the origin of information and, therefore, of surprise effects, (i.e. non-repeatability) of abiogenesis and of evolutive speciation?

The answer is, of course, that *if information theory demands this step, then, self-respecting scientists must be ready to take it. Shannon and Weaver's information theory obviously does lay down perfectly plainly that surprise effects or information quanta are surprising phenomena as far as natural law and repeatability are concerned. Which is the same thing as saying that natural law is "surprised" by Shannon and Weaver's discoveries and demands the step transcending and shepherding natural law if scientists are to remain within information science as it advances.* Our own experience confirms this necessity daily, for by "informing" natural law (by means of blue prints and other surprise effects), we can change the results produced by natural law from one product in a synthesis to an entirely different one.

To refuse to deal with or think about the origin of information simply because natural law can tell us little about it, is simply to put one's head in the sand like the fabled ostrich. For it is certainly information which shepherds natural law into producing varying substances out of the otherwise same starting chemical mixture in synthetic work. That is, information uses natural law, shepherding it in various directions *in a way that natural law itself could not foresee.*

In other words, scientists today are being forced by the very weight of information theory to look beyond natural law to informational phenomena which guide natural law to produce the various forms of biology we see all around us today. In our experimental experience, natural law has never been known to produce unassistedly any biology! The incongruousness of a certain Nobel Laureate's bleating to the news media on every possible and impossible occasion that all life and biology can be reduced to mere chemistry and physics and, therefore, to mere natural law, fairly takes one's scientific breath away. For a number of these learned gentlemen have been and still are active in the development of information theory in biology! They propagate this business about life being nothing but physics and chemistry writ large merely because of their materialistic education and their personal religious or atheistic views. They seem to be unable to step out beyond their own shadow. *For if the totality of biology were, as such gentlemen maintain, the mere result of nothing more than chemistry and physics, then they are thereby denying the work of information theory in the DNA-molecule which is certainly a surprise to mere chemistry and physics when it produces holistic biology. For the natural laws of mere chemistry and physics have never produced even an amoeba - or any other machine for that matter.*

But why has this new and scientific *necessity* of appealing to matters transcendent to mere chemistry and physics been so universally stifled, suppressed and even eschewed? In the first place the very idea is repugnant to *real materialists who*, as a matter of dogma, *believe that natural law must be able to explain everything.* If this cornerstone in materialistic dogma were removed, then all materialism, including those forms of it known as communism and fascism would have to be removed from the thought of all instructed human beings too! But we must remember that ideologies - even incorrect ones - are sometimes stronger than facts - even in scientific and other circles.

A second point arises, too. It is: can it be that those who have been willing and courageous enough to invoke non-naturalistic influences in explaining informational aspects of biology, namely the Creationists (who invoke God as the source of the information behind biology) are among themselves so disunited and disrupted by internecine fighting as to make their whole school of thought uninviting to materialistic outsiders? Although the Creationists claim to have a scientifically viable alternative to Darwinian thought (they speak a great deal of Creation *Science)* yet they do not seem to have thought particularly profoundly about the scientific implications of information theory in any creative act.

Over and above Creationism among the Christians, the Jewish and the Muslim Creationists are so disunited in other matters that scientists do not pay much attention to any of them. Among the Christian Creationists the various schools of thought - the theistic evolutionists, who use Darwinian Evolution as their God's method of creation and allow a primeval creation but not much else, the Progressive Creationists who think that God intervened specially to produce each major phylum at least, the believers in the Gap-theory, who maintain that God destroyed a previous creation and then replaced it with the present one by a Creation in six literal days, among all these warring creationist factions there is not the convincing unity scientists might be looking for. Of course, Darwinian Evolution is rent by parallel warring factions - the Cladists, the Punctuated Equilibriumists etc, etc. So that the whole field of biology, being so disunited, would seem to be ripe for a uniting new theory of abiogenesis and evolutive speciation based on the already available new knowledge to nourish such a change of thought.

The views we here put forward differ from those put forward by the Darwinians in that they show that natural law cannot synthesize unassistedly either evolutive speciation or abiogenesis. They show, too, that scientists must go further than the current scientific creationists do in that a differentiation must be made between defining the *Source of Information*, which may lead to religious tensions and the *Nature of Information* itself and its work of shepherding natural law into metabolic machines. Which latter is a highly scientific, technical subject, but one capable of being handled in the laboratory under scientifically controlled conditions and has little to do with religion directly as such.

Creation did not take place by means of some semi-magical agencies, which are not capable of being formulated in a sober scientific manner. It took place by the hybridization of information or surprise effects in shepherding natural law into new and indeed unlikely negentropy and machine-like teleonomic aggregates. Such a process is by no means magical or even religious in nature, for it is one which can be repeated in and outside the laboratory - as when one synthesizes, by adding information to matter, a hitherto unknown aggregate of matter, may be for use as a new drug. Natural law alone would not do that, but natural law subjected to and shepherded by information or know-how can. For each synthesis, the actual conditions, chemically seen, may be different but in each case new information is hybridized with matter to give the new product.

Every time a new *machine* is born it is born by the same procedure: exogenous surprise effects are teleonomically hybridized with the natural law in matter to yield - maybe under quite controlled conditions (nothing magical or religious about this) - the teleonomical machine. The above is not quite that which scientific creationists have been saying up to the present - although I suspect that that is what some of them have been trying very hard to say for some time, but have never succeeded.

In the present postulates we have quite purposely left out the question of the *origin* of the actual information involved in abiogenesis and evolutive speciation, because we believe that this Source is for us finite human beings infinite and timeless (i.e. eternal) and that therefore the human mind cannot, on principle, successfully grapple with it. This aspect (the Nature of the Source) must therefore by its very nature be religious - and therefore not a suitable subject for a book such as the present. As a scientist I would certainly not like to pontificate for scientists or even for others on this very important matter - even though I myself have definite views and convictions on the subject. They are religious in nature.

There are, however, certain legitimate *deductions* which can be drawn on the nature of the Source of all information. However, experimentally and in the time/space continuum of which we are a part, *proof* of matters regarding the Source will surely be difficult. It is clear that if any religious leader does feel able to make authoritative statements on this very subject of the Source, all people of good will should listen attentively to him or her. However, if this Source, who or which created us and gave us perhaps a goodly dose of common sense to judge evidence by, at the same time gave us any helps by which we might be able to deduce more about mysteries of this kind, then we should obviously listen even more carefully. . . and with a goodly measure of good will and common sense.

Personally, I believe that one such Source did give us information, which has quite a remarkable ring of truth about it. For that same Source said that the Creator or Source of information inhabits eternity and that we finites cannot approach that or think much about that particular dimension (Isaiah 57:15). Finite man cannot successfully think much about eternity, for which reason the Eternal One, it reads, became temporal and clothed Himself with a mortal body and brain such as we have, so that He could mediate eternal thoughts (normally indigestible to us) in a suitable way to time bound thinkers. This same Person identified Himself perfectly adequately, firstly by the way He lived and secondly by the works He did. Thus, real thinkers will have few intellectual difficulties in taking the cue for their thoughts on these matters from Him and His teachings.

The followers of this One said some remarkable words about the nature of the beginning of all things, notably that of biology. For John (I John I) maintains that the real beginning of the creation lies in the Logos, that is, in the Concept behind everything and that this Concept lay in the eternal thought of the Creator Himself. We might call that concept personified information today. As we now know that all information arises in a dimension that is a last mystery, this teaching would fit very well what we have been discussing above. One named Paul further taught that once all things had come into being they were maintained, that is, serviced, from the same Logos or source (Col. I:17). Which again meets our specifications, as it were.

However, this line of thought goes even much further. The identity of the One who made the above statements was clinchingly made clear by showing His power over the death of others when He called Lazarus, who had been 4 days embalmed and dead in the grave, in an instant back to life (John 11:43). He showed the same power for Himself too, when He rose from the dead after crucifixion, as He Himself said He would before His death - the resurrection of Christ is one of the best attested facts of history.

But these matters merge inevitably into matters religious, which are not our subject for the moment, so we will return to the purely scientific side of these problems. The necessity of factor "I" (information) in the synthesis of any type of machine, be that machine mechanical, electrical or biological, is a fact of information science today. It is a matter of technical and scientific knowledge, which any scientist can test for himself any time in the laboratory. The formulae we have used to demonstrate these facts are by no means religious and for convenience are given again herewith as our main postulate: -

1) Matter + t + e + I = Abiogenesis or machine synthesis of any kind

2) Machine or cell + t + e + I = increased machine complexity or evolutive speciation

Where t = time, e = energy and I = Actual information or holistic surprise effects.

Thus, the purely scientific alternative to evolutionary theory consists in the recognition of the scientifically verifiable fact that for the synthesis of anything teleonomic, such as a machine or a biological cell, the factor "I" is mandatory. Time, energy and matter also play their role in such syntheses but can never succeed in reaching the desired goal if "I" is not added to the equation.

The above is the basis of *the scientiific alternative to evolutionary theory we are offering and exposes the Darwinian postulates as not so much wrong as deficient.* This alternative can be demonstrated any time in a suitable laboratory. Religious consequences may follow this scientific postulate but are *not* a part of it.

We need now to proceed to the question of the time (factor t) and conditions (partly factor e) required to initiate and complete the creative processes we have been considering in the above section.

4) Ancient and Modern Wisdom Concerning the Six Days of Creation

In the foregoing chapters we have seen that time and energy certainly play their role during the hybridization of matter with information to produce the teleonomic aggregates of matter we have been discussing. We have noted that Darwinian thought must be deficient in contents in that it postulates that time, energy and natural selection alone suffice to deliver a machine and indeed a more complex machine from a simpler one, too - a postulate which no science has ever succeeded in verifying. David Hume and many others before and after Darwin knew nothing of factor "I" and therefore did not consider it at all.

Later, Darwinian thinkers came to believe that any *open* thermodynamic system could manage without exogenous information in the production of biological cells - but they never risked such a postulate with regard to any mechanical types of machines! It would have been too obviously incorrect! Why make the difference between the biological and the mechanical machine? The answer can only be that they did not know the informational nature of biology itself. Such thinkers believed that energy added to a mass of raw matter would suffice to organize it spontaneously. If there were no energy - that is, if the matter were in a *closed* thermodynamic system, then, they believed, no machines could be expected. Thereby they demonstrated their lack of understanding of the Third Law of Thermodynamics, namely that if one *extracts* energy from certain forms of matter (i.e. crystal structures) by the time absolute zero has been reached, - if that were possible - order (or negentropy) will be at its *maximum.* That is, the *removal* of energy tends *to increase order* in such material systems, *not the addition* of energy as in an open system! *Addition of mere energy in any open thermodynamic system decreases order!*

Why, then, do Darwinians and others teach that the *addition* of solar energy gives a primeval soup the impulse to new order up to abiogenesis, when the Third Law states the precise opposite, namely that the addition of energy will produce more disorder - and not more order? All experience in the laboratory confirms this fact, for the higher the temperature of a system the greater the tendency to disorder - within certain limits, of course.

This factor of the Darwinian demand for an open thermodynamic system for abiogenesis has another consequence: - If energy is pumped into a system, it itself will produce more disorder and certainly not more order. But if a *machine* capable of converting the pumped in energy into chemical synthesis is present (such as for example chlorophyll), then the addition of energy to that system will augment order - as experiment has proved times out of number. But the conundrum is: - first of all obtain the *machine* such as chlorophyll necessary for such a synthesis using energy to produce increased order in a primeval soup! Dare we mention once again that machines, especially machines of the required complexity, have never been known to arise without the help of information or surprise effects known as holistic exogenous information, not derived from natural law? Where did the information to make the machine using energy to produce order come from? Without the machine, pumped in energy (open thermodynamic systems) *increases* entropy!

These facts having once more been emphasized, we can now devote ourselves to the role of factor "t" in all machine type syntheses.

Let us mention in the first place that, even if infinite time were available - which in our space/time continuum is not the case - it could never replace the necessity for the surprise factor "I" which does not arise from factor "t" spontaneously. *The factor "I" brings, then, into our synthetic equation one which, as to its origin and effects, has no causality in time or space.* That is, the parameter "I" is strictly additional to the parameters "t" and "e". Consider, then, carefully the consequences of this fact, which is relatively easy to put into words but so difficult to conceptualize intellectually. Factor "I" accordingly, never *originated* in time or space. To use the old, and perhaps today offensive term, factor "I" originated in timelessness or eternity, i.e. outside natural law. And now we are hybridizing that timeless factor "I" with time in the space/time continuum to produce a machine structure - i.e. to make matter creative.

We cannot avoid, then, the remarkable conclusion that factor "I", on which the synthesis of biology and other creativeness is contingent, arose in the last analysis in timeless dimensions, last mysteries. *Biology, therefore, did not arise conceptually in the space/ time dimension at all, such as most materialistic scientists apparently believe, but outside it.* If this is the case, then, it is obvious that not even infinite time can replace "I", for "I" is in its very nature originally *independent* of factor "t". That is, "I" arose "before" factor "t" was even created (if one can speak of "before" and "after" in matters eternal). *Although "t" cannot make "I", "t" can certainly destroy "I"!* Thus, one may never maintain that it took so many millions of years to arrive at the information for, say, an amoeba or a frog to arise from or in a primeval soup. The information required was made outside space and time and not in a soup in time/space. For time destroys information, time never synthesizes information.

May one, however, ask how long it took for this already existing information to hybridize itself with matter? The *synthesis* of factor "I" itself is far more fundamental than the relatively minor matter of its combination with suitable matter, but it is nevertheless important for science. For "I" does not necessarily work, it must be remembered, in *directly* building up huge and complex protein, enzyme, fat and carbohydrate molecules, which matter could get us lost in abstruse chemistry. The vital function of "I" lies, *given the invention of the genetic mechanisms and coding information for synthesis, not in its chemical abstruseness but in its ability to arrange for the nucleotide sequences in the DNA molecule. The chemical syntheses are a relatively small matter, for the chemistry resolves itself, once the sequencing and coding systems have been arranged for. Then, from one properly sequenced system the chemistry will grow autonomously, given favorable conditions and given the coupling of the sequences to a pre-arranged language convention or code.*

This view coincides with the wisdom exposed in both Greek and Hebrew writings. For they, too, maintain that the main work of the whole creation was carried out in eternity, in the eternal Logos and was only put into time as a *completed unit*, ready to be hybridized with matter.[1] They also maintain that, though the work of the conception of the creation took place in eternity, that is, in the timeless eternal thoughts of the Logos, yet the *transfer* from that timeless dimension to time and space took a mere six stages in six 24 hour days.[2] In these writings the Author of the Concepts receives a name (the Ancient of Days, Dan. 7:9-22) which is suggestive as being the eternal Author of factor "I".

We are thus brought a step further in understanding the nature and origin of factor "I" and, therefore, of the nature and mechanism of abiogenesis. We should perhaps add here, however, that the dimension of timelessness, is a dimension transcending that of space and time.[3] Which fact brings us to another aspect of event horizons recently discovered by modern science but apparently quite well known to ancient wisdom. The apostle Paul (2 Cor. 12:1-5) reports that he was "translated" into dimensions outside our own. He called them "the heaven of the heavens", "the paradise of God" etc. and said that he did not know, while he was thus translated, "whether he was in the body or outside of it" during this experience. Paul was also careful to report that while in such dimensions he heard things that "cannot be told, which cannot be uttered: (v.4)", showing thereby that such dimensions are indeed for us a last mystery, that is, one concealed behind an event horizon through which information may not leak to other dimensions. In fact Paul was apparently speaking of a sort of cosmic censorship.

Summing up, we conclude that man, information, intelligence, biology, the creation and indeed all creativity originated in dimensions which must be to mortals for ever a last mystery. Would it not be logical to conclude that when a man dies, there may remain a copy of a transcript of the genetical information which synthesized him retained in those dimensions whence he came? Surely a Source which could develop such marvels of reduced entropy concepts as the genetic code would be capable of retaining such after their development? May not, therefore, the ancient concept of the resurrection of the dead be explicable in some such terms as those which we have been discussing? Might it be that after the DNA-sequences, which store the information which constructed us, have been dissolved in death, the extradimensional copy of the same sequences might be reserved for injection on to some type of "matter" not subject to the flux of time, thus preparing a sort of replica of mortal man but not this time constructed of temporal "material" but rather of material which is eternal? Just as the information which made man in the first place by being hybridized with temporal matter of the space/time continuum? Thus. mortality would be swallowed up by or transferred to immortality.

We must now look at the actual mechanisms of the transfer of factor "I" on to matter, time and space at the beginning.

5) Mechanisms of Transfer of Factor "I" at its Hybridization with Matter in Biology and Their Relationship to "t"

Because some learned scientists and philosophers find the description of such a transfer of information as that described for example in the Hebrew Writings, out of line with modern materialistic science, they consider such ideas to be simply fantastic or mythological. The concept that the genetic information and code was not developed in space/time at all, but put here in six days of 24 hours duration each, seems genuinely nonsensical to many modern thinkers. Men, on the other hand, who do accept these conclusions of ancient and modern wisdom - or take them seriously - are regularly abused as "flat earthers", "baddies" and ignorami.

The consequences of such an attitude on the part of the Establishment are grave for both the Jewish as well as for the Christian faiths. For after all, it must clearly be kept in mind that the Decalogue. which is the basis of the Hebrew as well as of the Christian faith, does pronounce: "Remember the sabbath day to keep it holy. . . . . *for in six days the Lord made heaven and earth and all that in them is."* (Exodus 20:8-11). The language is perfectly clear. If the statement is erroneous, then, why should the other nine commandments be correct? Why does the writer of the Law *(God's finger* wrote it, says Exodus 31:18) risk impairing the credibility of his whole faith by making such a statement, if he was not perfectly sure of what he wrote? In such an important matter, why let oneself out on a limb, as appears to have been done, if the fourth commandment is mythical, that is not historically correct or imperfectly expressed?

Let us consider: Moses reports the material inorganic creation as being a phenomenon that *arose here suddenly and certainly discontinuously ex nihilo.* First came the firmament and the light - the sun and the stars arrived only on the fourth day after the creation of biology such as fruit trees on the third day. If those days meant really and literally ages - millions of years - we must ask how plant biology could have existed for ages (millions of years) before the light of the sun allowed the plants to synthesize their sugars and starches? How did the plants. created on the third day (read age) exist and multiply if their fertility was dependent on insects which were created so tardily - that is on the fifth day - 2 whole ages of millions of years each and later? What agency pollinated the plants for 2 ages before insects appeared? This sequence demands that the earth was prepared before the sun and moon!

Hebrew scholars have come to the consensus that, when evening and morning are mentioned in connection with days, there 24 hour days are indicated and not ages. Being no Hebrew scholar myself, I bow to the considered opinion of scholars in this field - and find to my astonishment and satisfaction that after the advent of information theory and its application to creative processes, there are few scientific difficulties attached to the concept of the six twenty-four hour days. Only *before* this development was there any apparent difficulty in taking the six days literally as 24 hour days.

What shall we say then from a purely scientific point of view about the 6 twenty-four hour days during which this transfer of creative information allegedly took place during the creation week? The following: - Where the dimensions of creativity meet those of decay, i.e. space and time, at this point the question of the measurement of time and indeed its measurement standards obviously become critical. As we have seen, the *origin* of factor "I" itself, must, from the nature of information, be outside natural law and, therefore, timeless. What if its *transfer* to time and space were not governed by time (as a measure of entropy *increase)* either? For creativity involves entropy decrease, that is time, where creativity is concerned, runs, as it were, in reverse.

The following illustration may help us realize more easily what exactly is involved in such a *transfer* of factor "I" to space/time: If we wish to *reverse the ravages of the flux of time on matter one needs to reverse the loss of information which has taken place in the course of time on that matter.* We may take as our example any machine: - Say an aircraft turbine or a tractor motor has a little clock on it which reads out how many hours of service the turbine or motor has given and, therefore, how many hours of useful service remain to be extracted from the machine. When, say 10,000 hours of service have expired, either one scraps the machine or one sends it back to the makers or servicing agents. Here *the lost information factor "I"*, that is, the worn out blades or the pistons, which have become oval through wear and cylinders (normally exactly round but now made oval by wear), are restored to the original shapes. The bent or deformed blades are replaced, new piston rings and bearings are put in and after the service the ragged information of the worn out motor or turbine is restored to the new condition.

It must be clearly kept in mind that servicing by the addition of *new information restores the old motor to its new condition.* Servicing reverses the flux of time, in effect. *The metal shapes and fits - all properties imposed by exogenous information "I" on to the metal* - are brought to the new condition. *Let it be emphasized that the process of restoring lost information is really one of recreating the motor or turbine.* For servicing is a similar process to that involved in creating the motor in the first place: information was added to matter at creation, resulting in the new motor. In re-conditioning the worn out motor a strictly parallel process takes place. The extra information which is added during servicing does just the same as the pristine information which made a new motor out of metal. After adding this servicing information the old motor or turbine is good for another 10,000 hours - just like new, in fact. *Added exogenous information does the trick of creation or restoration i.e. time reversal.*

Thus, the addition of *new information* to an old motor effectively *turns the clock back for this motor.* That is, the addition of new information in reality, from the standpoints of teleonomy, *reverses time* measurements. It reverses the ravages of time. This addition of information to matter can take place at the original synthesis of the motor or at its restoration, rejuvenation or servicing.

We must, however, again note that, 1) although the wearing out of the motor took 10,000 hours, no *matter* was ever lost thereby, and 2) that the *restoration* from ageing need take much *less time* than the ageing itself. Further, 3) that the life clock on the motor wound itself down in 10,000 hours, but it can be wound up again by the addition of information in a fraction of that time. *That is, where information originating in the dimensions of timelessness (by crossing an event horizon separating two dimensions) there time relationships can be in principle thoroughly, as it were, turned upside down. For the time taken to effect the transfer of information, that is, to wind the machine up, may have little or no relationship to the time required to wind it down.*

The amount of information hybridized with the matter concerned will determine how much time is simulated, that is, service life gained. Put crudely, if the motor is half-serviced after 10,000 hours and only a part of the lost information restored, the service life of the motor may be correspondingly shortened, say, a further 5,000 hours. The passage of time can, in other words, be inversely simulated by the addition of information to matter. To put it even more drastically, all creative information hybridized with matter will simulate youth, i.e. make the motor "younger". So that a newly created motor or world will quite obviously appear to be young. So too a restored aged one.

On the other hand, if Adam was made by creative processes as an adult man, say, of *24 years old,* and that creation took place 2 seconds ago, those two seconds of existence will have all the appearance and characteristics of 24 full years. If 2 seconds ago Adam was created as a new born babe he will appear as no years old. *Creation simulates the negative and positive passage of time, so that information hybridization can work timewise in two fashions.* It is, therefore, indeed dangerous to pontificate over the age in our time scale of any really *created* world, for *creation can turn the time clock on principle forwards or backwards.* It simulates the negative or positive flux of time. Creation processes may turn the clock back from entropy to negentropy or vice versa. Adam might have been created as an old man! That is, here creative processes reverse or accelerate time - and indeed must do so.

To avoid skipping over the consequences of the relationship of information hybridization with matter and its effect on time measurement, think of the turbine or tractor motor again: the spare parts, bearings, turbine blades, pumps etc., may have taken quite a long time to design in some office or workshop. But the *transfer* of the information to be hybridized with the matter of the spare parts into the turbine or motor may take a very short time indeed. Indeed if the motor has been designed rightly and is conceived so as to be easily manufactured and serviced, the design work of many years may be built or repaired into the machine in, relatively speaking, no time. Thereby the clock of measured time is turned quickly and effectively backwards - *the addition of information does the trick.*

May this situation not well be the case with all creation in general? If creation was conceived in other and indeed timeless dimensions, it might, theoretically, be transferred to the matter of our time/space continuum in a flash of time, as it were. There is nothing ridiculous or even magic about this. Indeed, to scoff at such ideas is merely to reveal abysmal ignorance of creative processes in general and hide-bound materialistic thinking to boot.

Research into information theory has negated so much materialistic thinking as thinking which is ignorant of information theory!

If now the information which built the universe and biology arose in timeless dimensions (and there is every reason to hold this to be the case, for information can simulate age but can also reverse the ravages of our time), then there arise no further difficulties as to the concept of the for us *sudden transfer* of such universal creative information through an event horizon between dimensions in times as short as 24 hour days. For though the creative work itself was done in timelessness, its transfer to our time can be infinitely short.

It does not need to be emphasized once more that this way of thought is precisely that of the Hebrew scriptures. Such is as a fundamental tenet of all Hebrew doctrine (compare: "Thine eyes beheld may unformed substance; in Thy book were written every one of them, the days that were formed for me, when as yet there was none of them" (Psalm 139:16). That is, the information behind my unformed substance was known to the timeless Creator in eternity and noted in his "book" there. That is, His "memory system", long before the information was executed in matter, retains that information eternally. In other words, creative information was conceived in eternity and stored there before being transferred to time in the Six Days of the Execution of that same information in matter and, therefore, time. That is, the Jewish as well as the Christian teaching correspond in every detail with the principles discovered during the development of information theory. Similar days were constructed in eternity.

Personally, then, I see no longer any difficulty of a *scientific nature* in holding that the creative thoughts of Him who inhabiteth eternity (Isaiah 57:15) *were put suddenly into the space/time continuum in six twenty-four hour days.* This new scientific wisdom supersedes the outdated Darwinian guesses and extrapolations as to factor "t" - much as air travel has superseded the horse and buggy. Darwin imagined - to reduce things to fundamentals - that natural law would achieve that which we now know *can only be achieved by information hybridization to natural law.* He knew precisely nothing about information theory. Indeed, in the nature of things, he could not be expected to have known anything in this area. It is, however, a fact of history that progress in science is often blocked by a frantic holding fast to old, superseded ideas. If in doubt on this point, look at the history of the Phlogiston Theory we discussed at the outset. The time has now surely come to frankly recognize this fact - and to get on to new work instead of dealing with themes of less fundamental nature, themes like, for example, population genetics among many others, as a solution to creative processes. Such may give useful results in their field but are less than fundamental for matters of creative evolutive speciation and abiogenesis.

6) The Age of the Universe, the Solar System and the Earth

Exactly the same principles may be applied to the problem of the age of the whole space/time continuum. For the total structure of time/matter betrays many of the properties of a machine and is built on entirely mathematical principles. The orbitals of the electrons in the atom are determined on mathematical laws. Did those orbitals originate in stochastic procedures? How shall we class the mathematics of orbitals if not as natural laws shepherded into particular paths to achieve particular ends? Where did such mathematics arise, if not in the same source as that from which all creative and conceptual information arises?[4]

Physicists agree today that matter was once wound up at the beginning of time and that it is now in process of running down. *The point of all the above is that, from the rate of the running down of any clock one cannot determine how long it took to wind it up and to make it a functioning clock.* If now, the same principles hold for the creation of matter as those which undoubtedly hold for the construction of all machines, including the biological one, then we must conclude that matter was conceived of, too, by the hybridization of information with energy. Biology arose on the same principle. Is there then anything standing in the way of believing that such thought or information was put into time in a similar way? That is, in an infinitely short creative time?

It is surely perfectly clear by now that no measurements of the rate of running down of matter (say, radioactive decay) or biological information (say, mutational load, the result of information loss by mutation) will give us any inkling as to how long it took to make the information required for both. Nor can any scientist say how long it took to transfer such creative information to the space/time continuum, for here one is treating an intersection of time with timelessness, which makes the measurement of time rather a tricky business by any standard, to say the very least!

Thus, we are not able to calculate any age - either of biology or of the matter which together with information makes up biology - where any preceding *creative act* has taken place. It remains true that the old, worn out engine of our example, which has been supplied with new information from the top to bottom of its being, may look new - for its *information*, which reverses the ravages of the time by which we measure all age, *is* new. That which makes new and therefore apparently young is the information on any teleonomic aggregate of matter. For information acquisition makes new and apparently young - or simulates age, it itself being timeless. While loss of information makes old, gain of information may make young. This is the basis of creative acts and that of ageing, too.

The influence of surprise effects or information in creation uncovers the fundamental reasons for our inability to date events which arise as a result of the acquisition of information, that is, of creative acts. For such information arises beyond our dimensions of time/space, in which latter all information decays. Its decay allows us to measure time. Where *increase* in information is concerned, there our time measurement systems are fundamentally disequilibriated.[5]

The alternative to evolutionary theory here presented involves the hybridization of inorganic matter with information in order to produce all machine teleonomy. This type of information does not reside in inorganic matter or its properties, so that it has to be introduced exogenously. Such a postulate has nothing to do with religious views - although, of course, like other aspects of science, it may lead to religious views, if followed to a logical conclusion.

The scientific difficulty of reckoning with a Six Day creation period lies fundamentally with our inability to believe in creative processes in principle, processes which simulate the reversible passage of time. The scientist who denies any creative acts must deny the whole idea of the Six Days, for it must be nonsense to him and to all who believe in the origin of the world and biology without creative processes having been involved.

1 *Psalm 139: 13-17, Job 26:7, I John 1:1-2, John 1:10, Exodus 20:8-11, Genesis 1:7, 16, 25, 26, 31; Genesis 2:2, 3, 4; Genesis 3:1; Genesis 5:1; etc.*

2 *Genesis 1:1-31, Exodus 20:8-11.*

3 Davies, Paul, *The Eleven Dimensions of Reality*, New Scientist, 9th. February 1984, pp. 31-33. See also Science 1st. June 1984, 224, p. 971.

4 Indeed the whole cycle of biological nature looks suspiciously machinelike. Take the dependence of plants on animals and animal life on plants for example. The carbon dioxide which we breathe out in gaining our metabolic energy is vital for the plants to synthesize food for themselves (with the help of the sun) and for all animal biology into the bargain. This and other similar natural systems look suspiciously teleonomic and if so, will demand the outside shepherding of natural law to organize. We are learning today, too, that this machine-like structure is easily damaged.

5 Robert V. Gentry's book (1986) entitled "*Creation's Tiny Mystery*", published by R.V. Gentry, treats the formation of characteristic Polonium halos in granite rocks. Since the particular isotope of polonium concerned has a half life of a few minutes, and since the rock in which the halos find themselves appears once to have existed as a magma, it is apparent that the halos must have been formed in situ, while the rock was in the solid state, otherwise no halos would have been preserved (in a magma). The evidence of thousands of such halos of polonium in hard rock testifies in a rather unequivocal and unexpected way for a creation devoid of a time factor in origin. Gentry's book is certainly well worth reading and carefully pondering. The method offers one possibility of overcoming the inbuilt difficulties of measuring soundly creative processes in time. The book centers on his research on the phenomena of pleochroic halos in Precambrium granite. Besides describing first class research, Gentry's description of the persecution he has suffered at the hands of the Establishment reads like a story out of a thousand and one nights - all grants cut off and his position rendered redundant. It reads, too, like the story of a professor of evolution at a State University. After he became convinced by reading "*The Creation of Life*", by the present author, that abiogenesis and evolutive speciation just could not be accounted for by Darwinian theory he was relieved of certain teaching duties. He could not be fired since he holds a fully tenured professorial chair.

Chapter VIII

Materialism in the Light of an Analogy and of some practical Examples (This chapter may be skipped by timid scientists but especially by those who possess no algorithm for the *risus facetus* (=smile of humor) in their genome.)

1) Flatland and its Environment [1]

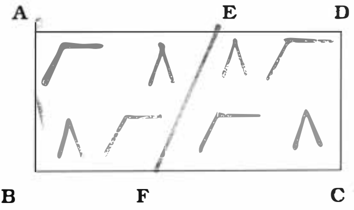
Once upon a time there existed a race of two dimensional intelligent beings who were active scientists. These bidimensional scientists lived by their research projects in various aspects of scientific theory. Although they were exceedingly intelligent (average I Q about 185) yet they were in one way rather more restricted in their outlook than our three dimensional scientists are. For their land consisted of two dimensions only instead of the three to which we all are so accustomed that we scarcely give them a thought at all. If we were only two dimensional in nature and lived all our lives in a country possessing only two dimensions, namely those of length and breadth, we too should be accustomed to the same bidimensional situation. For the Flatlanders had never known what height or what depth was, so that they possessed no conception at all of what that strange dimension might be. They just could not conceive of height because they themselves were built without that dimension.

So the Flatlanders lived their active and intelligent lives without the complications of this to them unnecessary dimension of height or depth. Their Flatlander males looked like obtuse angles and their ladies like acute ones, such as was entirely fitting for universal femininity. That is, a certain obtuseness characterized the maleness of their race and, of course, acuteness was the property of the ladies.

Their land, that is, Flatland, looked something like the figure I have shown below, Fig. 8.1. In this sketch the symbol signifies, of course, the ladies and the symbol the gentlemen:

FLATLAND

FIGURE 8.1



Now one fine day a line was drawn by someone unknown from E to F with rather dire consequences for the Flatlanders: For it will be immediately understood from our foregoing chapter IV on black holes and event horizons that each line in a two dimensional system such as flatland is, will function as an absolute event horizon. For one cannot pass either over or under this line EF or indeed over or under any other line in any two dimensional system. For there exists in such a system no depth and no height to pass under or over the line. So that, as a result of this restriction of dimensions to two, any line will function as an event horizon. For it seals off each side of itself dimensionally.

The consequence, then, of the drawing of the line EF through all Flatland was quite simple, though indeed far reaching. The portion of Flatland represented by ABFE became entirely and totally cut off from that portion represented by EFCD. These two portions of Flatland became in this way entirely cut off from one another. All communications stopped and the inhabitants of both portions became totally unaware of each other. Old fashioned language would express this state by saying that they became hermetically sealed and cut off from one another. That is, they "died" absolutely to one another. No one could jump over EF to reach the other side and no one could dig down under EF to burrow into the other side. The line EF was, in a fact, a true event horizon. It was entirely impermeable to all carriers or media bearing information.

2) A disquieting Event in Flatland

One day in that part of Flatland designated as ABFE there appeared what might be called two forms as far as those who observed the event could judge, these two forms appeared acausally. That is, there was no causality or reason to herald their coming. To use analogies familiar to us who inhabit three dimensions, these two forms which appeared, as it were, out of the blue, would have looked to us three dimensional beings just like two human footprints, that is, like five toeprints, a heel and a thinner area in between. We three dimensional beings would interpret such a form as an instep, five toes and a heel. See Fig. 8.2.

The Flatlanders, being scientifically minded, were most interested in the mechanism of the appearance of these to them so strange forms. The peculiarity of the forms was, however, to them as scientists of less import than the apparently acausal mechanism of their appearance. They well knew that negentropy - such as these forms represented - does not appear acausally, that is, spontaneously.

The Flatlanders, therefore, called together some of their best scientific colleagues to investigate these apparently spontaneously appearing negentropic forms - forms which would have to us looked like human footprints. But just as the assembled company of scientists was about to investigate the "footprints", they disappeared as it were literally into thin air - if that element existed there in Flatland. So they all now had a double problem on their hands to deal with, namely: 1) why and how did these negentropic forms appear and 2) why and how did they just as effectively and suddenly disappear?

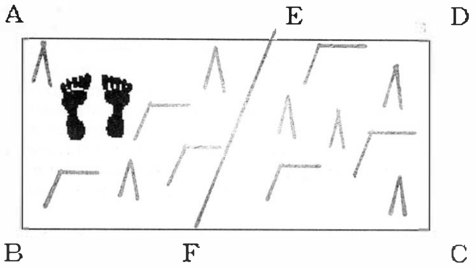


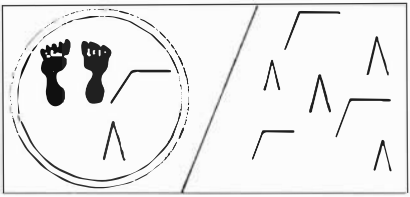
FIGURE 8.2
A disquieting Event in Flatland

The long and the short of their long discussions was that they got nowhere. They talked and discussed for all the world just like a parliamentary committee, but never came to any satisfactory conclusion at all. They could not agree on anything much - except that the two phenomenon looked as if they were entirely acausal. But they did eventually agree on one measure - and one only. It was, that, if such negentropic forms were ever to turn up again, the Flatlanders observing them were immediately to catch them - i.e. to catch them physically - so that they just could not disappear again without trace and without some scientific data having been laid hold of. It was, of course, obvious to every intelligent Flatlander just how he was to catch such forms: Just put an event horizon round them, that is, just draw a line round them. For a line in Flatland is a boundary, an event horizon such as those partitioning off Flatland from any other Flatlandish dimension. Just to be absolutely on the safe side, however, it was agreed too. that the line drawn round any suddenly appearing unwary negentropic forms should be a double one - no flatlander could get over or even under a single line. How much less, therefore, could anything Flatlanders could conceive of get out of a double line. So a double line it was to be.

As a postscript to this weighty proposal on catching unwary negentropic forms it was agreed that it would perhaps be as well, on thinking the matter over maturely, to add that a couple of Flatlanders with full chemical and physical equipment - i.e. microscopes, chemical kits for testing samples as well as food supplies, be shut in with any captured negentropic forms. Thus, it would be possible to ensure that the elusive negentropic forms would be continuously under strict observation by skilled Flatlanders. First class food and drink was included in the equipment so that time would not hang heavily on anyone's hands who was imprisoned with the "footprints". For it was considered likely that a problem of this magnitude could probably not be solved in just a day or so. The minimum time required for an investigation of this magnitude was estimated to be at least of the order of a week.

Hardly had all these preparations and discussions been rounded off, when the news came through that new negentropic forms looking just like the first ones, (that is, to us three dimensional people, human footprints), had just reappeared. They had turned up as before apparently acausally, just as the first ones had. The good news came through, too, that the footprints had been duly and securely captured and that a Dr. and Mrs. Flatlander with food and drink for a whole week together with a full scientific kit had already been shut in with them. (See Fig. 8.3.) A *double* event horizon enclosed them all with a double security line. The results of this fortunate occurrence were awaited impatiently by the press and the scientific public of flatland.

A E D



B F C

FIGURE 8.3
Dr. and Mrs. Flatlander's Scientific Investigation

After exactly one week the double event horizon was ceremonially opened with a very particular tool especially designed for this purpose. For event horizons in any dimension are difficult to manipulate by any standards. I have not the space to describe this masterpiece of ingenuity. All the onlookers and the press strained to get the first glimpse of the scene within the now pierced double line. The operators of the special tool used for opening the event horizon stood back to allow the press to get a better view. What greeted their astonished eyes was more than can be adequately committed to mere paper.

Dr. and Mrs. sat in the middle of a little clearing in the midst of arrays after array of scientific instruments and stores of food which had not yet been used up. Their expressions conveyed one choking look of staggered, wide eyed unbelief. They had eaten little of the sumptuous supplies of food and touched practically nothing of the vintage wines which stood in costly bottles around them on the floor. They were scarcely able to articulate at all as the scientists brought them out into the open to give their reports. Then, having been strengthened by some very specially prepared food and stimulants, they faced the press. And this is what they reported:

We had just physically laid hold of the negentropy patches in our enclosure and had just begun to make one or two preliminary tests, said Dr. Flatlander. My hand, said the scientist, had just firmly gripped one edge of the negentropic shape and my wife was engaged in photographing it, when quite imperceptibly it began to "ooze" out of the grip of my hand. It is most difficult to describe, said he, but the form appeared to slip through my grasp for all the world like ice lumps do when one holds them in one's warm hand. Whoever has held a live eel in his hand knows that, even if one grips the eel very firmly indeed, it just glides through the grasp of the fingers and back into the saving water. So it was with this negentropic form. The firmer I held it, he reported, the more it seemed to be impervious and immune to my grip. It slipped through my hand just like a lump of ice does.

The worthy scientific doctor then reported that this escaping out of his grip did not overworry him, for he was a scientist and knew that even though it might escape his grip, it still could not get out of the double event horizon surrounding all of them. So, after he had lost his grasp on the negentropic form, he looked around for it in the space within the double event horizon around them all. Since that time, he and his wife had searched every millimeter of the space to which they were confined. But the negentropic form was definitely not there. It was gone - evaporated into thin air - metaphorically speaking, of course. This was, naturally, quite and totally impossible, scientifically speaking. No scientist could accept black magic like this, for it amounted to acausal magic. The doctor and his wife had had nearly six days to think these happenings over and the more the two of them had thought about it, the more confused they had become. As scientists, they were frankly unwilling to believe in magic such as passing through an event horizon. But how could one explain such happenings which deny all the laws of science and dimension theory they knew of?

Dr, and Mrs. Flatlander then recapitulated before the press and before the assembled scientists the facts of the situation as they saw them. 1) The negentropic patches appeared acausally. 2) The negentropic patches disappeared acausally. 3) These same patches passed through event horizons with the greatest of ease, apparently in either direction. 4) While these patches passed through event horizons with no difficulty, the same horizons were totally impervious for Dr. and Mrs. Flatlander themselves. Indeed for all Flatlanders.

The assembled scientists doubted the results reported by Dr. and Mrs. Flatlander, examined them at least twenty times and finally came to the conclusion that they could a) not alter *the facts* of the case and b) that Dr, and Mrs. F. had reported faithfully the facts just as they had seen and experienced them, yet without understanding them.

After much deliberation they decided that the only thing they could do constructively was to invite an eminent Flatlander known as Professor Albertus Zweisteinus who was Ordinarius for Dimension Theory at one of the most famous universities in Flatland.

3) Dr. Albertus Zweisteinus' Visit and Verdict on the recent Happenings in Flatland

Dr. Albertus Zweisteinus was a very old and wrinkled Flatlander who enjoyed, as a theoretical physicist and mathematician, an enormous reputation. He had developed certain fundamentally new theories on the nature of reality. Although he thought, as he said, very slowly, he thought very exactly.

Having been introduced to the company of scientists who had just experienced the phenomenon of what they all took to be acausality in the appearance of these patches of reduced entropy and their equally mysterious disappearance, Zweisteinus listened very carefully to all the evidence. He showed not the slightest sign of emotion. Some thought that he did not understand the import of the problem because he said so little. But the questions that he, from time to time, put the scientists proved that he understood the problem very well indeed but was for the moment not saying anything.

After some hours of giving evidence, silence fell on the assembled scientific company. Zweisteinus stroked his chin, walked up and down, sat down again. Asked a few additional questions. Then, they all ate dinner together. After dining Zweisteinus announced that he was retiring early to think about these matters. So he excused himself and retired to his bedroom.

Next morning the great scientist appeared early for breakfast and seemed to be in a somewhat more communicative mood. After a first class breakfast the scientists gathered again to hear Zweisteinus' summing up of the situation and his interpretation of the appearance and disappearance of the reduced entropy patches, which defied all the known scientific laws governing Flatland.

Zweisteinus mounted the little rostrum - or what served as a two dimensional rostrum in Flatland - which one, of course, could not really mount owing to the dimensional implications of that expression, cleared his experienced throat and began to speak. At first he spoke haltingly and very slowly indeed, but he did not propose any new theories, such as the assembled company were sure he would. Instead, he asked for certain guarantees before he could come to the theoretical part of his exposition. The nature of the guarantees was quite remarkable. He asked first of all, that no one present would ever use what he now was going to say to give evidence against him. Then that the university at which he was professor of dimension theory would not remove his tenure of the chair. Further, that no one would rent-a-mob to demonstrate against him. His banking accounts, too, were to be immune against being blocked. Finally, he asked that all these guarantees were to be given to him in writing . . . and indeed before he began expounding his theoretical treatment of the disappearing and appearing reduced entropy patches.

The old gentleman seemed to be very frightened indeed and refused to part with any part of his knowledge before being given the written guarantees. The scientists present - some of them very distinguished indeed - began whispering in one anothers' ears to the effect that the old scientist sage had entered his dotage. Indeed, one very eminent man stood up and asked Zweisteinus if he really thought he had solved the great problem at all? The clear and convincing manner in which Zweisteinus answered in the positive had that ring of truth about it that convinced all present of his sincerity and certainty about having solved the problem to his perfect satisfaction.

A rather left wing colleague then asked Zweisteinus, why he insisted on all these guarantees before telling them his new and scientific truth? The truth would, he said, be respected by all - and indeed this was all that they expected of him. To which Zweisteinus replied that in his youth he had thought that way too, but in his old age he had learned to be wiser, He had gained vast experience to the effect that even scientists respected certain ideologies more than scientific fact and would punish him, Zweisteinus, if he destroyed their false ideologies by exposing new scientifically founded truth. One young colleague then burst out with a very impolitely formulated question to the effect that he did not understand what was "biting" the old man. There were frowns at sacrilege of this sort until another asked very politely why all the ceremony and talk of guarantees?

Well, said Zweisteinus, you are all *scientific materialists* here. You all believe that the two dimensions of Flatland are the sole expression of reality-at-large and base your life-style on that untruth. No other universes besides that of Flatland exist in your view. Flatland is the only reality that exists in your science. Outside our Flatland there are in your materialistic science no other realities. There are, he said, in your view, no last mysteries. What you cannot investigate in your laboratories just does not exist in your minds. In the view of the Flatlandian materialists, theology and metaphysics are just so much "bosh", not worthy of being taken into serious scientific account. In addition, Flatland had no beginning and would therefore know of no end. Expressions such as "psyche" or "soul" were just empty of meaning. The matter of Flatland was eternal and therefore needed no transdimensional creator to initiate it. When the Flatlanders "passed on", they were in reality just annihilated, because there was no dimension for the dead to exist in. Such were just no longer.

Now, said Zweisteinus, you are not only *scientific* materialists, you have become *ideological* materialists as well. If I may risk saying so before the cream of Flatland, he said, you are *religious* materialists too. You all - or most of your company - are fervent *believers* in time and matter as the sole realities in the universe. Which means that, because you exhibit the fervor of religious fanatics, you will attack and persecute anyone who does not think of things as you do, that is, who believes in supplementary dimensions. That is, you are, to a real extent *bigoted* materialists[2], for you will not permit a professor to exercise his profession, if you suspect that he does not think exactly as you do about materialism. Why, said he, I have heard of a professor who failed a student of his, simply because the student did not believe that natural law alone spontaneously built his person over long time periods. That is, the student believed that there are forces outside materialistic ones, valid in Flatland, which he believed to be at work behind event horizons and which are not governed by the laws of Flatland.

A gasp of astonishment went up from the assembled eminence sitting before the most eminent Zweisteinus. Was he still in reality or in his dotage? Had he become religious and therefore confused? No, said the most eminent Zweisteinus, I am now in a position to prove with the help of perfectly scientific method that your scientific materialism is totally in error. But first of all I insist, he said, on the guarantees, for I know that you good people are unable to leap over your own shadow. You cannot help trying to maintain your scientifically shattered ideologically governed theories with censorship, with propaganda, with psycho-terror and any other means at your disposal, even though I prove you to be in error. You cannot help persecuting those who do not agree with your materialistic views, for your views are in reality religious in nature. You are, said he, perfectly sincere. But just as certainly, you are sincerely wrong, for your views do not correspond to the factual evidence. Therefore they will lead you to the aberrant behavior of psycho-terror and censorship I mentioned.

There was some unrest in the lecture hall at this statement. But Zweisteinus quietened it rapidly by citing some well known cases of materialistic bigotry against scientists who shared differing views on these matters. However, the company was so very interested in hearing Zweisteinus's solution to the problem of the appearing and disappearing negentropic patches that they resolved to confirm to him the guarantees he insisted on, indeed without further ado and in writing.

Thus it came about that, after the signatures had been exchanged and sealed, Zweisteinus addressed the eminent assembly once more. He was markedly relieved in his appearance and spoke with a fluency which was remarkable in an old man. Obviously he had had a very great fear of reprisals from the materialistic Flatlanders. Now that that fear was gone he spoke relatively quickly and with great élan.

Colleagues, he said, we have come to a turning point in the history of science in Flatland. We all - including myself - used to believe in the uniqueness of the dimensions of Flatland. In fact, we went so far as to believe that the dimensions of Flatland were the only ones which existed. Flatland and its dimensions were all there was to the whole of creation. However, as a direct result of your observations on the reduced entropy patches, which appeared and disappeared seemingly acausally, I now know that this is not the case. Our whole materialistic philosophy has turned out to be incorrect. We must accept the unequivocal evidence that our most recent observations on the negentropic shapes have now brought to us. Friends and colleagues, Flatland is not the only reality. There are other dimensions and realities besides those of our country and our reality.

Everyone looked at him aghast. The eminent gentleman must really be in his dotage? But he did not speak that way - as though he were in his dotage. What could he mean by such unscientific quasi religious statements? Zweisteinus did not keep them in suspense very much longer, for he said: Gentlemen, the evidence we all know about now can be interpreted in only one way: namely, there are other dimensions and worlds which for us are last mysteries but nevertheless realities.[4] All the evidence you yourselves have given me point to there being at least a third dimension besides our dimensions of length and breadth which make up all Flatland.

Now, the word "third" dimension worked like a red flag to an infuriated bull when the assembled Flatlandian materialists heard it. They called out sarcastically to him asking him how he was proposing to name this "third dimension", what was his technical term for it? They had never heard talk of such nonsense in all their days since they began to practise the exact sciences in Flatland. They began to heckle and harass the old gentleman in just the manner he had feared. That is, they tried psycho-terror on him. But one elderly Flatlander stood up to the others and called them to order, saying that common decency demanded a fair hearing, otherwise they would earn the distinctive titles of hooligans and bigots, for their behavior merited such distinction. Worse still, Zweisteinus had feared - correctly - just this sort of behavior.

They quietened down muttering meanwhile words like "doting old fool" and "approaching old age has made him religious" etc. etc. So the eminent physicist and mathematician began again and said that he proposed to call his third dimension "altitudo" or even "depth" or "height" - just as they might wish. There were some suppressed cries of "never heard of it" and "deviating from the agreed party line", among others. But the old scientist took no notice this time and said that, if they would quietly listen - as scientists should by now have learned to do - he would proceed to give them evidence on a perfectly simple logical basis.

This was just what they all wanted, so they all suppressed their emotions and shut their mouths firmly. We have, said the sage, the problem of Dr. and Mrs. Flatlander hermetically enclosed in a double line functioning as an event horizon round about them. They cannot get out by any means known to Flatlandian science. They were, so to say, in a maximum security prison to the power of infinity by all our standards. Am I correct? Yes, he was correct, but they did not see his point so far. We also, said he, have in our double line functioning as an event horizon the elusive negentropic shapes which we have not yet interpreted. Now, in contrast to Dr. and Mrs. Flatlander (plus the scientific Flatlandian kit which belongs to the government of Flatland) who were all securely restrained from exiting from their maximum security prison, the negentropic shapes could undergo passage through the event horizons in either direction with no let or hindrance. In fact, there were apparently no restrictive influences to impede them in the slightest degree. That is, the laws of Flatland, which are two dimensional, could not restrain the negentropic shapes. I therefore suggest, said the wizened old veteran of many a relativistic battle with his intellectually slightly less viable colleagues, that these shapes possess a third dimension, which I call "altitudo". These shapes are then, in my opinion, two dimensional plus one supplementary dimension in addition.

Now, said the sage, if such "altitudo" exists, one would expect, according to the most elementary laws of logic, for two dimensions and their laws not to be able to restrain any system possessing one or more extra dimensions.

The learned colleagues looked profound and their enhanced profundity was emphasized by increasingly deep wrinkles on their noble brows. But no glimmer of comprehending intelligence escaped from their half closed eyes. So, like other experienced lecturers, Zweisteinus resorted to a very simple analogy to help himself over the pedagogical obtuseness of his hearers. Gentlemen, said he, permit me the use of just one simple analogy to clarify this relatively simple matter. Someone in the back of the lecture room grumbled into his beard about analogies not being permissible. But Zweisteinus was a master of pedagogics and promised that they could discuss the lawful use of analogies afterwards - if they still wished to when they had understood him completely and heard him out.

So they all again suppressed their emotions and prejudices and turned their eyes - and ears - towards the aged Flatlander. Suppose, he continued, the negentropic shapes were not only part of our dimensions, that is of two dimensions, but were also coupled to "altitudo", just as I have proposed. They are, that is, partly two dimensional, but also partly three dimensional as well. Now these negentropic shapes are securely enclosed in their two dimensional maximum security prison. With the help of their two dimensions of Flatland - length and breadth - they are fettered inside - just as Dr. and Mrs. Flatlander were together with all their chemical kits. But now, kindly pay the closest attention to what I say: Our shapes are integral hybrids of two dimensions but also an integral part of "altitudo", the third dimension I have mentioned. To escape from the double event horizon they merely need to exercise their third dimension by stepping *over* the double line or by burrowing *under* it. They thus proceed to step *over* the double lines. Since they are integral parts of the two dimensions of Flatland, they extract themselves from their two dimensional prison by exercising their third dimension, namely "altitudo". They, in fact, calmly step out of and over the imprisoning (for us two dimensional beings) two dimensional event horizon. For a two dimensional event horizon blocks *only* two dimensions. It cannot hold any two dimensional being which possesses a third or higher dimension, by means of which it can avoid the restrictive influence of the two dimensions.

Zweisteinus paused and then used another illustration to make his point even clearer. He pointed to their two dimensional motorway system in flatland. When the motorways met at road crossings, there the traffic had to wait until the traffic in one direction had passed by before the traffic passing it at right angles to it could venture over the crossing. But, said he with his prophetic gift of projecting himself into the problems of multidimensions, if we Flatlanders possessed "altitudo" we could make a "bridge" over or under the level crossing, so that the traffic could flow in cross directions simultaneously without hindering any direction at any time. The extra dimension "altitudo" does the trick.

Zweisteinus paused once more and then skillfully brought in a further help to understanding this problem of the freedom conferred by an extra dimension. Supposing, said he, that we had just the dimension of direction, such as a line, in Flatland. That is, supposing Flatland consisted of just one line and supposing that this line was a railway line, a single tracked railway line, in fact. No breadth existed in this one lined Flatland. Then we obviously, said he, could run, theoretically speaking, a train only in one direction at a time along our single railway track - having no breadth would block the passage of any train running in the opposite direction. A single track railway allows of travel only in one direction at a time.

To give the freedom necessary to run trains in opposite directions at the same time one would have to add to the direction of the line the dimension of breadth in order that we could build a loop out from the line - a loop to allow our train to move off the single lined track to await the passing of the train moving in the opposite direction. Or, mused Zweisteinus, we might use the extra dimension of breadth to build a parallel line, so that we could then have a two tracked railway system. Either the loop for passing trains or the extra double track both demand the extra dimension of breadth to execute. So here again the addition of breadth to the dimension of length confers extra freedom on the movement of traffic. With breadth to give loops or double tracked systems, trains could now move in opposite directions at the same time. But the extra dimension confers a freedom on the traffic system which would be otherwise inconceivable. One additional dimension added to any restricted dimensional system confers an extra freedom on that system.

Summing up, said Zweisteinus, the negentropic shapes, I propose, possess one extra dimension, which I call "altitudo" which gives them freedom to pass over two dimensional event horizons which for us two dimensional beings are impassable.

Further, said the old scientist, I suggest that the negentropic shapes are part of a three dimensional being and that this being lives in three dimensional space, just as we live in two dimensions. This 3-dimensional being, therefore, cannot be held or locked in by any of the two dimensional barriers such as those that we erect to contain two dimensional flatlanders.

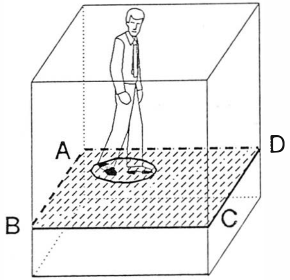
Now all this was highly technical for two dimensional beings, who were not accustomed to thinking in potentional three dimensional terms, which they could only conjecture with the help of mathematics. But they were quietened and listened to the further propositions suggested by Zweisteinus.

However, before we return to Zweisteinus and his propositions perhaps the author may be allowed to add a personal word at this juncture. The secret of the appearing and disappearing negentropic shapes was very simple indeed. For on the day concerned, when the Flatlanders had been put into a state of consternation by the sudden apparently acausal appearance of the shapes (which looked to us like human foot prints), I had in my three dimensional world taken a Sunday afternoon walk. My foot happened to meet exactly the plane in which Flatland found itself and made the impression on that plane which we have been calling, for want of a better term, a negentropic shape. That shape was the two dimensional imprint of the sole of my foot and it appeared apparently out of the "blue" in Flatland. They knew of no height and of no depth, so the footprint to them appeared out of nothing, in fact entirely acausally, for it arrived out of the dimension of height, which was non-existent in Flatland.

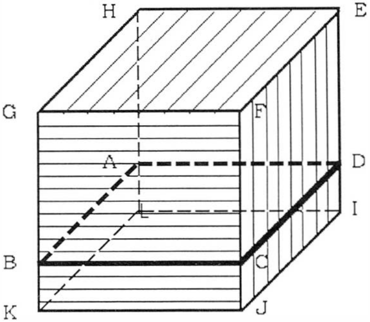
The Flatlanders were very astonished at the appearance of this unusual phenomenon from to them "nowhere" and tried to draw a double line event horizon around my foot to capture it for examination. I stood still for a time, admiring the three dimensional countryside and its view. The Flatlanders thought they had captured my foot because it stood still in another dimension for a time. But then I just lifted my foot above their double lines and stepped out of their two dimensional maximum security prison! Two dimensions cannot take anything possessing three dimensions hostage! The extra dimension gives a total freedom over the lesser dimensions.

The figure shows this situation better than words (Figure 8.4).

But we must now return to Zweisteinus and to his conjurations. You will understand, he continued to his august audience, that Flatland is two dimensional. We all know that and have worked for years on this sure basis. But what is new is not my suggestion that Flatland itself is only two dimensional but that it is at the same time an integral part of a three dimensional system which I am suggesting we call a cube.



The Author Visits Flatland



Infinite Flatlands

FIGURE 8.4

Figure 8.4 illustrates how Zweisteinus pictured his theoretical analysis of the nature of Flatland and its relationship to the dimension known as "Altitudo" resulting in the structure known as the cube.

4) Dr. Albertus Zweisteinus' Views on the Nature of Dimensions and Reality

The eminent scientist then continued with his theories on Dimensions and drawing a sketch on the blackboard showed Flatland as a plane labelled ABCD. (Fig. 8.4). But this plane, said he, was part of a cube, that is, its two dimensions were an integral part of a three dimensional system, a cube, in fact. This fact was shown by the cube labelled EFGHIJKL with Flatland ABCD approximately in the center. The negentropic shapes (alias footprints) are shown in both Figs. 8.2 and 8.3. Flatland is firstly a simple plane (in two dimensions only) and secondly part of a cube, that is of three dimensions. In Fig. 8.4 the sketch of a man (the author) has been added to the feet to show the relationship of the two dimensional to the three dimensional structure.

It will be obvious at once, said Zweisteinus, that the carefully contrived double lines or event horizons will not serve to restrict the movement of the footsteps, alias the negentropic shapes. The two dimensional foot soles when coupled to the three dimensional legs and body will just step over the event horizons in the two dimensional world. For the 2-dimensional event horizons cannot on principle restrict any two dimensional objects when these latter dispose of any extra dimensional factor over and above the 2 dimensions. *So the eminent scientist concluded that the mere evidence that the Flatlandian two dimensional event horizons could not restrain in any way the negentropic shapes was proof positive that a third dimension had come into the system.* The observations made by the flatlanders had proved, then, that Flatland was not alone but that it was an integral part of a three dimensional system.

His august and austere audience now uttered never a word. So Zweisteinus continued his expositions. He pointed triumphantly to the letters BCFG and to EFGH and to the lines drawn on them. Each line, said he, represents a two dimensional Flatland within a three dimensional cube. Within the line GB and CF there could, he said, be an *infinite* number of Flatlands, because each Flatland possessed only length and breadth and no "altitudo" or height. Since each line had no thickness or height, an infinite number of Flatlandish dimensions could be fitted into the spaces between G and B and F and C. So that an infinite number of Flatlands could be fitted into these areas.

Similarly, the great man said, in the space EH and GF a similar infinite number of Flatlands could be fitted into this plane at right angles to GBCF, for each Flatland in these planes would have no "altitudo" or thickness. Thus their number could be infinite in that plane too. Thus, in a restricted three dimensional cube space there could be infinite numbers of Flatlands at three different angles to one another.

His learned audience was busy absorbing the logic developed by the eminent Flatlander. But Zweisteinus had one more point to make before throwing the lecture open to discussion. It was this: All the boundaries ABCD, GBCF, HEFG, IJKL etc. were, he said, limited by event horizons. They would, therefore, act as event horizons in excluding the passage of information from one Flatland to another. The Flatland labelled GBCF would have absolutely no knowledge of the Flatlands HEGF or ABCD or IJKL. They would all be informationally isolated systems unable to communicate with one another. For they were all separated from one another by event horizons. Thus, in the finite space of the cube HEFGKJIL there exists the possibility of an *infinite* number of Flatlandian universes all transcending one another but none knowing anything scientifically verifiable about the other.

We are, said Zweisteinus, surrounded and transcended by other realities about which we cannot on principle prove anything and, of which we can know nothing. You yourselves have shown, he said, with the help of your own materialistic science, in which you are experts, that this is the case. Your proof of acausality (apparent) has shown the extra dimension to be real. The phenomenon of the acausal footsteps (negentropic shapes) has proved that at least one other dimension above our own exists and is functional. Great scientists like Paul Davies, said he, have shown on similar evidence that there are at least *11 such dimensions* including our two dimensions and the three of which we have now spoken. (See Paul Davies, Science, 1.6.84, 224, p. 971, New Scientist 9.2.84, pp. 31-33, New Scientist, 25.9.86., p. 55).

The great man had with this final thrust won his peers, for they gave him a standing ovation of 6 1/2 minutes duration and sent a telegram to the rector of the university and to the dean of academic affairs asking them to confirm life long tenure for Professor Dr. A. Zweisteinus as Professor of Dimension Theory. Thus Zweisteinus became a regius professor in the National University of Flatland.

One reason for this sudden change of atmosphere lay in the fact that many of his peers suddenly found themselves in their phantasy at their mothers' knees as she told them the older stories about angels and goodly powers who transcend us and who are our unseen keepers for good, protecting us against evil powers. The saying of T.D. Bonhoeffer sprang to their minds, too, during the exposition by Dr. Zweisteinus: "Von guten Mächten wunderbar geborgen, erwarten wir getrost, was kommen mag, Gott ist mit uns am Abend und am Morgen und ganz gewiss auch an jedem neuen Tag." ("Wonderfully surrounded by good powers we wait for whatever may come. God is with us at even and at morn, whatever the new day may bring." T.D. Bonhoeffer). Not one of these august men of science had ever before considered until now just how real the poetic licence of the poet in fact had been. For although considered until now to be but mere poetic licence with no scientific reality behind it, it appeared in this light that the alleged poetic licence was right on scientific course. Which fact made science not only barely factual but also beautiful and artistic as well. Although these men would never have said so, some privately believed that some of these truths had a morally active aspect as well as a merely beautiful one.

As a footnote to this chapter on dimension theory perhaps we ought to add one facet more to this whole problem. Acausality and Causality have bothered many a scientist. In former times there was a certain naive tendency to believe that causality was a universal law of nature - as universal as gravitation or the Second Law of Thermodynamics. But more advanced research showed later that there are strong reasons for believing that some phenomena are truly acausal. As examples we cite the decay of radioactive elements. Who among physicists or mathematicians would like to prophecy which, among say one thousand radium atoms, will be the next one to explode and decay? On the average we know that a certain number will decay, otherwise no one could calculate accurately a half-life for any radioactive element. But no one is able to point out which particular atom will, at a particular time, decay. No one knows when the turn of each atom will come at which it will decay. To all appearances its turn to decay seems to be acausal.

The question we must ask ourselves here is the same one which we put ourselves when confronted by the apparently acausal appearance and disappearance of the negentropic shapes (alias footprints). Two dimensionally they were acausal phenomena, but three dimensionally they were certainly anything but acausal. In the 3 dimensions of time and space maybe the decay of a radium atom is acausal. Might it not cease to be the case when viewed multidimensionally?

5) Some purely theological Consequences of Dr. Zweisteinus Conjurations

Materialists of various shades and colors have traditionally regarded religious, particularly the Christian multidimensional ("heaven of the heavens", 2. Cor 12: 2-4) faith, as a suitable butt for their sarcasm and maybe wit. Few leading scientists in recent years have been active in positive religious philosophy. Scientific materialists have, on the other hand, scarcely ever let up on their propaganda campaign against religion. This campaign has succeeded today in so far as much conservative religious thought and ideology are pretty well universally regarded as irrelevant, particularly the concept of a Creator who made the heaven and the earth and all that in them is (Genesis goes on Trial, Christopher Joyce, New Scientist, 11.12.86, P. 46). It is particularly the subject of so-called "faith" which, allegedly, has precious little to do with reason and therefore with scientific thought. If a scientist confesses, say, to believing in the resurrection of Jesus Christ, he has, according to many materialists, just given way to his emotions and stifled his critical ability. He is, then, according to this way of thinking, not a Christian as a *scientist* but in spite of his science.

Perhaps it might be a good idea, then, to apply what we have discussed in the foregoing sections about the negentropic shapes in Flatland to the question of an apparent acausality (such as the question of miracles) in our three dimensional reality.

To those who have thought seriously about the resurrection report in the Gospel according to St. John, Chapter 20: 19-20 and 26-28 and also have considered it in the light of dimension theory, there appear to exist some remarkable and apparently historical phenomena which can best be explained in the terms and concepts used by our Dr. Zweisteinus. The common explanation of these phenomena is that they are the products of hallucination and wishful thinking on the part of deeply disappointed disciples, who had hoped for political power with Christ - and had hoped in vain. Therefore, it is said, they invented the most unlikely stories primarily to comfort themselves - and secondarily to put a good face on the situation before the public. Let us look at some of the resurrection reports which have been ridiculed more than many of the others. We will take the liberty of quoting verbally from the relevant passages in this quite remarkable story, a story which, on the face of it, is as totally *acausal* as the appearance and disappearance of the footprints in Flatland. Perhaps there may be a parallel explanation in both cases.

Now for the story: "When, therefore, it was evening on that day, which was the first day of the week *and the doors shut where the disciples were* for fear of the Jews, Jesus came and stood in the midst, and says to them, Peace be to you." "And eight days after this, his disciples were again within, and Thomas was with them, Jesus comes, *the doors being shut,* and stood in the midst and said, Peace be to you." (John 20: 19-20, 26-27).

The picture is thus the following: Peter and John had hurried to the tomb where Christ had been laid after his crucifixion, embalmment and death and had found it empty. The corpse was no longer there, through the handkerchief which had been bound like a turban round his head and whose folds were full of the sticky mixture of myrrh and aloes (*in toto* 100 pounds' weight) with which the Jews embalmed the head and body of their dead, was lying there still unwound and therefore still in a spiral form. It had never been untwined, that is, unwound. For anyone who knew how to embalm the dead, this fact alone (how did the Head get out of the embalmment "helmet" without being untwirled?) caused some stir among the disciples who saw it. For one cannot take off such a sticky, gluey mass by just pulling it off, such as one would a hat or even a turban. One would have to tear it apart by disentwining it to get it off the Head once the gluey embalming mass - the mixture of myrrh and aloes - had set. The apostles noted this fact then: the headgear of the duly embalmed corpse was lying in a separate place: "folded up in a distinct place". Or as the King James translators have it: "And the napkin, that was about his head, not lying with the linen clothes, but still wrapped together in a place by itself" (John 20:7).

A moment's consultation with a Young's or a Strong's Concordance will disclose the exact situation which John was trying to communicate to his readers - a situation which even the translators obviously did not grasp. For the verb used by John for "wrapped together" is "entulisso", which is derived from "tulisso", meaning to "wind up" or to "entwine". Now the preposition "en" denotes fixed position in place, time or space, i.e. it is a relation of rest. The napkin therefore was still "entwined" or "wound up" just as it had been during and after the process of embalming. That is, it was undisturbed in its many folds, each fold being filled with a heavy layer of sticky myrrh and aloes, making it quite hard like glue that has already set. Now, for practical men who had surely embalmed many bodies or at least seen the women do it, this fact of an undisturbed turban set hard as with glue standing there in the tomb in a corner by itself, not only caught their observant eyes, but did something far beyond that. Many superficial readers of the story seem to miss the staggering meaning of this communication, a) because they read over a document instead of into it and b) because many seem to know little of the hidden but specific implications of dimension theory. Thus they miss the hidden meaning of the passages.

And this is how they miss them: John makes a really astounding and apparently a causal statement after seeing the undisturbed, undisentwined turban neatly placed in a corner by itself in the tomb. His statement? Quite simple- "He saw - and believed in the resurrection of Christ !" What made him believe simply by espying the undisturbed still undisentwined napkin? He knew that no physical head could possible get out of such a hard glued helmet without first undoing, i.e. disentwining it in order to get out. No mortal man could have taken that undisturbed helmet off his own head, for mortal man would have had to first disturb all those folds full of myrrh and aloes to take it off. That is, he knew just by looking at the physical facts that Jesus Christ must have taken on an extra dimension to get that turban off. For flesh and blood in time and space could not have done this feat. He knew by this one fact, that namely of seeing the head napkin that Jesus had had on, sitting there undisentwined and undisturbed that, just as Christ had promised to put off mortality and to put on immortality, He had now in fact done so. That is, the additional dimension of transcendency, which characterizes those who have risen from the dead, had rendered it impossible for time and space to hold Him. It is quite clear that John attributed his newly found ability to believe in the risen, now immortal Saviour to the *sight of that undisturbed napkin*. Probably the sight of the clothes, which were not just lying folded there as the King James version implies, but lying outstretched as if ready to put on (see Keimai, translated "lying") contributed to this ability too. So John's newly found faith was based on perfect rationality, that is, on the consequence of seeing facts which he could not otherwise account for.[5] He saw with his own mortal eyes that Christ's word to the effect that He was about to go to the immortal dimensions of the Father had obviously been fulfilled. For the Crucified One could now, after His death, no longer be held by the dimensions of time and space but had "transcended" them, something like the ice melting in one's grasp which slips through one's fingers, just as Christ had obviously slipped through the head napkin without breaking, unwinding or disturbing it in the very least. In fact, it was another case of three dimensional footsteps being unable to be restrained by a 2-dimensional event horizon!

But the above tells only a part of the story of the newly gained faith of the apostles and it will be necessary to tell this, perhaps even more important part of the remarkable story, in order to assure full conviction in these matters.

The disciples were terrified that the Jews would assassinate them, just as they had murdered their Master. The Pharisees and the High Priest well knew that Jesus had said, while he was yet alive - and had said it in all publicity so that *everyone* knew - that three days after they had crucified him, he would rise again from the dead. So there was in their view one thing that must never be allowed to happen - any hint of any resurrection. Therefore, the grave was watched over and guarded by soldiers armed with Roman authority to see that there was no hanky panky in this vitally important matter. The Jews meant it seriously with their threats and had determined to liquidate anyone who might proclaim anything like a rising from the dead.

For this reason the disciples met in secret after the crucifixion. They locked all the doors and allowed only their friends and trustworthies into their midst. Thus, all the doors of the chamber where they met being securely fastened, they gathered like a band of conspirators. Probably someone was standing *cave*[6] outside at the door of the house. In any case, all precautions had been taken to see to it that no Jews or Pharisees, who were not of their party, could get into the room where they sat in conclave, probably speaking in subdued tones to avoid being heard outside the chamber where they met thus in secret.

They were sure, then, of not being disturbed by anyone strange to them while in such guarded and sealed quarters. Without entering by any of the fast closed doors, quite suddenly, the Man they were talking about in subdued tones stood right in the midst of them - in fact just as suddenly and apparently acausally as the reduced entropy shapes were suddenly there in front of the astonished Flatlanders. The disciples were just as stupefied as the Flatlanders were, because they were just as sure that they were as securely locked in as the Flatlanders were when they enclosed Dr. and Mrs. Flatlander with the footprints behind the double event horizon. So when He suddenly appeared and spoke to them using his usual everyday greeting "Peace be unto you!" they were petrified with fear. (John 20:19). The Risen Christ, seeing their great fear, then identified himself better. They thereupon recognized his voice and then he showed them his hands and his feet with their fearful crucifixion wound marks to clinch his identification. This satisfied them and John wrote that "The disciples rejoiced therefore, having seen the Lord." (John 20:20).

So that now the disciples had seen the occurrence of two acausal events (the event concerning the embalming turban and the entering into a chamber, the doors of which were firmly locked), without in either case doing any violence. He was suddenly and apparently just there, like the footprints in Flatland.

But there are plenty of other acausal events recorded on the resurrection which we may heed or disregard at our peril. To disregard the observations of an experiment by saying they are mere myths, is perhaps not the quickest or even surest way of arriving at the truth of any matter! Thomas Didymus was not with the other disciples when Christ appeared in such a remarkable way in the room with the locked doors. So the other disciples told him all about it as soon as they met him. But Thomas was not having any of this kind of acausal, unscientific nonsense and said so: "Unless I see in his hands the mark of the nails and put my finger into the mark of the nails and put my hand into his side, I will not believe" (John 20:25).

Eight days after Thomas had laid down this manifesto for governing his personal faith problem,[7] the disciples were again in conclave behind locked and barred doors. Thomas was with them this time: "And eight days after, his disciples were again within, and Thomas was with them. Jesus comes, *the doors being shut* and stood in the midst of them and said "Peace be to you". Then he says to Thomas, "Bring thy finger here and see my hands: and bring thy hand and put it into my side: And be not unbelieving but believing. Thomas answered and said to him: My Lord and my God." (John 20:26-28).

Thomas did not accept mere hearsay from his maybe overwrought colleagues and stated quite reasonably that he needed to be convinced with the organs of perception, eyes and ears, his Maker had provided him with. This was obviously accepted by his Maker (Jesus Christ). For Christ stood suddenly and apparently acausally in their midst in a room firmly locked and without breaking any panelling in. Thomas knew what that meant much better than some modern sages appear to know. The sages of old knew that acausal events gave great cause for concern - in their eyes angels arrived in that way and *they* were transcendent, i.e. possessed extra dimensions. Otherwise they would not be able to use such routes of entry! That was the first point which convinced Thomas that Jesus had put off mortality and its mere three dimensions of space and time and had put on the extra dimension of immortality, in the same way that angels and God are transcendent.

But the second point ought not be forgotten either. It was that, obviously, the Master who now stood before Thomas, had heard his little manifesto about his conditions for faith, even though Christ was not physically present when he, Thomas, made it. How come, that a person not present at the time the statement was made - who, indeed, was supposedly dead and gone - could have been perfectly aware of all this inside information? Unless one wishes to deny the whole story of Thomas and his conversion after the death and resurrection of Christ and to dismiss it as unreliable, there is only one accounting for the content of the story: The resurrected Christ had taken on the additional dimensions of transcendence as indeed he had said he would before he died and had been present, though totally unseen, when Thomas made his little manifesto.

But there are many other reports of a similar nature which would have to be dismissed as mere nonsense if one did not wish to take them seriously. For example, Mary stood weeping at the tomb where they had laid Him, when a man appeared and asked her why she was weeping. She thought he must be the gardener - her eyes were probably tear filled hindering her vision. But Jesus then just pronounced her name "Mary" as apparently he was wont to do during his life on earth. She recognized him immediately as the one she had helped to embalm and bury, drew her consequences and called him Rabboni, i.e. Teacher. (John 20: 11-17). She recognized his voice and then reported the whole event to the disciples before Christ had appeared behind closed doors in the upper room the first time.

But among the other reports conveying information of a similar nature after the death and resurrection of Christ one final one must not be forgotten, for it bears a strong resemblance to the two appearances in the upper room within the closed doors. I am referring to the disciples on their way to Emmaus (Luke 24:13).

Two disciples were on their way from Jerusalem to Emmaus, a matter of about seven miles, and were discussing the terrible events surrounding the crucifixion of the previous few days. They were trying to put some sort of interpretation upon these events when suddenly, and apparently acausally, they noticed that a third person, whom they did not recognize, was going along with them. This same third person then asked them what events they were talking about. At which the two disciples were very put out indeed - that the man should know nothing of these awful events otherwise known to everyone (Luke 24:13-31).

So they told him how unaccountable it was that the chief priests and scribes had had Jesus crucified. They said, too, that it was now the third day since these things had happened and that some women had been to the grave and had not found him there. Some others had seen angels, who reported that he was not dead but alive. But, said they, they themselves had not seen him as some said they had. The third man then proceeded to expand on the words which the prophets had spoken about the death and resurrection of Christ. Further, said he, had they known the Scriptures, they would not have been surprised but rather confirmed in their belief by what had happened. "He interpreted to them in all the scriptures the things concerning himself" (Luke 24:27).

This was really most important for theologically interested people like themselves, so they invited the learned stranger into the inn they were to spend the night at. It was already late in the day, so that a meal was indicated. As they then sat together in the inn over their meal, the stranger gave thanks, as was perfectly usual in Jewish circles. But something struck them about his manner of doing so. They looked harder at him as he broke the bread and offered it round to them. Maybe some dreadful wound marks in his hands, as he performed this for the Jews familiar act, attracted their attention. Whatever actually broke the ban, it is written that "he was made known to them in the breaking of bread" (Luke 24:35). "And he vanished out of their sight" (Luke 24:31) at the very moment that their cognition was opened. Surely this event was an acausal one, too? No wonder then that they rose up in the same hour of the evening and returned to Jerusalem to convey to the other disciples what had convinced them too that Christ had put off mortality and exchanged it for the dimensions of immortality. He had taken on the extra dimension of dimensions which gave him freedom from the bondage of the three dimensions of his mortality.

Of course, one can dismiss all these and similar stories as myths and wishful thinking if one so wills. But the burden of these reports fits the theoretical framework of dimension theory. Years ago, when materialism was propounded by David Hume and the many others before and after him, the only evidence possessed for other dimensions was strictly theological. But since men did not wish to be subject to a Creator God who knows our innermost thoughts and who would demand account of us as to what we do with our lives, the idea of any God at all was unpopular. In these days of emancipation from all authority, human or otherwise, the idea of God has to be banned totally and at all costs. This consideration brought with it the necessity that the theological evidence be ridiculed and laughed out of court.

However, today this approach, which depends upon mere scoffing at the evidence for other dimensions has now been found to be thoroughly unscientific. The very materialistic science which was supposed to deny the conservative view has been found to support it. The multi-dimensions of Paul Davies (loc. cit.) and others have shown that the theological reports of apparently acausal events are indeed in line with scientific reality as we know it today. Materialistic science itself has shown the perfect reasonableness of the existence of other dimensions besides our time and space dimensions. Why, then, should it be considered unreasonable and indeed unscientific to believe in other dimensions such as the heaven of the heavens (2.Cor. 12: 2), when we have good scientific as well as theological evidence for their existence? The Marxists and the materialists have, if the truth of the matter is to be told, been caught up with by their own materialistic science and by now left far behind on the road of increasing knowledge.

So much, then, for the chapter which timid materialists and others without the algorithm for the *risus facetus* in their genome had leave to skip, if they so wished.[8]

1 cf. *Die Demission des wissenschaftlichen Materialismus*. Wilder-Smith, A.E., Telos, Hänssler Verlag, Neuhausen-Stuttgart, pp. 47-53., Chapter on Flatland.

2 cf. Davies, Paul, *God and the New Physics*, loc. cit. P. 5, religious and other bigotry, p. 8, and Einstein and the quantum theory p. 214-217.

3 *Dimension Theory*, Science, 1st. June 1984, 224, p. 971. cf. *The Eleven Dimensions of Reality*, Davies Paul, New Scientist, 9th. February 1984, 31-33. Also Davies, Paul, New Scientist, 25th. Sept. 1986, p. 55.

4 *Last Mysteries and Reverence before such*: Davies Paul, God and the New Physics, loc. cit. pp. 159-160.

5 T.H. Huxley thought that faith had to be stripped of all relationship to the facts in order to stand securely before all the attacks of the infidels - and he made a great point of this before the public. In reality and like Einstein, belief or faith must be based upon fact in order to be sure. The Hebrew scriptures insisted on just this point. The exact citation by T.H. Huxley runs: "No longer in contact with fact of any kind, faith stands now and forever, proudly inaccessible to the attacks of the infidel" (T.H. Huxley 1890).

6 That is, there was a watchman before the door.

7 Thomas wanted, correctly, to have solid facts on which to build any faith he might develop - a point which is totally misunderstood by those who believe that faith is independent of factual phenomena.

8 Denton, Michael, *Evolution, a Theory in Crisis*, Burnett Books, London, W.1., England, 1985, comments on the fact that the chief hindrance to the abandonment of Darwinian theory lies in the absence of a suitable scientific alternative: "Undoubtedly, one of the major factors which contribute to the immense appeal of the Darwinian framework is that, with all its deficiencies, the Darwinian model is still the only model of evolution ever proposed which invokes well-understood physical and natural processes as the causal agencies of evolutionary change. Creationist theories invoke frankly supernatural causes, the Lamarckian model is incompatible with the modern understanding of heredity and no case has ever been observed of the inheritance of acquired characteristics; and saltational models of evolution can never be subject to any sort of empirical confirmation. Darwinism remains, therefore, the only truly scientific theory of evolution." Denton M., loc. cit. p. 355. (Emphasis added by A.E.W-S.). It may now be added that the coupling of modern genetical theory with information theory has, for the first time, negated Michael Denton's statement about Darwinism being the only scientific theory available. Now we have a viable alternative of a scientific nature.

Addendum

In spite of the basic scientific difficulties standing in the way of accepting Darwin's theories and those developed by his modern followers, the theory enjoys almost undisputed sway in scientific places of learning throughout the world. The grave difficulties confronting the theory today are becoming slowly but increasingly known in many scientific circles and yet the Darwinian postulate still exercises sway in most systems of scientific teaching[1]. This influence has certainly not been gained by displaying a knowledge of the fundamentals of modern science but rather by propaganda of a rather subtle sort.

In the first place one is today no longer "progressive" if one has come to recognize the great value of ancient - and modern! - wisdom on some creative processes and descriptions of the same. Then, secondly it is a matter of scientific fashion to proclaim that any question of absolute moral values (the survival of the fittest destroys such) is outmoded - even though such loss of standards in thought and practice may obviously contribute to the destruction of mankind himself. Thirdly, if one does not swim with the stream of modern sentiment, it is becoming increasingly difficult for the young academic to earn his living in a good many scientific professions today.

But let us look at some of the ways in which the evolutionary postulate is propagated so successfully today. I take an example which recently came to my notice: An article appeared in the New Scientist authored by Margaret Klinowska (New Scientist, 12.2.1987, pp. 46-48). The article was entitled "No through road for the misguided Whale". Dr. Klinowska is an authority on keeping cetaceans in captivity and gives an excellent account of the reasons why whales beach themselves - they navigate apparently by using geo-magnetic contours and when these lead over shallow water to the shore, there they run out of water depth and land on the beach.

But this is not the reason, interesting though the facts are, for my quoting Dr. Klinowska's otherwise excellent article. The reason for my doing so is that is is an excellent example of how the Darwinian postulate is maintained even though we today know there is not a vestige of serious scientific evidence for it - except the irrelevant one of a gradation in complexity in nature. Herewith the start of the article - one which is calculated to warm the heart of every hard beleaguered Darwinian today: "Cetaceans - whales, dolphins and porpoises - are mammals that *returned to the water many millions of years ago.* Sometimes, however, they mysteriously *come back to land,* beaching themselves on shores around the world" (Emphasis A.E.W.-S.).

Now the article by Dr. Klinowska is intended to be a scientific one and is full of good scientific information on how whales and other cetaceans use a very sensitive receptor system to detect the tiny local perturbations in the geo-magnetic field contours against the general background of the geo-magnetic field. An exceedingly delicate *instrument or machine* must be necessary to effect this navigation feat. Which fact will take a large amount of Darwinian ingenuity to explain - just as Darwin himself had difficulties in explaining the eye on the basis of his theory. But the point of my mentioning this article here lies in another area. What scientist can produce clinching evidence *of any sort* that the cetaceans came originally from the land and "returned to the water many millions of years ago"? Yet scientific articles are continuously laced with just such ideological myths with the intent of upgrading a myth to science. Indeed, the literature is so laced with them, that it is often really difficult to separate myth from scientific fact. The cetaceans are supposed by many, too, to have an urge back to land! Dr. Klinowska does not, or course, say that. She has better theories than that to account for beaching.

The disturbing fact is that our school children, as well as our students become so exposed to this sort of pseudo science *for so long* and *from all sides in scientific text books*, in scientific articles, on the radio and the TV, that in the end they become quite unable to distinguish between ideological myth and the real facts. This confusion of facts with myth and ideology disturbs clarity in thinking processes, which is grave enough, indeed. But over and above this gravity comes something equally as grave. Such victims of ideological myth become thereby impervious to other ancient and modern types of wisdom - such as the ancient doctrines on creation and modern information theory. Such immunity is indeed grave, for it hinders real creative thought on the part of our future generations. For maturity in thought arises partly from comparing things old and new. The young student believes himself in the course of time to be so wise that he does not need to learn more - and rejects blindly things ancient and modern in favor of untenable Neo-Darwinism ideology. The attitude of mind generated by teaching unfounded Darwinian myth as the ultimate truth of all biological wisdom makes us less receptive to learning from the past, that is, from ancient wisdom. Such a state of mind is indeed serious in a society increasingly dependent on really progressive original thought and research.

1 *Evolution: a Theory in Crisis*, Michael Denton, Burnett Books, Hutchinsons Publishing Group, 1985, 17-21 Conway Street, London W. 1 P 6 J.D., England.

Glossary

Abiogenesis: The arisal of life from inorganic matter
Acausal: Without a cause
Acausality: Events happening without a cause
Alchemist: One who practices alchemy, the art whose object is such as the conversion of base metals to gold and silver, the discovery of the elixir of life, the universal solvent, etc.
Algorithm: A deterministic set of rules for computing the solution to a set of problems
Allosterical: Isomerism which is capable of changing forms
Anachronism: An error in computing historical time, any error which implies the misplacing of persons or events in time, a contradiction
Anathema: A thing devoted to evil: a curse or denunciation pronounced with religious solemnity
Anthropoid: Similar to or resembling mankind
Antithesis: A contrast or opposition of words or sentiments.
Antithetical: Pertaining to or characterized by antithesis
Antonym: A word of directly contrary signification to another; the opposite of synonym
Artifact: Any man made object; in biology, any unnatural change.
Autogenic: Self generated
Axiom: A self-evident truth or proposition, a principle universally received
Biogenesis: The general generation of life upwards from inorganic matter
Bit of information: A unit for measuring information; a byte is a larger unit (8 bits = one byte)
Cave: Pay attention
Cetaceans: The whale class of mammals
Cladism: A recent development in evolution based on various specific properties and not on evolutionary gradualism. Cladists believe in describing external properties and classifying them rather than on developing theories
Closed thermodynamic systems: Systems that do not allow transfer of mass or energy across their boundaries
Conundrum: A puzzle
Creationist: Those who believe in the First Cause, being that of a Creator
Creativity: The ability to be creative
Darwinian evolution: Evolution by mutation and natural selection.
Darwinian model: According to Darwinian theory
Denigrate: To defame, slander
De novo: Anew
Dextro molecule, dextro configuration: A molecule which deflects the plane of polarized light to the right
Dialectical: Pertaining to a system of argument in which the conflict between contradictory facts or ideas leads to progress
Dialectical Materialism: The materialism that believes that evolution in nature is determined by the interaction of opposites
Dimension theory: The theories governing the structures of differing dimensions
E. coli: Escherichia coli: a microorganism found in the gut
Entropy: That which describes the rising degree of destructurization or the increase of non-available energy in the universe.
Entropy hole: A thermodynamic state of such stability that increase of entropy is rendered unlikely

Eukaryotic cells: Cells that have a nucleus
Event horizon: The barrier existing between two different dimensions
Evolutive speciation: The increasing informational complexity from one species to a higher species
Exobiology: Extraterrestrial biology
Extrinsic: That which comes from outside
Factor " I ": The information factor
Gamete: Sexual reproductive cell
Genome: The genetic content of a cell or virus
Goethe's Faust: One of the most famous plays written by Goethe the German poet and playwrite featuring the devil
Gradualism: The policy or belief in advancing toward a goal by gradual, often slow stages
Histones: Certain chemical compounds of importance in cell organization
Holistic: In totality
Holistic information: Totally integrated information
Hopeful Monsters: A theory that evolution took place by sudden jumps producing monsters, developed by Goldschmidt
Hybrid: An offspring of a cross between two genetically unlike individuals
Hybridize: To produce or cause to produce hybrids
Hybridization: The production of hybrids
Hypercycles: The mechanistic arrangement of atoms supposed by Manfred Eigen to account for the alleged auto-organization of inorganic matter to life
Information theory (Wiener and Shannon): The mathematical theory concerned with content, transmission, storage and retrieval of information
Infrastructure; The small structures supporting larger ones.
In situ. On site
Interspecies change; Change across a species boundary
Intraspecies change: Change within a species boundary
Intrinsic: That which comes from the inside
In vitro: In the test tube
Irreversible systems/ reactions: Reactions which only go in one direction
Lamarckian model: Evolution by means of inherited, acquired characteristics
Language convention: The laws which govern the grammar of language
Levo molecule, levo configuration: A molecule which deflects the plane of polarized light to the left
Levo rotary: The deflection of the plane of polarized light to the left.
Logos. The Word, the Divine Word, Christ
Machinogenesis: The generation of machines from non-machine structures
Macroevolution: Evolution across the species boundary
Macromolecules: Large molecules
Materialism: The doctrine which denies the existence of spirit or anything but matter
Microevolution: Evolution within the species boundary
Micromolecules: Small molecules
Mutations: Result of a change; a sudden variation in the hereditary code
Naturalistic: Pertaining to naturalism; the doctrine that there is no interference of any supernatural power in the universe, the thesis that all structures are governed by

natural law and nothing else

Naturalistic materialism: Materialism that believes the laws of nature and matter suffice to describe all phenomena.

Natural law: The elementary laws governing nature

Negentropy: Opposite to entropy.

NeoDarwinism: Expansion of the Darwinian theory in attempts to explain modern biological developments based on genetic information

Non-teleonomic: Without direction, purpose

Open thermodynamic system: A system where mass or energy may enter or leave some volume in space

Optically active isomers: Differing chemical compounds of identical analysis, the difference being caused by atomic arrangements which cause optical activity - deflection of the plane of polarized light

Phlogiston Theory: A theory championed by Priestley

Polymer chemistry: Chemistry describing polymerization

Polymerization: The increase in the size of molecules: monomer combines with monomer to produce polymer

Population genetics: An attempt to explain evolution by using interbreeding pools of genes in populations

Positivism: A philosophical system which limits itself strictly to human experiment, denies all metaphysics and all search for first or final causes

Prebiotical: The state on earth or elsewhere before life arose

Primeval life: Primitive life, initial stages of life

Primeval cell: Primitive cell

Progressive creation: Creation on the basis that God intervened at intervals to produce new species and biological phyla

Prokaryotic cells: Cells that lack a membrane=bound nucleus and do not undergo mitosis or meiosis

Punctuated equilibrium: The explanation of evolution by long periods of stasis (no change) punctuated by sudden surges of evolution

Racemate: A mixture of left- and right-handed molecules in equal proportions so that no deflection of polarized light takes place

Radiation halo method: The method developed by Robert V. Gentry and used for radiometric dating

Replicase: The enzyme which controls multiplication of certain genetic mechanisms

Reversible systems/reactions: Reactions which go forward and backwards and reach a state of chemical equilibrium

Ribosome: Microscopic structure in the living cell at which certain chemical syntheses take place

Risus facetus: The smile of humor

Saltational models: Sudden inherited changes, caused by unknown means

Scientific materialism: The science that believes that matter and its laws determine all scientific phenomena

Second law of thermodynamics: Systems left on their own tend toward disorder (entropy increases).

Sina qua non: Without which

Space-time-continuum: The four-dimensional status in which all things exist; three dimensions being the coordinates of space, the other of time

Stasis: State remaining unchanged

Static speciation: Evolution strictly within the species boundaries, the amount of holistic remaining approximately constant

Stereochemistry: The chemistry dealing with spatial arrangements of atoms and molecules

Stereoisomerism: The isomerism (different species of chemical compounds) based on the geometrical distribution in space of the atoms in a molecule; thus, compounds of the same elementary analysis may have differing properties

Stochastic: Random

Supernaturalism: The state of being supernatural: being beyond or exceeding the powers or laws of nature

Surprise effect: 1 surprise effect = 1 bit of information

Telekinesis: The moving of objects from a distance

Teleonomic: With purpose, directio

Teleonomy: The arrival at goals by direction (purpose)

Telesthesia: The experiencing of events at a distance

Theistic evolution: The belief that God used Darwin's method of evolution to produce biology

Third law of thermodynamics: The entropy of any pure substance in thermodynamic equilibrium approaches zero as the absolute temperature approaches zero

Typology: Systematic classification or study of types

Vitalism: The belief that all life arose by transcendent interference in matter violating the laws of nature

von Neumann machine: A self-reproducing, self-diagnosing, self-repairing machine, the mathematics of which was worked out by Johann von Neumann

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ABOUT THE AUTHOR

A.E. Wilder Smith studied natural sciences at Oxford, England. He received his first doctorate in physical organic chemistry at Reading University, England in 1941. During World War II, he joined the research department of ICI in England. After the war, he became Countess of Lisburne memorial Fellow at the University of London. Subsequently, Wilder-Smith was appointed Director of Research for a Swiss pharmaceutical company. Later he was elected to teach chemotherapy and pharmacology at the medical school of the University of Geneva for which position he received his "habilitation" (the senior examination required for professorial appointments to European continental universities). At Geneva he earned his second doctorate, followed by a third doctorate from the ETH (a senior university in Switzerland) in Zuerich.

1957-58 Wilder Smith was Visiting Assistant Professor at the Medical Centre of the University of Illinois, 1959-61 Visiting Full Professor of Pharmacology at the University of Bergen Medical School in Norway. After a further two years at the University of Geneva, he was appointed Full Professor of Pharmacology at the University of Illinois Medical Centre. Here he received - in succeeding years - three "Golden Apple" awards for the best course of lectures, together with four senior lecturer awards for the best series of senior-year lectures.

Wilder Smith is also a well known speaker on many other topics. He is author and co-author of over 70 scientific publications and more than 30 books which have been published in some 17 languages. His "Man's Origin, Man's Destiny" and "The Creation of Life" are Christian classics. At present he is busy publishing a work on AIDS and a scientific alternative to Neo-Darwinian theory.

The film series "Origins", which enjoys great popularity in many countries was produced by Wilder Smith. He has just produced two new films in the "Origins" series - one on thermodynamics and one on information theory.

Wilder Smith's last Golden Apple award was inscribed: "He made us not only better scientists, but also better men".