THE IMPLICATIONS OF THE TWO LAWS OF THERMODYNAMICS IN THE ORIGIN AND DESTINY OF THE UNIVERSE?

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The first two laws of thermodynamics are explained and illustrated. According to the second law of thermodynamics, the universe is destined to a slow and irreversible heat-death outside divine intervention.

The two thermodynamic laws are shown to be at odds with any naturalistic scheme of origins but in good keeping with special creationism. The only escape from some possible heat-death is seen in a transformation of the cosmos as a consequence and fulfillment of the resurrection of Jesus Christ.

The First Law of Thermodynamics

The first law of thermodynamics states that quantitatively energy is conserved; nothing is gained or lost in transformations. If the universe is a closed or finite system, as Einstein and others thought, then the total amount of energy and mass equivalent of energy ($E = mc^2$) in the universe is constant for all time. This energy density concept can be applied to a finite universe. The first law can therefore be plotted as a graph of average energy density versus time. (See Figure 1.)

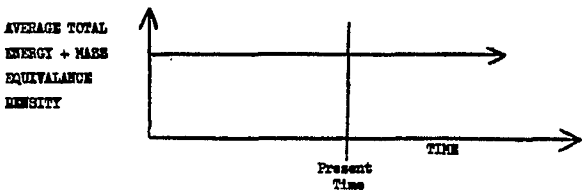

Figure 1. Average energy density versus time. In a finite universe there is the same amount of energy today as there was 1000 years ago and as there will be 1000 years from today, according to the first law of thermodynamics.

The universe has the same amount of energy today as it had a 1000 years ago and as it will have a 1000 years from today according to the first law of thermodynamics. The *quantity* of energy, including mass equivalence, is conserved.

The Second Law of Thermodynamics

The second law of thermodynamics is understood today in three ways: (1) the classical or work-heat approach, (2) the statistical or kinetical theory approach, and (3) the information theory approach. A closed system will go from ordered states to disordered states, unless order is injected into the system from the outside.

In the statistical approach, a closed system will statistically go in any interaction from a less probable state (order) to its more probable state (disorder). In the information theory approach, information in any closed system will, in any interaction or transmission, become more random or disordered.

The second law says that the entropy of a closed system always increases. The word, *entropy*, "is a compound from the Greek *en* (=in) and *trepen* (= to turn, veer, give direction to). Entropy accordingly means 'being directed inwards'."[1]

Entropy thus simply indicates the direction that the closed system goes, and that is toward greater randomness. It is what Eddington called *time's arrow*, that is, a pointer of the drift of natural processes. "Entropy is the measure of randomness,"[2] and randomness is always increasing. Harold Blum, a Princeton evolutionary biologist, capsulized the concept of entropy:

> A major consequence of the second law of thermodynamics is that all real processes go toward a condition of greater probability. The probability function generally used in thermodynamics in *entropy*. . . . Thus, orderliness is associated with low entropy; randomness with high entropy. . . . The second law of thermodynamics says that left to itself any isolated system will go toward greater entropy, which also means toward greater randomness and greater likelihood.[3]

Increasing entropy, the second law, is simply increasing disorder of a closed system. (See Figure 2).

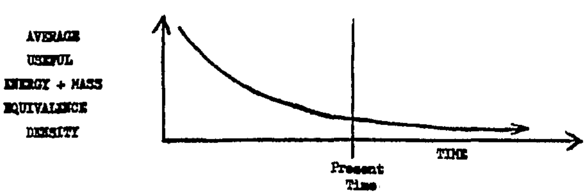

Figure 2. Available energy versus time. In the universe, the average useful energy density decreases with time according to the second law of thermodynamics which indicates that energy continually becomes less available and more randomly distributed.

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However, two methods are believed to exist whereby order can be produced out of disorder within the limits of this law: (1) chance and time whereby the improbable state is supposed to come about and (2) an agent and a degradable energy supply. The first of these proposed methods is invalid because chance and time both inerringly favor increasing entropy. In the second method proposed, some pre-existing agent must have a minimum amount of complexity or order equal to or greater than the order to be produced.

Also, the energy supplied must be degraded to greater disorder such that the degradation of order is equal to or greater than the local increase of order produced by the agent. "Therefore there may be local decreases of entropy as bodies interact with each other, but every decrease is more than balanced by an increase of entropy elsewhere so that the total entropy of the system increases."[4]

An illustration clarifies the difference between the two methods of producing order. Take a watch apart and throw the parts into a bag. Now we can produce order, the reassembled watch, by (1) shaking the bag, allowing chance and enough time, or (2) placing a watchmaker in the bag and giving him enough energy in the form of food. In the first, time and chance might produce the watch, but in the second, the agent and degradable energy supply achieve the order.

Likewise, a fertilized egg can become a human being as long as it has its agent, DNA (the genetic molecule), and an energy supply, food. Take either away and the egg is left only to time and chance to produce a human, an impossible feat according to any known naturally occurring events. Furthermore, the effects of harmful changes in the DNA are neglected in this analogy as is also the fact that the human will eventually die.

Specific Applications of the Second Law

More specifically what is the significance of entropy from the classical, work-heat approach?

> The term "Entropy" used in this law is of a rather curious and negative character. It indicates the degree of randomness or disorder in the constituent particles of any substance or, alternatively, it may be said to indicate the degree to which energy becomes converted from a useful into a useless form. The Second Law of Thermodynamics is in fact a physical law of irreversibility, since it states that in any physical or chemical process the amount of available energy must at the end of the process either remain exactly what it was at the beginning or, alternatively, must decrease. Such a decrease of available energy is an increase in Entropy.[5]

The available, useful (non-random) energy always decreases in a closed system. In simple terms work energy (useful, ordered) is turned into randomly distributed, unuseful, heat energy. In reference to the universe as a whole,

> the entropy of the universe increases in an irreversible process. . . . Since all processes in nature are irreversible . . . it follows that the universe continuously runs toward higher and higher entropy, that heat is degraded as it is transferred from regions of high temperature to regions of low temperature and that entropy is a measure of this degradation.[6]

This degradation of energy is probably an exponential decay because the rate of entropic increase is proportional to the potential differences (temperature, pressure and probability differences) which decrease with time. Therefore the entropic increase is more rapid at a given time and slower at any subsequent time as the available energy asymptotically approaches zero. This decreasing of available energy can be graphed as the average useful energy density over the whole universe versus time, although the rate will be unknown.

What is the significance of entropy in the statistical or kinetical theory approach?

> *In all cases observed in nature there is a tendency for processes to proceed toward a state of greater disorder.* We have already seen that natural processes tend toward a state of greater entropy so that we expect a connection between the thermodynamic concept of entropy and the statistical mechanics that the connection is given by the relation
>
> $$S = k \ln w \qquad (25\text{-}13).$$
>
> Here, k is Boltzmann's constant, S is the entropy of the system, and w is the probability that the system will exist in the state it is in relation to all the possible states it could be in. Hence, Eq. 25-13 connects a thermodynamic or macroscopic quantity, the entropy, with a statistical or microscopic quantity, the probability.[7]

This approach to entropy gives the second law a mathematical rather than an empirical basis. Using quantum physics and Boltzmann's distribution, the second law can be developed on a purely mathematical (statistics) basis completely devoid of empirical observations as presuppositions. "The reason the papers on some desks most frequently seem to be in a disordered state is simply that there are so many combinations of the papers which are disordered, and so few which are ordered."[8] The same is true of matter and energy.

The information approach is similar to the statistical mechanics approach.

> We measured the information content of a message in any given ensemble of messages by the logarithm of the probability of its occurrence. This way of definining information has an earlier precedent in statistical mechanics where the measure of entropy is identical in form with that of information.[9]

Information becomes disordered in interaction just as energy does according to the classical approach. An example of this is the transmission of a television picture down a wire. The picture is reduced to a sequence of electrical impulses which represent highly ordered information. As the impulses of electrical information travel along the wire, the impulses are disordered by the random molecular motion in the wire. If the information were sent through enough wire, it would only produce a completely snowy picture which did not contain the highly ordered information of a clear picture but only random information like noise or static. Information decreases as entropy increases in a system.

A Distinction Between the First and Second Laws

A clear distinction must be made between the first and second laws of thermodynamics. Historically, many misunderstandings would have been prevented, if this distinction had been made. Many have thought the two laws are contradictions.

> But soon after Mayer had formulated the principle of energy (conservation of energy), two other scientists, Clausius (1850) and Thomson (1851), laid down a second principle, which did not abolish Mayer's law of energy, as Haeckel mistakenly thought, but amplified and supplemented it particularly in a certain direction. This is the so-called second principle of thermodynamics, or the law of entropy.[10]

The usual question is, How can energy be conserved (the first law), if it is degenerating (the second law)? The fact that the amount of energy never alters does not mean that energy is always available. As stated earlier, the first law states that the **quantity** of energy, including the mass equivalent, is conserved, while the second law states that the **quality** of this conserved quantity is continuously degraded.

Likewise evolutionists have tried to attribute the presumed increase of organization, a decrease of entropy, in the supposed upward evolution of living systems to energy supplied by the sun. They point out that the earth is not a closed system and that the sun injects the energy needed for "evolution" from the outside. Blum, for instance, says,

> Where must we look for the increase in entropy that would compensate that represented by this increase in organization? We have to go all the way to the sun, which we must include in our isolated system. For the source of the energy utilized in reproducing the microorganisms stems from nuclear reactions in the sun, which have entailed increase in randomness. In all three instances [examples of reversed entropy] the latter of which corresponds very closely to the case of living organisms as a whole, we see increase in total organization only when we view a restricted part of the universe. If we enlarge our system enough to treat it as a thermodynamically isolated one, we find sooner or later an increase in randomness. When we think of high organization of living organisms, we need to remember that we deal with a small part of a much greater whole.[11]

Blum fails to differentiate the two laws. Quantity can never make up for quality in "evolving" highly organized systems. The sun supplies an influx of energy in waves and particles but the entropic value of this influx is negligible compared to the order needed to synthesize random atoms into living systems. The sun only supplies degradable energy, but it does not supply the agent or order to utilize this energy in producing highly organized life forms. Even Blum admits in the new chapter of his revised edition,

> Although the increase in negentropy [negative entropy] is always dependent in one way or another upon the expenditure of energy, the two things are not measurable in the same terms and cannot be equated. For example how would one set about relating number of bits [the degree of complexity in a computer] to energy supplied to the computer? Yet sometimes the terms "entropy" and "negentropy" are confused with "energy" and this may lead to *very wrong conclusions.*[12]

Another evolutionist, Isaac Asimov, admits the need to distinguish between *quantity* (the first law) and *quality* (the second law).

> To some cosmic observer, watching the vast increase of entropy represented by the nuclear processes that feed the sun's radiation, the small jiggle of decreasing entropy introduced by life on earth (like a drop of spray shooting upward while Niagara plummets downward) would be completely unnoticeable.
>
> And yet sheer quantity is not all. The complexity and versatility of life enforces a respect that cannot be elicited by raw sun power alone.[13]

Quantity can never make up for quality in any supposed evolution of life. Yet many biologists, while recognizing that apples and pears cannot be equated, fail to recognize that quantity (the first law) and quality (the second law) cannot be equated, and they still assert that the sun somehow is a force which by its energy drives "evolution" ever onward and upward in complexity.

In conclusion, the relationship between these two laws of thermodynamics is best allegorized by the physicist Somerfeld:

> As a student, I read with advantage a small book by F. Wald entitled, "The Mistress of the World and Her Shadow." These meant energy and entropy. In the course of advancing knowledge the two seem to me to have exchanged places. In the huge manufactory of natural processes, the principle of entropy occupies the position of manager, for it dictates the manner and method of the whole business, whilst the principle of energy merely does the bookkeeping, balancing the credits and debits.[14]

This difference becomes apparent when a rock is thrown into a lake. The rock, right before it lands in the lake, has energy which is useful and can be used for work. However, it strikes the surface, sends out waves, and settles to the bottom. Eventually the waves die down and the peaceful lake returns to its quiet Walden pond state.

But, what happens to the energy that the rock used to have? It is conserved according to the first law: the energy is dissipated into random motion of the water molecules in the lake. The work energy became heat energy, and the temperature of the lake is slightly higher. The books are balanced (the first law, energy).

Some questions remain: Why cannot the reverse event take place where the water molecules would form into waves, pick up the rock, and throw the rock back at the boy who disturbed its tranquility? Could not the books be balanced in such a reverse event, the "vengeance" of the lake? Yes, they could be balanced for the reverse event (the first law), but the manager (the second law) says, "No, because it would require random energy (heat) to become ordered energy (work)." "No," says the manager, "my bookkeeper must always balance the books, but I have the sole right to dictate how the debits and credits are dispensed; things go my way, in the direction of increasing entropy."

Cosmological Implication of Thermodynamics

As we saw earlier, the amount of energy in the universe is constant, but it is also becoming increasingly less available (See Figures 1 and 2). A superposition of the two graphs reveals two unique points: (1) We may predict that the useful energy will approach zero at some time in the future, and (2) We may deduce that the useful energy equaled the total energy in the universe at some point in the past.

The "scientific" eschatology of the universe

At point (1) on the graph the useful energy in the universe asymptotically approaches zero. In other words, the universe will slowly approach maximum entropy or zero useful energy. What are the implications of this destiny of the universe? Lincoln Barnett, in a popular presentation of modern physics for which Albert Einstein wrote the foreword, states the implications clearly.

> The universe is thus progressing toward an ultimate "heat-death," or as it is technically defined, a condition of "maximum entropy." When the universe reaches this state some billions of years from now all the processes of nature will cease. All space will be at the same temperature. No energy can be used because all of it will be uniformly distributed through the cosmos. There will be no light, no life, no warmth-nothing but perpetual and irrevocable stagnation. Time itself will come to an end. For entropy points the direction of time. Entropy is the measure of randomness. When all system and order in the universe have vanished, when randomness is at its maximum, and entropy cannot be increased, when there no longer is any sequence of cause and effect, in short when the universe has run down, there will be no direction to time—there will be no time. And there is no way of avoiding this destiny. For the fateful principle known as the Second Law of Thermodynamics, which stands today as the principal pillar of classical physics left intact by the march of science, proclaims that the fundamental processes of nature are irreversible. Nature moves just one way.[15]

The destiny of the universe, then, if left alone by God, would eventually be a slow and irreversible heat-death. We do not know how long it will be before the effect will begin to take place, because we do not know enough about the rate of decay or how far along the process is. Most scientists, however, are presumptuous enough to say, as does Barnett, that it is yet billions of years in the future, but this is based on the assumption that the process has been going on for billions of years and that we are about half way through the process.

Some scientists have tried to get around the implications of the second law.

> Mention must be made of the theories recently advanced by Fred Hoyle of Cambridge and others, according to which the expansion of the universe is counteracted by the con-

> tinuous creation of new matter. . . . In answer to the question, "Where does this continuously created material come from?" Hoyle rather naively remarks that it does not come from anywhere. "Matter," he says, simply appears. It is created."[16]

Hoyle's theory is a violation of the first law of thermodynamics because matter is created and therefore is not conserved. Hoyle, since the time of the above statement, has indeed rejected his own theory.

Such attempts to avoid or annul the "heat-death" amount to nothing less than a denial of either or both of the two laws of thermodynamics. This is *a step of faith* based upon no experimental or theoretical evidence and in fact it is a step of faith contrary to all experimental as well as mathematical formulations of physics. For example, "Everything, indeed everything visible in nature or established in theory, suggests that the universe is implacably progressing toward final darkness and decay."[17]

Some other writers and thinkers still see hope, against the heat-death of the universe, in the form of future scientific development of new energy sources.

> The accepted theory of yesterday was, that cold, rather than heat, would be the cause of the destruction of life throughout the universe, since it is the tendency of all other forms of energy to change into the form called Heat, which itself gets lost by radiation into space. There being no known cause which could make up for this constant loss of heat from the sun, the radiating center of our solar system, it was inferred that the life which depends upon heat must gradually disappear from our earth. Today it seems likely that this hypothesis will have to be considerably modified in consequence of the recognition of the stores of energy in the chemical elements, and of the varieties of radiant energy to which attention has been prominently directed by the discovery of radium.[18]

But unfortunately scientific exploitation of nuclear sources will end because they also are subject to the second law of thermodynamics and will, eventually, no longer contain any useful energy.

> Every closed system on earth, excepting only long-lived radio-active matter, reaches this state within observable time. That the course of events on earth continues at all is possible only because there is a constant influx of energy in the rays of the sun—in other words, only because the earth is not a closed system. But given enough time, no structure in the universe should be able to escape heat death! It is conceivable, of course, that certain forms of energy, such as the energy of atomic nuclei or the kinetic energy of stellar bodies moving in empty space would never be converted into heat at all. But even then, there would be in the end no longer any conversion of energy.[19]

Hope in scientific utilization of energy sources is without warrant.

> Thus all such attempts to escape heat-death remain futile. The only thing which can delude us into forgetting this dreary prospect is the thought that, if it is a matter of fifty million years away, then the world has still some time to develop and we need not be too much afraid of this prospect. . . . Even the length of time of the reprieve which has been given to the cosmos does not deceive us about the real situation of the universe. It is like the situation of a man condemned to death, who still has a fair interval of time between the verdict and the execution. This by no means alters the real situation, if the forecast made by leading scientists about the future of the world is correct.[20]

The "scientific" origin of the universe

At point (2) on the graph there is the interesting point at some time in the past when the useful amount of energy in the universe just equaled the total cosmic energy. The universe could not have existed before this point in time under the present laws because the useful energy before this point in time would have been greater than the total energy. This would require the useful energy to be greater than its possible maximum total.

Consequently three possible views exist about the meaning of this temporal point: (1) the universe existed in a perfect state of order and useful energy from eternity past and then a finite time ago began its present downward course, (2) the universe was in a state of total randomness and unuseful energy, then by some means "jumped up" to perfect order and useful energy and then began its downward course to unusefulness and randomness, and (3) the universe came into being a finite time ago and started its present downward course. Each of these views, however, represents a violation of the present scientific laws and, thereby, requires a supernatural event.

In view (1) supernatural intervention is required to maintain the universe in a highly ordered state against statistical disordering or, conversely, a supernatural intervention might have suddenly imposed this law of decay upon a perfect universe (cf. Gen. 3:17-19; Rom. 8:20).

In view (2) a supernatural intervention would be required to take the universe from chaos to order against the second law of thermodynamics.

In view (3) a supernatural intervention would have created the matter and energy *ex nihilo* and then given it the high order and useful energy from which it degraded.

The agent required to bring about these supernatural events in each of these views must have been, according to the second law, (1) able to suspend the physical laws, (2) able to have access to every part of the universe to give each part its order, and (3) more complex than every part of the universe in order to impart order to it.

Most scientific thinkers reject the first two views about the beginning of the universe, and accept the view that the universe came into being a finite time ago and started its present downward course. Sullivan develops this third view and excludes the first two from a more statistical mechanics approach.

> But the fact that the energy of the universe will be more disorganized tomorrow than it is today implies, of course, the fact that the energy of the universe is more highly organized today than it will be tomorrow, and that it was more highly organized yesterday than it is today. Following the process backwards we find a more and more highly organized universe. This backward tracing in time cannot be continued indefinitely. Organization cannot, as it were, mount up and up without limit. There is a definite maximum, and this definite maximum must have been in existence a finite time ago. And it is impossible that this state of perfect organization could have been evolved from some less perfect state. Nor is it possible that the universe could have persisted for eternity in that state of perfect organization and then suddenly, a finite time ago, have begun to pursue its present path. Thus the accepted laws of nature lead us to a definite beginning of the universe in time. We are to suppose, on this reasoning, that, at some particular moment in the past, a perfectly organized universe sprang suddenly into being, and has been steadily becoming more and more degraded ever since.[21]

Consequently, scientists who accept the first and second laws of thermodynamics conclude that the universe had an inception in time out of nothing. Any cosmic theory is in direct contradiction to the second law if the upward progress is natural and inherent in the universe. The universe is running down and degrading, not moving upward in complexity. On the cosmic level there is no evidence that, even by divine intervention, things are progressing upward, Also the creationist's, view of a once-for-all inception of the highly ordered universe in time is strongly supported by non-religious scientific thinkers.

Biological Implications of Thermodynamics

What bearing may physical laws have upon biology? Living matter consists of elements, molecules, and compounds interacting according to chemical equilibriums and defined by chemical reactions. A study of biology from a chemical view point is called biochemistry. Chemistry and chemical reactions, however, reduce to physics, the study of mass and energy interactions. Chemical reactions are constrained to take place in accordance with physical laws. Thus, according to the understanding of many scientists of this most fundamental level, biology is essentially a study of physics, defined by physical laws. What constraints, then, does physics place on biology?

Thermodynamics, the basis of physics, limits the possible views of biology about the origin and destiny of life. Life, just as the universe, can only progress in accordance with the laws of physics, excepting of course supernatural interventions.

One of the arguments that life could have come into existence upon the combination of atoms and molecules in spite of the second law is based upon the spark chamber production of amino acids. Elements thought to be in the primordial atmosphere are placed in an enclosed chamber and sparked by an electrical discharge for a week. At the end of this time amino acids are present which demonstrates that ordered organic molecules can be derived upon chance combination of inorganic molecules. Therefore, according to the argument, given enough time and the whole universe, proteins, living cells, and eventually man could evolve by chance.

This whole argument has been explored in some detail by Emmett Williams, Jr., and he makes it quite obvious that the physical chemist can offer no encouragement to the evolutionary biochemist who needs an ocean full of organic compounds to form even lifeless coacervates. As Williams stated in his abstract, "Miller's experiment is an excellent one, scientifically-speaking, and when properly interpreted leads to the conclusion that life could certainly never originate spontaneously."[22] In another more recent paper, Emmett Williams, Jr., has shown that life too is subject to the destructive and disordering effects of the principles of thermodynamics.[23]

An abundance of quotations can be drawn from the literature that point to the unlikelihood of even one protein molecule arising by chance, let alone life itself. Frank Cousins, for example, has quoted F. B. Salisbury to show mathematically that there is only 1 chance in 10^{515} (under very favorable conditions) that a simple protein of some 300 amino acid units might arise by chance.[24] Earlier, Lecomte Du Nouy carried out the calculations for the chance evolution of only one protein. Statistically, he says, it would be so highly improbable in the age of the universe that it is for all practical purposes an impossible event. And if it did happen he says:

> However if this happened and we maintained our confidence in the calculus of probabilities it would be equivalent to admitting a miracle, and the result would be: ONE SINGLE MOLECULE, or at most two or three.
>
> Life itself is not even in question but merely one of the substances which constitute living beings. Now, one molecule is no use. Hundreds of millions of *identical* ones are necessary.[25]

However, evolutionists have tried to escape the dilemma of this conflict between the second law of thermodynamics and imagined evolution. First of all, as mentioned before, they try to attribute supposed increasing upward complexity to the sun.

> The theory of evolution is very much in vogue today, and students and the general public are told over and over that its acceptance as a fact is practically unanimous among men of science. It follows from this that the evolutionists have been able to convince themselves that the theory of evolution is not contrary to this view. They do this by saying that there really is no contradiction because all the energy needed to bring about evolution has been supplied abundantly by an external source, namely the sun.[26]

However, as pointed out earlier, quantity of energy will not supply quality of energy such as needed to order the complex life forms. After citing a number of cases of increasing complexity in life and nature, such as fertilized eggs becoming complex animals, Davidheiser concludes:

> Thus more complex arrangements of matter can be produced from simpler or from random arrangements. In each of the examples given here, the energy required can be traced to an outside source, the sun. But in each case this energy was not enough. Such things as intelligence, skill, instinct, and genetic constitution were also required.[27]

In other words, not only is an external energy needed but also an agent at least as complex as the system to be produced (the DNA in the case of the egg). The sun alone cannot produce the order needed to produce complex life forms.

A second way sought to "save" natural evolution is by evoking Maxwell's demon, an imaginary character that can sort out atoms and so reverse the second law. However, Jagjit Singh counters against such magic.

> The longish detour we have followed in exorcising Maxwell's demon, rather than denying outright the existence of such a molecular homunculus capable of sorting and ordering, has a purpose. It points to a novel way of reconciling an apparent conflict between the second law of thermodynamics and the process of biological evolution. For the latter, with its continual emergence of ever new forms of life from inanimate matter via the "subvital" autocatalytic particle of protein all the way up to man as an increasingly complex crescendo of self-sustained chemical reactions, does seem to tend towards increasing organization and "Patternedness" of matter. On the other hand, according to the second law of thermodynamics, matter continues to drift toward a state of increasing chaos and "mixed-upness."[28]

Even if man were able by biochemistry to synthesize life, this would not prove evolution because such laboratory synthesis would not have been by blind chance. Man would have been the ordering agent in such a process. Consequently, neither solar energy, Maxwell demons, nor semantic sabotage of terms provide the evolutionists with a means to resolve conflict between evolution by chance and the second law.

The laws of thermodynamics do not allow for evolution or macromutation to take place by chance. Some highly organized supernatural agent is the only possible explanation for the evolutionary or catastrophic processes. Theistic evolution, macromutationism, and special creationism remain the three possible alternatives according to the second law of thermodynamics alone. All three would involve the supernatural.

However the events by which life actually arose are not a matter of personal speculation. These events occurred only in one way and, as with the whole course of past history, are not subject to change. The biblicist knows by revelation the actual course of events in the Scriptures, and therefore understands by a historical-grammatical approach that creationism is the only choice. The theistic evolutionist and the macromutationist reject or allegorize the biblical account, trying to piece the record of origins together from geology and archeology much as the materialist does.

The science-minded creationist, on the other hand, asserts that the data of biology, geology, and archaeology have better fit with divine, miraculous special creationism than they do with any variation of theistic evolutionism. An understanding of thermodynamics certainly fits with creationism. Furthermore, an understanding of thermodynamics absolutely eliminates chance or "natural process" as the legitimate agent in the origin of life.

The Destiny of Life

As has been shown earlier, the second law of thermodynamics leads unerringly to a concept of "heat-death" (aside from prophetic revelation in scripture). In this way, the second law leaves no hope for the idealist, the optimist, the existentialist, the evolutionist, or the materialist because life is totally and ultimately subject to vanity and nothingness by this law.

In light of the ultimate destiny of life (i.e., death), man has only two options. "The first is the radical hopelessness of nihilism, for which the whole course of the present world is merely an episode, which appears out of nothingness and disappears again into nothingness, leaving not a trace behind."[29] Under this option the only feasible approach to life is hedonism ("let us eat and drink, for tomorrow we die," 1 Cor. 15:32).

At least this first option takes into account the fact that we are doomed to ultimate dissolution and seeks to glean some type of pleasure in the meantime. Unfortunately, it does not stave off death and ultimate meaninglessness. Do-gooders and other optimists are absolutely foolish because they fail to see that good works and progress done solely to produce a better world are doomed by the second law. They make sacrifices to produce these transient, failing ends, and so lose out in the meantime as well as in the future.

A second option is the only option that has any hope, and it is a hope in eternal life based on the resurrection of Christ. Eternal life is the only hope that stands out against a decaying and meaningless cosmos; life has no meaning apart from eternal life.

This hope of eternal life and a transformation of the cosmos is based upon the resurrection of Christ, because through his death our sins are forgiven and through his resurrection we are given eternal life. If Christ did not rise, then this hope is in vain, as Paul explained.

> For if the dead are not raised, neither hath Christ been raised; and if Christ hath not been raised, your faith is vain; ye are yet in your sins. Then they also that are fallen asleep in Christ have perished. If we have only hoped in Christ in this life, we are of all men most pitiable. (I Corinthians 15:16-19 A.S.V.)

However Paul points out that this is not just another case of wishful thinking. He bases this hope in Christ's resurrection on the fact that the event was prophesied by the Scriptures, and that Christ was seen after the resurrection by Peter and the apostles, 500 others, and even by himself.

Without this hope of eternal life through Christ's resurrection we have only the pessimistic option, as Paul explains, "If the dead are not raised, let us eat and drink, for tomorrow we die." (I Corinthians 15:32b A.S.V.) This hope of eternal life presents the only optimistic and meaningful option to life because it is "an inheritance, *incorruptible* and *undefiled*, and that fadeth not away, reserved in heaven for you." (I Peter 1:4) The prophet of old, Isaiah, brings this salvation into sharp contrast with a corrupted fading universe.

> Lift up your eyes to the heavens, and look upon the earth beneath; for the heavens shall vanish like smoke, and the earth shall wax old like a garment, and they that dwell therein shall die in like manner; but my salvation shall be forever, and my righteousness shall not be abolished. (Isaiah 51:6)

Nothing else in life is incorruptible, permanent or meaningful because the second law of thermodynamics subjects all life to decay, corruption, and dissolution.

In final conclusion, in natural terms alone, the destiny of life, like the cosmos, is doomed to decay and ultimate dissolution, death. The philosophical options in light of this are (1) a false hope and ignorance of the reality of entropy, (2) a radical hopelessness of nihilism, or (3) a hope in eternal life obtained by personal faith in Jesus Christ.

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THEISTIC EVOLUTION

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Evidence is amassed to demonstrate that theistic evolutionism is objectionable from the standpoints of biblical exegesis and systematic theology. In addition, the concept of "progressive creationism" is identified and discussed. It is asserted that progressive creationism is farther out of keeping with the nature of God than is theistic evolutionism.

Two Opinions

The ancient pagan idolatry and the modern transformist philosophy are fundamentally one. This very identity is currently being stressed by many so-called "ecologists," who are saying that man should return to nature-worship, and that the Christian doctrine of man's God-given dominion over the earth has resulted in pollution and destruction of his environment.

Such a charge is of course fraudulent. It is not this Biblical doctrine, but rather man's perversion and rejection of God's truth, and man's selfish and covert denial of his stewardship that have led to these problems. It is no coincidence that the most aggressive leaders of the environmentalists who supposedly are fighting pollution tend also to be in the vanguard of the new-pagans with their revival of astrology and nature-worship and their militant commitment to social evolution and communism. Fundamentally they are fighting God.

In such a situation as this, it is discouraging to see such a large segment of the professing Christian church unconcerned and ignorant of the true nature of this conflict. Far too often, such apathy has led to dangerous compromises. Unwillingness to face the consequences involved in a clear stand for God leads inevitably to retreat and eventually to capitulation to His enemies. The widespread tendency among even conservative Christians to adopt some form of theistic evolution as their cosmology is. highly dishonoring to God and eventually self-destructive.

A close parallel with this situation existed long ago among God's chosen people, when the pagan Canaanite religion, with its worship of the host of heaven and Baal, the sun-god, was being mixed in with the worship of Jehovah, the true God. This compromising situation came to its climax on Mount Carmel, when Elijah, standing alone against the assembled prophets of Baal, cried out to the people of Israel: "How long halt ye between two opinions? if Jehovah be God, follow Him: but if Baal, then follow him. And the people answered him not a word." (I Kings 18-21)

It is no exaggeration or mere figure-of-speech to suggest that the evolutionary philosophy today is, in all essentials, a revival of Baal-worship. There is no way in which a real and lasting peace can be worked out between evolution and special creation, between Baal and Christ, between Satan and God. Theistic evolution, though a very popular concept, is really nothing but a contradiction in terms and a deadly compromise.

The Biblical Doctrine of Special Creation

According to Scripture all things were specially created by God in six days. Leaving until later the question as to the exact length or nature of these days of creation, is it possible that God's method of "creation" might really have been what the modern evolutionist means by "evolution"? A popular cliche among neo-evangelicals is to the

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