

ENTROPY AND THE HUMAN SITUATION

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And Jesus looked round about, and saith unto his disciples, How hardly shall they that have riches enter into the kingdom of God! ... but ... with God all things are possible.

— Mark 10:23, 27

Take heed therefore how ye hear: for whosoever hath, to him shall be given; and whosoever hath not, from him shall be taken even that which he seemeth to have.

— Luke 8:18

Introduction

The two quotes above were spoken by Jesus Christ almost two thousand years ago. His teachings subsequently formed the foundation of not only the Christian church, but extend to the very foundations of science. Despite this, his instruction has been largely ignored and even scientists left their original foundation behind in the eighteenth century for what was then considered the more appealing epistemology of positivism.¹ In the second quarter of this century positivism was so badly shaken that science was redefined: first towards engineering, as exemplified by the space program, and subsequently through economics to political expediency, such as the spotted owl fraud which was designed by the president of the Sierra Club to not only stifle Washington state's Weherhauser lumber, but to have the government confiscate its property as well; all so that his own California-based lumber company might gain advantage. Is it any wonder that America's largest tax-free land owners are "environmentalists" such as Havana Ted Turner and his wife, Hanoi Jane Fonda?

The politics of greed and pragmatic materialism cannot support a true

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1. The *American Heritage Dictionary* defines positivism as "A doctrine contending that sense perceptions are the only admissible basis of human knowledge and precise thought."

science. True science deals with truth, not greed. So no longer is science based on its original foundation, the supposition that since the universe was created by a reasonable God (Isaiah 1:18), it follows that the universe must be subject to analysis by reason. Today's science, having abandoned its first love, is nothing more than the latest political whim or power grab. That is the price of evolution, survival of the fittest, the fittest defined as those who exterminate or enslave the lesser creatures. Today's science is a thinly disguised fraud. And all this has happened since the second world war when the democratic socialists, formerly called Communists, learning that Americans looked to science as a means to truth, perverted science to their financial advantage.

The entire scenario is an example of entropy in action, in this case applied to human systems. But entropy must always increase, without exception. And because human systems such as economics are subject to entropy, and since entropy is quantitatively defined, it opens these human systems to mathematical analysis. The field of electronics, for example, has been applied to model the money flow and power flow of entire economies. The method was outlined in a 1979 monograph called "Silent Weapons for Quiet Wars." It was old news even back then.

Entropy

The word entropy has several interrelated definitions.

1. In a thermodynamic system, a quantitative measure of the amount of thermal energy unavailable to do work.
2. A measure of the disorder in a system.
3. A measure of the loss of information in a transmitted message.
4. The tendency for all matter and energy in the universe to flow toward a state of inert uniformity.
5. Inevitable and steady deterioration of a system or society.

The word itself comes from the Greek *en-*, meaning in, plus *trop*, meaning transformation. Entropy has in it subtle shades of meaning such as turning, change, way, and manner. Other related English words include contrive, trophy, tropic, trope (a figure of speech, a musical embellishment, hence troubadour), and trover (a common-law action to recover damages for property illegally withheld or wrongfully converted to use by another). From a Biblical point of view one can see etymologically

that entropy stems from a turning from the creative word of God as manifested in the creation he spake into existence. In other words, works cannot save your soul, only grace can; for works corrupt you and rob you of your liberty (by the Book, as in *library*) and your inheritance (Deu. 31:29 and Psalms 14:1). Entropy is science's term for the phenomenon which the Bible reports with the words "...the whole creation groaneth and travaileth in pain together until now" (Rom. 8:22). It is the wages of sin (Rom. 6:33; Gen. 2:17).

Entropy's applications are quite broad, ranging from thermodynamics, which first "discovered" entropy, through systems information theory.² It was Boltzmann who first noticed the statistical nature of entropy and first formulated the expression for entropy S in terms of the statistical weight of a system, W , as

$$S = k \ln W \quad (1)$$

Here k is a constant of proportionality and the term " \ln " means the natural logarithm. In a word, entropy is disorder; more precisely, entropy is the degree of disorder. Note that from (1) it follows that negative entropy is order.

The more disordered a system is, the greater is its entropy.³ Furthermore, entropy can only be created, it cannot be destroyed. This means that the entropy of the universe must increase with every action or process. Local areas of order can certainly exist, but only at a cost of at least as much disorder outside of that locality. Life is a case in point. Life has order and is thus a local entropy minimum, but note that our waste products and all the "stirring around" of things that we do all vastly outweigh our order. Even tidying a room means we stir dust around, heat up the floor by walking on it, and in general disorder more things than the few pieces of furniture we put in order. It turns out that the statement "entropy must always increase in the universe" has as one of its corollaries, the statement "all things must die." Systems tend to go to a state

2. Shannon, C. E., 1948. *Bell Syst. Tech. Jour.*, **27**, 379, 623.

3. The concept of absolute entropy is only well developed in the field of chemistry. We shall not be concerned with absolute entropy here, constraining ourselves to relative entropy (changes in) for generality.

of maximum entropy which is where they are most stable. Conversely, states of minimum entropy are least stable.

From information theory it follows that two systems which differ in entropy, differ in information, as information can order or confuse. In this light poverty reduces down to the lack of significant information. This lack of relevant information, this difference in the entropies of two nations or peoples, may be deliberately chosen by the poor person himself, or may be imposed by the richer person through the pretense of keeping the poor man "informed." Ultimately, poverty is caused by ignorance of God on the part of the poor man, or the rich man, or both.

The death of positivism in the 1930s meant that man's physical senses could not be trusted. There are two possible reactions. One, become senseless, that is, turn to alcohol, drugs, mysticism, new ageism, eastern mysticism, catholicism, etc., or two, re-incorporate spiritual sense, in other words, go back to science's original foundation, return to science's reasonable God. The former seems to be the drug of choice for man today.

With the death of positivism, philosophy (see warning of Col. 2:8) found itself in the predicament of having to find a different epistemology. The structuralists soon came to prominence who, to settle into a state of higher entropy, soon broke with each other into several schools of thought. One school, of which Claude Lévy-Strauss is a principal proponent, is the structuralist ethnology school which maintains that only universal, permanent, deep structural aspects of the mind can give any sort of genuine understanding of social relations. But these socialists are left with a vacuum, who or what fulfills the structure? Only the Holy Bible can provide the "genuine understanding of social relations." It cannot be found by applying any form of statistical analysis on the responses of people who have been lied to.

A second school is the structural linguistic school of thought, which holds that language consists of three components, a phonological (sound) component on the surface with a syntactic (proper sentence structure) component under that and a semantic (meaning) deep structure component. Like the structuralists, this is a quest for God, only this time for that expression of God called the Word by the apostle John (Jn. 1:1), for you see, all the parts of language are represented in the structure of structural linguistic except the word, which is at the core of the structure.⁴

4. Bouw, G. D., 1996-1997. For an in-depth look at this relationship be-

Entropy and Economies

In the early 1970s we witnessed the breakdown of the economic theory that replaced the one that failed with the stock market crash of 1929. Geared for an annual inflation rate of at most 5 to 6% per year, the theory worked very successfully until the mid-sixties when unforeseen developments on the international front took place, which developments were not subject to the economic constraints of the theory. According to Irving Friedman, the demise came about because developing countries were not satisfied with such a modest annual increase and pushed for 20% per annum or more.⁵ Thus the theory broke down because it had no way to enforce a modest growth rate outside the system it was set up for. Many took this as a sign that a theory to predict human behavior was needed. Actually, the solution lies in an economic system in which growth is based on an increase in scarce resources, such as gold or silver. The model actually failed because it was based on fictitious resources or, more exactly, the model was an early example of virtual reality, that is, realistic-seeming fiction. But such is the Biblical view and, as we noted before, the Biblical view is the *one* view that is not acceptable on a world-wide scale. That left only one acceptable solution, predict human behavior.

Attempts at predicting human behavior have been made by economists, in particular by Keynes,⁶ but these have been extremely

tween structural linguistics, the Word, and science, see the three-part article entitled "Theory of Theories" which appeared in issues 77-79 (Summer 1996-Winter 1997) of the *Biblical Astronomer*.

5. Friedman, Irving S., 1974. At the time Friedman was Prof. of Economics in Residence, World Bank, Washington, D.C. Speaking on 27 February, 1974 in a lecture delivered in San Francisco to the afternoon session on paradigmatology, at the 140th Annual Meeting of the American Association for the Advancement of Science. From my notes of that lecture.
6. Keynes, J. M., "The Application of Probability to Conduct," in James R. Newman, ed., 1956, *The World of Mathematics*, (New York City: Simon and Schuster, Inc.), 2, 1360.

general in nature and therefore not very useful in practice. The fields of medicine and biology have also started to approach the problem from their respective points of view, a problem which for the last several decades has been the primary concern of the pseudoscience, psychology. Attempts to analytically predict human behavior by the fields of biology and medicine are exemplified by authors such as Fremont-Smith,⁷ Gardner and Ashby,⁸ Handler,⁹ Kauffman,¹⁰ Laki,¹¹ and Schrödinger.¹² Complex though the mathematics of human behavior may be, could an understanding of the law of entropy help? The answer is affirmative.

To see this, let us first look at the conditions of equilibrium of a system in terms of its attaining a maximum entropy and the assumptions that are inherent in setting up the equations. The primary assumption is that all the particles (dollars or units of exchange if one prefers) must be in

7. Fremont-Smith, F., 1971. "The Neurological Justification for the Use of Interruption in Communications," *Perspectives in Biology and Medicine*, **14**, 333.
8. Gardner, M. R., and W. R. Ashby, 1970. "Connectance of Large Dynamic (Cybernetic) Systems: Critical Values for Stability," *Nature*, **228**, 784.
9. Handler, P., 1971. "Can Man Shape His Future?" *Perspectives in Biol. & Med.*, **14**, 207.
10. Kauffman, S. A., 1969. "Metabolic Stability and Epigenesis in Randomly Connected Genetic Nets," *Journal of Theoretical Biology*, **22**, 437.
11. Laki, K., 1975. "An Attempt to Measure 'Disorder' in Mental Disorders," *Perspectives in Biol. & Med.*, **18**, 157.
12. Schrödinger, E., "Heredity and the Quantum Theory," in James R. Newman, ed., 1956, *The World of Mathematics*, (New York City: Simon and Schuster, Inc.), **2**, 990.

constant motion. This can be accomplished by ignoring frozen assets and concentrating on liquid assets which are assumed constant in amount for the time being. Call the number of particles in the system N . The N particles will be distributed in some fashion among n individuals or cells, each with an amount N_i where i is an integer ranging from 1 through n . Assuming further that we do not care which particular particle is in whose hands, and assuming n and N much greater than ten, then using Stirling's approximation we derive that

$$\ln W = - \sum_{i=1}^n p_i \ln p_i \quad (2)$$

where $p_i = N_i/N$. According to equation (1), this expression is directly proportional to the entropy of the system and corresponds in form to Shannon's derivation. Differentiating and setting the result equal to zero yields two conditions to be met for the entropy to be a maximum, and hence for the system to be stable: first, the net change in the N_i must sum to zero, i.e.,

$$\delta N = \sum_{i=1}^n \delta N_i = 0 \quad (3a)$$

and second, if w_i is some measure of the purchasing power of the i^{th} cell, then

$$\sum_{i=1}^n w_i \delta N_i = 0 \quad (3b)$$

which is another way of saying that the overall purchasing power is constant.

The above conditions hold if there is no inflation, but we can infer from them the form of a growing economy by noting that N , no longer fixed, can be replaced by $N + \delta N$ (constant growth). This introduces second-order terms in the conditions for equilibrium which makes the stability dependent upon changes in the rate of inflation (acceleration). Allowing for the changes of inflation and depression, increases the

likelihood of large random changes, though these will be scarcer than random small fluctuations.¹³ We thus derive mathematically what Jesus said in the quote at the beginning of this paper, namely, that the rich will get richer and the poor will get poorer. We find that this results from growth, that is, from the interest charged on borrowed money. To put it bluntly, the imbalance is the unavoidable consequence of greed. And that greed is not just the greed of those who have, as the democratic socialists would have us believe, but the greed of those who have not is the primary contributor to the imbalance.¹⁴

The Rothschilds and Rockefellers of this world have for generations used relatively high interest rates to amass great riches. Though Bill Gates may be the richest man in the world, worth ninety billion dollars more or less, the foundations and trusts controlled by the aforementioned families control tens of trillions of dollars. And that is not paper money such as currency, stocks, and bonds. The only real riches for them are precious metals and real estate.

What is clear to these men is that their accelerating amassment of money (currency) will result in a money explosion akin to the fabled population explosion. They think that at that point they will control or own all the property and resources of the earth. At that point the paper starts to loose actual value. The pressure will then be on to disperse some or all of the resources, increasing their entropy. The expected result is that all men will sell themselves into slavery to their economic masters or die by starvation. Economically, the common man will have reached the entropic heat death. What happens next will be the subject of the second paper in this series, but first we will look at the population "problem."

13. The corresponding occurrence in thermodynamics is called *fluctuations*. Although the specific expressions differ here, the statistical characteristics do not.

14. For example, it is greed which makes poor people who can least afford it buy lottery tickets, gamble at Las Vegas, or play Bingo in the liberal and Catholic churches of this nation. It is greed which drives them to drink using the excuse that they need to dull the "pain" of the "injustice" done them. Greed drives them to buy cable television systems and fancy automobiles instead of fixing the roof, or schooling their children.

Entropy and Population

The physical and moral consequences of population filling up the life supporting environment was first discussed by Malthus¹⁵ who noted that a state of moral degeneracy was likely to accompany such an infilling because of the link between moral degeneracy (sin) and death. The population explosion is a statement of entropy. Twentieth century humanists have been concerned with the stemming of this tide before it reaches such a degenerate level which would take a generation or two to damp out, considering that there is a significant time lag between the birth of an individual and his reaching full consumption. The entropy of the situation is straightforward. The population will increase until the maximum entropy is achieved.

The actual mathematical treatment and the resulting entropy expression for population control is different than is the case for economic systems. That is because with population there is some minimum volume of natural resources below which an individual can not survive, namely, a certain area of land for raising food and housing, a column of air to support that, plus a column of water and mineral resources. Although the resulting expression for entropy is different than equation (2), the stability considerations are the same as equations (3) where w_i this time is the energy that the individual i devotes toward zero population growth.¹⁶ Also included is the amount of energy devoted to instructing the individual, i , plus the energy involved in his decision-making process as well as the execution of that decision.¹⁷ In short and trivially so, zero

15. Malthus, T. R., "Mathematics of Population and Food," in James R. Newman, ed., 1956, *The World of Mathematics*, (New York City: Simon and Schuster, Inc.), 2, 1192.

16. Though the wording says that cell i expends the energy towards zero population growth, the amount actually includes what may come from other cells such as the energy expended by the Chinese government or Planned Parenthood to enforce their racial eugenics programs.

17. A discussion of the equation of state of a decision versus that of chance would require more space than can be allocated here. The interested reader is referred to B. S. De Witt, 1970, "Quantum Mechanics and Reality," *Physics Today*, pg. 30, September issue.

population growth is still a matter of personal decision at the individual level (though it may not be for much longer) and requires feedback from virtually every individual in society.

The entropic situation points to the necessity of the Holy Spirit's presence at the individual level. Fortunately, such divine intervention has already occurred and all that is needed is for the relevant information to be released to each and every individual in such a way that the individual can believe. The locking-in-phase with the Holy Spirit (that is, being led by the Spirit) works because of the fundamental property of a free decision, namely, the property which says "yes" to one thing and "no" to all else once the decision is acted upon. And that decision is either for or against the Lord Jesus Christ, who is life himself. That is the only person so named (life), and he is a spirit-possessing entity. All other religions offer only things, which are dead and possess no spirit and which have been rejected by God. That is the crux of the human situation, and the only solution that has ever been offered.

Finally, insofar as entropy is concerned, note that entropy cannot create anything, let alone create itself. We see thus a law that supersedes the law of entropy, namely the law of the Creator who created entropy.

In the next article we shall look at what happens to a world system such as the New Order touted by the Georges Bush.

Quote

For a deception to be so seductive that even the very elect would take pause to wonder if it is of God, it would have to have all the earmarks of a true work of God. That means it would come in the name of Jesus, and it would be a "good work." And signs and wonders would accompany it. *Those who might recognize and expose the deception would be looked upon as divisive, hateful and deceived themselves.*

— Media Spotlight