

# The Universe Consists of Charge and Entropy: Mind and Matter Are Negative Entropy

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## Abstract

Information is the reduction of uncertainty, and uncertainty is equivalent to entropy. Thus, information is negative entropy. Concepts from information theory can be used to analyse physiological and psychological processes and to probe the nature of abstract ideas such as consciousness and vitality. A previously published model of the Universe indicates that it consists of charge and entropy. Since entropy is energy, then charge and energy are enough to explain the whole of nature. The building blocks of molecules (neutrons, protons and electrons) are formed of negative entropy. Complex high information systems (also negative entropy) lead to living organisms and eventually to complex multicellular organisms that are both vital and conscious. Most of the Universe is a void (maximum entropy) but there are tiny foci, such as the surface of the earth, which are information rich. Everything on the earth is composed of negative entropy—from the simplest physical structure to the most complex product of human thought. There is no fundamental difference between mind and matter.

## Keywords

Information, Entropy, Molecules, Consciousness, Vitality

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## 1. Introduction

The nature of consciousness is one of the big questions in biology and in medicine. We are aware of our surroundings, we build a picture of the world in our minds, we experience pleasure and pain, we appreciate beauty, we ponder our origins and our fate, and some of us have spiritual and religious experiences. These things of the mind seem to be different from the physical and chemical processes that form the Universe. Yet we know that these processes of the mind are generated by physio-chemical processes in our body and brain (Jenkins & Sullivan, 2012).

A somewhat similar problem occupied philosophers and biologists in the 19<sup>th</sup> and early 20<sup>th</sup> centuries. It was the question of the nature of vitality. There seems to be something fundamentally different about a stone and a frog. The latter, when alive, has vitality, the former does not. I think that most of us, in our present era, would claim to understand the nature of vitality, in essence, if not in complete detail. Vitality is a product of the information stored in a frog's DNA. That information is converted into proteins that create cells. The cells interact to form the multiple processes in the body and brain of the frog, thereby creating a vital animal with multiple layers of complexity. But the building blocks of the frog and the stone are the same. They both are formed, ultimately, by protons, neutrons and electrons. Does the same apply to consciousness? Is it merely additional layers of complexity, or is there something fundamentally different and new (Morris, 2011)?

This is not just a philosophical problem; it is also a practical problem. The mind-body duality lives on in our classification of disease. We recognise physical and mental disorders. The latter are diagnosed, treated and managed by psychiatrists. But there aren't clear boundaries between physical and mental diseases and the standard teaching is now to think in terms of psychological, sociological and physical factors interacting to cause both mental and physical diseases. But we still view psychological and physical factors as different even though psychological processes are a product of physio-chemical activity.

In this paper, I intend to use concepts from information theory to examine physiological and psychological processes in biology (Morris, 2011). Then I will try to apply the same ideas to the world of physics and chemistry (Morris, 2019).

## 2. Information Theory

The pioneers of the information age include Alan Turing, Claude Shannon and Crick and Watson. Alan Turing played a pivotal role in the development of the computer. Claude Shannon devised a way of measuring information (Shannon, 1948; Campbell, 1982). Crick and Watson showed that DNA was the molecule of information and this ushered in the molecular biological revolution. The information of life is stored in DNA and the expression of life is information flow.

Claude Shannon measured information as the reduction of uncertainty on a log scale. Consider 32 boxes with a red ball hidden in one. Two raised to the power 5 is 32 and  $\log_2$  of 32 is 5. Thus, there are 5 bits of uncertainty about the position of the red ball as far as an observer is concerned. The observer has 0 bits of information about the precise location. The observer is then told that the red ball is in one of the first 16 boxes. There are now 4 bits of uncertainty about the ball's position and the observer has gained one bit of information. The observer now inspects the first 16 boxes, and notes the red ball in box 7; he now has 5 bits of information about the ball's position and there are 0 bits of uncertainty.

The information equation, when all  $n$  positions are not equally likely is (Cherry, 1980):

$$H(n) = -\sum p(i) \log p(i)$$

The log of all possibilities is maximum uncertainty. The restriction of the number of possibilities then creates information. If the letters on this page were placed in a random order, all information would be lost. If they are then re-ordered as before, the information will be recreated. But in a physical system, the log of all possible combinations is maximum entropy. Thus, information is negative entropy.

Imagine an expensive, beautiful vase placed on a table. It is knocked to the floor and smashed into pieces. It loses its beauty, its value, its form and its function. Its entropy increases, and it forms an ugly mess on the floor. Its energy is conserved but changes form.

In biology and medicine, information is a feature of health, beauty, function and form. Entropy is a feature of disease, loss of function and asymmetry of form. Complex biological organisms have a high level of information coded in the genome; loss of information by germ line or somatic mutations leads to disease and impairment of health. Entropy increases as information is lost (Morris, 1994; Morris, 1999; Morris et al., 2002; Morris & Morris, 2003; Morris & Morris, 2004).

Alan Turing was one of the first to realise that computers and the brain were both information processing systems and therefore the basic principles that apply to all information processing systems would apply to both. These principles are (Morris, 1990):

- 1) Information processing systems have a finite capacity.
- 2) Information is processed in noise and therefore there is always a finite chance of error.
- 3) The components of information processing systems will decay with time, according to the laws of entropy, and the error rate will rise.
- 4) Complex information processing systems need a high level of redundancy to reduce the error rate.

The brain is an information processing system. But the immune system also processes information and makes decisions in an uncertain world (Morris, 1987). Indeed, all physiological systems can be analysed in these terms (Morris, 2001). We are composed of trillions of cells, and we can only be regarded as individuals if all these cells act together. This is co-ordinated by small chemical messengers, molecules of information (cytokines, endocrines and neurotransmitters) that diffuse between cells.

Cancer, heart disease and neurodegeneration increase as a power function of age, as does mortality (Morris, 1992). The age incidence of diseases caused by infection, however, shows a different pattern. They rise to a peak in early or middle age and then fall (Morris, 1987; Morris, 1990). Death due to infection is more common in males, while chronic disease due to autoimmune processes is more common in females (Morris, 1987; Morris & Harrison, 2009). Deleterious mutations in the genome impair the functions of genetic systems (Morris, 2001; Morris, 2005; Morris, 2015). Those with the least number of deleterious mutations are

more likely to be healthy, intelligent and better looking. We recognise beauty in members of the opposite sex and selective mating reduces the load of deleterious mutations in the next generation (Morris, 2001). Entropy and negative entropy are also useful concepts for probing health and disease in the analysis of the microbiome (Morris, Rigby, Wray & Taylor, 2024). All these basic aspects of biology can be explained using information theory (Morris, 2001; Morris, 2012).

Selected examples of the use of information theory in analysing pathological, physiological and psychological processes are described in Appendix A.

### 3. The Universe

We have all contemplated the origin of the universe. Surely there must be a beginning with nothing and then a process that leads to everything. But that process should not involve any acts of magic or in any way break any natural laws. Let us start with nothing; that is no space, no time, no energy, no information, no uncertainty and no entropy (Morris, 2019).

Now we need an equation of the form: nothing = everything. And it must not break any conservation laws.

It is actually easier than it seems:

$$0 = n + (-n)$$

where  $n$  is the number of positive charges in the Universe and  $(-n)$  is the number of negative charges in the Universe. The charge of the electron and the charge of the proton are exactly equal and opposite and sum to nothing. Thus, the equation holds. The first act, at the beginning of time, is the production from nothing of a single positive and a single negative charge. They are separated by a distance  $d$ , which is of the order of the radius of a hydrogen atom. The distance  $d$  is not fixed. There is a small degree of variation which is random (Morris, 2019).

The doubling time of the Universe can be roughly calculated from the Hubble constant (Kaufmann, 1994), which indicates that linear dimensions, in the present era, are doubling every 10 billion years. If the doubling time of  $n$  is every 2.2 billion years, then linear dimensions would double in just over 10 billion years. A value of  $n = 2^{450}$  would create a Universe with galaxies receding from each other at more than the speed of light. This Universe, approximately a trillion years old, would be much older than one produced by a Big Bang (Morris, 2019).

This model of the Universe consists of charge. But the distribution of the charges is random within tight constraints and therefore there is also entropy. Entropy is a form of energy. It is not useful energy, but it is energy. Therefore, this Universe contains charge and unlimited energy. That is enough to create the Universe as we know it.

This Universe also has space and time. There are three dimensions of space, and only three. Time runs in one direction. The random motion of the charges will never repeat therefore time runs forwards not backwards. Also, it would take a large amount of energy to push the positive and negative charges together. Therefore, the process is asymmetric.

As the Universe grows large areas of space are moving at vast speeds relative to each other. This is driven by a random process and radial cones moving out from the centre will not expand in perfect order. Some will move slightly to the left, some slightly to the right. The result will be vast areas of space colliding and pushing charges close together. That creates protons and neutrons, the first atoms, and then molecules. This model has been described in detail (Morris, 2019) and some key features are noted in Appendices B to E. Once positive and negative charges are pushed together into improbable configurations, electrons, protons, and neutrons form. The basic particles combine to form molecules, cells, etc. Life evolves as a tiny focus of information in a vast sea of uncertainty.

This model of the Universe is controversial and is different from standard models. It did not start in a big bang approximately 13 billion years ago, but instead developed slowly over a trillion years. It starts cold and gradually warms to just above absolute zero, compared with the Big Bang model, which starts hot and gradually cools to just above absolute zero. The cosmic background microwave radiation is obviously the same in both models as it reflects the current temperature of the Universe. The model predicts that solar systems are held together by gravity but the galaxies are not, and there is no need to postulate dark matter. All these ideas are discussed in detail in a previous publication (Morris, 2019).

#### 4. Discussion

This model is that the Universe is a three-dimensional graph with positive and negative nodes forming a lattice with edges of length  $d$ . But  $d$  is not fixed; it is random within constraints and this generates entropy. The model overcomes the most basic difficulty in physics: how can we get something from nothing? Charge is the only thing in the Universe which is exactly equal and opposite and is therefore the obvious candidate for the stuff of space (Sears, Zemansky, & Young, 1982; Morris, 2019).

If  $d$  is constrained so that a tight lattice is formed in a focal area, then this is negative entropy, information, and useful energy. If that constraint is propagated so that it forms at the front and is lost at the back, then information and energy travel as a wave through the Universe in a straight line. The energy travels as a wave, but also as a packet. This is the only way a straight line can be produced in this Universe (Morris, 2019).

The collision of streams of space leads to protons, neutrons and electrons. This is negative entropy, information and useful energy once more. An important feature of the model is that protons and neutrons consume positive and negative charges, i.e., positive and negative charges combine within protons and neutrons to form nothing (something going to nothing). This generates the force of gravity. A local force, not acting at a distance. But a photon travelling at a distance from a large object will find its perfect lattice slightly distorted as the sides of the lattice form a radial line to the large object. Thus, straight lines at a tangent to the sun will be slightly bent (what a beautiful idea for explaining Einstein's general theory

of relativity) (Feynman, Leighton, & Sands, 1964; D’Inverno, 1992).

Most of the Universe consists of entropy but there are focal areas that are information rich. The surface of the earth is one such area. Evolution has led to layers and layers of complexity as we progress from protons, neutrons, and electrons to molecules, then cells, then multicellular organisms and finally multicellular organism that are conscious. The evolutionary process involves layers and layers of added complexity as entropy is reduced and information produced. The conscious animal is capable of taking in information from the world and building a picture of the world in its mind. I cannot imagine how long it will take us to dissect every layer of that complex process and to understand every detail. It might not be possible; it could just take too long. But we will understand the process in essence, just as we understand vitality in essence.

Psychological and physical processes are fundamentally the same. But the latter tend to be simpler and easier to understand. Perhaps we should think of psychological processes as physical processes but with more layers of complexity, and layers we might never fully comprehend. This does mean that psychological processes are more difficult to understand than physical processes, and psychiatric disorders might be more difficult to manage and treat. But we should not make the mistake of assuming that a psychological disorder must have a psychological cause and not a physical cause. Multiple physical channels of communication interact to produce the complex psychological state. A physical disorder affecting one or more of the components will thereby influence the psychological state.

There has been a marked increase in mental health problems in young people in the last few years (NHS England Digital, 2022; Minnis, Pollard, & Boyd, 2024). This has taken the form of depression, anxiety, self-harm, eating disorders etc. The suggested causes include more competition in schools, more pressure for success, the harmful effects of social media, trying and failing to live up to social media influencers, a generation of young people who have had it too easy and have not developed coping skills, etc. All of these suggestions are attempts to explain psychological problems in terms of psychological or sociological causes. However, we might make more progress if we try to understand the physical processes that could interfere with psychological well-being. The transition from childhood to adult life has always been difficult, even for young people in good health. Information processing channels have a finite capacity, and complex psychological states are liable to use a large proportion of them. Any disease process in the body, such as increased inflammation, is likely to have a deleterious effect on the psychological state (Morris, 2018a). There is evidence that inflammation, secondary to a sub-optimal microbiome, has increased in recent years at all ages in the UK. This has been associated with an increase in a range of physical conditions. Optimising the microbiota might be one way to mitigate this pernicious increase in both mental and physical disease (Morris, 2018b).

This analysis indicates that there is no theoretical barrier to a machine acquiring the level of consciousness that humans possess. But I suspect there is a

practical barrier in that no machine manufactured by humans will ever be sufficiently complex.

I am a pathologist and am comfortable using ideas from information theory to analyse pathology, physiology and aspects of psychology. I am not a physicist, but I have felt compelled to try and produce a simpler model of the Universe because I believe that current concepts in physics are holding back scientific thought. I have avoided, however, a broader discussion of the role of information theory in philosophy, sociology and theology. But, I believe that a philosophy journal is the best place to publish this paper because every idea in the Universe is negative entropy.

### Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

### References

- Campbell, J. (1982). *Grammatical Man: Information, Entropy, Language and Life*. Simon & Schuster.
- Cherry, C. (1980). *On Human Communication: A Review, a Survey, and a Criticism* (3rd Ed.). MIT Press.
- D’Inverno, R. (1992). *Introducing Einstein’s Relativity*. Clarendon Press.
- Feynman, R. P., Leighton, R. B., & Sands, M. (1964). *The Feynman Lectures on Physics (Volumes 1, 2 and 3)*. Addison-Wesley Publishing Company.
- Jenkins, R. J., & Sullivan, W. E. (2012). *Philosophy of Mind*. Nova Science Publishers.
- Kaufmann, W. J. (1994). *Universe* (4th Ed.). WH Freeman & Co.
- Minnis, H., Pollard, A., Boyd, K. et al. (2024) *Prioritising Early Childhood to Promote the Nation’s Healthy Wellbeing and Prosperity*. The Academy of Medical Sciences.
- Morris, J. A. (1987). Autoimmunity: A Decision Theory Model. *Journal of Clinical Pathology*, 40, 210-215. <https://doi.org/10.1136/jcp.40.2.210>
- Morris, J. A. (1990). The Age Incidence of Multiple Sclerosis: A Decision Theory Model. *Medical Hypotheses*, 32, 129-135. [https://doi.org/10.1016/0306-9877\(90\)90036-e](https://doi.org/10.1016/0306-9877(90)90036-e)
- Morris, J. A. (1992). Ageing, Information and the Magical Number Seven. *Medical Hypotheses*, 39, 291-294. [https://doi.org/10.1016/0306-9877\(92\)90126-w](https://doi.org/10.1016/0306-9877(92)90126-w)
- Morris, J. A. (1994). Information and Clonal Concepts in Ageing. *Medical Hypotheses*, 42, 89-94. [https://doi.org/10.1016/0306-9877\(94\)90081-7](https://doi.org/10.1016/0306-9877(94)90081-7)
- Morris, J. A. (1999). Information and Redundancy: Key Concepts in Understanding the Genetic Control of Health and Intelligence. *Medical Hypotheses*, 53, 118-123. <https://doi.org/10.1054/mehy.1998.0728>
- Morris, J. A. (2001). Information Theory: A Guide in the Investigation of Disease. *Journal of Biosciences*, 26, 15-23. <https://doi.org/10.1007/bf02708977>
- Morris, J. A. (2005). Synergistic Interaction of Heterozygous Deletions Impairs Performance and Confers Susceptibility to Disease at All Ages. *Medical Hypotheses*, 65, 483-493. <https://doi.org/10.1016/j.mehy.2005.03.027>
- Morris, J. A. (2011). The Conscious Mind and Its Emergent Properties: An Analysis Based on Decision Theory. *Medical Hypotheses*, 77, 253-257. <https://doi.org/10.1016/j.mehy.2011.04.024>

- Morris, J. A. (2012). The Conscious Mind and the Unconscious Mind: A Decision Theory Analysis with Implication for Society, Religion and Disease. In R. J. Jenkins, & W. E. Sullivan (Eds.), *Philosophy of Mind*. Nove Science Publishers.
- Morris, J. A. (2015). The Genomic Load of Deleterious Mutations: Relevance to Death in Infancy and Childhood. *Frontiers in Immunology*, 6, Article 105. <https://doi.org/10.3389/fimmu.2015.00105>
- Morris, J. A. (2018a). A Cacophony of Cytokines Explains the Biopsychosocial Interaction Model of Mental and Physical Disease. *Archives of Depression and Anxiety*, 4, 56-64. <https://doi.org/10.17352/2455-5460.000034>
- Morris, J. A. (2018b). Optimise the Microbial Flora with Milk and Yoghurt to Prevent Disease. *Medical Hypotheses*, 114, 13-17. <https://doi.org/10.1016/j.mehy.2018.02.031>
- Morris, J. A. (2019). A Biologist's View of Creation. *Open Journal of Philosophy*, 9, 15-34. <https://doi.org/10.4236/ojpp.2019.91002>
- Morris, J. A., & Harrison, L. M. (2009). Hypothesis: Increased Male Mortality Caused by Infection Is Due to a Decrease in Heterozygous Loci as a Result of a Single X Chromosome. *Medical Hypotheses*, 72, 322-324. <https://doi.org/10.1016/j.mehy.2008.08.027>
- Morris, J. A., & Morris, R. D. (2003). The Conservation of Redundancy in Genetic Systems: Effects of Sexual and Asexual Reproduction. *Journal of Biosciences*, 28, 671-681. <https://doi.org/10.1007/bf02708427>
- Morris, J. A., Rigby, R. J., Wray, M., & Taylor, A. M. (2024). The Microbiome and the Entropy Paradox. *Food & Nutrition Journal*, 8, Article 294.
- Morris, J. A., Wray, M., Nicholls, K., & Rigby, R. J. (2023). Mucosal Tissue Dysbiosis Induced Inflammation Interacts with Psychosocial Factors and Genetic Factors to Cause Schizophrenia. *World Journal of Psychiatry and Mental Health Research*, 6, Article 1036.
- Morris, R. D., & Morris, J. A. (2004). Sexual Selection, Redundancy and Survival of the Most Beautiful. *Journal of Biosciences*, 29, 359-366. <https://doi.org/10.1007/bf02702619>
- Morris, R. D., Morris, K. L., & Morris, J. A. (2002). The Mathematical Basis of Sexual Attraction. *Medical Hypotheses*, 59, 475-481. [https://doi.org/10.1016/s0306-9877\(02\)00200-1](https://doi.org/10.1016/s0306-9877(02)00200-1)
- NHS England Digital (2022). *Mental Health of Children and Young People in England 2022—Wave 3 Follow Up to 2017*.
- Sears, F. W., Zemansky, M. W., & Young, H. D. (1982). *University Physics* (6th Ed.), Addison-Wesley Publishing Company.
- Shannon, C. E. (1948). A Mathematical Theory of Communication. *Bell System Technical Journal*, 27, 379-423. <https://doi.org/10.1002/j.1538-7305.1948.tb01338.x>

## Appendix A

Diseases such as cancer, heart disease and neurodegeneration rise as a power function of age. This can be explained using concepts from information theory. Consider some information processing systems that have a finite chance of error. The probability of a correct response is  $R$  and the probability of an incorrect response is  $1 - R$ . But the system will decay at random according to the laws of thermodynamics. Thus, the probability of an incorrect response is  $(1 - Re^{*-kt})$  (where  $k$  is a constant). Now let us consider a highly redundant system made up of  $n$  identical information processing systems with an error only occurring if all  $n$  systems fail. The chance of a mistake is now  $(1 - Re^{*-kt})^n$ . This function (with an appropriate choice of values for  $R$ ,  $k$  and  $n$ ) fits the aging curve in humans. It rises, roughly exponentially, throughout most of life but the rate of rise slows in extreme old age (as it does in humans) (Morris, 1992).

The age incidence of diseases caused by common organisms (virus or bacterium) is different. The probability of a first encounter with a common organism falls exponentially from birth, depending on how common the organism is. The appropriate model for the first encounter is  $(Ce^{*-mt})$ , with  $C$  and  $m$  both constants. The chance of a mistake on the first encounter (failure to deal with the organism leading to disease) is now  $(Ce^{*-mt})[(1 - Re^{*-kt})^n]$ . This curve rises to a peak in the first half of life and then falls. Common organisms peak early, and less common organisms peak later (Morris, 1990).

Statistical decision theory is a development from information theory. It can also be used to study the interaction between common organisms and the immune system (Morris, 1987). The first encounter involves the immune system analysing proteins on the surface of micro-organisms and classifying them as similar to the self or different from the self. There is a lot of similarity between proteins on the surface of micro-organisms and self-proteins and therefore there is always a risk of error. The error rate will rise with age as the immune system ages according to the laws of entropy. Thus, the risk of a disease due to error will rise to a peak and then fall as above. However, there are two types of errors to consider. The first is a false negative. That is, deciding if a particular protein is similar to itself and not responding to it. This will increase the risk of failure to deal with the organism and increase the risk of a serious or even fatal infectious disease. The second type of error is a false positive. This means deciding that a similar to self-protein is in fact not similar to self and attacking it. This error could lead to auto-immune disease. Statistical decision theory teaches us that in an uncertain world, there is always a risk of error and that strategies to minimise one type of error will increase the other. It is therefore of interest that men are much more likely to die of infectious diseases than women of all ages. Women are much more likely to develop auto-immune disease than men and the auto-immune diseases do rise to a peak in the first half of life.

Men have one X chromosome and women have two. The X chromosome carries 5% of the genome. Thus, in information terms men are 5% short of a full set.

However, in women, one X is inactivated, at random, in each stem cell. Thus, men and women express an identical number of genes in each somatic cell. But there is evidence of heterozygous advantage in humans, whereby it is better to have two slightly different functioning genes at a locus than to have both genes the same. It applies in particular to genes concerned with the immune response. There are situations in fighting infection in which a strong response is advantageous and others in which a less strong response is best. Men lack heterozygous advantage on X while women still have both X chromosomes active. This gives women an advantage in fighting infection and explains in part the increased longevity in females. In terms of the above models, males have an R-value that is slightly lower than that of females (Morris, 1987).

Germ line deleterious mutations in genes can lead to dominant (single mutation at one locus) and recessive (two deleterious mutations at one locus) diseases. But polygenic disease due to several deleterious mutations at different loci is more common. It is polygenic disease that explains the genetic component of schizophrenia, a disease with a life-time prevalence of approximately 1%. To understand polygenic disease, we need ideas from information theory. Genes act in complex networks to perform their functions, and these networks are highly redundant. Thus, one or two mutations in a large complex network are unlikely to lead to system failure, but three might. A model of the genetics of schizophrenia can be produced assuming a network of around 3000 genes with any three deleterious mutations in the set, leading to a 50% chance of the disease occurring (Morris, 2015; Morris et al., 2023).

These ideas of genes forming complex, high information, highly redundant networks help to explain factors related to sexual reproduction and sexual attraction. It is possible to estimate the mean number of deleterious mutations in the genome of humans using the risk of recessive disease in cousin marriages compared with the risk in the general population. The mean is approximately seven. But in each generation, a mean of one additional deleterious mutation arises due to mutation in germ cells. The result is that the distribution of deleterious mutations in zygotes, formed during reproduction, is Poisson with a mean of eight. Selection against the zygotes with the most deleterious mutations results in a population at birth with a Poisson distribution and a mean of seven. To achieve this, the loss of zygotes is 25%. Deleterious mutations cannot be lost in asexual reproduction and asexual organisms tend to die out. However, in sexual reproduction, progeny can have fewer deleterious mutations than parents, and the organisms survive long term. Moreover, the Poisson distribution of deleterious mutations means that talents vary within a population. Those at the lower end of the Poisson distribution are more likely to have robust genetic systems. They have an increased chance of being healthy, intelligent and good looking (symmetry of body form) (Morris, 2015).

## Appendix B

A neutron consists of a positive and a negative charge, which are  $10^{-18}$  metres

apart. The energy needed to separate the charges is equal to the mass energy of the neutron. An isolated neutron, however, is not a stable particle as it does not sit at a node (Morris, 2019).

A proton consists of two positive charges and one negative charge. One positive and one negative charge are  $10^{-18}$  metres apart as in the neutron. The other positive charge is further apart but within a total volume of space which has a diameter of  $10^{-15}$  metres. A proton is a stable particle and occupies a positive node in the Universe. The positive and negative charges have a mean life of 917 seconds (the mean life of the neutron) (Sears, Zemansky, & Young, 1982). They pull in another pair of positive and negative charges to replace them. The first two become nothing. The new duo survives for a mean of 917 seconds, as before. Thus, a proton consumes positive and negative charges.

A helium nucleus has two protons and two neutrons. Each proton is attached to two neutrons. This creates a circle. Counting clockwise, there is the first proton, then a neutron, then the second proton and then the second neutron. At the four junctions between proton and neutron, there are positive and negative charges separated by  $10^{-18}$  metres. In addition, each proton has another positive charge. The two positive charges repel but the four pairs that are much closer together form a much stronger force which holds the nucleus together. This is a strong force. Each of the four pairs of close charges survives for a mean of 917 seconds; as before, the pairs are replaced by pairs of charges pulled in from surrounding space. Thus, four pairs are consumed every 917 seconds.

Lithium can have 3 protons and 4 neutrons. Once again, each proton combines with two neutrons. But the clockwise sequence is PNPNNPN. Protons can never combine with protons but neutron can combine with neutrons. Each lithium molecule will consume 7 pairs of charges from space every 917 seconds.

## Appendix C

Each positive node in a cubic lattice has direct lines to six negative charges. A hydrogen atom has a proton nucleus and a single electron which orbits at a distance of  $d$ . The electron has a negative charge and mass and energy. It is said to be a point particle, but in orbit, we can only consider its probability of position. In the model presented in this paper, the six negative charges immediately adjacent to the proton are exactly equivalent and we cannot choose one as the electron. Instead, the electron in this model consists of a cloud of at least six negative charges and at least five positive charges. The energy and mass of the electron are determined by the extent to which the separation of the charges is constrained (negative entropy).

First of all, let us consider cubic symmetry around a positive node.

The first shell has 14 negative and 12 positive charges. Thus, it can have no more than two electrons.

The second shell has 48 negative and 50 positive charges; it can hold up to 8 electrons.

The third shell has 110 negative charges and 108 positive charges; it can hold 18 electrons.

The fourth shell has 194 positive charges and 192 negative charges; it can hold up to 32 electrons.

The fifth shell has 302 negative charges and 300 positive charges; it can hold up to 50 electrons.

The above corresponds to the full complement of the K, L, M, N, and O shells of atoms.

The shells, however, are not cubic but roughly spherical around the nucleus. Furthermore, the sphere rotates around the nucleus.

The K shell is formed of hexagons and pentagons with positive and negative charges at the apices. In the complete shell, there is one additional negative charge in the Northern hemisphere and one additional negative charge in the Southern hemisphere. If the Northern Hemisphere is rotating clockwise, the Southern Hemisphere is anti-clockwise. Thus, the magnetism produced goes in at one end and out the other. There is no requirement for arbitrary new restrictions or abstract mathematical rules; no exclusion principle is required.

The L shell has four excess negatives in the North and four excess in the South. These can be envisaged as one excess around the North Pole, an excess of three in a belt North of the equator, and the same in the South. Thus, 1, 3, 3, 1.

The M shell has 1, 3, 5, 5, 3, 1 excess negative charges.

The N shell has 1, 3, 5, 7, 7, 5, 3, 1 excess negative charges.

The O shell has 1, 3, 5, 7, 9, 9, 7, 5, 3, 1 excess negative charges.

It is difficult to believe that the number of electrons in the shells, the number in sub-shells, and the magnetic properties could be predicted with such accuracy by coincidence (Kaufmann, 1994; Sears, Zemansky, & Young, 1982; Feynman, Leighton, & Sands, 1964).

## Appendix D

The surface area of the earth is  $4\pi(R^2)$ , where R is the radius of the earth. The volume of space consumed per second is  $4\pi X(R^2)$ , where X is the depth of space consumed per second. It is the velocity of descent of the charges at the surface of the earth.

$4\pi X(R^2) = 4\pi Y((R + X)^2)$ , where Y is the speed of descent at a distance X from the earth's surface.  $X - Y$  is the acceleration due to gravity at the earth's surface. R is known and  $X - Y$  is known. Therefore, it is possible to calculate X. The value of X is half the escape velocity calculated using Newton's laws. This is exactly as expected because a space ship leaving the earth at a speed of 2X will be exactly equal and opposite to the speed of descent of space. It will slow down at exactly the rate that the speed of descent accelerates in the opposite direction, eventually coming to a stop when it is clear of earth's gravity.

The mass of the earth is known and that allows a calculation of the number of proton equivalents in the earth. Each particle consumes a pair of charges in 917

seconds and therefore the number of charges consumed per second can be calculated. We know the volume of space consumed per second and therefore the value of  $d$  can be calculated. The value is 0.072 nm, which is approximately the radius of the hydrogen atom.

These calculations also come out too well to be a coincidence.

## Appendix E

This model was conceived and published prior to the launch of the James Webb telescope. However, the prediction is that there will be stars and galaxies much older than the current concept of the age of the Universe based on the Big Bang model. The current estimate of the age of the Universe is the reciprocal of the Hubble constant which is approximately 13.8 billion years [20].

The model published here makes different predictions. Linear dimensions double every 10 billion years. If the red shift is a doubling of the wavelength of light ( $z = 1$ ), then the light has travelled for 10 billion years. If the wavelength is increased four-fold ( $z = 3$ ), then the light has travelled for 20 billion years. An eight-fold increase would indicate the star of origin was 30 billion light years away when the light started its journey ( $z = 7$ ). The largest red shift observed by James Webb (according to Google) has  $z = 13.2$ . This light left the galaxy approximately 37.2 billion years ago, according to this model, which is markedly different from the Big Bang model.