

## Water and Sunlight:

### The Physics of the Food chain and Healing

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#### Water

1. Water appears to be a very simple substance, with a formula of  $H_2O$ , which is just a solvent for other chemicals. *In practice it is incredibly complex and is the matrix for life.* Strictly speaking, water is not only composed of hydrogen and oxygen, but the isotopes thereof – there are 3 of each, which makes it quite a lot more complex. Furthermore, water molecules interact by the hydrogen bond, which is weaker than normal chemical bonds, and links many of the water molecules together into networks and domains  $(H_2O)_n$ . More recently coherent domains have been found in water. Thousands of scientific papers have been written about water, its structure and anomalous properties which make it the medium for life. For example Franks edited a 7 volume treatise on water.[1] Since then research has accelerated. For example, one website on the properties of water, lists 2,900 references.[2]

2. My i-remedies contain activated water, which has the entropy level lowered by flowers and/or crystals and sunlight. These are quite complex to make. They are not just water. For more details see page 7.

3. I do not claim to cure anything. Healing is a process of lowering the entropy levels until the disease disappears. This is a process, which, taken to its logical conclusion, will make someone free of that disease. However, some people stop before they get the results they desire. It's a bit like learning. In order to pass your exams, you have to learn enough. Entropy is a lack of information, and so one has to go on absorbing all the required patterns of information until one gets the health results one wants.

#### Personal Details

4. I am a research scientist, a seeker after truth. I have a PhD in elementary particles physics and worked for 20 years at the Universities of Bologna and Virginia, and at CERN (near Geneva where the large hadron collider is) and at Los Alamos. I have worked alongside several Nobel prize winners and have published or co-authored 51 papers, one of which had the 6<sup>th</sup> highest citation rate of all scientific papers in 1972.

5. I realised decades ago that there was something wrong with physics. Eventually I realised that it was wrong about life. The Universe is not dead and lifeless, and life is not a random add-on. *Life is actually a fundamental principle of nature, at the core of creation.* I therefore resolved to study the healing power of nature to learn more about this and the physics behind it. As a result I have created many remedies and treatments (see below).

#### Part II: Water in more Detail:

6. Water is essential for life. You will die of thirst long before you die of hunger. Water is so important for life that it is considered sacred or special by most of the world's religions. In baptism it symbolises entry into new life. The Bible talks about the "sparkling dew which cometh from heaven", and Jesus talked of "living waters". When water is applied to seeds, it causes them to sprout, *but nobody can write down the chemical reaction which starts life.* Living organisms are 70% water, and parts of your brain contain up to 85% water. You might want to think about that.

7. However, we live in a scientific age, so let us look at the existing scientific evidence. Scientists first discussed the possibility that life began in the oceans, more than 150 years ago. For example, the authors of the *Bridgewater Treatises* discussed the properties of water in the 1830s.[3] Henderson pointed out in 1913 that the strange properties of water not only make it a useful liquid,

but also make it the basis for living organisms.[4]

8. Different properties of water have long been known to medicine. In fact the English legal system has recognised the healing properties of water since the reign of Henry VIII (see Herbalist's Act 1542). People still go to spas. In fact there are far too many spas and springs with healing properties to list here. Each has its own healing properties. There are holy waters, such as the Chalice Well at Glastonbury, which people made pilgrimages too in the Middle Ages. People still go to take the holy waters at Lourdes, and the Catholic Church has scientific evidence for 80 miraculous cures, and there are many more cases of people who have partially improved.

9. The study of water is a specialist branch of science involving mainly chemists and physicists. Most biochemists focus on the 30% of biochemicals in the body, and ignore the water, thinking it is just a solvent. This separation of biochemistry from the study of water is most unfortunate, because water plays key active roles in living organisms, as we shall see. However, it has enabled the scientific study of water to be pursued free from commercial pressures.

10. Water outside the cell, has anomalous properties. In 1667 scholars at the Accademia Cimento in Florence discovered that water becomes denser as the temperature is raised from 0° to 4°C, which is odd because the density of most substances decreases as the temperature increases. Furthermore, water melts at too high a temperature, and also boils at too high a temperature. It ought to be a gas at room temperature, but is not because of the hydrogen bond. Its specific heat and surface tension have unusual values. Another unusual property is that ice floats. If it was like a normal solid, and sank to the bottom of the fluid, then the oceans would freeze from the bottom up. In practice they freeze on the surface, which preserves life below. Water has numerous other peculiar properties.

### **Activated Water.**

11. Perhaps one of the most interesting is that it can be activated to remove lime scale from boilers. One of the problems of generating electricity is that lime scale forms inside the boilers and gradually reduces the efficiency of the power station. There used to be an industry making "activated" water, which removed this lime scale. This was made electromagnetically or by patented processes.[5] Nowadays demineralised water is used in these boilers, and so activated water is no longer needed. That there used to be an industry making activated water to descale boilers, shows that water has hidden powers. Given the importance of water in living organisms, it should not be surprising that activated waters have applications in medicine and healing.

### **Water in Cells**

12. Water in cells and near membranes has unusual properties. For example, water in the nucleus of a cell may not freeze until -20°C. Water near membranes and surfaces (vicinal water) has reduced density, increased heat capacity (+25%) and viscosity, and changes its structure at 15°, 30°, 45° and 60°C.[6] *It is found that living organisms do not function properly at the structurally unstable temperatures of 30° and 45°C.*[7] Death is likely to occur if the body temperature rises too close to 45°C. *Living organisms tend to function best at temperatures midway between these. For example, mammals prefer temperatures of 37° to 38°C where the water is more stable.*

13. Water molecules form about 30% by weight of active proteins.[8] Hydrogen bonds play a key role in holding important biomolecules together.[9] For example DNA and haemoglobin would not exist without hydrogen bonds.[10] Hydrogen bonds hold both DNA and haemoglobin together. *So we would not be here without the hydrogen bond.* However, the hydrogen bond also forms networks between the surrounding water molecules. The three dimensional structure of proteins, which is responsible for their function, is maintained in large part by hydrogen bonds.[11] In effect proteins are no more rigid than the surrounding water networks, because both are maintained by weak hydrogen bonds, which bend and rotate easily. Action and reaction are equal and opposite (Newton's third law of motion) and so biomolecules float and move in water a bit like seaweed, reacting to every subtle change in the water.

14. The old theory that proteins were rigid, surrounded by solvent water molecules, is no longer valid. In practice proteins vibrate and move within the surrounding water framework. In fact there is evidence that vibrations and movements of certain proteins play a role in their function.[12] Water is a geometrical communications medium, which plays a key role in determining the structure of proteins.[13] Water causes seeds to sprout, yet nobody can write down the chemical reaction which starts life. The reason is because this is not chemical but physical. Water allows the proteins in the seed to achieve their natural structure and hence activity. The phenomenon of "cryptobiosis" is when certain primitive animals come to life again when moistened, even after decades.[14] Without water, proteins are lifeless. Thus water is essential to life, and it clearly has extraordinary properties which enable it to be the matrix of life.

### **The Quantum Structure of Water**

15. In 1891, Roentgen (who later discovered x-rays) proposed that as ice melts, many of the tetrahedral "ice molecules" must be intact, and be mixed with normal water molecules, because as ice melts only 12% of the hydrogen bonds are broken, and so the remaining 88% of not.[15] He pointed out that the "ice molecules" are less dense than normal "water molecules" (since ice floats) and this explains why the density of water is less at 0°C, and why it increases as the water warms to 4°C, because more of these less dense "ice molecules" break up as it warms, and the water becomes more dense. (Incidentally, 77% of the hydrogen bonds are still intact in boiling water.) This was the beginning of studies into the structure of water. However, such classical (Newtonian) theories do not explain all the peculiar properties of water.

16. In 1950, Pople presented a quantum mechanical theory of the structure of water.[16] In Pople's theory, the hydrogen bonds of water can bend *independently* instead of cooperatively as in ice, which explains the high heat capacity of water. This theory explains the properties of water determined by various experimental techniques, including x-rays. Harris and Alder calculated the dielectric constant of water at various temperatures using this theory, and the results were almost identical with experiment.[17] Other calculations gave good agreement with experiment, and the theory met with considerable success.

17. In 1951, Lennard-Jones and Pople showed that there exists a network of hydrogen bonds extending throughout liquid water, which links all the molecules together.[18] So in this theory water is one large molecule (H<sub>2</sub>O)<sub>n</sub>. This confirmed previous computer simulations. Thus water is much more complex than is usually thought. However, this does not explain activated water above.

### **Quantum Electrodynamics (QED) and Water**

18. The problem with this network of hydrogen bonds is that the water molecules move around and the hydrogen bonds break after a few picoseconds.[19] However, the above quantum theory assumes that the bonds are static. As the bonds make or break, there are fluctuating electromagnetic (EM) fields, there is also the earth's magnetic field, both of which quantum mechanics ignores. The correct theory to take account of matter and EM fields is quantum electrodynamics or QED (which incorporates Maxwell's equations, quantum mechanics and relativity). *QED is the most precise theory in the history of physics.* However, it is normally applied to the interactions of just a few particles, not to the millions of molecules in water.

19. The breakthrough came when two particle physicists Preparata & del Giudice solved the complex equations of QED for bulk matter. This has led to something of a revolution with the application of QED to liquids and solids.[20] This theory replaces the static picture ("electrostatic meccano" or "erector set") of chemical bonds linking individual atoms together, with a dynamical interaction between groups of molecules spread over larger distances. This theory (often referred to as coherent QED or CQED) is a new theory of condensed matter. It explains a range of phenomena, such as superconductivity, magnetism, superfluidity, and glass, which the static theory has never explained. This new dynamic theory explains the long-range correlations behind these

phenomena. It also shows that long-range coherent interactions can occur in water and hence in living organisms.

20. When this theory is applied to water, we find that the water molecules form two groups: coherent domains in which the molecules are all moving in unison, surrounded (a bit like islands in the sea) by randomly moving water molecules. In the coherent domains, the water molecules are moving in unison between two energy levels in phase with an EM wave, a bit like a laser, *except occurring naturally and the EM wave is trapped and so not radiated*. [21] In a laser there is a cavity and an external EM wave which pumps the atoms up to the excited state. However, in water the cavities form naturally, and the EM wave is internal and trapped in the cavity.

21. The coherent domains contain a few million water molecules in a volume determined by the wavelength of the electromagnetic wave (typically 100 nm), a bit like nanoparticles. These are surrounded in the interstices by incoherent randomized liquid water molecules, similar to water in the previous theory. The coherent domains are highly organized, and so their entropy is low. Their density is also lower than that of the surrounding randomised water, being closer to that of ice. This is a two-phase theory of water.

22. This CQED theory of water explains many of the peculiar properties of water (eg the high specific heat; the maximum density at 4° C; the large dielectric constant; the strange magnetic properties; and many of the anomalous properties of water). The oscillations of the coherent domains are very sensitive to electromagnetic waves and experience significant changes for negligible energy exchanges, which helps explain why water is so sensitive to the most subtle phenomena. The coherent domains contain tetrahedral structures containing a magnetic component capable in principle of interacting with weak EM signals and storing the information they carry. [22] This could provide a possible mechanism for the memory of water.

### **The Memory of Water**

23. There are numerous examples in conventional chemistry where water remembers the substance that was in it. [23] This theory of the memory of water has stimulated research into this. [24] Homoeopathy has provided evidence for the memory of water for 200 years. There are now meta-analyses of placebo-controlled trials of homoeopathy. [25]

24. Since the earliest days of quantum mechanics in the 1920s, there have been physicists (eg Bohr, Schrödinger, Bauer, Wigner) who have thought quantum mechanics is connected with life. There are already quantum theories of photosynthesis; energy production in cells; charge transfer; muscle action; and enzymes. The application of QED to water, has started to create *a new quantum theory of life*, because water is a key component of living organisms, although other more advanced physics is required. This theory also includes electromagnetism, so one should not be surprised if electromagnetic phenomena start to be found in living organisms.

### **Electromagnetic Signals from DNA in water**

25. Luc Montagnier, who won the Nobel prize for discovering HIV, has done just this. He has discovered that DNA of certain pathogenic bacteria and viruses emits an electromagnetic signal. He has found that dilute solutions of pathogenic DNA emit low frequency electromagnetic signals which can be projected into another test tube of ultra pure water, where, under the right conditions, they will produce a copy of the original DNA! [26] And this experiment has been repeated many times. Thus the memory of water is linked to EM signals. Furthermore, if this EM signal is digitised (with an ADC converter) it can be transmitted over the internet to another laboratory, where it can be converted back into an EM signal (by an DAC) and when this is projected into pure water under the right conditions, it will produce a copy of the source DNA hundreds or thousands of miles away. [27] This is proof that water contains information which can be transmitted along a wire. These results can only be explained in terms of CQED, or other more advanced physics.

### Part III: Sunlight and the Physics of the Food Chain

26. We now combine this QED theory of water with a physics theory of the food chain, which is hidden away in the physics literature. In 1944, Schrödinger published a small book "What is Life?",[28] in which he asks why we eat. He argues, that one nitrogen atom is just like another nitrogen atom. And so adults do not need to eat to exchange nitrogen atoms. He argues that the real reason we eat, is to ingest order, and excrete disorder, so that we can make our inner state more orderly. For historical reasons, physicists call "order" "negative entropy" or "negentropy", which is most unfortunate because it makes it sound so negative, when in fact it is very positive. We need a brief explanation of terminology to understand this.

27. Entropy is related to unavailable energy, and is also a measure of randomness. The opposite of randomness is "order" or "information". Negative entropy is the opposite of randomness and so it is order or information. Negative entropy is often shortened to negentropy. It is important to understand that information (and also negentropy) is not a chemical, but a pattern (eg bits). So whilst negentropy is not a chemical, it is frequently the pattern or order in chemicals. So Schrödinger is saying that the food chain is a flow (a current) of order (negentropy) and we eat so as to increase our inner levels of order.

28. Prigogine, who later won the Nobel prize, proposed that living organisms are devices which accumulate negentropy, by exchanging energy and matter with their surroundings.[29] If one exchanges only energy, then one cannot lower ones entropy level, but by including matter (ie food), one can become more orderly, especially if the ingested matter contains order. The point being that randomness tends to increase (see below), and so living organisms need ways counteract this. The equations for this are given here.[29] So where does this order in the food chain come from?

29. For a long time there was no explanation for this. Then in 1961 Brittin and Gamow showed that *sunlight shining on the earth's surface reverses the normal effects of the second law of thermodynamics*, and provides the order needed for photosynthesis, by pumping the entropy out into outer space.[30] This effect is shown in figure 1 below, together with the equation Brittin and Gamow derived.

30. The basic principles are that the surface of the sun is at  $6000^{\circ}$  Kelvin, that of the earth's surface is about  $300^{\circ}$  K, and that of space is  $2.7^{\circ}$  K. As a result, high temperature photons coming from the sun, arrive on the earth's surface and are absorbed (eg by a leaf) or water. The surface of the earth remains approximately constant over time, and so the earth radiates as much energy back out into space, but in the form of low energy photons corresponding to the temperature of the earth's surface.. This requires about 20 times as many photons, because the earth is so much cooler than the sun. However, these 20 low energy photons are irradiated in all directions out into space, and so carry more randomness away from the earth than comes from the sun. As a result, order builds up on the earth's surface, which appears to violate the second law of thermodynamics.

### Second Law of Thermodynamics and a New Theory of Life

31. One can explain the laws of thermodynamics succinctly in the following way. The first law of thermodynamics says you cannot win, while the second law says that you cannot break even.[31] The first law requires that energy is conserved, so that you cannot get out more energy than you put in. That is why you cannot win. The second law says that there is always dissipation, so in practice you cannot get out as much energy as you put in. That is why you cannot break even. The shocking thing is that sunlight overcomes this!

32. As we have seen, entropy is a measure of randomness. In this sense, the second law states that every system tends to an equilibrium state, where the entropy (randomness) is maximum. For example, a cup of hot tea will cool down to room temperature, where the energy in it is no longer available to do work. Everything corrodes and decays. Iron rusts. Wood tends to rot. Once flour

and sugar have been mixed it is almost impossible to separate them. Everything becomes more chaotic with time. The second law has led to a theory of the heat death of the Universe. It is thought to be absolute - irreversible. This is the central myth of physics. This is why Brittin and Gamow's theory is so extraordinary, *because it shows how sunlight and the food chain defy this.*

33. Every physicist believes that if something violates the second law of thermodynamics, then it is impossible. Technically, Brittin and Gamow's theory does not violate the second law, but it produces an effect (reduction in entropy level) *which is the opposite of what one would normally expect from the second law*, which is quite astonishing.

34. It is true that over time a polished table will become scratched, and it will remain scratched until someone deliberately polishes them out. However, if you cut your skin, *it will heal up without a scar, provided you keep it clean.* Why? In fact living organisms are incredibly complex (living tissue contains 10,000 million million times as much information as any known computer technology), highly ordered and far from equilibrium. This means they maintain themselves in an unstable state. Only when they die, do they start to decay, and then nature tends to recycle everything. So what is going on here?

35. There is a key difference here between chemistry and physics. Chemists want to know what living organisms are made of. (So they focus on the biochemicals, not the water!) However, physicists ask how they are organised, because if they are not organised, they are just random blobs. In physics jargon: how do living organisms violate the second law of thermodynamics?

36. This theory of the food chain starts to provide an explanation. Brittin and Gamow's theory shows how sunlight on the earth's surface, reverses the normal effects of the second law, and creates order which will be stored in water via its memory, and in plants by photosynthesis. They showed that sunlight produces more than enough order to account for photosynthesis. Animals then graze on the plants, and this order passes along the food chain. Other organisms ingest it, increase their inner order and excrete wastes and randomness. *This is a new theory of life based upon mathematical physics.*

### **Evidence for the Creator**

37. This theory shows how life is being created by sunlight shining on the earth's surface. So is there a Creator? There are two pieces of mathematical evidence for God:

37.1. In 1932, von Neumann published his theorem of infinite regression, where he showed that the process of observation in quantum mechanics is infinite.[32] However, we live in a finite Universe, so this implies that the process of observation extends outside the Universe! So cosmologists have pointed out that there has to be an Ultimate Observer, outside the Universe, to break the chain. This could be God.[33]

37.2. There is also a code hidden in the Bible, which can only be extracted easily with a computer. This code can only exist because the copying error of the first five books (Torah) is only 9 characters in 304,805 (0.003%) over 2000 years. If the copying error was just 0.1% the code would disappear.[34] Sophisticated statistics have been applied to this. The code for God's signature has been found: "Bible code, Sealed before God".[35]

### **Randomness (Entropy) Theory of Disease**

38. We assume that disease is caused by breakdown in these processes, whereby chaos, randomness builds up in the sick organism. There is evidence for this from exposure to nuclear radiation, eg Hiroshima, Nagasaki, Chernobyl. Nuclear radiation causes randomness and it also causes 60 or more different diseases, counting cancer as 1 disease. (I have the references for this.) In this theory, disease is an information problem. It is like bugs in the software.

### **Theory of Therapy**

39. The solution is to provide the patterns of order which are missing. I have developed a

system, which I call quantum entropathy, to do this.

#### **Part IV: Quantum Entropathy (QEP)**

40. Quantum entropathy is a system of quantum physic (ie healing with order and life, as opposed to medicine which is suppression with dead chemicals) based on the above mathematical theory of water and the food chain.

41. When sunlight shines on water, something magical happens. It pumps out entropy (by the Brittin and Gamow effect), and *the memory of water stores this increased order*. If a flower or crystal (which is a highly ordered state of matter with the atoms lined up in rows like soldiers on parade) is placed in water in sunlight for several hours, *the pattern of order in the flower or crystal will be imprinted into the water and stored*. The usual technique is to remove the flower or crystal after several hours or a day in sunlight, filter the essence and bottle it. If brandy is added, the low entropy state will last for years.

42. Flower essences and gem elixirs made like this are a kind of artificial dew. A Christian Abbess, Hildegarde of Bingen, experimented with these in the Middle Ages. Dr Edward Bach re-invented them in the 1930s, and his flower essences are available in Boots Pharmacy and internationally. Worldwide there are more than 70 manufacturers of these, with more than 1500 flower essences being available.

#### **I-Remedies**

43. 30 years ago I was searching for ways to heal disease. I was looking for sources of order (negentropy) which would reverse the chaos of disease. At first I thought vitamins and minerals would do this, then homoeopathic remedies. But after a lot of experimenting, I found that flower essences and gem elixirs touched a deeper level of pain. This makes sense because they are made with sunlight, and so are more highly ordered states. After experimenting, I found I could improve upon this. I found that by combining essences together, *I can make even more highly ordered states (lower entropy) which are more specific and powerful*.

44. After decades of experimentation, there are now several steps to the manufacture of my i-remedies:

44.1. Make the mother essences, using sunlight and a flower or gem as described above. I have made over 500 flower essences and more than 1000 gem elixirs. These are not used as my remedies, but are the *source essences* from which they are made as follows:

44.2. A basic i-remedy is made from a *combination* of flower and/or gem elixirs. There is great skill in choosing the combinations and the proportions of each. This creates a more complex and specific and so more powerful low entropy state. These i-remedies are targeted, a bit like a rifle bullet, although clearly much much gentler. In fact the analogy fails completely because they create order, unlike rifle bullets which create chaos. The point is the order is targeted and very specific, and hence more powerful and effective.

44.3. A few of my remedies are combinations of these combination remedies. This creates an extra powerful low entropy state, which is both specific and general in its action. These remedies are a bit more like buckshot, but again they create order not chaos.

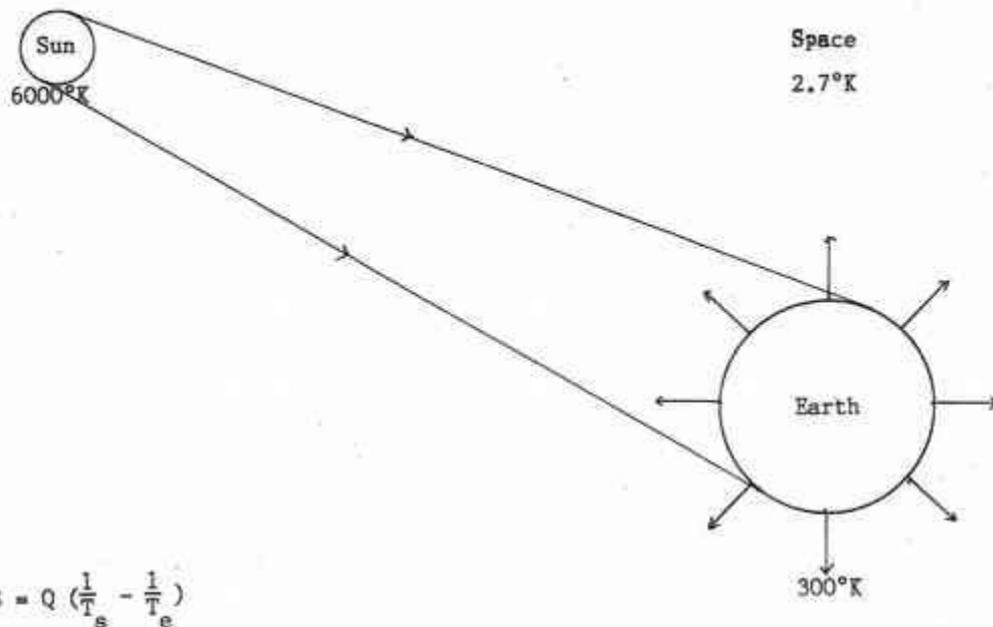
44.4. Some of these remedies are dimensionalized to work on the higher dimensions of matter (as in string theory). This is a mechanical process, a bit like homoeopathic potentiation.

#### **Conclusions**

45. Water is a very complex substance which is the matrix of life. My i-remedies are activated water which contain very specific patterns encoded in the coherent domains of water to reduce entropy levels and heal disease. They have the patterns of flowers and crystals imprinted into them using sunlight. My i-remedies are more complex to manufacture than basic flower essences, and considerably more powerful. There is a magic in my i-remedies, beyond the above science. They are states of liquid consciousness, which collapse the wave function so as to heal disease.

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**Figure 1.100:** Radiation leaves the surface of the sun at 6,000°K and arrives on the earth's surface, which is only at about 300°K. In order to maintain its average temperature, the earth radiates as much energy as it receives back out into space. However, because the earth is cooler, it radiates this energy in the form of about twenty times as many low energy photons into all the directions of space at random. As a result, the earth radiates more disorder back into space than it receives from the sun. In effect, the sun pumps disorder out of the biosphere. In this way, order can build up on the earth's surface.