

The Wobble Effect

by

Jerry Schmeer Jr.

Wonderful spirited ingenuity.
Well done.
I hope you pursue this
story.

Biology II

Prof. Brenda Boleyn

21 May 1989

A

THE WOBBLE EFFECT

One of the great things about never growing up, is like a child, your mind still works in questions. It seems I never run out of them. How does gravity work ? What if the universe has limits ? What are the secrets of the pyramids ? Why do people grow old and die ?

Although, my mind sometimes tends to wander due to the inter-relationships I often see between all things, for this paper, I am going to try to keep my center centered on one aspect of that last question. Where and what is this biological clock that causes cells to divide so many times perfectly then suddenly stop. What is this ticking time-bomb counting ?

First, to be clear; I'm not talking about the thing we call "AGING." The breakdown of our immune system, over time, which leads to the deterioration of genetic, biochemical, and cellular processes. (Pearson 18-22) I'm not talking about the physical aspects time and its relative nature in the universe. (Calder 72-83) I'm talking about the internal little clock, in all living organisms, that governs important biological processes throughout the life span of an organism. More importantly, I'm talking about where this clock gets its frame of reference.

My search has lead me to believe that human biological clock is found in the double helix structure of DNA molecule, and it is counting the molecular oscillation of the water molecule. Something I'm going to call "THE WOBBLE EFFECT." Although, in a paper such as this I can only scratch the surface; it is my intention to put in the mind of even the strongest critic, the feasibility of this idea.

We know from are study of distant stars that the basic elements that we hold on to and love so dearly, exist in the same form millions of light years away. We have speculated, and believe quite strongly that life exists throughout the universe. I believe that the key to this aging clock must therefore be universal. It must be as valid for the flower outside my window, as a similar flower on the other side of the universe. It could not be based on localized events such as circadian rhythms (the day and night of our Sun) or any other terrestrial phenomena. Although, I do believe that these events do play an important part in the overall effect. I feel therefore that this clock must exist on an atomic or sub-atomic level.

Knowing that clocks, be they mechanical, atomic, or biological must share similar properties, I looked for a general definition that I could use as a guide post.

... timekeeping relies on counting a regular series of events: the alteration of day and night, the swings of a pendulum or a balance wheel, the vibrations of a quartz crystal, and so on. (Calder 54)

Like the biologist who studies simple plants to find structures and processes that are probably used in more complex organism; it was my hope that by studying the structure of a simple computer clock I could find a similar structure in the more complex biological clock.

7.
human machine, here is an exert that explains the importance of the computers clock, quite clearly.

When the computer's power switch is turned on, electricity rushes through the entire system and a predetermined sequence of events begins. The quartz crystal clock starts sending signals out on the system's network at the rate of several millions beats per second. Every action is regulated precisely by this rapid pulse, which is independent of the computers other control signals. (Computer Basics 112)

One of the things I discovered over the years is; if you want to find why something sinks, study why another thing floats. In other words, study the things that seem to buck the trend. So I made a list of the things that seemed to be able to beat this thing we call the aging process. same

1) Seeds.

I've always found seeds interesting. They have food and all the genetic information needed to create a living plant, but often lie dormant for hundreds of years or more. (Fuller 126) Drop a little WATER on them, all of sudden, you have a living, growing, aging plant.

2) Freeze drying

I love those little packages of frieze dried soups. Once again, pour a little WATER on them and the next thing you know you're eating garden fresh vegetables. I often wonder just how long they could last

7.

in my cupboard if I forgot about them. I'd like to put one in a time capsule and open it in 100 years or so (I figure I'll still be around now that I've found the key to human aging process) and eat it for lunch. I wonder how it will taste.

3) Things that were cooled or frozen

Sperm are frozen everyday, animal cross-breeding depends on it. Their useful life is extended from hours to years. Recently, a man had his head cut off and frozen at his death. He intends (intended) to have it put back on a body in a few hundred years or so. I kind of wonder when they put him back together will he be as old as his head, or his body. The key to cryogenics is keeping the WATER from destroying the cell as it freezes.

*Age of
brain
might be
important*

It appeared in all the cases that I studied, WATER was somewhere involved in the story. Water has always held a special fascination for me; its link to all living organism, its special unique properties, and its unusual tetrahedral structure. (Keeton) (Holtzclaw) I was sure if I pursued this aspect, I would find the basic links that I needed to show that water was the key to aging.

I decided before I could get anyone to even listen to my idea I had to show at least three valid points:

1) Water had some fundamental vibration or unique oscillation that could be counted

2) That although circadian rhythms were important to the daily living cycles of plant and animals, there was still an underlying

unifying force that was not externally dependent. And, an alteration of this underlying force would cause a disturbance in the rhythms.

3) Water had some unique and closely related function to the double helix structure of DNA

Looking for my first goal I started searching through books on organic chemistry. I understood the basics of atomic structure, but was less knowledgeable on how electrons reacted in molecules. I keyed on the water molecule. Finally, in a probably boring to most, and little read textbook, I found the following information and diagram.

The atoms of a molecule vibrate about mean positions, this vibration representing a periodic change in their positions relative to one another, with internuclear distance at the moment of mean position being the bond length. The vibrational motions of the atoms in a complex molecule may well be expected to compose a bewildering pattern, but it transpires that any complex pattern can be regarded as a result of a rather small number of vibrational modes termed fundamental or normal modes, the associated frequencies being fundamental frequencies. If the radiation beam has such a frequency, the molecule will usually absorb it as vibrating energy, exhibiting atomic vibrations of this frequency.

Vibrations fall into two broad classes, stretching and bending. A molecule of n atoms usually has $(3n - 6)$

oscillators are normally synchronized whether or not the animal is in a periodic environment. This means that the oscillators must be internally coupled by mechanisms of sufficient strength to maintain synchronicity.

(Moore-Ede)

Once again my eyes lit up; "...synchronized whether or not the animal is in a periodic environment." My interpretation of that is, if the sun don't shine, the organism can still keep its rhythms. And, "this means that the oscillators must be internally coupled by mechanisms of sufficient strength to maintain synchronicity." Could it be the good, old oscillations of the H_2O molecule? I think so. In fact, while doing some general reading on circadian rhythms I came across this.

Only a few chemicals are known to change the frequency of circadian rhythms. ... [Although] The rhythm of bean (Phaseolus) leaf movements, as well as a rhythm of swimming activity of the unicellular alga Euglena, is slowed by exposure to solutions of heavy water (D_2O) (McGraw-Hill)

For those unfamiliar with "heavy water", it is basically the same water we are familiar with, with a couple of more electrons thrown in. Thus the reason for the "heavy." Once again, it should be clear to see that this indeed would change the molecular orbits of the electrons and thus its molecular vibration.

Now the hard part, showing how those fundamental vibrations had any relationship to the DNA; where I felt the timing program was stored. I

yes, very interesting.

genus names are underlined

searched for weeks. I finally found what I was looking for. If I had done this paper last semester, this following information wouldn't have even been published yet. In the journals at Woods Hole I found that a group of Japanese scientists had found that water bonds to the DNA molecule.

A number of biomaterials have a dielectric absorption peak around 100 MHz, which is due to the reorientation of water molecules bound to the material. The biomaterials include living organisms such as human skin, fish muscle, and living tissues as well as biopolymers such as DNA and lysozyme. The configurational analysis indicated that the water molecules are bound to DNA through a hydrogen bond and participate in stabilizing B-form helix. On the other hand, the water molecule has a possibility of being bound to the DNA through electrostatic interaction between phosphate ion and dipoles of the water molecules.

The article goes on to say, that :

The number of water molecules, of the order of 10, are bound to one nucleotide. The X-ray analysis of an analogue of B-form DNA indicated that stringlike clusters of water molecules are constructed along and across the groove. Water molecules in the cluster are mostly bonded to the DNA. Such an alignment participates certainly in stabilizing the DNA helix. (Kuwabara 4839)

b. a program and processing center - in this case the DNA molecule which contains a discriminator that picks up the particular frequency that the water molecule is oscillating at and counts the wave motions then advances for every period of counts determined by the program (also in the DNA) - it temporally stores this information locally

c. a centralized storage location - that keeps the continually updated information and shares it with other parts of the entire system - often a more complex system in the brain - which looks over the system as a whole - I believe this area is located in the pineal gland in the brain and indeed works in synchronizing it light/dark sensitivity

I truly believe that water is the answer. If such a system does exist, we may some day find ways to externally control this oscillation. No need to alter the DNA, no drugs, no freezing, just a simple electromagnetic force field. I am very excited about this, and I plan to pursue it in the (many, many) years to come.



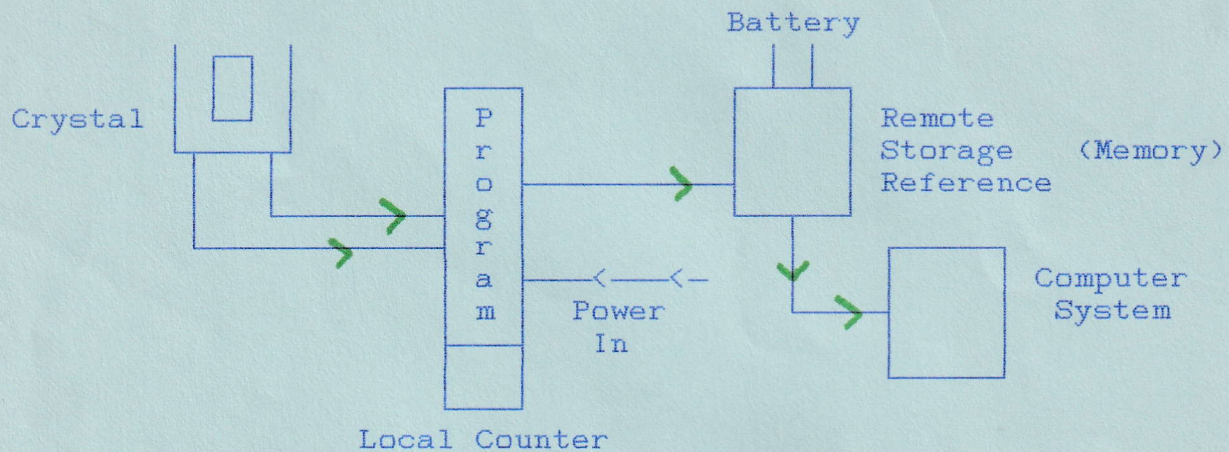
You!

Good luck to you.

This has been fun & interesting to read.

It really is an exciting idea.

Figure 1.0 Simple Computer Clock System



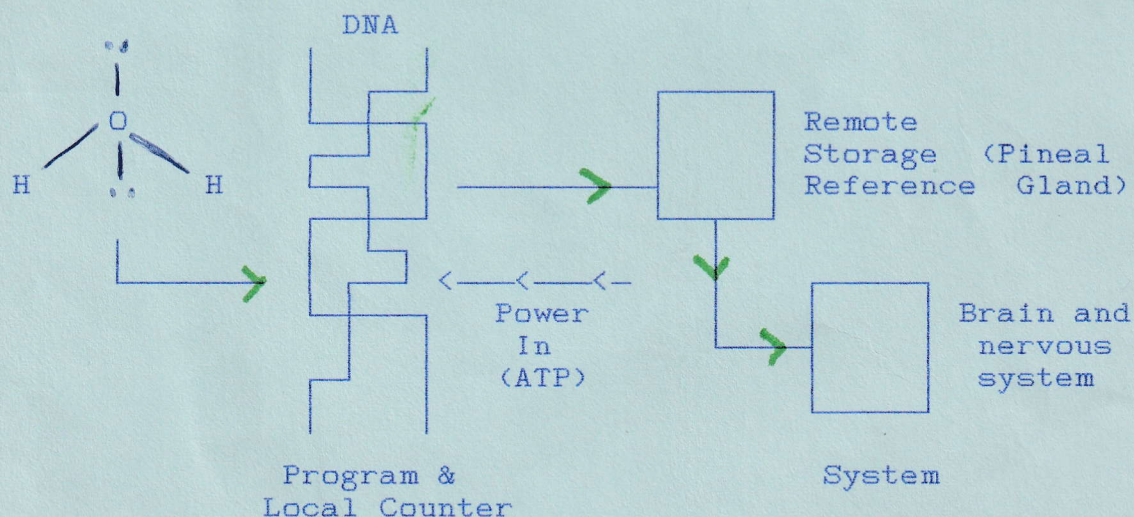
A simple computer clock contains these three basic parts:

- a. A timing source - (in this case a quartz crystal that when given energy oscillates at a very precise frequency)
- b. a program and processing center - in this case usually a clock chip which contains a discriminator that picks up the particular frequency that the crystal is oscillating and counts the wave motions then advances for every period of counts determined by the program - it temporally stores this information locally
- c. a centralized storage location - that keeps the continually updated information and shares it with other parts of the entire system - often a more complex program such as an operation system - which looks over the system as a whole.

Keeping in mind that we are striving to find this clock in the

My understanding of the text goes something like this. Water indeed does bond to DNA; in fact it is very important in maintaining DNA double-helix structure. Water is highly dielectric. It has a strong ability to interfere with the attractive force between unlike charges, such as those as positive and negative ions. (Weininger 201) When water is bound to such a structure, a particular wave function can be measured. Now, I will be the first to admit that wave theory is a very complex subject. I certainly am not an expert,....yet. I'm also not claiming that DNA is using this 100MHZ frequency. I'm just saying that I believe that a portion of the DNA stand works as a chemical discriminator. Much like your home radio it can tune to a precise frequency and then count the oscillations. This is how I think the human clock works.

Figure 1.0 Simple Human Clock System



a. A timing source (in this case the water molecule when given energy oscillates at a very precise frequency)

fundamental modes, $(n - 1)$ being stretching, longitudinal modes along the lines of the bonds, the remaining being modes that result from oscillations transverse to the bonds. Bending vibrations are further distinguished as out-of-plane, wagging, rocking, and twisting. (Reid 126)

The vibrations of water are shown in figure 1.0.

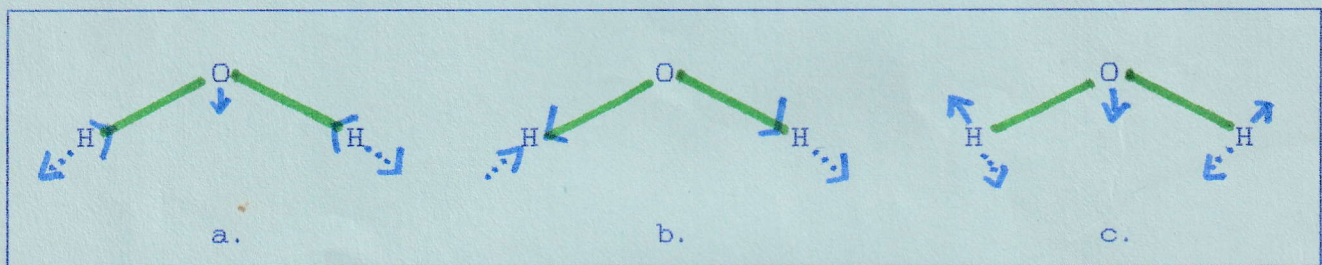


Figure 1.0 Fundamental vibrations of H_2O . a. Symmetrical stretching, b. Asymmetrical stretching, c. bending vibrations. (Reid 126)

I couldn't have been happier. It was exactly what I wanted to hear. I felt that I had at least shown to myself that there was some fundamental vibration, and therefore felt that those vibrations could be counted.

The next task I knew would be a little harder. Even though, in my mind I knew that the timing mechanism couldn't be a localized event, I knew that many would hold strongly to this belief. I searched the extensive library of Woods Hole Oceanographic Institution for something on the subject. There in a volume on circadian rhythms I found this.

First, the circadian timing system has two or more oscillators, each capable of generating self-sustained circadian rhythms. Second, these potentially independent