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Frequency and Anticipation in Bio-Systems

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Abstract

Bio-systems must have a computing function at many levels of biological activity and the problem is how does it work? Frequency is the language of this bio-computing activity and these frequencies may be as coherent as is theoretically possible. Frequency has a duality with chemical structure and as an expression of energy level change it may provide a control function. All bio-systems are water based and use the properties of water to implement basic arithmetic operations and basic reversible logic gates the clocking provided by nerve impulses. Strong anticipation is imbedded chemically in nucleotides, chemicals and their frequency signatures and in water memory. Weak anticipation derives from the bio-system's need for future chemicals and activities predicted from within a model of itself.

Keywords Bio-Systems – Frequencies - Computing – Anticipation - Control

1. Introduction

The basic problem is to determine how bio-systems anticipate at each of the many levels of biological activity. Patterns of coherent frequencies have a syntax and are able to provide control functions on their own as well as being identifying labels for chemicals which only undergo bonding interactions at short range. The operations involving frequencies are analog. Digital control appears in trains of nerve impulses which can operate through logic gates and arithmetic operations to adjust the frequencies themselves. The bio-system needs to have knowledge of its "Past" fed into its "Present" and in Strong Anticipation to retain this for future activities. In Weak Anticipation it must model a frequency pattern to represent its "Present" self and possible "Future" states. This is summarised in the diagram of Figure 1.

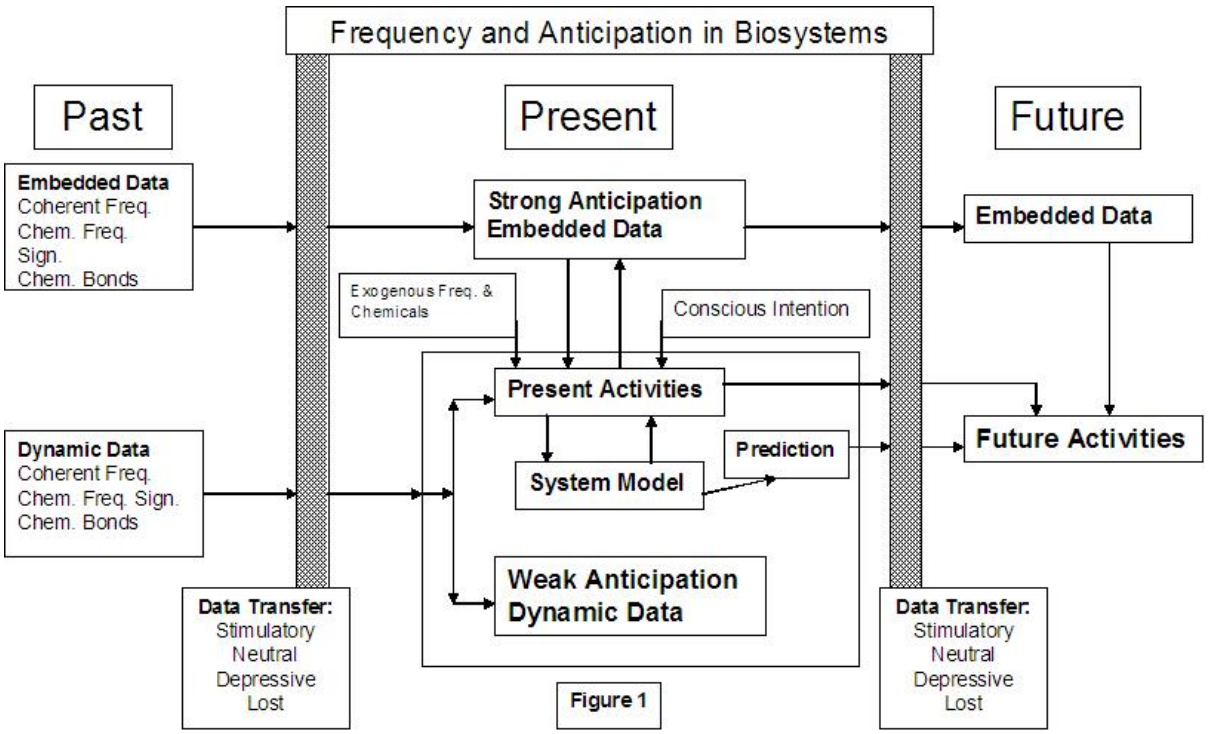

Figure 1 The biosystem's activities in a "Future" state will have the Strong Anticipation embedded data carrying any modifications made in the "Present" state together with data predicted from the System Model. It must recognise the systems need for a continuation of the species.

2. Past State

A system comes from its "Past" state with embedded data and dynamic data in the form of coherent frequencies which are either stored in water memory or as the frequency signatures of the chemicals comprising the organism structure. Chemical structure represents embedded data and Strong Anticipation but, on-going dynamic chemical activity also feeds in as Weak Anticipation. The following details the language and syntax available for Anticipation in Bio-Systems.

2.1 Domains of Coherent Frequency

Del Giudice and Preparata and co-workers (Arani et al., 1995) have shown that the exchange of resonance radiation can result in the formation of domains of coherence. Coherence of frequency may result in frequency becoming a fractal quantity. Then, the constant parameter becomes the coherence length, the distance over which phase coherence persists, instead of velocity. This generates frequencies proportional to any velocity that the system will support. One such velocity is the velocity of light, another is the velocity with which the coherence propagates, of the order of metres per second where the whole of a coherence domain is involved in the interaction. This gives a fractal ratio of the order of 108 and enables the frequencies of chemical bonds to interact with

technological frequencies and in another jump with biological frequencies and vice-versa.

2.2 Dirac Equation and Frequency

Rowlands (2007) has described a form of expression for the 'Dirac Equation' which contains purely physical information so that mathematics becomes an intrinsic part of physical structure. Furthermore, the equation contains three terms which separately express the "energy", "momentum" and "mass" in the physical system. He postulates that the most general form of the wave function is 'nilpotent' (= the square root of zero) (Diaz & Rowlands, 2004) and the operator (±kE ± iip + ijm) which contains the physical information about the system is also a nilpotent in which k represents energy, i represents momentum and j represents mass.

He points out that nilpotent quantum mechanics includes quantum coherence and that living systems acting as hierarchies of quantum Carnot engines could show a boundary between fractal and wave structures and evidence of chaotic working. He does not specifically write the nilpotent Dirac equation in terms of frequencies. This can be done using the relationships E = hv and E = mc2. The momentum term could be represented by a wavelength λ for the coherence length in a coherent system, or by a third frequency = v3/c. The term then becomes (Smith, 2009a):

(± khv1 ± iih/λ + ijhv2/c2) or (± khv1 ± iihv3/c + ijhv2/c2)

Cancelling Planck's constant gives:

(± ikv1 ± ii/λ + jv2/c2) (± ikv1 ± ii/λ + jv2/c2) = 0

which are equations in coherence length and two frequencies which may be the lower and upper fractals.

2.3 Water Memory for Frequency

The writer has described a mechanism for a frequency memory in water (Smith, 2008) which involves coherence in the precession of the spin of protons in water. Given a critical number of protons in phase coherence, the precession can generate a local magnetic field such as to satisfy proton NMR conditions at any frequency. Electron spin precession can acquire similar properties for ESR conditions and would apply to frequencies imprinted into metals as well as to those in water. These imprints need the presence of the geomagnetic field and can be erased by placing the specimen in a closed steel

(mu-metal) box. The size of a coherence domain is determined experimentally by finding the critical magnetic field at which memory erasure occurs. The assumption that at this point the magnetic energy is equal to thermal energy kT gives the required volume. The coherence of an imprint in water is ultimately limited by the statistical fluctuation of the number of particles involved in the coherence and may be less than parts per million; it is just measurable with a high performance waveform generator (Agilent 33250A).

The frequency information is in the magnetic vector potential component of an alternating magnetic field (A-field) such as that near a toroidal coil, the B-field has a formatting property equivalent to mechanical succussion. A Caduceus coil has distinctive properties, the windings cancel the B-fields and the tangential A-fields but the radial A-fields remain. The Caduceus coil couples to different frequency resonances than those found using the field of a toroid. It usually only detects a single frequency which is of the order of 0.1 Hz.

There seems to be further source of memory capability involving the imprinting and measuring of frequencies using an electric field (E-field) or an acoustic field as discussed by Partheil (1903). This must involve dielectric coherence among water dipoles. This imprint is not erased by shielding the geomagnetic field with a steel box but is erased by exposure to 1.42 GHz, the microwave resonance of molecular hydrogen. Partheil found that acoustic mode frequencies could be related to atomic weights. The Rydberg Constant taken with the fractal ratios can link frequencies and atomic mass. The ability to respond to coherent frequencies gives living systems the capability of identifying atomic isotopes.

2.4 Chirality and Frequency

Marcer and Schempp (1998) have shown the quantum coherence and phase conjugation conditions necessary for a holographic memory system. This is the only memory system which satisfies a living system's need for an image of the actual location of the object in space and time. While there seems to be a continuum of frequencies available for constructing such a system, only two phases - Yin and Yang have been encountered so far. These may be expressions of a chirality rather than phase.

The frequency references for living systems seem to be stabilised through fractal relations to coherent resonances in the far-infra-red rotational spectrum of water. The A-field component of the geomagnetic field provides the chirality reference. Imprinting water on the North side of a toroid gives a laevo-rotatory (L-) imprint, imprinting on the South side gives a dextro-rotatory (D-)

imprint. In general, the L-imprint is stimulatory of biological activity while the D-imprint is depressive. Fractality of frequency inter-links this to chirality in the optical region. Solutions of L-fructose pass L-frequencies and block D-frequencies while a D-sucrose solution has the opposite effect.

Chemicals which can H-bond to water acquire characteristic frequency signatures. Elements have a single frequency, molecules have more frequencies and these usually alternate in L- and D- chirality. Among exceptions are water imprints from single crystals of silicon and quartz which only contain L-frequencies and these repeat at precise decade intervals from 10-4 Hz to 10+9 Hz.

3.0 Data Transmission

The "Past" state's data has four possibilities in its passage to the "Present" state. The frequency data may be stimulatory (L-frequency), depressive (D-frequency) or neutral in respect of biological activity or it may become lost in transit. Certain combinations of frequencies seem to acquire a 'nilpotency' which results in total erasure of their imprinted information. This can occur among acupuncture meridians and provides an anticipatory feature in as much as a non-zero value implies an error or fault in the frequency data and what it represents in the biosystem. Chemical structures may deteriorate and data in their frequency signatures become corrupted.

4.0 Present State

Not only are the "Present" activities informed by the embedded data and the dynamic data but also by endogenous frequencies and by chemicals entering the system from the environment. Conscious intention can also generate frequencies and chemical activities for example, 'an intention to wave the hand'.

4.1 Present Activities

The Laws of Life used by Nature must involve the application coherent frequencies and the effects of frequency in biocommunication must eventually be limited at the quantum level through integer related quantum transitions between chemical states. Water, H-bonded to chemicals gives characteristic frequency patterns which living systems can recognise and this extends as far as isotopes. Living cells can respond to the addition of a single quantum of magnetic flux linking the cell and thus have the Josephson effect available giving a frequency/voltage inter-conversion. They are sensitive to the magnetic

vector potential (A-field) which can affect the phase of wave functions. The endogenous frequencies in living systems such as those on acupuncture meridians and chakra points must be 'eigen' states of these wave functions.

There is no point in a living system having a language and syntax in frequency if frequencies cannot effect any action. Figure 2 demonstrates that the steady increase in frequency of yeast cells growing in a glucose nutrient can be stopped merely by the close presence of a second tube containing an imprint of its current 'nilpotent' frequency. This was measured with the reaction tube in a Caduceus coil as shown so that only a single frequency had to be measured. This frequency must be quickly imprinted into water as a D-frequency before the cells change significantly. This is what is in the second tube seen in Figure 2. So long as it is within a few centimetres there is no further change in frequency. The frequency change resumes as soon as it is removed. This was repeated using a new D-frequency derived from the system at the point it had then reached. This 'nilpotent' frequency has a practical clinical application in that it removes all current stress frequencies from a patient when used as a homeopathic potency allowing the next layer of stress to manifest.

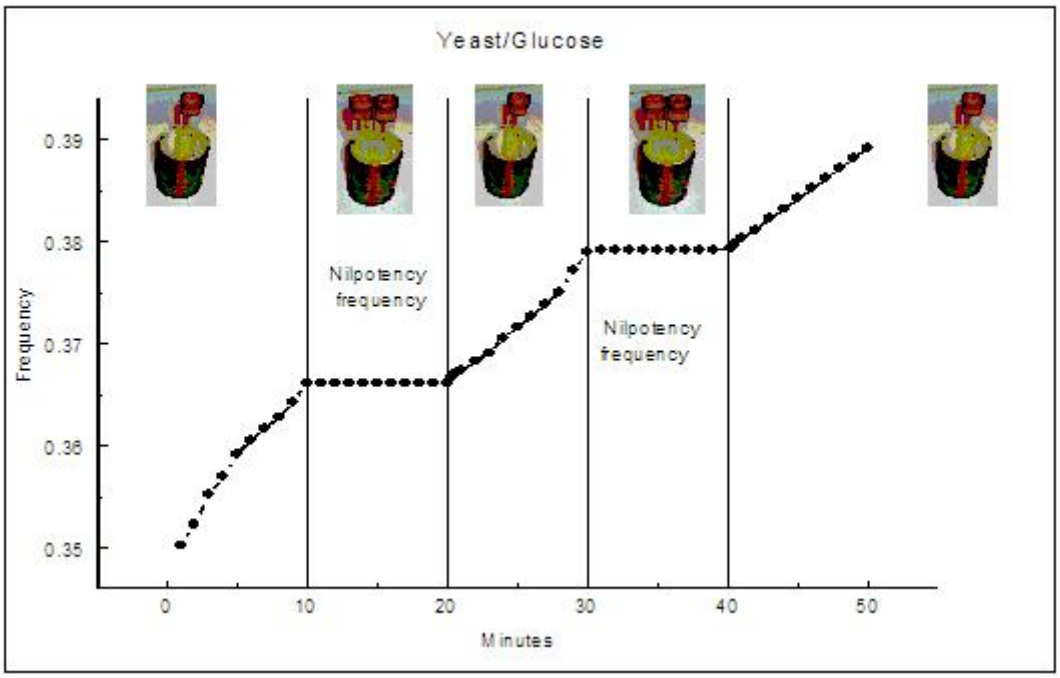

Figure 2. Evidence that a specific frequency (Hz) can stop an activity in a living system

4.2 Acupuncture Meridians

Humans and animals have long-recognised acupuncture meridians and these have characteristic coherent frequencies. They probably originate between cells

at an early stage of the embryo development. As the organism grows this coherence persists and connects body organs to sensitive points on the periphery. Even plants have an acupuncture meridian (Smith, 2009b). Stressing an acupuncture meridian or target organ spreads its endogenous frequency into the whole body field. For 50 healthy human subjects, the mean Heart meridian was 7.802 ± 0.002 Hz (i.e. ± 256 ppm). With this precision, it provides a reference frequency within the body. Through fractal connections its frequency is stabilised by the 149 cm-1 – 127 cm-1 transition in the far-infra-red rotational spectrum of water.

The precise nature of the Heart meridian frequency enables the body to detect changes in the natural Schuman band radiation from the ionosphere. The Nerve Degeneration meridian which describes that status of the entire autonomic nervous system should be able to detect variations in 'sferics radiation. This is a environmental predictive attribute.

There is noise to be contended with by the anticipatory system. Where there is stress on a meridian, target organ or the autonomic nervous system, endogenous frequencies appear in the whole body field. Table 1 (Column 1), shows frequencies measured from a patient with a long medical history and symptoms consistent with stresses as shown in Column 2. The percentage bandwidth of the resonances is shown in Column 3 and the calculated signal-to-noise ratio is given in Column 4 where it is seen that the endogenous frequency on the small intestine meridian is one tenth of the noise level and that on the sympathetic autonomic nervous system (ANS) just over half noise level.

Frequencies Hz	Meridian Stresses	Resonance width %	Signal-to-Noise Ratio
2.413×10^{-3}	Sympathetic ANS	17	0.58
3.004×10^{-2}	Small intestine	55	0.10
2.212×10^{-1}	Pericardium	8.3	1.18
5.212×10^{0}	Urinary bladder	3.9	2.51
7.812×10^{0}	Heart	0.6	16.33

Table 1. Frequencies measured from a patient with a long medical history and symptoms consistent with stress where shown.

4.3 Prediction

One "Present" activity is the need for the system to create a frequency pattern model of itself based on the information coming into "Present" activities and thence to predict "Future" status and "Future" needs.

Between the states of health and disease there may be a state of mathematical chaos (Smith, 2009c). Because of the nature of chaos, it is not possible to do double-blind trails on systems in a chaotic state. Chaos has been demonstrated in respect of the cardiac signal of a healthy human as well as in electroencephalograms, epidemics, fluid flow and oscillatory chemical reactions. Any experiment involving a system in a chaotic domain is non-repeatable from the same initial condition. This puts a limit on the possibilities of system modelling and prediction.

4.4 System Modelling

In CASYS'01, the writer (Smith, 2002) showed that frequency imprints in water could be subjected to all the basic arithmetical operations and in CASYS'05 (Smith, 2005) that all the basic reversible logic gates could be devised similarly and so in principle, any reversible Boolean function could be computed in any aqueous system and be clocked by pulses a small as nerve impulses (Smith, 2005).

In CASYS'07, the writer (Smith, 2007) examined interactions between coherent frequencies and chemical structures as a possible way of proceeding from a dynamic to a permanent memory. It was shown that water imprinted with the patterns of frequencies copied from mono-nucleotides could be modified to pass through the frequency patterns of DNA and RNA to the frequency pattern of the amino acid which was coded and this only using water and a specifically determined frequency. This showed that it was possible to model the frequency signatures of a chemical system. When the same procedure was carried out including traces of the chemical mononucleotides, the same frequency patterns were obtained. However, these would not erase in a mu-metal box so, it is possible that a chemical reaction had been catalysed by frequency structured water implying that frequency imprinted water can act like an enzyme.

4.5 Frequency Measurements

In 1982, the writer had to devise a dowsing technique to measure frequencies affecting patients highly sensitive to their electromagnetic environment. Early attempts to measure frequency imprints in water objectively only managed to detect signals at the nanovolt level and of little practical use for instrumentation over a wide frequency range (Smith, 1994).

Since the theory for memory mechanism involves moving charges, there will be a magnetic vector potential (A-field) component in the direction of motion.

Since the currents involve charges precessing at the stored frequency there will be an alternating A-field at this frequency. Since dA/dt = -E, the A-field will generate an electric field proportional to the angular frequency ω.

A toroidal coil generates an A-field along its axis so, it was assumed that a wire placed axially would experience this E-field and acquire an electric potential proportional to the coherence length in the A-field. Accordingly, a 50mm length of copper wire was inserted into the input (BNC) connector of a low-noise amplifier (Brookdeal Electronics Ltd. LA350). A toroidal coil was placed with the wire along its axis. The A-field could be calculated from the dimensions and winding details and the current. The voltage generated at the amplifier input was measured over a range of frequencies and agreed with that calculated (Smith, 2009a).

Having demonstrated that an amplifier could measure voltages induced from A-fields, a glass tube of water was imprinted with the set of frequencies corresponding to the filter settings available in the amplifier. A wire was connected to the amplifier input and the other end was inserted into this water. A very respectable signal at millivolt level was available for measurement and analysis.

Sargsyan, Karmyan and Avagyan (2010) described an experimental technique leading to a simple device for the non-invasive assessment of physiological states of living systems in general based on a change of the amplitude of light reflected from the sensor when a biological object is placed a short distance away.

In physics, any 'action at a distance' effect is very important since one can determine what will transmit and what will block an interaction. The writer (Smith, 2010) set up the above authors' basic arrangement. Their "Biological System" was replaced by a glass tube of frequency imprinted water. This frequency information appeared in light scattered from a glass plate. It disappeared when the local magnetic field was reduced to about 50 nT which implies a coherence domain in a water film on the glass plate of about 166 μm diameter, the same as a coherence domain in humid air while a coherence domain in liquid water is 53 μm diameter. With various types of coils connected to an oscillator in the source position, the reflected light only carried the frequency information when a Caduceus coil was used. A solenoid and toroid gave no effect. The range of frequency involved in biosystems extends from at least microHertz to TeraHertz so a system based on an optical measurement seems a good choice.

5. Future State

The same considerations for the transfer of data from "Past" to "Present" apply to transfer from "Present" into "Future state. This state draws upon the activities, model predictions and the embedded data in the "Present" state.

It is difficult to write about "Future" state without remembering Einstein's quip, "Prediction is very difficult, especially about the future!".

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