Frequencies: Effect, functions and meaning for the living organism

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Abstract. – The importance of coherent frequencies in living systems was first recognised by Professor Herbert Fröhlich, FRS. The writer's work with electrically sensitive patients gave an insight into the importance of frequencies in living systems. This has led to the realization that frequency is the common factor uniting many branches of Complementary and Alternative Medicine. Frequency is endogenous on acupuncture meridians and these are related to the autonomic nervous system . Examples of such frequencies are given. They occur within a coherent system which gives them the property of being fractal. It is this which links the chemical to the technological and to the biological frequency bands. When there is stress on a target organ, its meridian frequency is found in the whole-body field. Applying acupressure to a point gives the same effect. This suggests that a Bioresonance measurement involves the change in electrical resistance at the interface arising from wave interference between the whole-body stress frequency and the meridian frequency. Evidence in support of this is presented.

1. Introduction

Professor Dr. Herbert Fröhlich FRS, Professor Emeritus of Theoretical Physics at Liverpool University was born at Rexingen in the Black Forest of Germany on the 9th December 1905 and died in Liverpool on the 23rd January 1991. Fröhlich belonged to the generation of the founding-fathers of theoretical physics all of whom he knew well. After a short while in the family business he became interested in physics through building his own wireless-set and taught himself enough mathematics to gain admission to Munich University. Here he studied under the great teacher, Arnold Sommerfeld who set him a problem concerning the absorption of light by metals. In just over two years, Fröhlich had produced a thesis containing a solution for which he received his Dr. phil. from Munich without ever doing a bachelors degree.

He had already considered biological problems in relation to theoretical physics in the 1930's. His friend Martin Reiss told him that biological membranes maintain a small electric potential of a tenth of a volt, he asked its thickness, and on hearing that it was a millionth of a centimetre, realised that this corresponded to the enormous electric field of tem million volts per metre which ordinary dielectrics will sustain only when special precautions are taken. An elastic constant corresponding to the velocity of sound gave him likely resonant frequency of the order of a hundred gigahertz. Such frequencies were not available at that time.

In 1967, he was able to present his ideas to a conference on 'Theoretical Physics and Biology', arranged by the Institut de la Vie and held in Versailles, France; here he compared the collective (cooperative) behaviour biological systems with the long-range phase correlation (coherence) found in the Einstein condensation of a Bose gas to a single quantum state, such as found in superfluidity and superconductivity which occur at very low temperatures. At the

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same meeting Prigogine presented his ideas about “dissipative structures”. The subsequent development of Fröhlich’s ideas and the work of his collaborators around the world in confirming his theoretical predictions are summarised in the two “Green Books” he edited, “Coherent Excitations in Biological Systems” (1983) and “Biological Coherence and Response to External Stimuli” (1988) which are published by Springer-Verlag.

From 1974, the writer was active in research on the ‘Interactions of Electromagnetic Fields with Bio-Materials and Living Systems’ in cooperation with Professor Fröhlich. An early conclusion of this work was that there were anomalous magnetic field effects in water and living biological systems and that these were only explicable in terms of coherence phenomena giving long-range order.

In 1982, the writer became involved in the diagnosis and therapy of patients ‘Hypersensitive to their Electromagnetic Environment’ at the request of Dr. Jean Monro, in London. Work with her electrically hypersensitive patients and with those of Dr. W.J. Rea in Dallas, Texas, has given an insight into the extremes of sensitivity and speed of reaction that living systems are capable of when their autonomic nervous system fails to regulate.

The writer’s publications on “Electrical Hypersensitivity and Water Phenomena” and some definitions of electromagnetic quantities are listed at the end of this document.

2. Frequencies in Electromagnetic Hypersensitivity

Electromagnetically sensitive patients almost invariably have a history of hypersensitivities to many chemicals, and/or foods and particulates. The autonomic nervous system appears to be the first body system to become involved. Patients may react within seconds to something in their environment. They can readily distinguish verum from placebo. The frequency and its coherence seem to be the clinically important parameter. There is a threshold for the intensity or amplitude of the field at the patient for the onset of any effects but, once this is exceeded its value usually matters little until the onset of thermal effects; it is the frequency which is important.

The clinical effects of frequencies are unique to each individual. Some frequencies are stimulatory or therapeutic and these usually alternate with depressive or stressful frequencies. This alternation of the stimulatory-depressive effect of frequencies is a general phenomenon with few exceptions. It resembles the effects produced by the serial dilution of an allergen, higher frequencies resemble higher dilutions or potencies.

The clinically effective frequencies range from near circadian (0.4 MilliHertz, 2,500 sec/cycle or, 42 min/cycle) to above microwave frequencies (1 GigaHertz = 10^9 Hz) and sometimes to optical frequencies for patients hypersensitive to sunlight.

Identical reactions can be triggered in a patient by chemical means and neutralised with electrical frequencies or triggered electrically and neutralised chemically. The clinical effects of environmental frequencies or chemicals can be reproduced by water contained in sealed glass ampoules after its exposure to coherent frequencies of an alternating magnetic field without any chemical contact The unexposed water produces no clinical effects.

Chemical toxicity in these patients is manifest through the appearance of frequency signatures.These are frequencies arising from H-bonding between water and the chemical. It has been possible to re-program the frequency imprints of a cell culture and have these were transmitted correctly to cultured daughter cells which demonstrates that lasting effects are possible. The presence of frequencies which fluctuate to a limited extent (a few percent) over time is a sign of a normal healthy biological system. Chemical contamination restricts this activity by imprinting a chemical signature frequency. After a patient has been chemically detoxified, a "memory" of the toxin may remain in the body and this needs to be removed.

3. Entrainment of Environmental Frequencies

There is a surprising degree of interaction between living systems and external frequencies. Although the frequency bandwidth on a meridian is only about ±2% of its mean frequency the latter can be 'entrained' or 'pulled' by external oscillations such as from an electrical oscillator or an environmental source of radiation such as a computer, TV, mobile phone, or the frequency signature of a chemical. This entrainment may be up to ±30% before the acupuncture meridian frequency jumps back to its normal endogenous value. Table 1 shows this entrainment at the heart acupuncture meridian (He9). The endogenous frequencies were 7.768 Hz and 382 MHz. It should be noted that the 7.8 Hz endogenous frequency of the acupuncture point He9 (also the heart chakra) is exactly 6-times the heart-beat frequency 78/min; it is also one of the frequency bands in the Schumann Radiation from the upper atmosphere.

Table 1

Entrainment by Environmental Frequencies (shown in red/shaded)

Frequency MHz	He9 High Band MHz	He9 Low Band Hz
No Exposure	382	7.768
260	382	7.718
270	270	5.245
370	370	7.652
390	390	7.864
400	400	7.933
450	450	9.830
480	480	7.657
500	382	7.660

The subject was exposed to the high frequency only by sitting in front of the output loop of a microwave oscillator for 3 minutes after which the frequencies on acupuncture point He9 were immediately imprinted into water in a pipette and measured. The pipette tip was placed on the point and a magnet brought close to imprint. The microwave power density at the subject was estimated to be of the order of mW/m^2. The frequency measurements took about 5 minutes following the exposure by which time the acupuncture point frequency had relaxed to its unexposed value so another measurement was possible. Table 1 shows that at 260 MHz and at 500 MHz there was no entrainment. From 270 MHz to 480 MHz, the frequencies measured on He9 had become entrained to the exposure frequency and the low band frequencies had also shifted in proportion. The frequencies where entrainment has occurred are shown red. Within entrainment, the high-band to low band frequency ratio is: $50.8 \pm 4.7 \times 10^{6}$ (S.D. ±9%).

Table 2

Spectrum of Mercury Imprinted into Water –
Showing Multiple Frequencies Fractal Effect

Hg spectrum	Optical freq.		Microwave freq.		ELF freq.
nm	Hz		Hz		Hz
	$\times 10^{15}$		$\times 10^{6}$		$\times 1$
185	1.62		935		19.31
254	1.18		680		14.38
365/6	0.820		472		9.843
405	0.740		425		8.925
436	0.688		396		8.358
492/6	0.607		347		7.235
546	0.549		315		6.633
577/9	0.519		298		6.262
615	0.488		280		5.832
623	0.482		276		5.832
		Optical/MW		MW/ELF	
Ratio		1.7340×10^{6}		47.70×10^{6}	
Std. Dev.		± 0.34%		± 0.75%	

This is an example of the "Multiple Frequency Effect" which is a characteristic of a coherent system where the constant parameter becomes the coherence length and this determines the wavelength. It makes frequency proportional to the velocity with which the coherence travels. Any velocity that the system will support has is corresponding frequency, this makes frequency a fractal quantity. Coherence propagates by diffusion like heat up the handle of a saucepan; heat is disorder – coherence is order.

Table 2 shows this fractal effect for the optical spectrum of mercury imprinted into water. Additional bands of frequencies occur in the microwave region and at low frequencies. It is fractality which couples the electromagnetic effects of environmental chemicals, microwave radiation to the endogenous frequencies of living systems.

4. Frequency Measurements on Patients

The procedures adopted for testing patients for electrical sensitivities are described in papers cited in the References. When we started patient testing, we did not know what to expect. It was sufficient for the patient to sit in the same room as a set of electrical oscillators which were tuned slowly over a wide range of frequencies and the clinician noted the frequencies at which symptoms occurred and at which they were neutralised. Subsequently, patients came in who were so sensitive that they could not tolerate an oscillator being switched on anywhere in the building. For these, it was necessary to have the patient hold a vial of water held in the fist and succuss it on a wooden surface. This imprinted the body fields and frequencies into the water which could then be measured in the absence of the patient.

It is just possible to measure such frequencies by instrumentation in the kilohertz region with electrodes or by heats of mixing (V. Elia, M. Niccoli, “Thermodynamics of extremely dilutes aqueous solutions”, Ann NY Acad Sci 1999; 879 :241-8). These methods are only useful for validation. The only practical method for clinical purposes is the dowsing technique (Smith, 2004). Thus, allergists like civil and mining engineers may have to learn dowsing.

We found that about 10% of patients with chemical, nutritional or particulate sensitivities had acquired electromagnetic sensitivities. The frequencies measured for triggering the reactions or neutralising them covered a wide range but showed little recognisable pattern until it was realised that 7.8 Hz often appeared. This frequency is used in some therapeutic or protective devices to stimulate the heart meridian. Measurements quickly revealed that each acupuncture meridian (also the chakras) had a characteristic endogenous frequency (see Tables 3 & 4) and that many of the frequencies measured from these patients were those of the acupuncture meridians. Such measurements show those acupuncture meridians which are under stress and those which need stimulation.

Figure 1 summarises the frequency imprinting by 12 electrically hypersensitive patients who during the course of their therapy had imprinted a total of 57 tubes of water with a total of 726 frequencies. Of these, 167 would have been capable of synchronisation at a Ting acupuncture point, and 655 would have been capable of entrainment. Many patients had more than one frequency capable of entraining St45, hence the >100% values. There were only 49/726 frequencies outside any entrainment range. Ten patients who lived in the EU had imprinted 19/54 tubes with the 50 Hz power supply frequency. Two patients who lived in N. America had imprinted 3/5 tubes with their 60 Hz power supply frequency (nothing at 50 Hz). It appears that adaptation and entrainment to the power supply frequency is quite common among such patients.

Acupuncture Meridians may originate with coherence between embryonic ectoderm and endoderm cells persisting as the organism develops with the ectoderm forming the acupuncture points, the endoderm and mesoderm the target organs (see Figure 2).

The endogenous frequencies on acupuncture points and meridians can be followed right through to the target organ tissue itself. Frequencies were measured in histological microscope slides of the acupuncture target organ tissues where these were available. The paired-values correlation coefficients for classical points vs. target organs were:

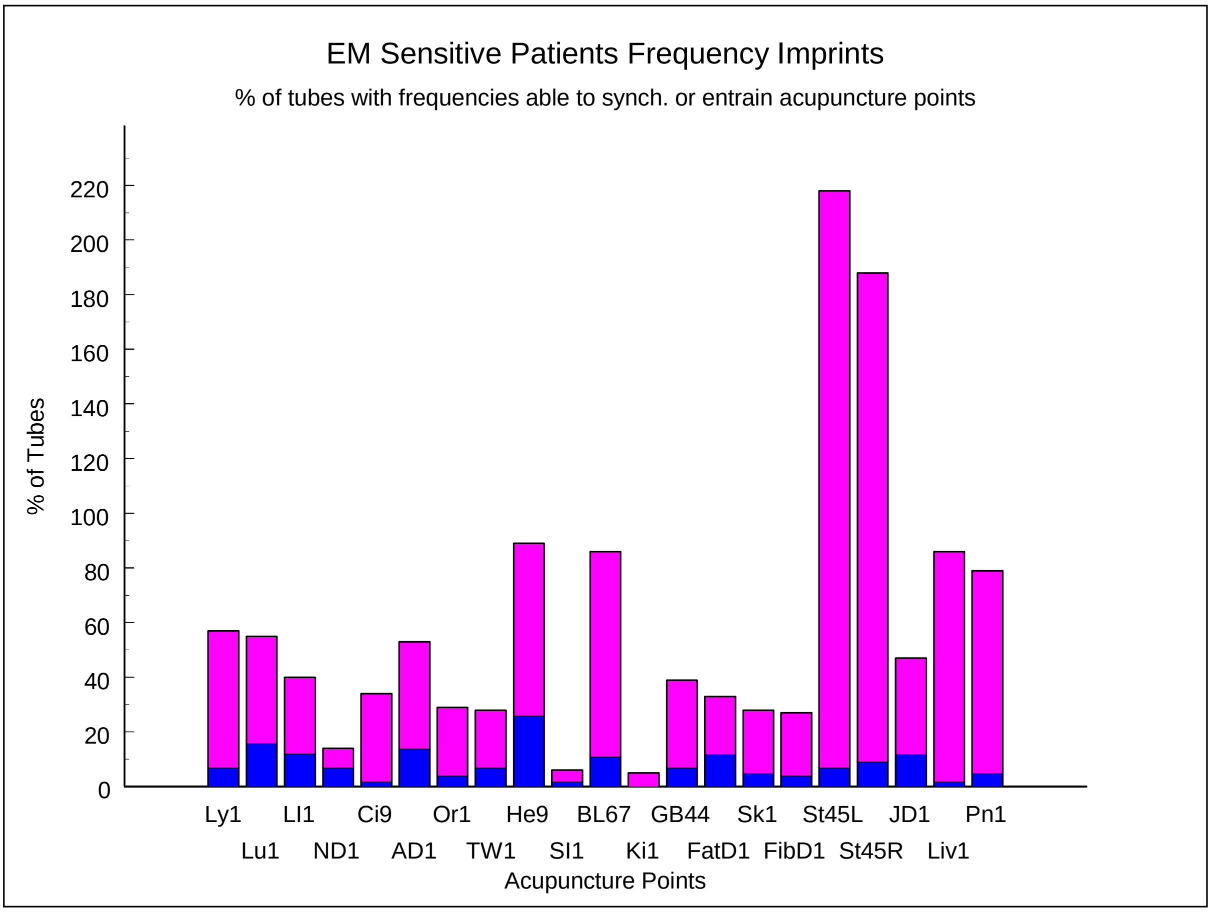
Low frequency band:	0.9999
High frequency band:	0.9771

The acupuncture meridians can be stimulated through the eye by looking at a flashing light. A light-emitting-diode was connected to an oscillator and was viewed towards its lens and at a comfortable brightness which did not give any noticeable after-image. The chakra and acupuncture points were checked for reactions when this was viewed at the frequency known to stimulate the particular chakra or meridian. All the reactions measured were of stress with both eyes open. There was only a reaction of awareness when viewing with either eye alone. With both eyes closed there was no response. All the chakra points could be stimulated. The acupuncture meridians found to be so affected were: ND, AD, Or, TW, He, BL, FibD, Liv, Ren, GV, Pe (see Table 3). There is also a link from acupuncture points around the eye to the pituitary, hypothalamus and hippocampus. Sound frequencies may also stimulate meridians.

The endogenous frequencies on an acupuncture meridian are very precise. For 31 TW1 frequencies from 22 patients, the mean was 6.0178 kHz (S.D. ± 0.20%) and for 53 He9 frequencies from 38 patients, the mean was 7.7877 Hz (S.D. ± 0.92%).

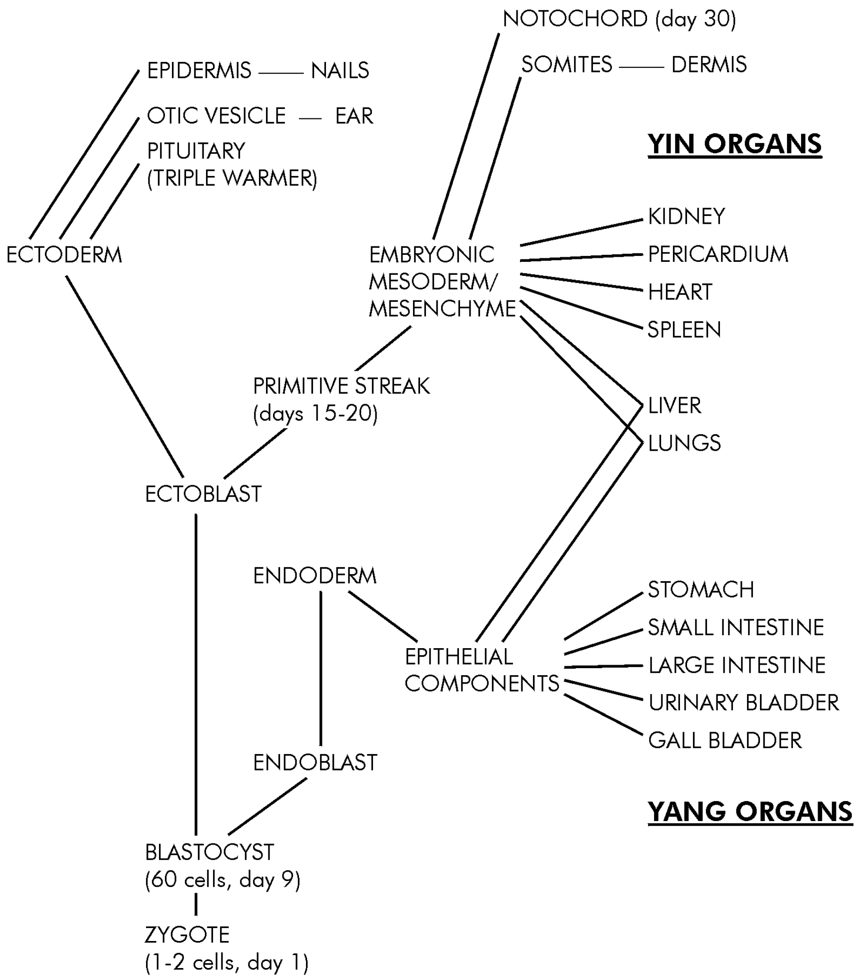
Figure 1

EM Sensitive Patients' Body Frequency Imprints into Water

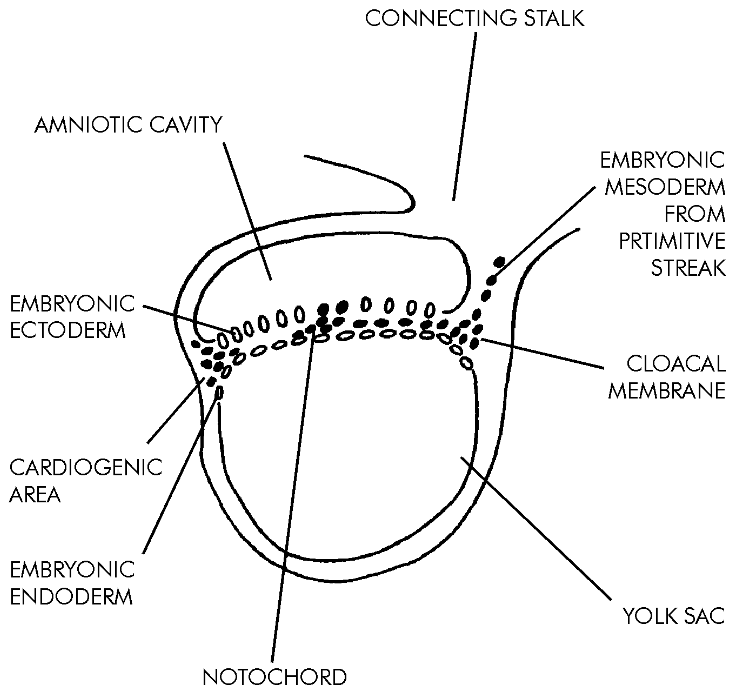


(Entrainment in grey. Synchronization in black)

Figure 2: Possible Origin of the Acupuncture Meridians



(A) POSSIBLE RELATIONSHIPS BETWEEN EMBRYO GERM CELL LAYERS AND THE ACUPUNCTURE MERIDIANS



(B) DIAGRAMMATIC REPRESENTATION OF A PRESOMITE EMBRYO ABOUT 4MM SIZE AT 3-4 WEEKS

Smith CW. Bioluminescence, Coherence and Biocommunication. In: Jezowska-Trzebiatowska B, Kochel B, Slawinski J, Strek W (Eds.). Biological Luminescence. Singapore: World Scientific, 3-18, 1990. (Figure recreated)

Table 3

Acupuncture Points and Nominal Values for their Endogenous Frequencies

"Classical" Acupuncture Meridians	Point Measured	Low Band Frequency	High Band Frequency
		Hz	MHz
Lung	Lu1	0.48	24
Large Intestine	LI1	0.055	2.7
Stomach	St45 / right	0.044	22
Stomach	St45 / left	0.44	2.2
Spleen/Pancreas	Pn1	0.055	2.7
Heart	He9	7.8	380
Small Intestine	SI1	0.025	1.2
Urinary Bladder	BL67	5.5	270
Kidney	Ki1	0.00095	0.047
Pericardium	Pe9	0.25	13
Sanjiao (TW)	TW1	6,000	300,000
Gall Bladder	GB44	0.05	2.46
Liver	Liv1	4.8	240
Du Mai (GV)	GV14	4.3	149
Ren Mai (CV)	Ren24	14	730
„Extra“ Points			
Anmian I & II	Ex 8 & 9	3,000	
Extra "Ting" Points			
Lymphatics	Ly1	0.06	2.95
Nerve Degeneration	ND1	0.00055	0.027
Allergy	AD1	2	98.4
Organ Degeneration	Or1	0.078	3.85
Fatty Degeneration	FatD1	0.74	36
Skin Degeneration	Sk1	0.0035	0.172
Joint Degeneration	JD1	0.3	148
Fibroid Degeneration	FibD1	800	39,400
Circulation, pericardium	Ci9	0.05	2.46

5. Relation between Acupuncture Meridians and the ANS

The relationship between the acupuncture meridians and the autonomic nervous system (ANS) comes from the work of Dr. Reinhardt Voll. In his work, cited in English by Kenyon[1], Voll identifies a complete system of acupuncture points which indicate the functioning of both branches of the autonomic nervous system. These are listed in Table 4. These points, Voll accessed by electroacupuncture. He found a drop in the electroacupuncture reading where there was stress on the corresponding part of the ANS.

To be able to relate the results of Voll to the writer's measurements of frequency, measurements (Table 5) were made on Voll's summation point for the whole ANS, nerve degeneration meridian, ND1 on 7 days between February 15 & March 6, 2005 by the writer on himself. The measurement order was: RH frequencies, EAV % change measurement, RH frequencies; LH Frequencies, EAV % change measurement, LH frequencies. There were three frequencies to be measured in each water imprint – the frequency characteristic of acupuncture meridian ND1 ($\sim 4\times 10^{-4}$ Hz), the frequency characteristic of the sympathetic ANS ($\sim 3\times 10^{-3}$ Hz) and the frequency characteristic of the parasympathetic ANS ($\sim 3\times 10^{-1}$ Hz). These frequencies appear at those acupuncture points linked to the ANS in addition to the endogenous meridian frequency.

The frequency changes arose from the electrical stress imposed by the electroacupuncture measurement. The percentage frequency changes approximate to the percentage changes in the electroacupuncture readings.

In practice, it is quite difficult to read the electroacupuncture meter needle movement as it takes place while the probe is being applied to the point. Mostly, there was a drop in the acupuncture reading but, where the acupuncture reading showed an increase, the frequency also increased. Measuring the frequencies characteristic of the sympathetic and the parasympathetic systems does appear to indicate which system is under stress on either side of the body.

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[1] J.N. Kenyon, "Modern Techniques of Acupuncture" Vol. 3, Chapter 11 – Disordered Autonomic Steering.
The German source is: Friedrich Bechtloff, "EAV – Elektroakupunktur nach Voll – Eine Darstellung in Bereichen", Uelzen 1991)