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THE HOLOGRAPHIC PARADIGM AND ACUPUNCTURE

By

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INTRODUCTION

The differences between Western and Asian science have been discussed at length.(1,2) Termed causal analysis and inductive synthesis, respectively, they are complementary systems for the study of nature and the human condition.

It is often difficult for individuals grounded in the Western scientific framework to make the paradigmatic shift necessary for the beginning study of acupuncture. Offering vague notions of causality or effect, and cloaked in seemingly esoteric language, Chinese medicine holds little for the analytic mind to grasp firmly.

The holographic paradigm as proposed by physicist David Bohm (3,4) and neuroscientist Karl Pribram (5,6) offers a model of consciousness and nature that closely parallels that of five-Element acupuncture. With the equations of quantum mechanics as its theoretical basis, the holographic model is important for several reasons. First, it provides a bridge between eastern and western scientific methodologies. Further, it provides a concise framework for understanding the rationale behind Chinese medicine. And, most importantly, it makes possible a western paradigmatic shift to a scientific and social outlook more in accord with the ecological views of Daoism.

The intent of this paper is to present the holographic paradigm. Emphasis will be placed on its similarity to and implications for five-Element acupuncture.

THE MODEL

Holography is a lensless form of photography which uses laser beams as a light source. A hologram is made by capturing the interference pattern of a wavefield of light on a photographic plate. When the plate (the hologram) is illuminated by a coherent light source (one in which all frequencies are identical, i.e. a laser), the original image that created the interference pattern is regenerated in three dimensions. Since no focusing lens is used, the pattern on the plate appears as a meaningless array of swirls.

Of great interest is the fact that illumination of any portion of the plate will produce the whole of the original image, though in less detail than if the entire plate is used. Hence, every part of the hologram is needed to reproduce the image in full detail. A parallel of this principle in biological systems is that every cell in the body contains in its DNA a template of the entire organism. However, cells from different organs and tissues perform different functions and all must be present for the integrity of the organism to be maintained.

David Bohm has proposed that the universe itself is constructed on the same principles as a hologram. He tells us that the equations of quantum mechanics predict that there is more energy in one cubic centimeter of space than is contained in matter in the known universe. To Bohm "matter is like a small ripple on this tremendous ocean of energy, having some relative stability, and being manifest."

In Figure 1 the image of the apple is enfolded into the "implicate" order of the swirls on the holographic plate. Just as the hologram contains an unmanifest, though implicitly ordered image of the apple, material reality evolves from an underlying implicate order. This order is enfolded in nature in the form of electromagnetic waves, sound waves, electron beams, and all other wave forms of movement. Colliding with each other, these waves produce holographs constructed by our brain which interprets them as material reality. The waves of the implicate order are "carried" on the vast ocean of underlying energy which Bohm has termed the "holomovement."

Figure one: Construction of a Hologram

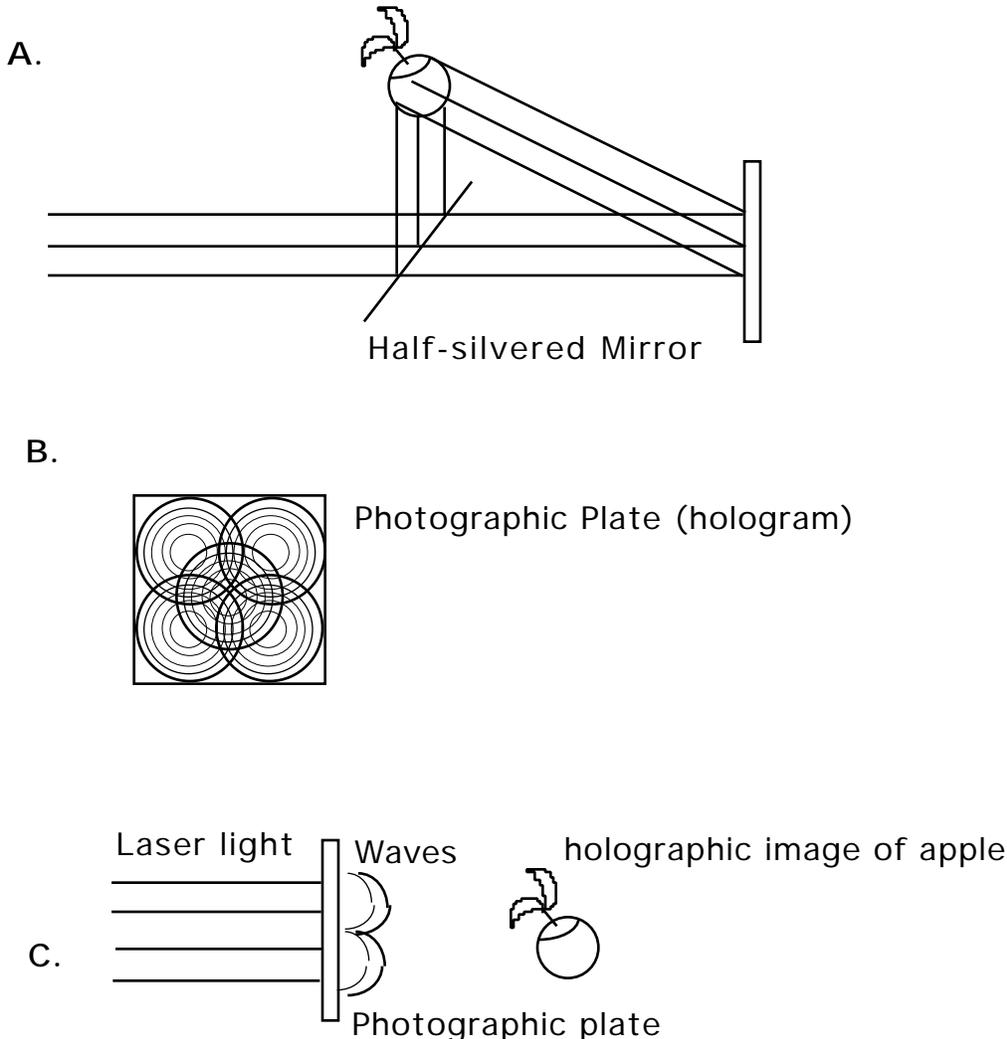


Figure 1: Explanation

A. Light from a laser is passed through a half-silvered mirror. Part of the beam illuminates the apple while the other part travels directly to the photographic plate. When the light reflected off the apple interacts with the reference beam, an interference pattern is created and recorded on the photographic plate.

B. The interference pattern appears as a meaningless array of swirls on the plate (the hologram), yet contains an implicitly ordered representation of the apple.

C. If a laser is used to illuminate the hologram, a wavefront is created that is similar to the one originally coming off the apple. To an observer,

the apple appears in full detail and in three dimensions. If only a small portion of the hologram is illuminated, the whole image of the apple still appears, but in less detail and from fewer angles.-Figure adapted from Bohm (4).

To illustrate how order is enfolded in the material world, Bohm uses this example: Imagine a device consisting of two glass cylinders with a viscous fluid such as glycerine between them. If you put a drop of ink into the fluid and turned it slowly, it would be drawn into a thin thread that would be invisible. Now the drop is enfolded into the glycerine. If we turn the cylinder slowly back, the drop, once again, becomes visible and is unfolded. However, when enfolded, the drop is still present, though unmanifest, in the implicate order. If this operation was done with many drops, one turn $1n$ times, the next $2n$, and so on, we would wind up with many threads all intertwined and interpenetrating, each one intimately tied into the whole. As the machine is turned backwards, each drop manifests, one at a time, and then becomes enfolded again as the next one presents itself. If this is done quickly enough, we may perceive one static drop, isolated, and unchanging.

The reality, though, is that with each moment we are presented with a new drop, continually unfolding out of and enfolding back into the holomovement. The enfolded reality cannot present itself at any given moment, yet at any moment all drops are present in this implicate realm. Taken as a model of the universe, elements that are related to each other are those that unfold together even though originally they were interspersed. The entire implicate order is present at any given moment. In Bohm's "holoverse," space and time are concepts used for our convenience in organizing our perceptions of the material world (explicate order).

Karl Pribram (5,6) has proposed that the brain stores information holographically. Through our senses we perceive the environment in terms of frequencies of light, sound, vibrations, and other wave patterns. These frequencies, Pribram proposes, are stored as resonant circuits in the nervous system. The circuits create an energetic field, which changes as each individual adds to his or her experience. This field, present throughout the nervous system, may be likened to the interference pattern on the holographic plate. Conscious processes, such as memory, perception, imagery, and emotion, involve the reading out of this blur through the transformation of the hologram back into patterns of neuronal firing. This energetic field, then, is the implicate realm of the brain and may be considered the unconscious.

In a nutshell, the holographic supertheory says that our brains mathematically construct "hard" reality by interpreting frequencies from a dimension transcending time and space. The brain is a hologram perceiving a holographic universe.(7)-Marilyn Ferguson

In summary, the holographic theory states that material reality is continually unfolding out of, and enfolding back into, a vast ocean of quantum energy, and ocean of undivided totality. Matter, a small ripple on this ocean, is sensed by us in the form of frequencies. These frequencies are transmitted via the nervous system and stored in our minds holographically. Our minds mirror the basic order of the universe.(8)

ACUPUNCTURE

Ken Dychtwald, in his analysis of the holographic theory, after concluding that the theory was not new (Leibniz, discoverer of integral and differential calculus, proposed a similar model in 1714), states, "What is new is our ability to experience the nature and possibilities of this paradigm in such a way as to have direct meaning and application to the experience we have of ourselves and the universe."(9) A plethora of books and articles have appeared examining the applicability of the paradigm to our own society. Some of them speculate on the formulation of a health care system based on the model. Larry Dossey writes, "How can medicine redirect its course? Instead of 'keeping the parts running' ('explicate therapy'), how would it implement an 'implicate therapy'? I do not believe the task is a hopeless one. Indeed, there are indications of an emerging paradigm in medicine that will foster an experiential awareness of the implicate order."(10) It is my belief that the Taoists formulated some 2500 years ago a medical system, social ethic, and a model of the universe wholly consistent with the holographic paradigm. The following is a discussion of five-Element theory (5ET) within the context of the holographic model. I hope to demonstrate that five-Element acupuncture is the "implicate therapy" called for by Dossey and that 5ET may serve as a basis for the future expansion of the holographic model.

While several of the relations found in 5ET (such as the five directions) are evidenced in records of the Shang Dynasty (1766-1122 B.C.), 5ET was not fully elaborated until about 350 B.C. by Zou Yen.(11) Five-Element theory (Fig. 2) describes the character and relationships of the identifiable functions comprising human nature. Taoists viewed humans as microcosms of the universe and 5ET was constructed through the discovery and

observation of natural laws. It is a system that allows us to qualitatively assess the directionality of an individual's energetic configuration through the interpretation of signs emanating from this physiology and personality.

Figure 2

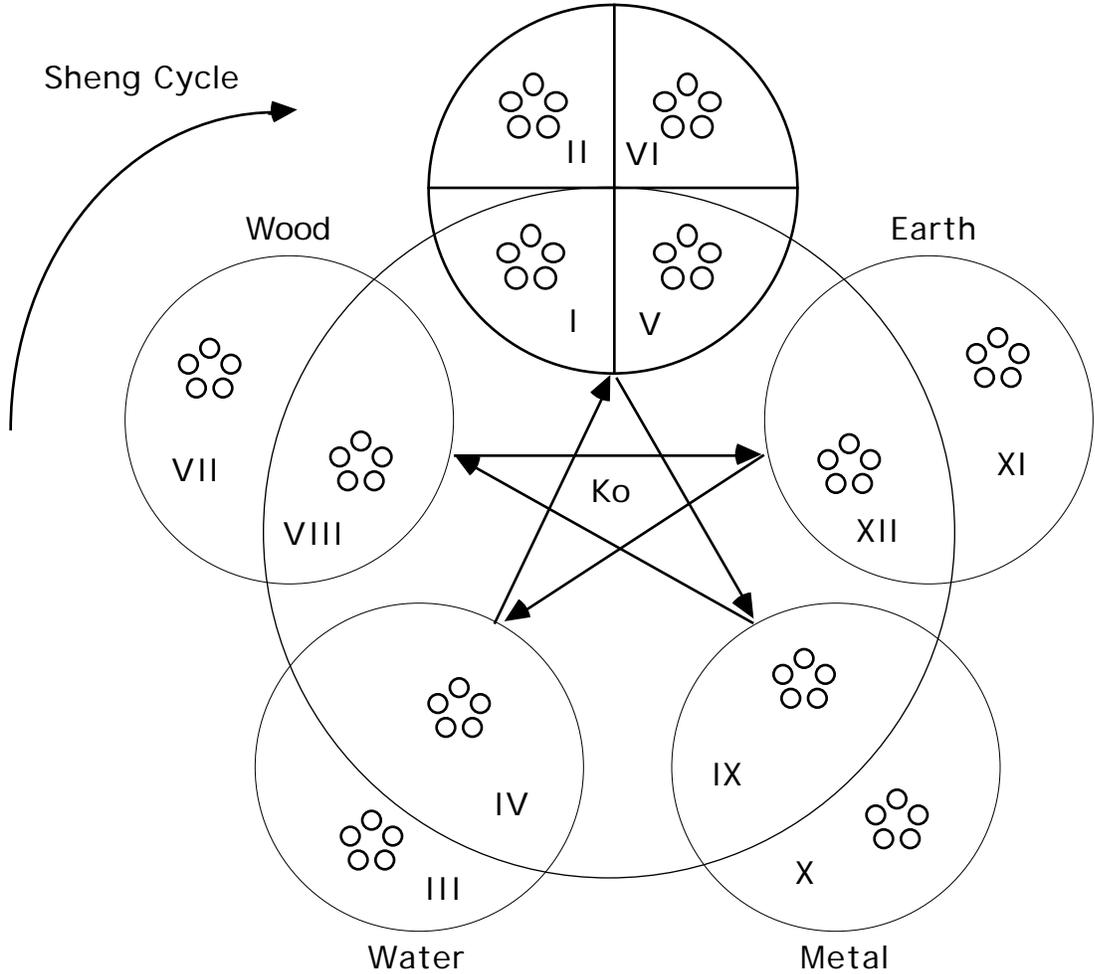


Figure 2: Functions

- I: Heart: Emperor
- II: Small Intestine-Sorter of pure from impure, Conducts essence to and from Heart.
- III: Bladder-Stores reserves.
- IV: Kidney -Controller of fluids, Stores will and inherited constitution in form of yuanqi and jing.
- V: Heart Protector- Protects the Heart, governs intimacy.
- VI: Three Heater-Maintains homeostasis, thermostat, social relations, networks and communications.
- VII: Gall Bladder- Decision Maker.
- VIII: Liver-Planning, protection through detoxification.

IX: Lung-Receptivity

X: Large Intestine-Lets go of that which no longer serves.

XI: Stomach- provides nourishment through the Integration of acquired experience.

XII: Spleen-Transportation and distribution of nourishment.

Figure 2: Sheng and Ko Cycles

A. The Five-elements continually transform into each other via the sheng cycle and regulate each other via the ko cycle.

B. Each energetic Phase contains paired functions, the relative balance of which maintains harmony in one's inner kingdom of being. Each function in turn contains its own relative balance of the Five-elements.

The Chinese described five directionalities of energy existing in nature (Wood, Fire, Earth, Metal, and Water). These "Elements" are not constituents of matter in the western sense but are "evolutive phases"² continually transforming into each other. Each phase allows us to describe the quality of an underlying, or implicit, energy in terms of its outward manifestations. Some associations of each energy are listed in Table 1.

Table one: Elemental Associations in Acupuncture Diagnosis

	<u>Emotion</u>	<u>Sound</u>	<u>Odor</u>	<u>Season</u>	<u>Color</u>	<u>Virtue</u>
<u>Wood</u>	Anger	Shout	Rancid	Spring	Green	Benevolence
<u>Fire</u>	Joy	Laugh	Scorched	Summer	Red	Propriety
<u>Earth</u>	Sympathy	Sing	Fragrant	Late Summer	Yellow	Reciprocity
<u>Metal</u>	Grief	Weep	Rotten	Fall	White	Righteousness
<u>Water</u>	Fear	Groan	Putrid	Winter	Blue	Wisdom

The five Elements were further elaborated into twelve functions, the relative balance of which was thought to maintain health (Fig. 2B). In 5ET it is impossible to discuss one function without eventually discussing all of them! For instance, how can you have the function of sorting (Small Intestine:II) without implied decision-making (Gallbladder:VII) or planning (Liver: VIII)? In accordance with the holographic theory, all functions must be present for life to continue and, each function retains its own

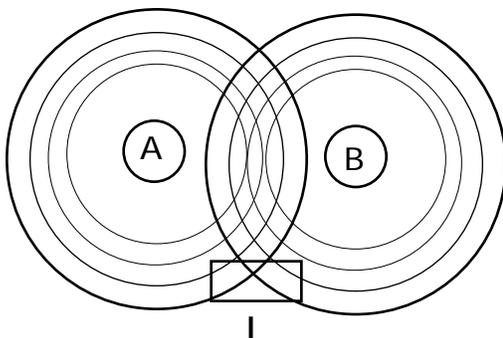
identity while containing information about the whole.

Five-Element theory may be considered a map of the holomovement. It allows us to assess the implicate order as it manifests explicitly in each individual. This is done by gathering data through the four examinations (to see, hear, ask and feel) and integrating it to paint the individual's energetic portrait.

How is it that 5ET allows us to know the implicate realm by studying the explicate? I will illustrate this with an example. Imagine the vast ocean of quantum energy described by Bohm. Into this ocean we will throw two rocks. Consider rock A to be an individual's inherited constitution and rock B to be the sum total of his life's experience (environmental influences). The rocks will produce concentric circles emanating outwards that will eventually overlap.

The crests and troughs of overlapping waves will produce an interference pattern similar to the swirls on the holographic plate. The holograph that is generated will be that of the underlying energetic event (the rocks tossed into the lake, or life process of the individual), which is now invisible to us except for the waves. If a photograph is taken from directly above at time T-1 it may look like this:

FIGURE 3



This wave pattern represents the momentary energetic pattern of the person we are examining. Notice that the examination of any overlapping region (i.e. region I) will give us information about the entire underlying event since only that event could have resulted in this specific interaction. (The event we wish to know about is this individual's Causative Factor (CF),(12) which results from a combination of inherited and environmental influences.) The way we learn about this underlying energetic pattern is through the interpretation of manifest signs. The hologram of energy is

implicit (implicate) in the manifest (explicate) signs (symptomatology) of a given person.

The amount of information we are able to glean from a given sign is limited only by our powers of observation and the adequacy of the system of interpretation we are using. Every region of overlap in Figure 3 gives us information about the whole. The more regions we study, the better we know the underlying event.

Each function has a tendency to express itself more in certain parts of our behavior, personality, and physiology than in others. (Otherwise, a system based on the differentiation of signs, such as 5ET, would not be possible.) However, every function (the whole) must be present in some proportion in every atom (the individual parts) constituting a human being. For instance, the rear of the tongue represents Water, but its configuration must result from the interaction of all five energies.

The waves continually emanating (Fig. 3) may be likened to the explicate realm of the holomovement. Although photographs taken from above at different times will yield different pictures (symptoms) they will all provide us with information about the same underlying event (CF). In this sense, time does not exist in the holomovement. Just as in Bohm's model of the ink drop, signs that appear simultaneously are related and useful in diagnosis. This is true regardless of their separation in space. For instance, signs occurring concurrently on the tongue, abdomen, and foot may confirm each other because the twelve functions permeate them all.

Karl Pribram states, "In the absence of space-time coordinates, the usual causality upon which most scientific explanation depends must also be suspended. Complementaries, synchronicities, symmetries, and dualities must be called upon as explanatory principles."(13) This is precisely reflected in acupuncture, which deals with standards of reference based on the complementarity of yin and yang, the synchronicity of the signs its interprets, the duality of the eight guiding criteria, and the symmetry of the five Elements and twelve functions.

If we were to evaluate an entire individual, what would we learn? Ken Dychtwald considers this question:

" If we were to look closely at an individual human being, we would immediately notice that it is a unique hologram unto itself; self-contained, self-generating, and self-knowledgeable. Yet if we were to remove this being from its planetary context we would quickly realize that the human form

is not unlike a mandala or symbolic poem, for within its form and flow lives comprehensive information about various physical, social, psychological, and evolutionary contexts within which it was created. Given one human being, the necessary tools for deciphering its information, and an intelligence capable of reasoning with this information, and could accurately determine the complex nature and identity of the planet through the living symbology of one of its creatures...(or perhaps from) only one cell of this human...perhaps only one atom...perhaps one electron...perhaps one unit of time."(9)

In her article in *The Holographic Paradigm*,⁽⁷⁾ Marilyn Ferguson states, "Implicit in the (holographic) theory is the assumption that harmonious, coherent states of consciousness are more nearly attuned to the primary level of reality, a dimension of order and harmony. Such attunement would be hampered by anger, anxiety, and fear, and eased by love and empathy...What fragments us? What makes us whole?"

How does disease occur in the body/mind/spirit and how does Five-element acupuncture work to restore/maintain health? Pribram has suggested that the brain constructs "concrete reality" by interpreting frequencies (of light, sound, vibration, etc.) existing in nature. These frequencies result in patterns of neuronal discharge specific to each stimulus. As we take in information, these patterns continually modify a three-dimensional electromagnetic field stored throughout the nervous system. Modifications of this field occur through continual changes in the conformations of cell surface proteins and other neurochemical configurations throughout the brain. These neurochemical components may be likened to the holographic plate (Fig. 1) and the electromagnetic field, to the hologram stored on it.

Conscious process occurs when frequencies are either "read out" of nature (perception) or of our own stored field (memory). Consciousness, suggests Pribram, is a lens that allows us to focus and make sense of the frequency realm (implicate order) in nature and in our own stored experience. Hence, consciousness results through the interpretation, via mathematical transform functions in these nervous system, of either perceived or stored frequencies.

The degree of health present in a given individual will depend on (1) the degree to which nature's order is accurately reflected in his hologram, and (2) how accurately he is able to generate images (in his body and mind) from the implicate realm. Ultimately these conditions depend on the integrity of the transform functions themselves. I would like to propose that the transform functions are, in fact, analogous to the twelve functions of Chinese medicine. The way an individual's body and mind develops

results from an interaction of his inherited constitution with his environment. (Fig. 2) The way this interaction occurs will be skewed by his CF.

1. The five Elements in nature exist as groups of frequencies. These frequencies are more coherent and resonate together as they form a particular function or Element. Frequencies become less similar as they transform into the next Element on the Sheng cycle.

2. The twelve functions of Chinese medicine, which permeate mind/body/spirit, are themselves the transform functions discussed by Pribram.

3. The five Elements in nature will be reflected in a given individual as presentations (symptoms) of body/mind/spirit, in a way governed by his CF and energetic configuration (integrity of transform functions).

4. The internal and external causes of disease (Table 2) manifest as a result of the poor imaging in the body/mind/spirit of frequencies emanating from the implicate realm in ourselves or in nature, respectively. (Ultimately there is no distinction between ourselves and nature.)

Table 2: The Internal & External Causes of Disease

<u>Internal</u>	<u>External</u>
Joy	Heat
Fear	Cold
Anxiety	Fire
Worry	Humidity
Anger	Wind
Grief	Dryness
Heredity	Dampness

5. Five-Element diagnostics allows us to read the underlying (implicate) energy through physical (including behavioral)(explicate) presentations of a human being.

6. Acupuncture works by tonifying the CF and the other functions and by allowing resonances (frequencies) stored in the body/mind/spirit that do not accurately reflect the five Elements in nature to dissipate (sedation). This may be accomplished through needle insertion by braking and forming resonant loops in the nervous system.(14)

7. As resonances leave the body through the matrix (transform functions) through which they entered, the law of cure may be produced. (The law of cure states that symptoms disappear from within to without, top to bottom, and in the reverse order in which they occurred.)

Johathan Klate (15) considers acupuncture points to be "developmentally preprogrammed, psychophysical, interactive vortices" through which specific suggestions may be made to the body/mind/spirit. The congruency of all the suggestions made during treatment will determine its effectiveness (if the client is ready to receive that treatment), along with our ability to resonate with our client and the spirit of the point we are needling. If people are indeed holograms, then our coherence of intention may be the laser needed to illuminate their image in perfect form.

Endnotes

- 1) Capra, F., *THE TURNING POINT*. New York: Bantam Books, 1983.
- 2) Porkert, M., *THE ESSENTIALS OF CHINESE DIAGNOSTICS*. Zurich: Acta Medicinæ Sinensis, Chinese Medicine Publications, 1983.
- 3) Bohm D., Quantum theory as an indication of the new order in physics. Part A: The development of new orders as shown through the history of physics. *Foundations of Physics*, Vol. 1, pp.359-81, 1971.
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- 5) Pribram, K., *LANGUAGES OF THE BRAIN*. Englewood Cliffs, N.J.: Prentice Hall, 1971.
- 6) Pribram, K., Problems concerning the structure of consciousness, in G. Globus (Ed.), *CONSCIOUSNESS AND THE BRAIN*. New York: Plenum Press, 1976.
- 7) Ferguson, M., Karl Pribram's changing reality, in K. Wilber (Ed.), *THE HOLOGRAPHIC PARADIGM AND OTHER PARADOXES*. Boulder and London: Shambala, 1982.
- 8) Ken Wilber has criticized the holographic paradigm on two counts (Wilbur, K. Reflections on the new-age paradigm, in K. Wilber (Ed.) *THE HOLOGRAPHIC PARADIGM AND OTHER PARADOXES*. Boulder and London: Shambala, 1982.). First, he believes that the comparison of the model to the mystical philosophies of the Orient by certain authors (Bohm and Capra, for instance) are based more on superficialities of language than on actual content. However, I hope to show below that the idea of humans as holograph is central to the five-Element system of acupuncture. This is immediately apparent when studying the five-Element chart (Fig. 2). Second, Wilber argues that the model offers no concepts of hierarchy, which are

present in all perennial philosophies. To this I would respond that the Taoists did not recognize hierarchy. For instance, sorting (one of the twelve functions discussed below-Small Intestine:II) is seen at the organelle, cellular, tissue, organ, behavioral and spirit levels. Hence, the functions span any physical or metaphysical hierarchy.

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10) Dossey, L., *SPACE, TIME, AND MEDICINE*. Boulder: Shambala, 1982

11) Kaptchuk, T., *THE WEB THAT HAS NO WEAVER*. New York: Congdon and Weed, 1983.

12) Causative Factor (CF) is a misnomer since the notion of causality in Chinese medicine is vastly different from the linear concept of cause and effect found in the West. In five-Element acupuncture the CF is thought of as the weak link in an individual's energetic chain. It is the function where treatment will most efficiently balance a person's energetic configuration. In my writing I discuss the concept of CF as "constitutional type" which I believe more accurately conveys the meaning of the notion of CF.

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