

# A STUDY OF STRUCTURAL INTEGRATION FROM NEUROMUSCULAR, ENERGY FIELD, AND EMOTIONAL APPROACHES

Valerie V. Hunt, Department of Kinesiology, University of  
California, Los Angeles

Wayne W. Massey, Department of Kinesiology, University of  
California, Los Angeles

Robert Weinberg, Department of Psychology, University of  
California, Los Angeles

Rosalyn Bruyere, Healing Light Center Glendale, California

Pierre M. Hahn, Department of Psychiatry and Behavioral  
Sciences State University of New York , Stony Brook , NY

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## **ABSTRACT**

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Clinical evidence, pilot projects, and a prior study provided the techniques and design for this holistic study of Rolfing\* (Structural Integration). Reported changes following Rolfing include: greater physical skill, feelings of well-being, emotional calmness, improved sensory awareness, and social interaction, memory recall and psychic experiences resembling other levels of consciousness. Hunt (1977) demonstrated major improvement in muscular efficiency after Rolfing. Weinberg and Hunt (1976) discovered neuromuscular patterns associated with anxiety states. Pilot projects in the Movement Behavior EMG Laboratory produced techniques for recording minute electronic radiations from the body which showed relationships with an "aura reader's" reports of the auric field.

Forty-eight subjects were composed of twenty-four experimental and twenty-four controls with twelve pairs of men and twelve of women matched for posture, body structure, amount of activity, height, weight and age. All subjects met the criteria: between ages 20-35; without birth defects, major injuries, recent surgery, chronic medical conditions, or history of emotional disturbance. Four subjects, experimental Group II, two each men and women, were selected from the twenty-four experimentals for study during the Rolfing sessions. All subjects were reimbursed for participation.

Experimental subjects received ten sessions, twice weekly for five weeks in alternating sessions by two Rolfers\* selected by Ida P. Rolf. Both experimental and control subjects were evaluated before and after the five-week period by the following procedures: State-Trait Anxiety Inventory (STAI); EEG recordings of right and left hemispheres while resting, sorting blocks and mathematical calculations; EMG recordings of six daily living tasks; energy field photography (Kirlian) and DC field recordings. The four experimental Group II subjects were further evaluated during Rolfing by: DC field recordings, and electronic recording of the chakra locations simultaneously with an aura reader's continuous report of the auric field.

Electronic frequency data, EMG, EEG, and auric field were intercepted by a four-channel telemetry system produced by Biosentry, IRIG channels 11, 12, 13, 14, 15, 16 using bipolar surface electrodes and recorded on a Nagra IV tape recorder. DC data were obtained from a Packard Bell vacuum tube voltmeter using bipolar silver probes.

## Findings

### 1. Group Vital Statistics

Fisher t comparisons showed experimental and control groups did not differ significantly in age, height or weight.

### 2. State-Trait Anxiety Study

Groups did not significantly differ by Fisher t test on anxiety trait indicating no

predisposition to differ or anxiety state based upon the anxiety trait measure.

Between group differences in anxiety state were analyzed by multi-variate analysis of variance with four dependent variables, (1) average state anxiety for each group over the entire experiment (2) group differences between pre and post Instrument settings, or pre and post electronic recording before and after Roling (3) group differences in anxiety state from before to after Roling (4) interaction between groups and experimental conditions (i.e., structural Integration, control).

Overall multivariate F was significant  $p = < .05$  indicating overall group differences on the combined variables. Univariate tests of before to after displayed the experimental group had significantly less state anxiety than the controls after Roling,  $p = < .01$ . No other variables reached significance

Although the groups did not differ on state anxiety when averaged throughout the experiment or during pre and post Instrumentation, they did significantly differ from before to after Roling. These results provide empirical support for the belief that Roling leads to a decrease in anxiety state.

### **3. Brain Hemisphere Study**

Because of interface interference between the carrier frequency of one channel and the erase frequency of the tape recorder clear data were obtained on only nineteen experimental subjects before and after Roling. Therefore no group comparison could be made.

Fisher t comparisons showed experimental subjects during rest recorded a slightly greater right hemisphere activity after Roling than before,  $p = < .05$ . Although not reaching acceptable significance they showed an increase in the right hemisphere activity in the spatial task of block sorting and house building after Roling,  $p = < .10$ . There was no significant difference in hemisphere activity during mathematical calculations. Therefore there is indication that Roling has a positive effect toward increasing the dominance of right hemisphere during tasks purportedly best carried out by a high level of right brain activity.

#### **4. Energy Field Photography (Kirlian)**

Color Polaroid three-second exposures of thumb and first three fingers were taken before and after Rolfig. These code-identified pictures were evaluated by two independent judges using a three-point scale on the criteria: (1) width of light blue and white coronas, center finger pad, and overall corona, (2) amount of white and light blue bubbles, flairs, regularity and dark blue streaking, blotching and bronze or red tints.

The only significant difference between groups on the size (width) criteria was the eontrols had greater overall corona after Rolfig,  $p = < .01$ . There were greater group differences in dynamic shape and color of the coronas. The experimentals had a significantly greater amount of white bubbles  $p = < .02$  and the eontrols a greater amount of light blue bubbles after Rolfig,  $p = < .01$ . An insignificant trend showed the experimentals with more irregularity of white corona and pink and bronze shades after Rolfig, both  $p = < .10$ . Controls displayed more blue flairs radiating from outer border of corona and dark blue streaking,  $p = < .10$ . The increase in white irregularity demonstrated by the experimental group is interpreted as a more dynamic field change probably due to an increase in high frequency emanations in the auric field. The greater activity in the blue parameters and Overall size of the controls are postulated to result from large amounts of low frequency energy emanating from these subjects.

#### **5. PC Study**

The laboratory electronic set up required for the many types of data collected for this project created extreme variability in DC recordings during the pre-Rolf testing. Relatively stable DC recordings were obtained only from the experimental and control groups post-Rolfing and from Group II experimentals before and after the tenth Session. There were five placements of bipolar probes on different body locations.

The experimental group recorded a significantly greater differential between the right palm and left back of hand, the left palm and right back of hand, both at the .01 level, and the differential sum of all placements,  $p = < .001$ . The

controls showed a higher differential between forehead and back of head,  $p = < .01$ . Group II experimentals likewise had a significant increase in the differential of combined sensors after the tenth session,  $p = < .05$ .

Burr (1972) found that feelings of well-being were associated with higher voltage differences between two body locations implying a greater flow differential. The significantly higher voltage differences obtained from the experimental group and the Group II experimentals after the tenth session suggest that Rolfing may positively effect the DC measurement of energy flow.

## **6. EMG Frequency Study**

Telemetry EMG recordings were taken from sixteen separate muscles while subjects performed six activities: lying, throwing, lifting, jogging, stepping up on a stool, and karate chop.

Data were analyzed by a step-wise discriminate analysis of five frequency epochs: 8-40, 48-80, 88-128, 136-176, and 184-231 Hertz using two parameters

SUMSP, the power of the frequency band, and FBAR, the center of the frequency mass or predominant frequency of the muscles sampled. Comparisons were made of experimental and control, and male and female groups before and after Rolfing. Statistical findings were evaluated with reference to efficiency in specific tasks and the effects on posture, flexibility, and entropy.

Of the sixteen muscles sampled fifteen showed significant changes better than the .05 level, all above the sixty-six percent prediction of the criterion Rolfing.

When experimental and control groups were compared on before and after recordings forty-three frequency parameters discriminated between groups. Of these forty-one showed distinct superior changes in the Rolfed group.

On pre-Rolfing comparisons the experimentals presented the most in-efficient pattern in all tasks. They had consistently greater activity in antagonist muscles with rapid high frequency depolarization and a concentration of low frequencies curbing free joint excursions and compressing joint tissue. This is a hypertensive, overcontrolled, restrained, inefficient and destructive pattern. After Rolfing the experimental subjects in most in-stances decreased in power of contraction, only occasionally maintaining the same amount while controls increased, but consistently they lowered in the amount of high frequency power and concentration.

The more efficient pattern of the controls on pre-testing had deteriorated on post-testing. They displayed more activity and higher frequency action in both antagonist and agonist muscles. The controls expended more effort in a less efficient pattern in post compared to pre-test and used significantly more energy in these ineffective patterns than the experimentals after Rolfing.

Male and female experimentals differed in the type of change following Rolfing. Males decreased in prevalence of mid and high frequency depolarization in fifteen of seventeen changes. Females decreased in the preponderance of low frequencies and in the power of contraction. It appears that the

males decreased tension by dropping the amount of alpha or upper motor neuron Stimulation and the females reduced tightness by decreasing the lower motor neuron or gamma loop feedback to muscles. The selective effect discovered in body type subgroups of males following Rolfing (Hunt, 1977) also operated with the male and female subgroups in this study.

The group frequency changes found in this study validate the earlier finding by (Hunt, 1977) indicating that Rolfing alters neural control in the direction of lower motor neuron control or gamma spinalization, found by Tokizane and Shimazu (1964) to indicate skill in repetitive tasks. In some way Rolfing improves neural instruction or muscle control with a more appropriate amount and frequency of muscle depolarization for the activities studied. Rolfing makes muscular energy more coherent and therefore muscular action more skillful.

In this study Rolfing improved the action of deep muscles more than superficial ones with a greater positive effect on the proximal muscles than the distal ones. In this culture hyperactivity of deep muscles close to the center of the body is legion. These are the areas where memory of past traumatic experiences seem to be held, where splinting against pain takes place and where bodies become misaligned from improper relationship to gravity. Standing and walking on hard surfaces, insufficient large muscle activity and static work in an industrial society are causal. Probably this is also a neuromuscular pattern of anxiety and exists in cultures which repress feelings.

From the extensive discriminate frequency analysis of these data strong conclusions are warranted. Rolfing made consistent major improvement in efficiency of motor performance by improved organization and balance of the neuromuscular System. Greater force could be created to overcome resistance with less effort. It provided resiliency and coherency in those muscles whose imbalance is prevalent in this population. The major entropic changes probably first manifest in the muscles and connective tissue Systems were lessened.

Such changes should have profound effects upon eliminating neuro-muscular strain and pain, in conserving energy, and in allowing physical and emotional spontaneity. The total effects upon health and well-being, although not measured in this study, should be commensurate.

## **7. Neuromuscular Patterning of Energy**

New parameters for analyzing EMG data by patterns of neuromuscular organization were used in this study. (Weinberg, Hunt, 1976.)

Electromyograms of experimentals and controls were compared on the five physical tasks before and after Rolfing by the following criteria: (1) anticipation, time from baseline to major action (2) preservation, time from end of major action to baseline (3) duration of major action.

Fisher t comparisons indicated no significant differences between controls and

experimentals after Rolfing on anticipation, preservation or duration except in one task. The experimental group had significantly longer duration time on all four muscles,  $p = < .01, < .01, < .02, < .04$  while stool lifting.

This is the only task tested that is a sustained controlled act where subjects could alter their time and still perform the task or in which a change in personal timing of subjects could be reflected. Therefore Rolfing is postulated to effect the concept of time and its duration.

## **8. Electronic Auric Field Study**

Prior pilot studies during Rolfing, unconventional healing, meditation and altered states of consciousness had provided techniques for recording a high frequency low amplitude energy field not in the known muscular spectrum. This is believed to be an auric emission. There was correspondence between these data and changes in chakra and auric field colors re-ported by aura readers.

In this study these energies were recorded contuously from the four subjects experimental Group II by a telemetry System during all ten Rolfing sessions. Simultaneously Rosalyn Bruyere, aura reader, recorded the color, size and energy movement of the chakras and auric clouds. Subjects recorded their spontaneous experience, Images and feeling states during each session. Eight chakra areas were instrumented based on the area of the body being Rolfed.

In concert with the aura readers description of color distinct wave forms were discovered for primary and secondary color s. These were recurring, non-symmetrical wave forms with definable characteristics. Blends and light colors produced a more irregular inconsistent pattern. Secondary colors contained the wave characteristics of two primary colors. Each wave form carried its unique sound. Displays and descriptions are contained in Chapter VI.

Analysis of the raw data and aura readers reports over the ten sessions provided the following dramatic information:



a. There was progressive improvement in the upward flow during the ten sessions from small dark color, uneven low frequency and amplitude chakra emissions during the early sessions, to larger, lighter color, even, higher amplitude and frequency wave forms in the later sessions. During the first three sessions, Rolfing seemed to disorganize the field with a downward shift of prevalent chakra colors. By the fifth session all subjects showed a clear blue field. During the seventh and eighth sessions there was a preponderance of light blended colors, pink, peach, and ice blue. A cream colored aura appeared in the eighth session and maintained throughout the experiment and post testing. Persistent individual chakra patterns were evident from the first session.

b. Chakras frequently carried the colors stated in the metaphysical literature, i.e. , kundalini - red, hypogastric-orange, spleen-yellow , heart-green, throat-blue, third eye-violet and crown-white.

Activity in certain chakras seemed to trigger increased activity in another. The heart chakra was consistently the most active.

c. Subjects had many emotional experiences, Images and memory recalls connected with the different body areas Rolfed. These findings give credence to the belief that memory of experience is stored in body tissue.

Chakra activity seemed to relate to imagery and its content. All subjects displayed a sudden shift of high frequency and amplitude violet wave forms from the third eye to the throat and back to the third eye just prior to imaging. Both men and women re-ported Images of men with right leg Rolfing and women with left leg processing. This finding is in line with concepts of yin and yang,

anema and anemas.

d. Rolfer's hands and arms had a large blue or white corona except when subjects experienced pain from the procedures. Then the subject's aura recorded red; the Rolfer's aura changed to a violet-pink calming the field. There was a constant interplay of the fields of subject and Rolfer indicating a transaction took place probably facilitating the dynamic field changes recorded from subjects.

The frequency spectrum of color wave forms were analyzed by Fourier analysis. Displays are included in Chapter VI. Most of the auric field data were found between 100 Hz and 1 KHz , however, telemetry channel carrier bands may have interfered with higher frequency recording. Spectrum analysis of many data samples revealed distinct frequency bands for each color irrespective of chakras. Although lower than in the light spectrum, except for blue, they were in the same frequency sequence as light. Each color contained some frequencies of all colors, however, the larger quantity of frequencies lying in one band differentiated colors. Blue produced two bands at 100-240Hz and around 800Hz . The lower band is believed connected with tonus of muscle spindles. Yellow showed a broad frequency band 400 to 600Hz . Red contained predominant 640-800Hz .and was related to the subject's expression of pain. Secondary colors showed narrow bands lying between and overlapping primary colors. Green produced frequencies 240-400Hz . Orange a narrow band lay between red and yellow at 600-700Hz . A violet frequency band appeared above high blue at about 900Hz with spikings of blue and red also evident. White showed almost equal amounts of all frequencies to 1500Hz. Cream color prevalent in the later Rolfering sessions had slightly less symmetrical frequency bands with less in the high and more in the mid-frequencies than white with a banding at 1100Hz . Further processing of wave forms by real time audio spectrum analysis provided greater detail with frequency, relative amplitude and time referenced in a Sonagram three dimensional display. Ghost bands, dynamic changes and blends of frequencies in the secondary colors became evident. These were discussed relative to the Session and subject experiences.

These data taken from the body surface contained frequencies and patterns that when analyzed by wave form, Fourier frequency analysis and real time Sonagram frequency displays all gave the same results. And these results were in direct correspondence with the aura reader's accounts of chakra and auric cloud colors. This constitutes the first objective electronic evidence of emissions by frequency, amplitude and time which validates the subjective observation of the human aura described by sensitives for centuries.

The detail described by the aura reader as to individual and group responses, and the relationship between emotional states and colors should be viewed as fact and not subjective judgement. Subject's perception of feeling state changes during Rolfing showed such correlaries to electronic recordings and aura readers reports to further strengthen energy field conclusions. The energy emissions discovered in this study above those heretofore found by surface recordings of biosystems can be interpreted only by an energy field hologram model.

From this extensive study of energy field emissions strong conclusions are warranted. The field defined by the reader and electronic data contained dynamic changes during Rolfing that coincided with emotional states, imagery, and progressive changes in the neuromuscular and connective tissue Systems. It is concluded that Rolfing is a powerful modality to alter the auric field toward more refined, equal and higher frequencies—a more coherent energy field. Rolfing makes consistent and progressive changes during each session and based upon the areas of the body processed. The widespread implications for psychophysical health are profound. Furthermore, the extensive ramifications for further study of health, disease, pain, psychopathology and all human behavior using the techniques perfected in this study are inestimable.

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## **Toward a Field Paradigm of Rolfing (Structural Integration)**

Adequate explanations of the many changes in the neuromuscular, energy

field and emotional Systems discovered in this study are difficult, probably impossible. However, interesting interrelationships emerged which undoubtedly have bearing upon clinical and subjective reports of changes from Rolfing. These inevitably lead to a hologram concept of man. The primary Claims for the Rolfing techniques are systematic alteration in myofascial imbalance which improves static postures, dynamic movement and counteracts entropy. This study gives indication of wide-spread changes interpreted to involve consciousness, thought processing, anxiety, and energy fields.

1. There is evidence of changes in ways of processing data and the nature of thought processes that ensue. Neuromuscular studies showed decrease in the upper motor neuron activity to more reflexive automatic spinal control of movement. There was a tendency to increase right hemisphere activity in spatial tasks and resting. Kirlian photography indicated more dynamic, vibrant higher frequency emanations. Electronic auric studies showed progressive change from a random low frequency field to a coherent high frequency, classically interpreted to indicate high consciousness. The neuromuscular organization revealed a slowing in time duration noting that in expanded consciousness time slows, becomes extended with alertness to sensory input. Silverman (1973) interpreted EEG evoked response findings to indicate sensitivity and receptivity to environmental Stimulation and selective Inhibition with increased Stimuli. All these findings give evidence of a more holistic, intuitive, receptive way of processing Information and responding that are attributed to right brain activity and expanded consciousness. This is a more plastic open transaction with the environment. Such a paradigm helps to explain the psychic, attitudinal and thinking changes frequently reported by Rolfed subjects.

2. Greater movement efficiency , feelings of well-being and less fatigue have been claimed for Rolfed persons.

The increased DC electromagnetic flow found in Rolfed

subjects, according to Burr (1972) is associated with feelings of well-being. The decreased neuromuscular baseline tension disclosed in EMG recordings, also claimed for meditation, muscle relaxation and biofeedback is interpreted by Deikman (1971) due to right brain activity. Auric field findings from body locations overlapping endocrine areas called chakras, believed to arise from cellular activity, showed high frequency recordings. In metaphysical literature such indicates tissue vitality and health.

The extensive neuromuscular findings are pointed to improved neuromuscular organization, producing a more coherent energy flow , capable of overcoming resistance smoothly with greater force and less effort.

If the body is viewed by a quantum concept having to do with basic elements of inherent and manifest energy, then the bioenergy approach is basic. It stems from the atomic cellular nature of the body cutting across all tissues and Systems. Furthermore, the bioenergy approach is holistic since energy organizes all Systems and tissues. Then from a quantum holistic concept the source of health would lie in abundant, resonating, coherent energy. This was the direction of the energy findings in this study after Rolfing.

3. Subjects report more comfortable feeling state following Rolfing.

In this study significant lowering in anxiety state occurred in Rolfed subjects. The force applied by Rolfers to Stretch myofascial tissues and reposit tendons and muscle often creates pain which disappears when the pressure is released. The temporary pain, how-ever, marks an emotional release that may be strongly colored with associated emotions. During Rolfing individuals often recall specific traumatic episodes associated with specific parts of the body releasing pent-up emotions and

relinquishing chronic muscular contractions. It is proposed that releasing emotions can result in decreased anxiety.

Deikman (1971) commented ". . . -a shift to the receptive mode could be expected to decrease anxiety because the state of receptivity is not organized around action to be directed at the environment."

Rolfed subjects showed both the decrease in state anxiety and an increase in the right hemisphere activity while passive and actively sensing and creating with blocks.

The lowered antagonistic muscle action disclosed after Rolfing constituted one component of the neuromuscular pattern of low anxiety state (Hunt, note I), (Weinberg and Hunt, 1976).

The dynamic pattern of the Kirlian photographs and the open, flowing, coherent electromagnetic fields of the chakra System were hypothesized to constitute a normal response stemming from a lowered anxiety state.

4. Entropic ageing changes are claimed to be counteracted by Rolfing.

According to Rolf (1973) the plastic design of bodies which encourages the entropic characteristics of all physical Systems can be evoked to counter the tendencies to progressive formlessness popularity called ageing. Repeated Stimuli to create change in the brain are claimed to make changes in the physical substance so new functions are available. The brain and the body are plastic mediums that can be changed by educational procedures (Brain/Mind Bulletin , Vol. I, No. I).

Improved neuromuscular balance from increased holding power in stabilizing muscles, and decreased antagonist resistance in large movements were all found in this study after Rolfing. These body conditions use gravity to support

body weights, mitigate joint compression and nerve and muscle tension. In such ways the everyday stress which accounts for the ageing neuromuscular system can be offset.

The hologram model envisioned by Tiller (1974) describes the lowest force field, the physical energy, diminishes over time toward disorder or entropy, while the etheric or bioplasmic energy system increases its potential with time, defying entropy as it moves toward finer organization. Since

the myofascial system serves as guy wires to align and support the body masses in the gravitational and electromagnetic fields, improved efficiency in this system must involve energy field coherency on the entire physical hologram level. The increased neuromuscular efficiency discovered in the EMG studies and the finer organization of the etheric or bioplasmic system disclosed in the Kirlian photographs, the electronic field recordings, and the reader's report of the auric emanations are all anti-entropic in nature. It is interesting to note chakra energy appears to flow in two ways--toward entropy and toward order. In the early Rolfing sessions the field became random, dark in color, and low in frequencies; in the later sessions even, coherent, translucent and in high frequencies. Simultaneously the physical body and the etheric field were freed.

The fact that greater neuromuscular changes occurred in the trunk and the proximal joints where movement in the gravitational field is initiated, with the larger DC magnetic changes in the limbs where more direct electromagnetic interaction probably occurs gives evidence of different force field or energy levels. If the Tillers (1974) ratchet concept of field levels is correct, we can hypothesize mechanical, cellular and subatomic sources of entropy interface.

## **Toward a Body Hologram**

In this study the body was not considered in the ordinary model of systems (neuromuscular, cardiovascular), or tissues (endocrine, nerve), or biochemistry (enzymes, fluid substances) . Instead the body was viewed from a quantum concept of energy stemming from the atomic cellular nature of the

functioning body, which cuts across all tissues and Systems. Such a concept is holistic because energy organizes all Systems and tissues.

The principal investigator in this study holds the belief that as we understand more about bioenergy and its organization, we will know more about aliveness and that illusively desirable quality called health. From this larger vision health becomes a positive condition of biosphere, which makes life richer, more productive, and prolonged. The sources must lie in abundant, resonating, coherent energy fields, for we know free unharnessed energy without purpose is valueless. Amid the material energy shortages today, man's body energy crisis looms greatest. We have not learned to leash the bioenergy at its source, or its reconstructed physiological forms. But the fault lies not alone in inappropriate habits and mal-practices. Human energy catastrophies are deeply embedded in our separate and incomplete belief constructs about reality. We have desperately needed a single comprehensive unifying view of the brain, the body, the mind, of man in nature.

The hologram concept emerging in physics and brain research appears to provide a truly unifying cosmic view of reality which demands reinterpretation of all biological findings on another plane. "The holistic model has been described as the 'emerging paradigm', an integral theory that would catch all the wonderful wildlife of science and spirit. Here at last is a theory that marries biology to physics in an open system" (Brain/Mind Bulletin, Vol. 2, No. 19, 1977). This radically new paradigm could provide fresh prospects of perceiving and connecting man's knowing from experience with what he uncovers in the laboratories.

The holograph for which Gabor received the Nobel Prize 1971 was obtained from lensless photography in which a wave field of light scattered by an object is recorded as an interference pattern on a plate. When the hologram or photograph record is placed in a laser or coherent light beam the original wave pattern is regenerated in a three-dimensional Image. Every piece of the hologram is an exact representation of the whole and will reconstruct the entire Image. (Brain/Mind Bulletin, Vol. 2, No. 16, 1977).

The application of the hologram theory to biological sciences has been



primarily restricted to the brain. It " . . . states that the brain constructs 'concrete' reality by interpreting frequencies from another dimension, a realm of meaningful patterned primary reality that transcends time and space. The brain is a hologram interpreting a holographic universe (McKenna and McKenna, 1975)." Pribram (1971) speculated that the brain's mathematics may operate like a crude lens to record wave fields. If such a brain lens did not exist, perhaps we would know the world organized in the frequency domain without space or time, only events. In fact, primary reality may lie in the frequency realm. Physicist Bohm stated "... the hologram is a starting point for a new description of reality, the enfolding order. Classical reality has focused on secondary manifestations--the unfolded aspects of things not their sources." (Brain/Mind Bulletin, Vol. 2, No. 16, 1977.) Expanded consciousness experiences suggest man has access to the frequency territory of primary reality.

Citing Pribram's paper at the Houston Conference, New Dimensions of Health, "theoretical physics has already demonstrated that events cannot be described in mechanical terms at the sub-atomic level. Changes in magnetic, electromagnetic, or gravitational fields and changes in brains electrical patterns would be only surface manifestations of seemingly immeasurable underlying factors" (Brain/Mind Bulletin, Vol. 2, No. 16, 1977). Pribram (1976) further proposes "... there are a set of properties manifest in organized, (i.e. , spectral) energy we have been slow to comprehend fully when trying to understand biological organization. Our know-ledge of the external world, our knowledge of the 'physical' is knowledge

of structure. In light of the results of physics, neurophysiology and psychophysiology, we must realize that our knowledge is of certain structural and/or formal features of the external world; we do not know what comprises its intrinsic or first order properties." (Globus and Maxwell, eds. , 1976) If we do not know the intrinsic nature of anything physical, we cannot know the real nature of brain or body.

Pribram (1971) proposes that random distribution is based upon holographic principles and is therefore determined . Synchronicity, a meaningful coincidence, makes sense in a meaningful holographic universe. Therefore ,

he concludes, "the uncertainty of events is only superficial . . . there are underlying symmetries not just haphazard occurrences" (Pribram, 1971) .

The parameters and design of most biological investigations couched in the classical reality of the researchers do not encourage quest for intrinsic properties nor are findings readily interpretable by a hologram concept. However, McKenna (1975) theorizes the possibility that DNA and subatomic particles of the body operate on a holographic principle. Parapsychologists Krippner, Tart and D. Dean find the holographic model of the brain scientist Pribram, and the physicist Bohm consistent with their experimental findings, particularly as it postulates access to a domain transcending time and space. (Brain/Mind Bulletin, Vol. 2, No. 19, 1977).

We believe the findings of this study of Rolfing by muscular, energy field and emotional approaches are not happenstances or simply highly related gestaltic factors. While the underlying truths which account for these findings are not known, the brain activity, feeling states, and electrical fields of muscle and aura embody synchronicity. And these truths do posit a new description of body reality lying in the frequency pattern of energy. And as such these patterns constitute surface manifestations of a purposeful man-universe hologram. Yet with our time locked language structure we have no vehicle to describe these findings accurately by hologram . Nonetheless the principal investigator envisions that Rolfing like coherent light uncovers and taps into the perfect body hologram and assists subjects to gain access to a primary body reality. At this level of Interpretation Rolfing makes a contribution to human evolution.

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## NOTES

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