

Perspective

# CRANIOSACRAL THERAPY

## PART I: ITS ORIGINS AND DEVELOPMENT

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### ABSTRACT

In this, the first installment of a series on CranioSacral Therapy and energy medicine, I have attempted to describe in brief the many facets of the system and therapy as they presented themselves, almost simultaneously. The observations that led to the research into the craniosacral system are described. The clinical and educational ramifications are also considered. In the second and third installments, these two latter aspects will be considered in more detail. Political aspects and events which resulted from the release of CranioSacral Therapy to the healthcare community at large and to the public will be described and discussed.

**KEYWORDS:** Psychophysiology, bioenergy, craniosacral therapy, somatoemotional release, energy cyst.

## AN INTRODUCTION TO THE CRANIOSACRAL SYSTEM

I got my first look at the craniosacral system in 1970, while I was acting as first assistant to a neurosurgeon. The patient was a man in his late 60s who had come under my care some months earlier for the diagnosis and treatment of what turned out to be a systemic infection by the parasite echinococcus. The infection had resulted in hepatic and brain cysts as well as gastric bleeding. The patient's response to conservative hospital treatment was satisfactory.

While searching for the cause of a residual problem—pain and dystrophy of the feet—we discovered a 1.5 centimeter ovoid radio-opaque plaque on the posterior aspect of the external surface of the dura mater at a level between the third and fourth cervical vertebrae. It was decided that this plaque should be surgically removed. Incidentally, the laboratory reported that the plaque material contained remnants of the echinococcus parasite, which the patient's body had walled off and contained within the plaque, largely composed of calcium. Removal of the plaque did restore the patient's feet to normal function and sensitivity. In short, he was soon able to bear weight on his feet without pain.

It is important that I describe my introduction to the craniosacral system as it was presented to me. Subsequent to the removal of the spinous processes and the lamina of the third and fourth cervical vertebrae, the external surface of the dura mater was exposed. The sought after plaque was positioned so that it was almost centered on the vertical midline of the body at mid-cervical level. We were pleased to see that the plaque was more or less situated upon the external surface of the dura mater. Our intention was to scrape the plaque from the dural membrane surface and to avoid, if at all possible, any incision or invasion of the dural membrane. We wanted very much to maintain meningeal integrity.

My assignment during this procedure was to grasp the dural membrane with two Allis forceps. One forceps was positioned transversely to the plaque, one on each side, about 0.5 centimeter lateral to the edge. Once put in place, I was to use these instruments to stabilize and maintain the plaque in a still position. It was then that my viewing of the craniosacral system began. The dural membrane, upon which the plaque was located, would not be held totally

still no matter how hard I tried. Left to its own devices, the membrane appeared to rhythmically bulge out towards the exterior and alternately retract inward. The bulging-retracting activity could be reduced by my efforts with the forceps, but these membrane movements refused to be totally stopped. It appeared to me as though there was a rhythmical rise and fall of hydraulic pressure on the other side of the dura mater. I timed the rhythm at about 8 cycles per minute with some minor fluctuations in rate and an occasional short interruption in the rhythmical activity. We have since come to recognize this stop as the “still point.” During these still points the craniosacral system is perhaps doing some physiological adjusting. Clearly, the rhythmical activity on the other side of the exposed area of dura mater did not correspond to the patient’s respiratory activity nor to his heart rate, both pieces of information were visibly available from the anesthesia breathing apparatus and the cardiac monitor. The surgery went along without any problems. The dura mater remained intact in spite of my inability to maintain its stillness. The patient did well post-operatively. No one other than myself seemed interested in the case of the “moving membrane.” Nor did they have any answers for me, I was left to ponder that which I had experienced first hand, by myself.

**I**t seemed to me that the dura mater was being moved by a hydraulic force on its internal side. It is known that the dural membrane forms a water tight barrier. It is also known that the dura mater is seldom viewed in its intact state at a surgical procedure. Usually it has been disrupted by needles, drills or scalpels so that the viewers do not see what it would be doing in its natural state. I/we had the opportunity to directly view the dural membrane intact but without the support of the container, which is offered to its external surface by the osseous and connective tissues which normally surround it. It is also true that relatively slow dural membrane movements may not be noticed on those rare occasions when an intact area is exposed because the focus of attention by the surgical personnel is elsewhere. I noticed it because I was supposed to hold it still and I could not accomplish this task. I did, indeed, suffer some degree of embarrassment. I’m sure this was a major factor in focusing my attention on this introduction to the soon to be named craniosacral system. It seemed as if there was a rhythmical rise and fall of fluid pressure on the internal side of our viewed dural membrane. This might be secondary to a controlled inflow and outflow of fluid. Since the dural membrane forms a water tight container, the fluid inside the container would be cerebrospinal

fluid. The whole system would perhaps qualify to a physicist as a semi-closed hydraulic system. This idea remained in the back of my head.

## A SECOND MEETING

**I**t was more than a year later that I noticed an advertisement in the *Journal of the American Osteopathic Association* for a 5-day seminar on the subject of Cranial Osteopathy. It would give me 40 hours of CME credit, so I decided to attend. The seminar presented an in-depth study of the anatomy of the skull. It claimed that cranial sutures remain mobile under normal circumstances throughout life. It claimed that the brain coiled and uncoiled rhythmically, thus providing a driving force which moved the bones of the skull vault. I doubted very seriously that brain tissues had either the contractible power or the tensile strength to move the skull bones around. But, during the seminar, I did feel the motion of the skull bones with my own hands. These bones moved rhythmically. If my memory was serving me correctly, the rhythm of the skull bone motions that I was feeling was very much in synchrony with the rhythmical activity of the dural membrane which I had observed during the aforementioned surgical procedure.

The pieces began to come together in my mind. Perhaps the dura mater does form a semi-closed hydraulic system with the cerebrospinal fluid. Semi-closed because of the presence of some intake and outflow control mechanisms. I felt the skull bones move in a similar rhythm to that which I had witnessed with my eyes. Perhaps what I had seen was the driving force for what I was feeling. Should this be the case, the system would not require a brain of the contractile potential and the tensile strength that was being described in the lectures.

## INITIAL CLINICAL EXPLANATIONS

I went back to my practice and shared my observations with the aforementioned neurosurgeon. He suggested that I try to help his office nurse's eight-year-old son who had chronic recurrent otitis media. The child was facing his fourth tympanotomy on the right side. I combined some of what I had seen

at surgery with some of the techniques I had learned at the seminar. I felt that his right temporal bone was immobile, so I restored its mobility using light, manually applied forces. The temporal bone mobilized, the ear decongested and the need for another tympanotomy was obviated. The neurosurgeon and I had become quite friendly prior to this incident as, at his request, I had been doing acupuncture for many of his patients. We talked at length about this semi-closed hydraulic system possibility. I assisted him on several neurosurgical cases during which we focused some of our joint attention on the possibilities of this as yet unrecognized system. We experimented with the transmission of dural membrane tension patterns and the mobility or lack of same, both in the cranium and in the spinal cord. Soon, I was doing some hands-on work to maintain skull suture mobility on his first day post-craniotomy patients. Since I had often assisted in the surgery with these patients, I made some educated guesses about post-operative effects and had the privilege of being able to improvise hands-on treatment approaches that I felt might maintain cranial mobility, reduce fibrous responses and gliosis. It seemed successful. My neurosurgeon friend felt that his patients' recovery rate was accelerated and the level of morbidity was reduced. Before long I was doing more and more of this kind of work and less general practice.

## MOVING IN WITH THE PROFESSIONAL RESEARCHERS

**I**n 1975, I was invited to join the Department of Biomechanics at the Michigan State University College of Osteopathic Medicine in East Lansing, Michigan. I became a clinician-researcher. This was a relatively new department, one of whose charges was to demystify and explain inexplicable observations reported by physicians who were, or who had been, out in the front lines. I was such a physician. I had a rather wide experience both in academics and in patient care. My undergraduate degree was in psychology. I served as medical corpsman in the United States Coast Guard for 3 1/2 years—two on board a patrol search and rescue cutter where I was the only medically trained person. I dealt with a variety of emergencies from appendectomy, thumb amputation to lymphangitis. I had consultation privileges by radio with the US public health service, otherwise I was on my own. By necessity, I learned the fine art of improvisation.

My last year in the service was spent ashore in charge of the medical laboratory in the Curtis Bay, Maryland shipyard. After discharge from the service, I attended osteopathic college in Kirksville, Missouri. While in school, I was awarded and completed a three year teaching and research fellowship in biochemistry. While in osteopathic college, I also took some moonlight studies in hypnotherapy from a D.O. psychiatrist. Subsequent to my graduation from osteopathic college, I completed a year of internship from 1963-1964 at Detroit Osteopathic Hospital. In October 1964, I began a general practice of Osteopathic medicine and surgery in Clearwater Beach, Florida, and covered the emergency room for about two years while building a practice. During those years, I was in charge of drug addiction programs, mostly heroin—for the Clearwater and St. Petersburg Free Clinics, and began the use of acupuncture, gaining a rather wide experience in this area of evaluation and treatment. Incidentally, I also worked professionally as a jazz piano player most of my life, which I believe has kept my right brain functional, intact and unexpressed.

**W**hen I joined the Biomechanics Department at MSU it had five clinicians and 22 Ph.D.s from a wide array of disciplines, from mechanical engineering to biophysics and from anatomy to neurophysiology and biochemistry. In addition, we had a psychologist whose expertise was in experimental design.

Of these, my most intense research involvements were with Ernest W. Retzlaff, Ph.D. (physiology), Richard W. Roppell, Ph.D. (biophysics), Zvi Karni, Ph.D. (biophysics), and D.Sc. (biological engineering), Jon Vredevoogd, M.F.A. (design), and to a lesser extent with Yoram Lanier, Ph.D. (bioengineering), Fred Becker, Ph.D. (anatomy), Jon Kabara, Ph.D. (biomechanics), Irwin M. Korr, Ph.D. (physiology) and Dave McConnell, Ph.D. (psychology). I mention these people to give you an appreciation of the wide and wonderful interdisciplinary exchange that went on during that period of time, and have purposely not named the friendly neurosurgeon because during our time together he was criticized by some of the (politically) powerful people in his specialty for straying too far from the conventional track.

Although I worked with Kirlian photography, magnetic fields, characteristics of the spine and its ligaments, and with energetic emanations of acupuncture points, my major focus during 8 1/2 years at MSU was on the development of what became known as CranioSacral Therapy.

## SUTURES AND PERCEPTIONS

From July 1975 through the end of 1980, I worked with Dr. Retzlaff. One challenge was to discover whether human cranial sutures are capable of movement through life. We first studied sutural materials supplied by the anatomy department. Using these samples it seemed as though adult sutures were fused. Then it dawned on us that perhaps we were looking at post-mortem changes. I remained convinced that I was feeling/perceiving movement between individual skull bones with my hands.

The next task was to determine whether I was feeling a real motion. Perhaps I was imagining my perceptions. In order to test this, Dr. Roppell developed a mock-up skull-vault. It was composed of a frontal bone, two parietal bones, two temporal bone squama and an occipital bone all mounted on a system of pistons that would move each of these bones individually in a given direction either 1, 2 or 3 millimeters depending upon the programming of the individual piston. He then developed 10 computerized programs of movement and distance sequences for the six bones and covered the mock-up cranial vault with a fitted 1/4-inch thick covering of foam fabric.

**I**n detecting movement, Dr. Roppell found that people with scientific bias against the abilities of humans to accurately perceive such small motions were less able to do so. Stenographic pool members scored higher than the medical students who were skeptical of, or who had not been involved in, hands-on work. Two factors surfaced. The *longer the subject waited* to report his/her perception of the bone movement, the less their chance of being correct. Second, of the physicians and students tested, those who scored higher had *hobbies or curriculum minors in one or more of the arts*. It mattered little whether the art was music, painting, sculpting, writing prose or poetry. So, it would not seem to be the use of the hands that was the significant factor, but rather their indulgence in and/or their trust of the creative aspect of themselves.

Once it was indicated by this method that I was feeling real motion, Dr. Retzlaff and I decided that we needed some fresh sutural material to study. I contacted my neurosurgeon friend who then supplied us with a steady stream of cross-suture bone specimens taken from patients aged seven through 57. He simply quick-froze the bone-suture samples and sent them packed in dry ice to us by

Federal Express. Dr. Retzlaff experimented a bit with pressure and straining techniques. Soon we were able to demonstrate that in the “living” adult-human cranial suture there is definitely potential for the movement that some of us were perceiving and that Dr. Roppell had so diligently documented.

We found the adult suture to contain:

1. An abundance of collagen and elastic fibers;
2. A multitude of blood vessels and vascular networking with relatively free communication with the Haversian canals of the bone;
3. We found the equivalent of Sharpey’s collagen fibers anchored deeply in the bone and offering limits to the amount of potential motion between the two bones involved in suture formation;
4. We found nerve fibers and networks accompanying many collagen fibers and all of the vasculature; and
5. We found stretch and pressure receptors within the intrasutural material. Sutures from adults clearly *were not calcified* as was the belief and teaching of most anatomists in western Europe and the American continents.

I make this latter distinction because of an experience I had in 1979 while presenting a lecture to hospital staff in Haifa, Israel. I was making a very strong argument for the concept of cranial sutural mobility. I was expecting opposition and received none. After my second foray through proof of sutural motion, Dr. Eli Gideon suggested a coffee break and I acceded. He took me into the library where he pulled a book from the shelf, “Anatomica Humanica” by Professor Guiseppi Sperino. Dr. Gideon translated the text for me from Italian. His words were to the effect that cranial sutures fuse before death only under pathological circumstances. Dr. Gideon explained to me that Italian anatomists subscribe to this concept. Since most Israeli physicians at my lecture had studied the Italian theory of anatomy, I was not about to find much disagreement regarding sutural mobility. He suggested that I had made my point and that I should move on to the next topic. On the other hand, British anatomists still maintain that human sutures fuse rather early in life. Although,

the 30th American Edition of *Gray's Anatomy* does mention that there is a capability for sutural involvement between the frontal and the parietal bone.

The publications that resulted from my work with Dr. Retzlaff, *et al.*, are detailed in the references section.<sup>1-9</sup>

## MONKEY BUSINESS

**D**rs. Retzlaff, Roppell and myself also conducted some unpublished research with live monkeys to study their cranial bone motion. We had to mount measuring devices with antennae directly on the skull bones of the monkeys in order to eliminate any soft tissue scalp motion that might be related to muscle tonus changes, arterial vascular activity and venous and/or lymphatic drainage activities. In order to do this, I made two small incisions through the scalp of the anesthetized monkey, one over each parietal bone equidistant from the sagittal midline. Antennae were glue-mounted in anatomically analogous positions upon the external periosteal surface of each parietal bone. Dr. Roppell then broadcast a radio signal across the two antennae. The frequency of this signal varied with the distance between the two antennae. Using this setup, we were able to record a craniosacral motion in the anesthetized monkey that was different in cyclic rate than either the recorded breathing or the heart rate.

I was able to interrupt the craniosacral cycle by applying slight pressure with one finger to the monkey's coccyx. We repeated this experiment with three monkeys. In all of them, the craniosacral rhythm fluctuated between 8 to 10 cycles per minute. All craniosacral activity on all three monkeys was interruptible by the aforementioned coccygeally-placed finger tip pressure.

Clinically, I began to apply this concept of craniosacral motion to headache patients. A significant number of headaches could be commenced by coccygeal pressure in an anterior direction and relieved by moving the coccyx posteriorly. This observation indicated to me that the integrity and continuity of a hydraulic and a membranous tissue transmitting system between the tailbone and the cranium could definitely refer pain from one end to the other. This is when we began to call it a craniosacral system.

## BABOONS AND HUMANS

We were satisfied that human adult sutures were capable of movement. We knew that live monkey sutures moved. And we knew that human hands could sense these motions and telegraph these sensory perceptions to human brains, which could interpret and report these perceptions accurately. We had to learn more about the fluid dynamics, and the membrane systems inside the cranium and down the spinal canal to the tailbone. We also had to see if clinicians could examine the same patients under “blind” circumstances and reach acceptable agreements.

**O**ur department was awarded a United States Air Force research contract to study the characteristics of the spinal connective tissues and the strengths and weaknesses of the structural designs. The research purpose was to answer the questions, “At what speed is it safe for a pilot to eject from the cockpit of a disabled plane in order to avoid neck/back injury secondary to the impact of the outside air? What precautions and/or protective devices might prove effective?” This work brought us a steady flow of cadavers that had not been chemically preserved. They had only been kept cool, but not frozen, and all of the cadavers were less than 24 hours old. There were both human and baboon cadavers. Most of the baboon cadavers had been subjected to a variety of wind tunnel tests by Air Force researchers before they were sacrificed. The human cadavers simply showed up with a brief medical history.

The physicists and engineers took the spines and the related connective and osseous tissues. I was given the heads so that I could study the “craniosacral system” in its fresh state. To remove brain tissue without damage to cranial sutures, I cut small windows in the parietal bones about one square inch in size. Brain tissue was then removed through these windows without use of sharp tools. I relied heavily on plastic instruments and water irrigation, and with practice learned to remove brain tissue and leave the intracranial membrane almost completely intact. The only areas where the dura mater was cut were at the “windows.” These windows were positioned so as not to disrupt the falx cerebri, the tentorium cerebelli or the falx cerebelli in any way. As it became clear that fibrosity patterns in each cadaver, human or baboon, were unique and different, we began to realize that the study of these fibrous differ-

ences might help us gain an understanding of each individuals' membranous/connective tissue tension/strain patterns. It seemed reasonable to hypothesize that there would be a correlation between brain function in the living human (and probably the living baboon) and the individually-different patterns of the fibrosity. As this concept evolved, Jon Vredevoogd, who taught design at MSU, took hundreds of excellent photographs of these intracranial membranes as I dissected, by putting his camera's lens through the windows in the cadaveric parietal bones.

Our next colleague was Dr. Yoram Lanier, whose forte was connective tissue. On loan to MSU from the Technion Institute in Haifa, Israel, he became fascinated by the variety of intracranial fiber patterns and we began to remove specific areas of membrane for him to study more thoroughly. Dr. Lanier used a blue stain that turned red if the stained tissue had been strained or tractioned to the level at which some of the cross bridges (probably sulfur) were disrupted. Thus a red color indicated tissue (in this case dural membrane) that had been strained beyond its ability to withstand the forces applied. These tissues were injured in vivo. We saw several membrane samples which by unique patterns of red color, were hypothesized to be responsible for clinical symptoms. Unfortunately, Dr. Lanier returned to Israel before that study was concluded and it was put aside "temporarily."

**O**n the whole, though, the research our department conducted with connective tissue clarified the visco-elastic quality of that tissue. My own experience with palpation and treatment of the craniosacral system was definitely supported by the visco-elastic concept. Let me explain. Biomechanical testing showed that connective tissue first displayed an *elastic* property. In a relatively short time, however a viscous change occurred and the tissue no longer had a "memory" to return to the original length when the external forces were removed.

By palpation, we can feel this model in a living human being. When we discovered an abnormal restriction to mobility that was imposed by a contracted and/or fibrosed connective tissue, we put this restriction on stretch. That is, we tractioned the contracted tissue. Initially, we received an elastic recoil reaction. If, however, we maintain the distance of the stretch, after a few minutes the elastic recoil tendency "disappears." The tissue in question has

lost its memory for its previous shape and now has a new morphology. If we release our stretch prematurely, while the elastic recoil tendency is still present, the contracted/restrictive tissue returns to its “prestretch” length and the problem is not corrected. The engineers have explained what we feel with our hands.

It seems to me that if autopsies were to include an evaluation of the intracranial membrane system’s fibrosity patterns, much could be learned about the courses of a wide variety of brain dysfunctions. The problem is to get pathologists and coroners to include dural membrane studies and stop doing calvariae cuts.

## WORK WITH CHILDREN

**A**s we continued our basic research with sutures and membranes, I decided to initiate a clinical application of CranioSacral Therapy. Having worked with children prior to moving to Michigan State, I designed an inter-rater reliability study of nursery school children, developing a 19-parameter hands-on standardized evaluation tool. These children were evaluated by four examiners, including me.

Twenty-five nursery school children were examined by me and one of the other examiners on each of the 19 items. These parameters did not include *the rate* or *the amplitude* of the craniosacral rhythm because we knew then, as we know now, that rate and amplitude vary with examiner touch, intention, sharing of energy, and spontaneous “still points.” We were looking for agreement or disagreement in raters on significant restricted areas of the craniosacral system and its sutures. The parameters were as follows:

### Occiput

- 1—Right restriction of motion
- 2—Left restriction of motion

### Temporal Bones

- 3—Right restriction of motion
- 4—Left restriction of motion

## Sphenobasilar Joint

- 5—Restriction toward flexion
- 6—Restriction toward extension
- 7—Side bending rotation restriction toward right
- 8—Side bending rotation restriction toward left
- 9—Torsion restriction toward right
- 10—Torsion restriction toward left
- 11—Compression-decompression restriction
- 12—Lateral strain restriction toward right
- 13—Lateral strain restriction toward left
- 14—Vertical strain restriction toward right
- 15—Vertical strain restriction toward left

## Sacrum

- 16—Restriction toward flexion
- 17—Restriction toward extension
- 18—Restriction toward right torsion
- 19—Restriction toward left torsion

The rating scale used with each parameter is as follows:

1. Easy or “normal” response to induced passive motion
2. Moderate or transient restriction to induced passive motion
3. Severe or complete restriction to induced passive motion

Increments of 0.5 were allowed on the rating scale.

The other examiners were Dr. Irving Gastman, to whom I taught CranioSacral Therapy; Dr. Robert Ward, who began learning cranial osteopathy in 1972, attending the same workshop as I did; and Dr. Fred Mitchell, who began learning cranial osteopathy in the early 1960s. Drs. Ward and Mitchell’s techniques for evaluation and treatment were different from my own.

Dr. Gastman evaluated 11 of the children whom I evaluated. With no rating variation allowed, Gastman and I agreed 72% of the time. With 0.5 rating variation allowed, we agreed 92% of the time. In total, we both examined 209 parameters blinded to each others results and agreed on 192 of these

parameters, given a 0.5 rating allowance variation. Given no rating allowance variation we agreed on 149 of 209 ratings. For a subjective evaluation, this is remarkably good agreement considering the nature of our subject, small wiggling children.

Dr. Ward evaluated eight of the children whom I evaluated. We agreed 77% of the time with no rating variation allowed and 88% of the time with 0.5 rating variation allowed. When exact agreement was required, Dr. Ward and I agreed exactly 117 times out of a possible 152. If we allow a 0.5 rating variation, Dr. Ward and I agreed on 133 out of 152 parameters.

**D**r. Mitchell examined six of the children whom I examined, mutually evaluating 114 parameters of motion. With no allowance for variation, we agreed exactly on 74 out of 114 parameters and on 84 out of 114 parameters at 0.5 rating variation allowed. Using zero allowance for rating variation, we agreed 75% of the time and 85% of the time if we allow a 0.5 rating variation. One of the parameters that reduced our percent of agreement significantly was left sacral torsion. Dr. Mitchell and I agreed here only 17% of the time.

As I said none of us were aware of the others' findings. All data was recorded by a technician as it was verbally reported step-by-step by the examiner. The raw data were then given to Eric Gordon, Ph.D., an independent statistician, for evaluation. Clearly, the other evaluators and I were perceiving the same things. Agreement was high. We had further support for the reality of our perceptions.

I used the above-reported work as a stepping stone toward the next research project. The 19-parameter standardized evaluation protocol had proven its worth. The next step was to examine a sample of students in a public school. The principals of three grade schools in Lansing, Michigan cooperated in this. Information and consent forms were delivered home to their parents by these grade school children on a Monday. By the following Friday, 203 consent forms were returned, allowing participation in the research. During the following week I, the only evaluator, went to each of the schools for one day and, using an assigned room, a portable treatment table was set up for the purpose of performing the examinations. The same technician was employed

as before to record my orally reported data. I did not want to receive any visual indication of any child's condition as they walked into the room and climbed onto the table, so a school employee was assigned to have a child lying on the table when I entered the room for the examination. I did not speak to any child until after the examination results were reported to the recording technician.

As in the previously reviewed protocol, the technician guided me through the 19-parameter protocol. Heart rate, respiratory rate and cranial pulse rate were first recorded by counting each for 15 seconds and multiplying by four to obtain the rates per minute. Then the 19-step standardized examination was carried out.

The raw data were given to Dr. Gordon, who was privileged to obtain information from the school files on each participant relative to his/her school performance, teachers' opinions, etc. From this, he developed the descriptive categories of "normal" or "not normal," behavioral problems, motor coordination, speech problems and learning disabilities. The motor-coordination and speech-problem children were all confirmed by the Motor Coordination Clinic located on the MSU Campus. Fortunately, all children with these problems were seen and treated by this clinic as part of the University's community service.

**H**istorical data was collected in personal interviews of the research technician with the parents after the craniosacral examinations. The following historical categories were decided upon: seizure history, head injury, obstetrical complications and ear problems. The data in these categories was correlated with the craniosacral system dysfunctional findings. Dr. Gordon performed all data organization and statistical analyses, deriving correlations between cranial dysfunction, school categories, and historical categories.

The results of this research were published in an article entitled "The Relationship of CranioSacral Examination Findings in Grade School Children with Developmental Problems" by John E. Upledger, D.O., F.A.A.O.<sup>10</sup> Two studies of school children have been included in the appendix of our textbook, *CranioSacral Therapy*.<sup>11</sup>

Conclusions were:

1. The standardized quantifiable craniosacral-system motion examination represents a practical approach to the study of relationships between craniosacral-system dysfunctions and a variety of health, behavior and performance problems.
2. High craniosacral-system dysfunction scores correlated very positively with classifications of "not normal," behavioral problems, learning disabilities and motor coordination problems as determined by our search of the school records.
3. High craniosacral-system dysfunction scores correlated with obstetrical delivery complications such as fetal distress, prolonged labor, forceps delivery and, especially, with Cesarean section deliveries.
4. The highest craniosacral-system restrictions scores correlated most positively with those children suffering from multiple problems as categorized in this study.

**I**n ground-breaking research of this kind, especially with school children, fear in some adults becomes more important than the research variables. My intention was to follow the above research projects with a controlled study of dyslexic children in East Lansing. We planned to have three groups of 25 children each. The groups would be matched as best we could for age, gender and severity of disabilities. One group would receive CranioSacral Therapy once a week for one school semester. A second group would receive placebo CranioSacral Therapy in the form of craniosacral system evaluation for 15 minutes once a week with no therapist-facilitated correction intended. However, I was well aware of the therapeutic effect of touch. We would deal with this problem as we analyzed the standardized examination forms that would be completed weekly on each child. The third group of children would receive no treatment, no touch and no special attention from us. All of the children were to be evaluated at the beginning and the end of the semester for their reading skills.

After the project was organized and funded, a reporter attended the school board meeting where the research was to get official approval, and published

in the morning newspaper an article which was headlined, “MSU Professor to Use Lansing School Children as Guinea Pigs.” That was the end of that project. On the positive side, we opened a University-sponsored clinic for brain-dysfunctioning children that operated from 1977 through my departure from MSU in 1983. Fortunately, we were reassigned by our funding agency to begin research with autistic children at the Genesee County Center for Autism, discussed later.

## BODY ELECTRICITY

During one of our regular Biomechanics Department meetings in the summer of 1976, I asked for technical help from our basic science faculty. I wished to investigate the possibility that there exists an exchange of energy of some kind between a therapist and a patient during a hands-on CranioSacral Therapy session. Dr. Zvi Karni, the biophysicist/bioengineer from the Technion Institute in Haifa, Israel, responded and we became colleagues.

The result of our initial work was published as “Mechano-Electric Patterns During CranioSacral Osteopathic Diagnosis and Treatment” by John E. Upledger, D.O., F.A.A.O. and Zvi Karni, Ph.D., D.Sc.<sup>12</sup> As a service to those of you who may be interested, we included this article in the Appendix of *CranioSacral Therapy*.<sup>11</sup>

This work used a modified Wheatstone Bridge Dr. Karni designed and built. With it we recorded electrical body changes on a polygraph along with ECG and respiratory activity. The latter was recorded by strain gauge at the anterior diaphragm.

**O**ur concept was that the human body could be thought of as a bag of electrolyte solution with insulating skin as its boundaries. With this in mind, we placed exploring electrodes on both anterior thighs of each subject, three inches above the superior borders of the patellae with grounding electrodes ipsilaterally placed on the dorsum of each foot.

Findings we saw:

1. Breathing was not consistently related to craniosacral system activity.

2. At the onset of a “still point,” the heart quite often gives a premature ventricular contraction.
3. When I found a point of “release” in the craniosacral system, the craniosacral rhythmical activity stopped simultaneously with a cessation of electrical fluctuation in the patient’s body. The electrical potential baseline consistently dropped during this period of “release” within the craniosacral system. I believe this is probably our most important observation. Hopefully some one will find opportunity to do full-scale research on these observations.

**O**ne last point. We saw definite increases of coronal output in the Kirlian photographs of patients’ fingers resultant to CranioSacral Therapy. We also saw changes in electrical activity in acupuncture meridians resultant to CranioSacral Therapy. I have often since had acupuncturists evaluate the pulses and monitor the changes that occur as I perform CranioSacral Therapy with patients. Clearly, the system of acupuncture meridians and energies are favorably influenced by CranioSacral Therapy. In early 1979, Dr. Karni was required to return to Israel for political reasons. He then arranged a visiting professorship for me in the summer of 1979 at the Technion Institute in Haifa. He also arranged that we would do work at the Loewenstein Hospital (a neurological institute) in Ra’anana under the direction of Professor T. Najenson.

At the Technion, we did more strain plethysmography work along with Joseph Mizrahi, Ph.D. We confirmed the preliminary work that Dr. Karni and I had begun in Michigan. This work was published in a journal produced by the Julius Silver Institute of Biomedical Engineering Sciences at the Technion Institute at Haifa, Israel, in April 1980.

## EVALUATION OF COMA PATIENTS

At the Loewenstein Neurological Institute in Ra’anana, I was asked to evaluate several comatose and/or paralyzed patients from a craniosacral point of view. My findings were confirmed by Dr. Mizrahi with his plethysmograph in terms of the rate of the craniosacral system rhythm as measured on the patient’s arm. The evaluation results were as follows:

1. Four cases of long-standing coma secondary to anoxia displayed craniosacral rhythms of 3-4 cycles per minute all over the body.
2. Two cases of long-standing coma due to drug overdose displayed craniosacral rhythms of 10-25 cycles per minute all over the body.
3. One case of poliomyelitis in coma with secondary residual paraplegia displayed palpable rhythms of 24 cycles per minute in the paralyzed limbs and a craniosacral system rhythm of 10 cycles per minute in the rest of the body.
4. One case of Guillain-Barre Disease in coma displayed a low amplitude rhythm of 24 cycles per minute in paralyzed lower extremities and low amplitude craniosacral system rhythm of 6 cycles per minute above the paralysis.
5. Seven cases of spinal cord injury in coma displayed craniosacral rhythm of 7-10 cycles per minute on the head and body above the cord injury and rhythms of 18-26 cycles per minute below the cord injury. These determinations were made by palpation of the paravertebral muscles. I was able to localize accurately the level of the spinal cord injury in this way with no knowledge of level of cord injury from other sources. The patients were prone in bed when I examined them.
6. One case of long-standing coma due to cerebral hemorrhage with secondary left sided hemiplegia displaced a rhythm on the hemiplegic side of 25 cycles per minute. On the normal side, the craniosacral system rhythm was 8 cycles per minute. The craniosacral activity on/in this patient's head was disorganized and confused. It was not countable because it made several erratic changes each minute as we attempted to count.

These findings led us to suspect that the craniosacral rhythm that is palpable over the whole body is dependent upon an intact motor nervous system. In conversation with Dr. Irwin Korr (physiologist), who had specialized in neurophysiology since the mid 1940s, it was theorized that the more rapid rhythms palpated in paralyzed body parts and regions might well be due to the inherent activity of the sympathetic nervous system at its end organs without the moderating effect of the upper motor neurons.

I have used this model clinically and have come to rely upon its authenticity as a predictor of complete upper-motor-denervation to muscle effectors as compared to lack of tissue response due to the other factors.

## THE PRESSURESTAT MODEL OF CRANIOSACRAL MOTION

**I**n 1977 I became aware of fascia hanging from the free border of the falx cerebri on some dissections. Dr. Retzlaff identified it as a nerve tract running out of the falx cerebri with brain tissue attached to its free end. The brain tissue appeared to have elements of ventricular lining (epidermal cells) as a partial constituent. A nerve tract from the sagittal suture to the ventricular system of the brain.

We injected horseradish peroxidase into the sagittal suture of two live monkeys that the department of pharmacology was about to sacrifice. Horseradish peroxidase is a dye that follows nerve tracts and stains them. Two days later the monkeys were sacrificed, and Dr. Retzlaff traced the nerves from the monkeys' sagittal sutures into the ventricular systems of the brains.

This finding led to a theoretical model for the mechanism of the craniosacral system's rhythmical activity. Dr. Retzlaff and I had previously found the nerve plexuses in the cranial sutures with what appeared to be receptors for both stretch and pressure. Now we had found structures that possibly were components of a nerve impulse/message delivery system between these intrasutural receptors and walls of the ventricles of the brain, wherein the choroid plexuses were located. *It was these plexuses that extracted cerebrospinal fluid (CSF) from blood and put that CSF into the water tight compartment formed by the dura mater membrane.* We decided we could describe a model that would explain the mechanism that underlaid these physiological events which we were perceiving as the activity of the "craniosacral system." This Pressurestat model, as conceived by Drs. Karni, Retzlaff and me, was theorized to work as follows:

Cerebrospinal fluid (CSF) is extracted from the vascular system at the capillary level by the choroid plexuses that are present in a significant proportion of the walls of the brain's ventricles. This CSF is deposited

inside a watertight compartment that has as its boundary the dura mater membrane. This membrane is not attached to bone in some areas of its expanse, however within the cranial vault it forms the endosteum of the frontal, parietal, temporal and occipital bones. As the CSF is put into the dural membrane compartment by the choroid plexus, it causes the compartment to expand. This expansion puts the sutures between the vault bones on “stretch.” When the stretch or sutural expansion surpasses a given threshold, a message to interrupt CSF production is sent via the newly-found nerve trunk to the choroid plexus.

We also theorized that the resorption of CSF back into the vascular system by arachnoid granules and bodies is relatively constant. Therefore, when CSF production is interrupted, the volume of CSF slowly but steadily drops. This reduction of fluid volume within the watertight dural membrane compartment allows for the elastic fibers within the sutures of the cranial vault to close the distance across the suture until a “pressure” threshold is reached. When compression of the intrasutural contents reaches this level, a message is sent via the conductor circuit to the choroid plexuses. The response to this message is to resume production of CSF. The resultant increase in fluid volume within the compartment then re-effects sutural expansion. This expansion or stretch continues until the stimulus threshold is reached whereby the message once again is sent to the choroid plexuses to interrupt/stop CSF production. Since a typical rate of craniosacral rhythm is about 10 cycles per minute, and since the perceived movements of the system, expansion and contraction of the system are about equal in time, we reasoned that CSF production is probably about twice the rate of CSF resorption under normal circumstances. This means that the CSF production is “on” for about three seconds and “off” for about three seconds, cyclically. This gives us the 10 cycles per minute that is typically found in a human subject. We consider the sagittal suture to be a key sensor in the production control system.

The “Pressurestat Model” definitely qualified as a semiclosed hydraulic system. It is a water tight system with controlled fluid inflow and outflow:

1. We felt that the choroid plexus adjusted its activities, cycle to cycle, based on the sensory “stretching” and “compression” input messages from the sutures.

2. We felt that this input originated largely, but perhaps not exclusively from the sagittal suture, because the rhythm was most easily modified by manually compressing and decompressing this interparietal suture.
3. We felt that the arachnoid granulation bodies at least partially regulated the volumetric range within which the craniosacral system operated.
4. We felt that this regulation was not cycle to cycle; it was not as immediately reactive.
5. Because of the membrane structure and the fibrous design within the cranial vault, we felt that the major input that influenced the rate of CSF resorption from the system was located in the anterior end of the straight venous sinus. This region contains aggregates of arachnoid granulation bodies which appear to influence venous back pressure: Via this route the rate of CSF resorption could easily be regulated up or down.

**I** presented the Pressurestat Model at an international conference on biophysics and biological engineering in Jerusalem, Israel in 1979. A South African neurosurgeon by the name of E. A. Bunt introduced himself to me. He personally invited me to attend his lecture that afternoon. He indicated that, after I heard his presentation, he would welcome a discussion about his work and the way in which it interrelated with the work that I had presented. Dr. Bunt and his associate K. Lewer Allen, M.D., also a neurosurgeon, had been searching for the cause(s) of idiopathic hydrocephalus. They had done several tomographic x-ray studies of the skull, the brain and the brain's ventricular system.

In their tomographic studies of the ventricular system, the image cut was such that it gave a two-dimensional display of the lateral and third ventricles. They noted that there was a rhythmical dilation and contraction activity with a range of about 40% in area seen on the tomograms. In a normal adult woman, the rate of the rhythmical ventricular change was eight cycles per minute. In a child with idiopathic hydrocephalus, the rate of ventricular cyclic changes was four cycles per minute and irregular.

During our private conversation, Dr. Bunt ventured to say that he intuited that the cause for idiopathic hydrocephalus might be found in the sagittal suture or the sagittal venous sinus. He further stated that the Pressurestat Model which I had presented made perfect sense to him and fit in with his observations as a neurosurgeon. This last part was, of course, conjecture on the part of Dr. Bunt. However, I have learned not to discard an experienced and accomplished person's intuitions because they have not been scientifically tested as yet. The observations of Drs. Bunt and Allen as well as the opinions offered informally by Dr. Bunt did indeed support our Pressurestat Model. The title of Dr. Bunt's presentation was "Dysfunctioning of the Fluid Mechanical Cranio Spinal Systems as Revealed by Stress/Strain Diagrams."

## AUTISM

**E**arlier, I mentioned the research at the Center for Autism. It went on for three years—1978, 1979 and 1980 during the first six months of each of those years. We did not publish our results simply because we were too busy doing the work to summarize it. We did find out that 10% CO<sub>2</sub> - 90% O<sub>2</sub> inhalation therapy 2x/day for 15 minutes quiets the autistic child. We tried this to stimulate the respiratory reflexes and simultaneously oxygenate their brains, because autistic children all seemed to be shallow breathers. We did nutritional counseling subsequent to the results of hair analysis and physical findings. Most of the children were in foster homes. It was clear that our counseling was not high priority to most of the foster parents. We did general body work and CranioSacral Therapy on the autistic children and saw some remarkable behavioral improvements, but they seemed temporary. Regressions occurred during our six months of down time each year. It was difficult to document change because we could find no independent specialist who seemed able to objectively rate the behavior of autistic children in any way that would lend itself to statistical analysis.

We used movement recordings by time lapse photos timed at one-tenth of a second for 10 consecutive school days. These recordings indicated that when the barometer was in motion the children were more restless. We also saw that when the room temperature was about 72°-75°F and the humidity was about 60% the children were the most cooperative. We also found, with

thermographic studies, that we could warm their hands 2° to 3° by doing “still point” induction of the craniosacral system at the occiput. This latter observation suggests a relaxation response in the vasculature, probably via induced sympathetic nervous system tone reduction.

All of the autistic children seemed to have very tight intracranial membrane systems, and none of the children had more than two of the 19 parameters on my standardized examination form rated as normal motion. My impression was that there is great energy within the autistic child’s craniosacral system. This energy was trying to work against a membrane system that was too tight for the skull and brain, which were trying to expand with normal growth. It seemed to me that something was preventing the meninges from accommodating the growth process, which was being dictated genetically. Many things could do this. Perhaps that was why the children that improved regressed when our treatment was interrupted. Perhaps the membranes needed our help in order to accommodate ongoing brain and skull growth.

The autistic children did educate me significantly about the process which we now call SomatoEmotional Release.<sup>®</sup> This topic is covered in the book *SomatoEmotional Release and Beyond* by John E. Upledger, D.O.<sup>13</sup>

During the last year of our work at the Center for Autism, I wanted to test my feeling about tight membranes and their relationship to autism. Bernard Rimland, Ph.D., was in the forefront of autism research. He had developed a scale for autism based on the appearance or lack of appearance of specific development landmarks. Dr. Rimland’s scale was considered valid and reliable by the Department of Psychology at MSU so I contacted him and requested that he allow me to blind examine some of the children that he had rated. He agreed and contacted parents in my behalf. I evaluated 63 of his rated children. We had to go to Detroit, Chicago and Columbus, Ohio to do it, but we did it.

Using my criteria of high energy and membranous restriction for autism, I came up with 85% agreement with the Rimland Scale for Autism. This confirmed my suspicions. I was also able to determine which children were schizophrenic rather than autistic. The schizophrenic child has low intrinsic

energy and plenty of suppleness in the intracranial membrane system. This impression was supported by the Rimland Scale that also predicts schizophrenia. Unfortunately, I did no further research with this approach; I simply did not have the time.

## FORCE REQUIRED TO MOVE SKULL BONES

After leaving Michigan State in 1983, my attention focused mostly clinical work along with a small amount of research. However, an opportunity came along in 1980 that I could not pass up. It involved the opportunity to dissect fresh cadavers and measure the forces necessary to move the cranial bones of these cadavers. We were allowed to work on two fresh unembalmed bodies at the Harvard Medical School Morgue. This was done with Cindy Rowe, P.T., who was instrumental in gaining our entry into the morgue, and Neil Mohon, a physicist who came along to measure certain forces and their effects upon the dural membrane system.

**T**he brains of these fresh bodies were carefully removed through 2-inch square holes in each parietal bone. The intracranial membranes were kept intact. Our purpose was to see how much force on specific skull bones and the sacrum is required to move the intracranial membrane system. Mohon was in charge of membrane markers and force applications. The heads of the bodies were stabilized and a fixed camera photographed the skull and the marked membranes through the parietal windows. On one unembalmed fresh body with no inherent hydraulic force to assist, it required 48.2 grams of traction on the frontal bone to achieve perceptible falx cerebri marker movements. Although we did not measure the force, I could also move the falx cerebri of that body by the application of light flexion force on the sacrum with my hand. Further, we found that we could palpate and perceive membrane tightening with a finger before the markers could be seen to move. We were able to move the tentorium cerebelli by the application of lateral traction on the ears. This traction was on the order of 60 grams.

We were unable to do our measurements on the second cadaver because during the dissection we discovered that this subject had at sometime undergone a craniotomy. Part of the brain had been surgically removed and the intracra-

nial membrane system was quite disrupted and distorted. However, significant healing had taken place so it was clear that this patient had survived the surgery.

During our dissections I removed tissue that was suspended from the inferior sagittal venous sinus and was extended into brain tissue. The pathology laboratory reported this tissue as vascular. This was another surprise. In addition to a neural connection between the sagittal suture of the cranial vault and the ventricular system of the brain, we also had a vascular connection between the inferior sagittal venous sinus and the brain tissue. I have not had the opportunity to further explore this finding as yet.

## OTHER RELATED RESEARCH

**B**efore we move along into other topics, I should like to offer a brief overview of works done by others that relate to what we later called the craniosacral system. This is not a complete listing of research works, rather a summary of some of the work that has become better known to me. They are presented in chronological order, from the earliest to most recent (as references 14-32). This list of works is not intended to be exhaustive. I hope that it may be of interest to you.

## KIRLIAN PHOTOGRAPHY

Through the years 1976-1979, I took Kirlian photographs of one hand (usually the right hand) of the patient and my own hand (on the same side as the patient's hand). We sat across from each other so that our fingertips faced each other about an inch apart. Our 10 fingers, actually four fingers and a thumb from each of us, were placed on the same piece of Polaroid film for the photograph. Black and white film was used because it seemed that tests of color emulsions from one box of film to the next were inconsistent. I settled on black and white in order to rule out this variable. I took the Kirlian photograph of "us" before and after each treatment session. Where both craniosacral work and acupuncture were done during the same visit, I separated the two approaches and took Kirlian photos before and after each phase of the treatment session. For severe scoliosis patients, Kirlian photographs were taken

of the patient's feet before and after treatment. The balls and toes of each foot were photographed, using a separate piece of film for each. The Kirlian photos were taken over a four second exposure time using 4,000 volt potential. I was interested in any observable effects that we might have upon each other's energy fields. I also experimented with several other variables under non-treatment conditions which I shall overview for you.

Our findings might be summarized as follows:

1. Venous occlusion by tourniquet showed no apparent effect upon Kirlian photographs of the fingers.
2. Arterial occlusion by tourniquet showed no apparent effect on Kirlian photographs of the fingers.
3. Relief of menstrual cramping by acupuncture did correspond to an increase in corona fullness of all of the fingers and the thumb in one case.
4. Relief of toothache pain by acupuncture corresponded to increased corona fullness of the fingers and thumb in one case.
5. Pain induced by tightening a clamp on the index finger of the opposite hand showed no apparent effect upon the corona of the fingers and thumb of the non-clamped hand.
6. When two persons' hands were being photographed on the same film, the energy lines of the coronas appeared to divert or bend away from the other person's coronas when they were asked to think very negative thoughts about each other. When these same two persons were asked to have loving thoughts about each other, the coronas seemed to blend into one another.
7. During practical examinations given to osteopathic medical students, the student's Kirlian photographs of the right hand's fingers and thumb were done solo, without my hand in the photo. Four photos were done for each student: (1) Immediately upon entering into the examination room, (2) After I complained about having to administer the examination and telling them that they better be good because I was not in the mood to tolerate any errors,

(3) After the patient had been examined and before I commented on their performance, and (4) After I complimented the student upon doing such a great job. As you might expect, the first photos were quite variable with the more disrupted coronas belonging to the more nervous and fearful students. The second photos without exception demonstrated more disruption and less energy than the first photos. The third photo showed variable changes which in my opinion correlated with the students level of relief and perhaps self-satisfaction, after completion of the patient examination. Invariably, the fourth photos showed increased energy and integrity of the coronas after the student was complimented.

8. Kirlian photos were taken of the fingers of several students and patients whose fingers were temperature-controlled by putting them in a water bath for 3 minutes. The water bath temperatures were changed one degree centigrade at a time. The hydration of the fingers was kept constant by placing the hand in a water tight glove with an absorbent lining. It was found that invariably cooler temperatures produced more integrated and higher energy coronas than did higher temperatures. It was also seen that the coronal changes occurred suddenly over a one to two degree centigrade threshold range. The critical temperatures varied considerably for different subjects. The threshold temperatures for these coronal changes ranged between 24°C and 32°C. I am not sure what this meant, but it certainly brought another variable into consideration. At that time, many Kirlian photography researchers were trying to relate specific coronal patterns to specific diseases. I did report these findings at an international Kirlian Society meeting in New York City in 1978.
9. Kirlian photographs with patients taken before and after treatment sessions revealed the following trends. Recall that most of these photos included the right hand fingers and thumbs of both myself and the patient on a single black and white Polaroid film. The film was developed immediately after exposure in order to avoid error in sequence, patient name, etc.

Overall, some very interesting trends became apparent. Quite often on the first few visits the patient presented with more disrupted and lower-energy coronas than I displayed as the therapist. Quite often after the treatment, it

might appear that the patient's coronas were improved at the expense of my own. After a few sessions, if improvement in symptoms occurred, there were times when it might appear that I too received coronal improvement from the session, sometimes at the apparent expense of the patient's corona. If the patient was not in favor of rehabilitating completely, it often occurred that their lines of coronal energy diverted away from my fingers and frequently appeared to set up barriers to the penetration of my own energy lines into close proximity of their fingers. These were the malingerers.

**I**n those cases where rapport, trust and healing clearly developed between the patient and myself, the post treatment coronas for both of us seemed more full and energetic. Also, the energy lines seemed to integrate with each other. Sometimes, a single energy line would connect the two of us. It seemed as though we both received energy from an external source into our coronas. It did not matter much whether the treatment was acupuncture or CranioSacral Therapy, the above results seemed to occur. However, it appeared that coronal changes were more marked subsequent to hands-on connections as compared to the use of acupuncture needles. This difference was usually present, but seldom was it a large difference.

This work with Kirlian photography gave me an appreciation for energy exchange on an intuitive level and helped to confirm some perceptions gained from certain hands-on interactions.

Another Kirlian experience that happened only once may stimulate your thought processes. On one occasion I did a single Kirlian photograph of a female subject's right fingers and thumb. I was not in the film. About two inches behind (towards her body) from the finger/thumb tip coronas there appeared another full set of five coronas apparently indicative of the presence of another hand. This got our attention.

## ACUPUNCTURE

I was introduced to acupuncture in 1968 by "Butch" Anderson, the manager of the St. Petersburg Free Clinic, where I was a director. Since that time, Butch has become an MD specializing in internal medicine. At that time, Butch was

an ex-medic from the Green Berets, and a very “savvy” clinical manager. While in San Francisco, Butch had come across a 35-page booklet on acupuncture anesthesia published by the Foreign Language Press in Peking, China. In this booklet were nine points that would “stop” pain anywhere in the body. Butch suggested I try it. We disagreed. Finally, in order to shut him up I brought in three of my most intractable, pain patients. One was a post-operative gall bladder patient who suffered constant pain and bilirubinuria. It was about six weeks after surgery. The second was a prostatic cancer patient in constant pain due to bone metastases to the lumbar spine. The third subject was a rheumatoid arthritis patient who was in the midst of an exacerbation. We brought them into the office on my afternoon off. I used the needle placements as they were given in the book (Li-4, P-4, St-36, GB-37 all bilateral and GV-15). I inserted 25 gauge disposable hypodermic needles in these areas. All three of these patients were out of pain within 15 minutes.

**I** suddenly knew that there was something here that they hadn't taught us in school. I ended up getting total pain relief of the post-operative patient by the use of what turned out to be Liv-14 on the right side. How I was guided to that point, I don't know. Ultimately, I put a silk suture through the point and attached a small chain to the suture. Whenever she had pain, she pulled her chain. Within about 2 weeks after insertion of the suture-chain rig she was without pain and her urine was clear. She had no recurrence by 1975, when I left my private practice. The man with the bone metastases lived about two months before succumbing to lung metastasis. He used no analgesics between his first acupuncture treatment and his death. His wife needled him, per my instructions, every morning. This kept him pain free. I treated the rheumatoid patient about three times, he left town and I never heard from him again. The acupuncture treatments did, however, alleviate his pain for 24-36 hours each time he was treated.

I won't go into a lengthy description of my acupuncture experiences after that initiation; suffice it to say that its use for drug addiction and the pulmonary problems that accompany intravenous drug use was most helpful. I treated over 100 cases of herpes zoster quite successfully over a two-year period when there seemed to be an epidemic of that problem in Florida, and used it in conjunction with my neurosurgeon friend as a method of both pain control and a way to decide whether surgery was indicated. The long and short of it is that by the time I joined the Department of Biomechanics at MSU I had

done upwards of 3,000 acupuncture treatments. I learned primarily from Felix Mann's books and about 250 hours of seminar work with Frank Warren, M.D.'s Acupuncture Research Society. However, I learned most from patient response.

At MSU, I teamed up with Dr. Roppell to study the molecular construct of acupuncture points. After much discussion, we decided to travel to the USDA laboratory where Phillip Callahan, Ph.D. (entomologist), a friend of Dr. Roppell's was in charge. Dr. Callahan had at his disposal the equipment that would enable us to analyze the wave emanations from given skin areas. Dr. Roppell would then relate these emanations to the molecules which were producing them. With a little luck, we would be able to discover the molecular make up of a variety of acupuncture points, compare them with each other, see what changes might occur with needle treatment and determine how they compared with surrounding tissues. We made measurements with Fourier analysis instrumentation. I provided the point locations, the needling, the pulse diagnosis, etc. According to Dr. Roppell, the data obtained would give us the information necessary to identify the molecular make up of the acupuncture points and their changes as described previously. Unfortunately, Dr. Roppell became incapacitated soon after our trip. It was soon discovered that he had developed a brain tumor and that was the end of the project.

**T**here is one other rather puzzling observation that I made during acupuncture treatment that I would like to share with you. The patient was a woman in her mid-forties, referred to me by a neurosurgeon who had removed a brain tumor about six weeks earlier. The patient had developed a severe post-operative trigeminal neuralgia for which I was requested to administer acupuncture treatment.

I had inserted several needles in a variety of locations that included stomach 1 bilaterally. These points are located at the midlines of the orbits on their inferior margins. The needles were inserted about 1/4 inch deep and angled away from the eyeball in a straight inferior direction.

I returned to evaluate the patient about 10 minutes after insertion. Upon my return, I saw that the stomach 1 needle on the right side had rotated 180° so that it was aimed directly towards the eyeball. It was also inserted much more deeply, perhaps 5/8". This was the side from which the tumor had been removed and the side of the trigeminal pain. I seriously asked the patient if

she had touched the needle in question. She absolutely denied doing so. She had needles in her hands and wrists, was in the supine position and appeared to be quite comfortable. I believed her denial. At this point, I was the one who was rather uncomfortable. I gently tried to back the needle away from the eyeball. It resisted. I stimulated the stomach I needle on the opposite side, this did not facilitate release of the needle in question. Finally, I simply used "brute force" and removed the needle. It came out through the skin with great difficulty. It was no wonder. There was a piece of connective tissue, at least 1/16 inch across and 1/8 inch long, fused to the end of the needle. I sent the needle to the hospital pathology laboratory. The pathologist described it as "a piece of overcooked meat fused to a skewer." He wanted to know what I had done. I told him; we both scratched our heads in wonderment. The patient completely recovered from the trigeminal neuralgia with that one treatment.

I have had no such similar experience since this occurred in 1971. I have no idea how it happened, but there certainly is an energy in the body that we didn't know about.

## THE PRIVILEGE OF WORKING WITH ZVI KARNI

Zvi Karni, Ph.D., D.Sc., was a joy and a privilege to work with. Some of our work together is described above, but there is much more unpublished and theoretical work that I shall review for you now.

Dr. Karni and I did a lot of polygraph measurements on patients and subjects with focus on electrical potential happenings inside the patient's body during CranioSacral Therapy. We also did quite a bit of similar recording during acupuncture treatment sessions. We began to view the body as a container of electrolyte solution with a vast maze of connective tissue microcircuitry enveloped in the bodily fluids and enclosed by the skin as an insulator. We thought about acupuncture points as possible control gates that modulated and regulated the flow of electrical/magnetic/electromagnetic energy between the external environment and the internal milieu on the inside of the skin. We considered the possibility that some acupuncture points let energy into the body, others let it out and perhaps still others could work in either direction

depending upon which was most appropriate. Dr. Karni theorized that acupuncture meridians would produce their own individual magnetic fields that would perhaps be discoverable and traceable with very sensitive magnetometers. We needed a shield room. We used the room at Oakland University in Pontiac, Michigan, but too much outside noise came through. Dr. Karni had a friend at M.I.T., David Cohen, who made a reservation for us to use their shielded room in about 18 months. Dr. Karni felt that this was probably the only one in the country that would fill our need for electromagnetic quietness. Unfortunately, Dr. Karni was recalled to Israel before we could take advantage of this possibility. However, this concept put me on the track. I am now able to determine the course and level of functional conduction of individual acupuncture meridians quite accurately by manual palpation of their energy fields. We also find that we can frequently open obstructed meridians with our hands, using the hands as magnets to entice the energy through the obstruction. This is quite teachable and it almost obviates the need for needles.

**A**nother topic upon which Dr. Karni and I spent a lot of time is the concept that was eventually named "Energy Cyst." The name came from Elmer Green in the back of the room at The Menninger Foundation as I was describing our concept of the localized concentration of the energy put into a body by an outside trauma. As I have previously described, our measurements of electrical potential made upon a patient's body during a hands-on treatment session suggested that significant reorganization of inside-the-body electrical activity occurred and the craniosacral system's rhythmical activity ceased when the body was in a position wherein the pain was alleviated, the muscle tensions felt balanced and the therapist could feel tissues softening. We called this a position of "release." If we waited long enough in such a position, the electrical potential began to rhythmically fluctuate in a very organized way and the craniosacral system's activity returned with a more relaxed and effective quality. Most often, the pain was either gone permanently or significantly improved subsequent to such an event.

Dr. Karni kept quizzing me about how I found the right position for "release." It became clear that initially I was working beneath my level of conscious awareness. Dr. Karni's incessant questioning forced me to bring my actions into my conscious awareness. My interpretation of what I was doing was that I was counterbalancing the effect of gravity upon the patient's body; that I was

providing an external source of the kind of energy that the patient's body needed to reach the position of "release"; that I was physically and by intuition, enhancing the drive energy of the craniosacral system; and that I was totally respecting the patient's body wisdom about how to facilitate the "release" process.

Ultimately our conversations and thoughts brought us to the place wherein we had to accept the idea that very likely all bodily tissues have memory for past experiences stored within them. Our focus at that time was primarily upon the musculoskeletal, myofascial and the nervous systems. This was primarily because of the types of patients who were coming for care. As a professor of biomechanics, the patients referred to me were at least, on the surface, biomechanical.

**W**e theorized that bodily tissues had memory for events and that these bodily tissues, by re-experiencing the position of the event, could discharge or catharse the power of the event. Where the event was a physical trauma inflicted from outside of the body, an external "energy of injury" was injected into the body. We theorized that once this foreign energy was injected, the body could deal with it in one of two ways. It could either dissipate it, thus paving the way for "normal" healing and rehabilitation. Or, if for some reason, the dissipation was not effective or chosen by the body's wisdom, the next best thing would be to concentrate and localize this foreign energy into the smallest possible space. The reason for the localization was considered to be that this foreign energy which was chaotic, disorganized and probably entropic would disrupt the normal flow of microcurrents along the microcircuitry, which we visualized as being present in all of the connective tissues, fascial sheets and layers of the body. This disruption of microcurrent flow would result in the devitalization of the tissues that the circuits serviced. The result would be pain, dysfunction, possibly dystrophy and/or disease depending on the deprived tissues.

Dr. Karni and I hypothesized that the electrical and craniosacral events that occurred during "release" by appropriate body positioning signified the discharge of this foreign energy of injury, which had been injected at the trauma site. We soon found out that the position of "release" was, according to the

patient, exactly their body position when the injury occurred. Tissue memory and intelligence took the body to that position. When the memory came into conscious awareness, the patient often re-experienced the accompanying emotion. We began to use a thermographic camera during these sessions and we saw one to two degree centigrade temperature variances where the trauma had entered the body. When the temperature elevation returned to normal, the electrical potential and the craniosacral system's rhythmical activities returned. The qualities of these activities were less forced, softer, smoother, and simply appeared and felt better to us.

During one of my trips to the Menninger Foundation, we searched for possible factors related to the retention of the foreign energy as an "energy cyst." It became clear from clinical observation that the emotional background of the patient carried a very powerful influence. That is, a chronically angry or guilty patient would retain the energy of injury as an energy cyst rather than dissipate it and heal normally. This insight has proven most helpful.

## SOMATOEMOTIONAL RELEASE®

**S**omatoEmotional Release is a term that we have coined to describe a phenomenon that began to occur with great regularity as we became more and more proficient in the use of CranioSacral Therapy and the release of Energy Cysts. SomatoEmotional Release involves the use of body position and energy transference between therapist and client, as does the release of Energy Cysts and tissue memories. The difference lies in the wholism of the approach and the almost complete lack of direction by the therapist.

In the release of Energy Cysts and tissue memories, the therapist has a specific problem in mind which is usually presented as a complaint by the patient. Then, using evaluation techniques such as craniosacral system evaluation and total body "arching," the therapist locates the Energy Cysts and makes use of body position and clues from the craniosacral rhythm to release the Energy Cyst. The objective is quite clear during the treatment session.

I should placate your curiosity somewhat at this point and tell you briefly that "arching" is a method that we have developed that makes use of energy activi-

ties in the patient's body. We use these energies to locate the Energy Cysts. Our concept is analogous to what you see when you drop a pebble upon the surface of a rather still pond of water. The waves on top of the water spread out in circles from the point where the pebble entered the water. The waves produced by the pebble's entry interfere with the normal activity of the water in the pond. We find that Energy Cysts in the patient's body send out similar waves of interference in an otherwise normal sea of energy. CranioSacral Therapists can and do develop the perceptual skill to discover these waves of interference produced by the Energy Cysts. We then follow these circular waves to their center and there it is, the Energy Cyst.

**I**n SomatoEmotional Release, the approach is quite different. Here, we simply place our hands on the patient. We then give silent permission for the patient's body to do whatever it deems appropriate at the time. We offer to put energy into the patient. Before you get excited about my "craziness," as I speak so matter of factly about "putting energy into the patient's body," understand that we have measured very prominent changes in body voltages, as well as changes in electrical resistance in both therapist and patient when this "energy" is offered by the therapist and accepted by the patient. We are collecting more and more documented measurements that relate to this "energy transference" phenomenon. The information we have will be presented in the next installment of this perspective.

Back to SomatoEmotional Release. We find that when the therapist offers a comforting and trustworthy attitude, the patient is encouraged on some nonconscious level. When we combine conducive attitude with the measurable physical energy of which I spoke earlier, it usually takes only a few minutes for the patient to assume the body position of their choice. We, as therapists, have made no suggestion of specific objective. The choice of what to do during this treatment session is made by the patient. We try to let them know that we support the wisdom of their choice and will facilitate or assist in any way that we can.

Once the SomatoEmotional Release begins, the craniosacral system activity shuts down just as it does during the Energy Cyst Release. The SomatoEmotional Release process is, however, more global. The body position allows a generalized release of stored-up emotion. This release seems to come

from the body tissues. It is most often expressed through the nervous system, the vocal apparatus, etc. There may be crying, shaking, sweating, laughing, pain—almost anything you can imagine. It all depends on what it is that the patient has nonconsciously decided to deal with during that session. I suspect very strongly that there is an inner wisdom within the patient that takes into consideration their impression of the skill of the therapist. With this in mind, the session is tailored to suit the patient's needs, as well as the therapist's ability and dedication. I have felt tested in terms of skill, sincerity and motivation by patients during almost every SomatoEmotional Release treatment session in which I have been involved. And there have been thousands of such sessions so far in my professional career.

SomatoEmotional Release, when it is effective, changes people's lives tremendously. It is as though it gives them a chance to see objectively what they are doing with their lives and how they can change for the better. It gives them recall of experiences, traumas, accidents and the like that they have been holding beneath the surface of their awareness for years. Once these suppressed experiences break through the surface, the problems can be dealt with and resolved. When the problem remains suppressed it can cause trouble in a variety of unpredictable ways.

**A**s an example of the power of the SomatoEmotional Release process, I shall describe for you a situation that occurred over 15 years ago. It was a most unlikely occurrence in that the "patient" was a psychiatrist. He volunteered to come forward from an audience of more than 200 health-care practitioners. I was to demonstrate the technique used to induce the SomatoEmotional Release process and I needed a "patient." I began with him standing next to a treatment table on a stage in a rather large auditorium. I simply placed my hands on his hips as I kneeled on one knee in front of him. This is one of several approaches that we use to begin the process. Almost immediately he began to teeter toward his right side. I eased him onto the floor using my body to support him. He began screaming and cursing in a very loud voice. In order to keep his process going I simply maintained contact with his left hand and wrist. He continued this "R-rated" performance for about 25 minutes. His body jerked and flopped about like a fish out of water. He did not attempt to take his left hand/wrist away from my grasp. As the

process continued his voice got higher, his screaming and cursing became more and more childlike. Finally, he began to cry as a child, while he assumed a quiet resting position on the floor. His knees were pulled up toward his chest. I continued to hold his left hand and wrist. After he had cried in this infant way for about five minutes, his body suddenly relaxed. He came back to the here and now. He looked around at all of his friends and associates who had witnessed this demonstration. He appeared somewhat embarrassed.

**I** asked him if he would like to lie down on the treatment table and allow me to do a few CranioSacral Therapy relaxation techniques in order to end the session in a more balanced mode. He did. As I worked with his head I asked him if he knew what had happened. He did. He shared with us (all 200-plus of us) the fact that he had been in psychotherapy as a patient for over 10 years. He also has been a practicing psychiatrist for over 13 years. He has been at a “stuck” place in his psychotherapeutic process for about three years. In this “stuck” place, he constantly felt very angry at his father. He had until that day been unable to get to the cause of this anger. During this demonstration session, he had re-experienced a time in Washington, D.C., where his father was involved in the federal government. He could feel the sun shining warmly down upon him as he lay happily and contentedly in his baby carriage. All the world was right. His father was with him and he was the center of his father’s attention.

Then his father stopped to speak with an acquaintance whom they happened to encounter during their walk. The conversation between father and the acquaintance went on and on, and on. The one-year-old, someday to be a psychiatrist, was no longer the center of his father’s attention. He began to feel neglected. After all, this was his time with his father. Someone was taking it away from him. That someone could divert his father’s attention from him so easily was a very hurtful realization. He started to make “baby” noises. Daddy didn’t pay attention, he was deep in conversation by now. Baby became frustrated because Daddy just kept on talking and didn’t pay attention to his baby noises and movements. Frustration led to anger. Baby began to cry in full-blown anger. His father reached down into the carriage, grasped baby’s left wrist and said, “If you don’t shut up, I’ll break your damn arm.” Not a very diplomatic statement, but things like this happen.

In the here and now, the demonstration volunteer could understand how his father may have become involved in a very important and perhaps intense conversation. He also could understand that his father wanted to complete this conversation. Baby kept vying more and more strongly for attention. Finally, father ran out of patience, grasped his son by the left wrist and uttered the threat. Put in context, the knowledge that his father had uttered the threat about breaking his arm didn't seem quite so bad. The adult psychiatrist had knowledge that his father had never physically or intentionally emotionally abused him, so he was better able to accept the idea that his father simply ran out of patience with him at that particular time. True, his father's actions and words were unduly harsh for a one-year-old child, but his father wasn't perfect nor was he excessively violent. He was a mortal human being. The psychiatrist could accept that now that he knew what it was about. The memory of this incident had been suppressed. It was retained in his left wrist. When meaningful contact was made with his wrist by my hand, the recall of the experience was liberated. He could then resolve the issue that had been producing an ongoing sense of anger with his father since the time of the incident. In my opinion, the years of psychotherapy identified the emotion of anger as chronically present. Psychotherapy also illuminated the focus of the anger as the father. However, after several years of work the cause of the anger had not yet been identified. It remained for a 40-to-50 minute SomatoEmotional Release demonstration session before an audience of over 200 colleagues to define and resolve the remainder of this problem. I received a "thank you" letter from this man about three months later in which he stated that his feelings toward his father had changed significantly for the better.

**A**nother illustration of the power of the SomatoEmotional Release process came in 1979 in Paris. I was lecturing to an auditorium full of skeptical French physiotherapists. There were well over 300 in attendance. It was requested that I demonstrate how the SomatoEmotional Release process works in practice after I had talked about it at some length. I finally agreed to do so, somewhat against my own better judgment, and a volunteer was requested. Immediately a middle-aged, rather muscular and obviously macho Frenchman came marching down to the front of the auditorium. It was obvious that I was to demonstrate on him. My interpreter, who was also my friend, warned me that this man was the very vociferous leader of the highly skeptical faction in the audience that was saying that this was all

“hogwash.” I found myself in a rather difficult position. I was discussing concepts that are rather intangible. I had an audience that was grumbling about what I was trying to present. And now I had to demonstrate the practical application of the SomatoEmotional Release process on a big, strong, macho guy who was bragging that he would show me that nothing would happen with him.

I did not have a treatment table, nor had I intended to demonstrate anything. This was to be a morning of didactic lecture. He came to the front of the room. We said “bon jour,” which was about 50 percent of my total French-speaking ability. He glared at me in defiance, daring me with his eyes to be so presumptuous as to even dream that this SomatoEmotional Release process could affect him in any way. I placed my hands over his anterior superior iliac spines and his iliac crests. I went down on one knee as though I were eyeballing the levelness of his pelvis. I said a little prayer begging for success. I silently affirmed my faith in the SomatoEmotional Release process. I put energy into him. It was that generic sort of energy that is offered for whatever use the patient deems advisable at the time.

It is a little difficult to estimate time with true accuracy because in this situation a minute seems like an hour. But I would guess that within 30 seconds this defiant Frenchman fell forward over my right shoulder as though I were to carry him away somewhere. I followed my intuitive sense of what his body wanted to do. I gently lowered his body to the floor in the front of the auditorium. As he slid to the floor, he assumed the “fetal position.” His knees were on his chest and his thumb was in his mouth. He was crying and sobbing rather mournfully as though he was a very sad and heart-broken little baby. I let him do that as long as he wanted. He seemed aware of the audience and of his colleagues watching him, but as happens in SomatoEmotional Release, he didn't care. His macho braggadocio pride must have diminished in importance at this time.

After about 15 minutes of rather pitiful sobbing and crying on the floor, he stopped rather abruptly. His body relaxed. He acknowledged my presence and began speaking in French to the interpreter. The gist of what he said was that he realized that he felt deserted by his mother when he was a baby. He had an older brother who was injured in a bicycle accident. She suddenly had

her attention diverted from him to his brother, who had become a disabled child. He could forgive now that he understood. He could stop feeling sorry for himself. I never saw this man again but I suspect that he was significantly changed after this SomatoEmotional Release experience. Probably his excessive macho persona was overcompensation for feeling deserted and unloved as a baby. It would be difficult for a baby to understand if suddenly the apparent love and attention that he was used to receiving was significantly reduced. The baby must then protect himself from further hurt. Many of us protect ourselves by being “tough.”

**W**hat made these two rather prominent healthcare professionals go into a deep therapeutic process at the risk of personal embarrassment and in front of hundreds of their colleagues? I don't know. I can tell you that it has happened over and over again. I do three or four demonstrations during each SomatoEmotional Release seminar that I teach. There are about 40 or 50 students in each seminar, and I've been teaching about 10 of these seminars per year for at least five years and about five per year for the previous five years. So I could “guesstimate” that I have taught at least 75 seminars with at least three demonstrations during each seminar. This comes to a very conservative estimate of 225 demonstrations in front of classes of 40 or 50 students. Then there have been at least another 50 demonstrations in lecture settings with much larger audiences, many of these in foreign countries. Perhaps I'm suppressing, but I can't think of a demonstration where nothing happened. I can only think of a few that left much to be desired. Remember, when we begin, neither I nor the demonstration patient have any idea what might happen. I do indeed trust the SomatoEmotional Release process and with good reason.

Perhaps what happens is that we all live with a sort of “censor” inside of us that rather paternalistically keeps certain memories and experiences out of our conscious awareness. The intentions of these “censors” are good. They feel that they are protecting us. However, there is an ongoing cost to keeping these memories and experiences beneath the surface. This cost can be manifested as pain, disability, unhappiness, chronic anger, irritability, lack of self-esteem and so on. The censor considers it worth the cost to keep the memories and experiences buried. There is another part of us which I shall tentatively name the “efficiency expert.” The efficiency expert dreams of what life would be like if

all of these censored memories and experiences could be brought to the surface, dealt with and resolved. SomatoEmotional Release enlists the body to help the efficiency expert. When therapists align ourselves with the efficiency expert, the “censor” relaxes and a positive treatment effect is obtained. I suppose we might say that our energy and presence assist that part of the patient that wants to totally heal the problems rather than just cope with them day-by-day.

**I** have described for you a couple of rather sensational types of SomatoEmotional Release experiences. I would like to describe for you how this process works on a day-to-day basis, one-on-one with patients as they come into the clinic. I am reminded of a young lady who was referred by a rather prominent psychiatrist because he could find no help for her. She was a highly ranked tennis professional who had developed “tennis elbow.” She had to drop out of tournament play because the elbow continued to disrupt her ability to play. The referring doctor had used every treatment mode he could think of without satisfactory results. He could obtain some relief but not enough to allow her to return to the sport that she “loved.”

During our first appointment (she was to be with us for a week and scheduled to see me four times during that week), I realized that there was a connection between the right elbow and her pelvis. I mentioned this possibility to her. She became rather defensive and denied any problems with her pelvis. I didn't disagree with her out loud because the development of a patient-therapist adversarial situation is usually not therapeutically productive unless used as a tool to help the patient express anger or something similar. I did not want to be her adversary as yet, so I allowed her to interpret my silence as agreement that the pelvis probably was not related to the tennis elbow.

On the second day I asked her to stand with her back to me so that I could check her “leg length.” She agreed to that after I told her that I had to work with the “foundation,” as well as with the elbows.

As I placed my hands over her posterior pelvis and low back I could feel her beginning to tilt forward. I was not pushing, only touching. I could feel her natural defenses fighting against falling on her face. So I asked her to bend forward and she complied. Her body seemed to like the forward bending. I then asked her to place her hands on the floor so that she was essentially “four-

legged” on her feet and hands. Her body liked that idea, too. As I asked her to go down on her hands and knees, her craniosacral system stopped pulsing. It remained at a standstill while she was on her hands and knees. I had a strong intuitive sense to place my right hand over her right ischium. As soon as I touched this bone, she began to cry and sob. She then went face down on the floor. I maintained my contact with her right ischium. She cried for 15 or 20 minutes. Finally, her body relaxed, and her craniosacral system recommenced its rhythmical activity. She smiled through very wet eyes as she looked over her shoulder at me and asked if she could get up.

I asked her to lie down on the treatment table and began to do some gentle, relaxing CranioSacral Therapy techniques aimed at gaining her trust and friendship. I then suggested that if she wanted to talk about anything I was there to listen. Her story went like this. About three years before the tennis elbow took her out of play, she had been competing in a national tournament. She had won her match that day, but had not played well enough to please her coach. There was an argument between her and her coach out on the tennis court, late at night when no one else was around. He was yelling and berating her very severely. She remembered (or seemed to remember) and repeated his words aloud. She turned away from him and began to walk toward the exit gate. He came up behind her and pushed her on the back so hard that she went down on her hands and knees. Then he kicked her in the right buttock so hard that a crack fracture of the right ischium resulted

**T**his fracture was interpreted as a “stress” fracture by the doctor. She took about a year out of her intense training and competition. As her coach began to pressure her to get back into a full training program and to compete in the major tournaments, she began to develop the “tennis elbow” which got progressively worse. Until this treatment session, she honestly believed that the tennis elbow was a valid and separate problem. Now she knew that the tennis elbow was there to prevent her from returning to full-scale competition. She did not want to find herself in the same kind of situation again—a situation that resulted in her coach becoming so angry that he would yell at her, berate her, push her down and kick her. She couldn’t stand any more of that. The coach was her father. He was trying to live vicariously through her because he was never a champion. His joy and his frustration had been through her. From now on, she would live her own life.

In less than an hour, using the SomatoEmotional Release process, she came to all of this realization and insight. She did give up tennis. She discovered that she really didn't like it that much anyway. It was her father who was obsessed with being a champion, not her. During the next two sessions, we released a lot of related tissue memories and Energy Cysts. We talked a lot about living for herself and declaring independence from her father. We also talked a lot about his problems and she developed a sense of empathy and compassion for him. Kind feelings towards her father began to replace the anger and resentment that surfaced during our work. All in all, it was an excellent therapeutic and self-realizing experience for her and for me. Her "efficiency expert" must have been extremely happy because this whole thing happened in four sessions of about 45 minutes each.

**A**nother wonderful success for SomatoEmotional Release came in the form of a young woman who had been involved in a rather severe automobile accident. She was not really disabled, but she suffered constant pain during the ensuing eight months after the accident. She had fractured three ribs, sustained a "whiplash" in the neck, and fractured her pelvis. All of her fractures were healed, but she was left with severe headaches that occurred almost daily and were only relieved by several drinks in the evening. The headaches came on during the day as she went about her housekeeping and yard chores. Her neck hurt all the time as did her lower thoracic region. Her older brother was driving the car when the accident occurred. She was unmarried and had never been pregnant. But she made no secret of the fact that she liked having a "lover."

I saw this young lady a few times and tried very hard to come up with some structural reason in her neuromusculoskeletal and/or myofascial systems that would account for the severity of the constant pain and the daily intermittent headaches. I found a few things that we corrected and there was some relief, but not much. I cleared the restrictions in her craniosacral system. This helped a great deal with the neck pain and the headache improved concurrently, but the pain in the middle of her back continued unrelenting. I put her in the sitting position on several occasions and tried to induce a SomatoEmotional Release process without success. She just sat there stiff and talked about how bad the pain was. I saw her once a week. I have since learned that in a case like this it is more effective to see the patient several days in a row. It seems

that the increased frequency of treatment sessions inhibits the reorganization of defenses.

In any case, during the 10th session, I had her sitting on the treatment table with her back to me. I had one hand on the painful area of her back and the other on the top of her head. I was carefully testing her spine for very subtle movements and at the same time pleading for a breakthrough into the SomatoEmotional Release process. My wish was granted. Suddenly she began to push very hard with her back against my hand. The way we respond to this kind of pressure from a patient is to give them an equal amount of resistance to work against. I did this. The harder she pushed, the harder I resisted so that she could not bend backwards.

Gradually, I saw my hand turn into a fist. Now she was pushing against my fist. Then she screamed and cursed at someone that I was representing. She told that person to keep his nose out of her business and called him an S.O.B. I went along with this process for a while, saying nothing except to encourage her to keep going. After a few minutes she slumped forward and exclaimed, "Holy S—." I asked her what was going on.

**S**he explained that when she was 13 years old she had sex with a man in his 20s. She did this out of defiance to her alcoholic mother. She had missed curfew one night and her mother locked the doors so that she (the patient) was out all night. She rode her bicycle around for a while and met a man who talked to her. He invited her to his apartment and she had her first sexual experience. A few days later when they were alone, she told her brother what happened. He became very protective and angry. They argued. He hit her with his fist right in the middle of the back where she had been pushing against my fist. The presence of my fist and the resistance that I offered enabled her to release both the energy of the blow from her brother and the energy of the injury from the car accident that fractured her ribs at the same time.

I believe that had her brother not hit her in the back first, she would have probably healed the ribs and the injury of the accident without residual pain. However, something else needed to be released from these tissues. As the release occurred, the memory of her brother hitting her and her response to it came flooding back. Next came the realization that since that time, in order to show

her brother that he was not her “boss,” she had sex with a continuous string of men. These men were always older than she by at least 10 years. The “coincidence” that her brother was driving the car when they had the accident gave her nonconscious mind the opportunity to link her previous (and denied) feelings about her brother to the accident. She then, nonconsciously, used this opportunity to continue her pain until something was done that would allow her to see how she was using her own sexuality to defy her brother rather than to satisfy her own sex drives and needs for a loving relationship. Subsequent to this treatment session when the SomatoEmotional Release came through, her whole life turned around. In about a month, her pains were minimal. There was some more releasing to do within the craniosacral system in order to clear the residue of the accident on a physical as well as on a emotional level, but all things considered, she did very well.

## TEACHING THE THERAPY

I have been rather severely criticized by some of my colleagues for teaching health-enhancing techniques to non-physicians. The feeling is that these people are simply not qualified to do the work.

**P**lease let me explain how this all came about. In 1976, I was preparing to do some CranioSacral Therapy research on learning-disabled children in the Michigan public school system. During a casual conversation, one of the county supervisors of special education made the comment that in his estimation one in 20 children enrolled in the public schools of the state had some sort of brain function problem. He was including seizures, autism, learning disabilities, concentration problems, retardation, speech problems and so on. My feeling was that about 50 percent of brain dysfunction problems could be helped by CranioSacral Therapy. This meant that five percent of all the school children needed to be evaluated, and probably two to three percent would need definitive CranioSacral Therapy. At that time, there were about a half-dozen osteopathic physicians in Michigan who could capably evaluate and treat these children. Neither the evaluation process nor the treatment process could be mass-produced. Each required a minimum of 20 minutes of one-on-one, hands-on time with each child. The interest in learning to do CranioSacral Therapy was not high among my physician colleagues. Nor was

it high amongst the allopathic and osteopathic medical students that we were teaching at the University. The percentage of students interested in pursuing this kind of work was probably 10 percent or less.

As far as I was concerned, every month that passed for a learning-disabled child, when he was untreated and continued on in school feeling inferior and inadequate, was a month of deepening emotional trauma. We needed another way to make craniosacral system evaluation and treatment available to these needy children.

I then went to the dean of my college. I described my plight. He gave permission for me to teach a night course of non-physicians at a school for multiple handicapped children. From there, I went to the University curriculum office and we obtained post-graduate credit from Michigan State for all those enrollees who had previous degrees in various fields.

**T**he enrollment in this first one-semester course was about 20 students. The enrollees were physical therapists, occupational therapists, registered nurses, school psychologists and a couple of special education teachers. The course went exceedingly well. There was a strong demand for a second semester of the course. The non-physician students learned the craniosacral system evaluation techniques exceedingly well. Soon, I began to teach them some of the treatment techniques I used. The majority of these non-physician students learned the hands-on skills of CranioSacral Therapy rather quickly. It did not take long for me to realize that being a physician was not requisite to becoming proficient in craniosacral system evaluation and treatment. Soon I was teaching the night courses in craniosacral system evaluation and treatment sponsored by Michigan State to any enrollee who had the credentials to work with a child in any diagnostic or therapeutic way.

I began to understand that the requirements to do good CranioSacral Therapy were dedication, compassion, sensitivity and the like. The requisites were not organic chemistry, neurology, materia medica and other science courses.

I developed what we call a 10-step protocol. This is a series of 10 hands-on steps that, if done with reasonable correctness, will help a patient's craniosacral system to work better. If you use your hands gently and don't try to force

anything, you can't do any damage. Soon we were teaching these 10-step protocol techniques to the parents of brain-dysfunctioning children so that they could continue their child's treatment independent of our clinic. We did this initially so that they did not have to structure their lives to provide proximity to a CranioSacral therapist. These kinds of cases could return to our clinic two to three times a year for re-evaluation, and the child could get the benefit of uninterrupted CranioSacral Therapy from the parent.

**T**hen we began to realize that this approach of teaching the parents to treat the child regularly (usually on a daily basis) began to bring the family together. It enhanced the feeling of self-worth of the parents when they could do something for their child. We saw that in many cases the mother had been taking over the care of the handicapped child. The father felt left out and useless. We began to develop treatment techniques that required mother and father to work on the child at the same time. More often than not, these couples began to solidify their marriages. Father was not out in the cold, he was in the loop. He felt useful and necessary. This was good therapy for all concerned.

Next we began to teach father to use simple CranioSacral Therapy techniques on mother when she got a headache. It helped. She felt that he cared; he felt useful. Frustration levels dropped because self-worth and caring levels went up. I'm sure a lot of relationships have been healed because the touch required to do the CranioSacral Therapy techniques is well-intentioned and loving. Touch communicates feeling.

Now we teach one-day seminars around the country, called ShareCare. In these seminars we teach a few basic CranioSacral Therapy techniques that have general helping effects. They are not dangerous. Any side effects that occur from improper use are only temporary and cause mild discomfort, no damage is done. We teach the direction of healing energy so that you can help yourself and your friends with aches and pains. If something serious is wrong the pain may leave but it will come back soon. If it comes back four or five times you need help from a physician. We introduce the concept of an Inner Physician. We help enrollees learn to dialogue with their physical bodies and learn to accept responsibility for their proper care and maintenance. We have people talking to themselves, but in so doing they become better acquainted with who they are. It is time that the body, the mind and the spirit are reunited.

## SUMMARY

I have overviewed the progression of events that have led to the development of CranioSacral Therapy as a modality that is available to any healthcare practitioner who chooses to incorporate it into his/her practice. In this article, the focus is more on research and development. In future articles, a much deeper discussion of the clinical aspects of CranioSacral Therapy will be presented.

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15. Viola M. Frymann, Relation of Disturbances of CranioSacral Mechanisms to Symptomatology of Newborns: Study of 1250 Infants, *Journal of the American Osteopathic Association* 65 (June, 1966). Dr. Frymann evaluated 1,250 newborn infants, focusing on craniosacral system function. She found that both respiratory and circulatory symptoms correlated to abnormal sphenobasilar synchondrosis torsion accompanied by temporal bone dysfunction and immobility. Dr. Frymann states that symptoms abated when cranial osteopathy was used to correct the sphenobasilar torsion and to mobilize and balance the temporal bones.
16. E. G. Baker, Alteration in the Width of the Maxillary Arch and its Relation to Sutural Movement of Cranial Bones, *Journal of the American Osteopathic Association* 70 (February, 1970). Dr. Baker built a device that measured the width of the maxillary arch by attaching to the second upper molars. His work demonstrated a 9-cycle-per-minute average of a rhythmical 1.5 millimeter average variance in maxillary arch width on one patient.
17. Philip E. Greenman, Rotentgen Findings in the CranioSacral Mechanism, *Journal of the American Osteopathic Association* 70,1 (September, 1970). X-ray studies of the relationships between the sphenoid body and the basiocciput were done on 25 patients by Dr. Greenman. He was able to show abnormal relationships between these bones that demonstrated the lesions defined by Sutherland as flexion, extension, torsion, sidebending, vertical strain and lateral strain. No correlation was attempted with clinical symptoms. Therefore, the x-ray findings could represent anatomical variants as well as abnormal findings.
18. Viola M. Frymann, A Study of Rhythmic Motions of the Living Cranium, *Journal of the American Osteopathic Association* 70,9 (May, 1971). Dr. Frymann and a mechanic devised equipment that was intended to measure and record circumferential changes of the head as well as cardiac and respiratory rhythms. She successfully demonstrated a third rhythm that appeared to be independent of heart rate and breathing activity. She interpreted this third rhythm, which ranged between 6 and 12 cycles per minute, to be the activity of the craniosacral system.
19. \_\_\_ Jenkins, \_\_\_ Campbell & \_\_\_ White, Modulation Resembling Traube-Hering Waves Recorded in Human Brain, *European Neurology* 5 (1971), pp. 1-6. Ultrasound echo

- pulsations were observed at seven cycles per minute in a healthy human subject. These pulsations continued without change when the subject held his breath. Traube-Hering pulsations are usually measured on the ear. When the investigators observed the Traube-Hering pulsations on the ear, they differed significantly from the seven per minute pulsations of the brain. The authors conclude that the seven per minute brain pulsations are autonomous and not related to cardiac, respiratory and/or Traube-Hering pulsations.
20. — Wallace, — Avant, — McKinney & — Thurstone, Ultrasonic Measurement of Intracranial Pulsations at 9 Cycles Per Minute, *Journal of Neurology* (1975). The investigators reported an apparently independent 9-cycle-per-minute intracranial pulsation observed by ultrasound in the brain and membrane tissues of a human subject.
  21. Norma J. Gilmore, Right Brain, Left Brain Asymmetry, *ACLD Newsbriefs* (July-August, 1978). Dr. Gilmore performed the Upledger-designed 10-Step CranioSacral Therapy Protocol on 20 learning disabled children once weekly for six weeks. She reports that all 20 learning-disabled children improved from below average to either average or good in their reading skills over the six-week period. Dr. Gilmore has had no medical or premedical training. She learned to apply the 10-Step Protocol by rote. She is living proof that, when properly taught, CranioSacral Therapy can be applied effectively to needy children by a person who lacks any type of healthcare background. Dr. Gilmore performed the CranioSacral Therapy as "Upledger Relaxation Technique."
  22. Milicien Tettambel, *et al.*, Recording of Cranial Rhythmic Impulse, *Journal of the American Osteopathic Association* 78 (October, 1978), p. 149. Dr. Tettambel used force transducers taped one across the frontal bone and one across each of the two mastoid processes of the temporal bones on 30 subjects ranging in age from 16 to 71 years. She successfully recorded three separate rhythms on all of these subjects. The cardiac pulses and the respiratory rhythms were clearly recorded. A third pulse was also recorded at an average of 8 cycles per minute. She presumed that the third rhythm represented the cranial rhythmic impulse
  23. Robert Chadwick, The Effects of Cranial Manipulation Upon Ryodoraku Acupuncture Meridians. This is a piece of unpublished work that was turned in to me in 1980 as part of the required research experience by a graduate student at Michigan State University. Dr. Chadwick used the classical Japanese Ryodoraku electrical measurement methods to evaluate acupuncture meridian millivoltage before and after the application of CranioSacral Therapy. Dr. Chadwick found that on 10 patients, without exception, CranioSacral Therapy moved all meridian imbalances toward the desired balance.
  24. Barry Libin, Occlusal Changes Related to Cranial Bone Mobility, *International Journal of Orthodontics* 20,1 (March, 1982). Dr. Libin reports that he has changed the transverse dimension across the maxillae as measured at the second molars by two and sometimes three millimeters using CranioSacral Therapy.
  25. Jean-Claude Herniou, Studies of the Structures and Mechanical Properties of the Cranium. This work was Herniou's doctoral thesis in 1983 at the Universite de Technologie de Compiègne in Paris, France. Herniou practices in Paris and he visited me while I was still in the Biomechanics Department at Michigan State University, College of Osteopathic Medicine. He also attended several of the seminars I presented in France. I have a copy of his thesis in French. In brief, Dr. Herniou was able to apply equipment which measured the piezo-electric changes across the sagittal sutures in live sheep. His work showed a rhythmical opening and closing of these sutures at an average rate of 12 cycles per minute. The range of motion never exceeded one millimeter. This work was carefully scrutinized for its scientific merit by Herniou's doctoral

- committee.
26. Louis Rommeveaux (Personal Communication, 1983). Dr. Rommeveaux has taken seminars which I presented in Grenoble, France. He informed me by personal letter that he employed an electronic engineer to build a device that he mounted on 48 different subjects. The device was attached longitudinally with one end taped to the skin over the glabella and the other end to the skin over the nasal bones. His device measured and recorded movement between its two attachments. Rommeveaux stated that significant rhythmical movement was recorded on all 48 subjects at rates between 5 and 10 cycles per minute. He also stated that he monitored craniosacral activity on 36 patients in the hospital at the time they were given peridural anesthesia. His stated perception was that the craniosacral rhythm underwent a complete stop at exactly the time the anesthetic injection commenced. The halt in rhythm persisted for about 5 minutes before it began again.
  27. Karsten Bunnergaard (Personal Communication, 1988). Karsten Bunnergaard, D.D.S., practicing in Hamburg, Germany, described to me his use of a device which made use of the "Hall (Gold Leaf) Effect" to measure craniosacral rhythmical activity across the maxillary arch. He recorded an average rate of 12 cycles per minute on four different patients. He estimated the amplitude of the range of motion across the maxillary arch at 1.5 millimeters with the patients at rest in the dental chair.
  28. The Colorado Board of Medical Examiners vs. W. M. Raemer, D.D.S. Court of Appeals, State of Colorado, Case No. 87CA1589 March 22, 1990 The unanimous ruling of the Appellate Court in favor of W.M. Raemer, D.D.S., states that CranioSacral Therapy is an effective form of treatment for TMJ dysfunction. As such, it was ruled that dentists in Colorado are allowed to use CranioSacral Therapy for treatment in the scope of their practice.
  29. Thomas Adams, *et al.*, Parietal Bone Mobility in the Anesthetized Cat, *Journal of the American Osteopathic Association* 92,5 (May, 1992). Dr. Adams applied strain gauges across the surgically exposed sagittal sutures in living cats. He recorded rhythmic motion across the sutures with the cats at rest which differed from cardiovascular and respiratory activity. Externally applied stimuli did not significantly change the sutural activity. The rates of sutural movement averaged at 11 cycles per minute.
  30. Dimetrios Kostopoulos & George Keramidas, Changes in Magnitude of Relative Elongation of the Falx Cerebri During the Application of External Forces on the Frontal Bone of an Embalmed Cadaver, *Journal of Craniomandibular Practice* (January, 1992). This work was carried out by the investigators at the New York University Anatomy Laboratory. The investigators made use of instrumentation that measured piezo-electric changes related to length changes in the falx cerebri in response to measured anteriorly directed traction on the frontal bone. Results showed that an elastic response began at 140 grams frontal bone traction. At 642 grams the elastic response ended and viscous changes began. At 642 grams of frontal bone traction the falx cerebri elongated 1.097mm within the 5 cm distance spanned by the measuring device.
  31. James M. Norton, *e. al.*, Characterization of the Cranial Rhythmic Impulse in Healthy Human Adults, *Journal of the American Osteopathic Association* (Fall, 1992). Dr. Norton's study included 24 subjects and 12 examiners, all drawn from the faculty and student body at the College of Osteopathic Medicine at the University of New England. The craniosacral system's rhythmical activity was monitored by having the examiner press a switch mounted on the examining table leg with his/her knee at the beginning of the flexion phase of each cycle of the craniosacral system. All examiners were required to

use the same standard hand placement on the subjects' heads. All subjects and examiners were required to rest quietly in each others' presence for three minutes before the examination began.

A total of 274 cycles was reported by the 12 examiners on the 24 subjects. The average rate of craniosacral activity was calculated to be 3.7 cycles per minute. It is important to note that several spontaneous "still points" occurred during the examination processes. The time for still points was included in the calculation of cycles per minute, which lowered the average rate significantly. It is also significant that the cycles per minute were consistently slower after the still point had occurred than before such occurrence.

32. J. M. Norton, Failure of Tissue Pressure Model to Predict Cranial Rhythmic Impulse Frequency, *Journal of the American Osteopathic Association* 92,10 (October, 1992). In this work, Dr. Norton investigated the possibility that the cranial rhythmic impulse (craniosacral rhythm) might be resultant of some complex interaction between the cardiovascular and the respiratory activities. The latter two activities were recorded by skin surface electrodes and pneumograph, respectively.

While the cardiovascular and respiratory activities were being recorded, a therapist practicing CranioSacral Therapy used the knee-switch method described in Norton's previous work (above) to record the beginning of each flexion phase of the craniosacral system on 20 different subjects. The rate of craniosacral system activity on all subjects was between 6 and 10 cycles per minute.

Norton could find no combination or interaction between the cardiovascular and the respiratory activities that could explain the findings of the craniosacral system examiner. Further, it was observed that when subjects voluntarily held their breath, the craniosacral system activity continued, apparently unaffected. Dr. Norton concludes that the craniosacral examiner must have indeed perceived and recorded another rhythmical activity besides the cardiovascular and respiratory rhythms.

In regard to Dr. Norton's work, I offer that in my own experience it seldom happens that a therapist practicing CranioSacral Therapy can touch a patient for more than a minute or two without having some therapeutic effect on this very sensitive craniosacral system. It can be accomplished but the examiner must not blend with the subject. The examiner must work quite hard to maintain a distance between him/herself and the subject. This is a very difficult task for most therapists practicing CranioSacral Therapy to accomplish. Dr. Norton did not perform his investigations using experienced therapists. Some of what he measured was probably patient response to human touch. As an added thought provoker, consider that Rollin E. Becker, D.O., a well known Cranial Osteopath with about 50 years experience, describes a 3-4 cycle per minute rhythm that is "beneath" or more subtle than the craniosacral rhythm.

Further, in private conversation with physicist Neil Mohon, he told me that he has measured in excess of 50 qualitatively different energy fields around living human beings. Each of these energies has its own pulsatile characteristics. Mohon was doing research for the United States Government, developing instruments that would detect the presence of humans hiding in jungles, etc., when he made these discoveries. How little we know.

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