

Dennis Bartram – The Journey Towards Tensegrity

I have been practising physical therapies since 1969 when I became qualified in Swedish Remedial massage. In 1974 after adding the skills of Osteopathy, I opened a clinic and began my career in physical medicine.

During the next ten years, I attended many seminars on Osteopathic and Chiropractic techniques. Some research was proving that the standard thrust manipulative techniques of Osteopathy were not necessary. This approach fascinated me, as it was a less forceful approach but also seemed kinder to the body. These less forceful approaches utilised body positioning and the tensility of the tissue to facilitate the correction.

One of the most eminent researches studied and utilised Eastern methods of therapy and from their theories developed new physical techniques to match the criteria. Dr George Goodheart developed from Chinese Meridian Theory a series of muscle tests that correlated with the diagnostic method of pulse diagnosis used in Acupuncture. Collected pages of Dr. G. Goodheart. Acupuncture and the knowledge of the meridian system are thousands of years old. Applied Kinesiology is one of the very few systems that has added new information to the ancient knowledge. Walther, D.S. (preface) Applied Kinesiology.

These muscle tests soon became a reliable and empirical backdrop to understanding the links between Eastern and Western methodology. With muscle tests, he demonstrated the effectiveness of a technique and a reliable form of diagnosis and post checking. Even the Swedish massage that I initially practised was developed by a Swedish doctor Peter Ling from a Chinese backdrop. This sparked for me an interest in Eastern methods of therapy and lifestyle.

My other interest in the East had also begun in 1970 when I began studying Japanese Karate. After studying for fifteen years, I discovered many of the Japanese masters were also doctors of Japanese medicine.

In 1985, I began my study of an ancient form of Japanese warrior principles. The Grandmaster of this school was a Dr. Masaaki Hatsumi and was the holder of ancient

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scrolls of nine schools of martial arts and a school of ancient medicine. His daytime occupation was a Seitai practitioner, which translates to a Japanese form of Osteopathy.

I initially met with Dr Hatsumi when he came to England for the first time in 1986 to demonstrate his martial principles. Although his martial skills were frighteningly effective, another quality shone from him. He was friendly, gentle and his body movement was graceful. He seemed to have plenty of time to evade attacks made on him during demonstrations and seemed to float as he walked through various techniques.

I watched in awe of a man twenty years my senior, working with ease and with fingertip precision to lock his opponents in tangled body configurations. To learn that this man practised as an Osteopath totally intrigued me and made me ponder as to his methodology. As he practised martially, he would say “Budo and Medicine are the same!” and if medicine was practised poorly, it could kill. He told us to study nature and learn from nature and that natural movement was all that was required to maintain health.

That day in 1986 changed me, I had found my mentor, a man who practised my hobby and my occupation and described them as being one. I changed from a hard physical disciplined Karate to a softer evasive body defence method. This also influenced my decision to stop manipulating in the standard Osteopathic method and study Dr. Hatsumi’s naturalistic approach.

I utilised body positioning and gentle movement into my practise methodology. Slowly I began to get the results from this body orientation approach.

In 1995, I went to visit Dr. Hatsumi to ask for guidance and the opportunity to demonstrate these principles to him. He was impressed with my progress and told me he would teach me on “one to one basis”. He painted a calligraphy for me, which translated as mysterious hands. He said that this described what he saw as he watched me practise.

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In a private session, Dr. Hatsumi worked on a friend of mine who had been a patient for several years. This person had suffered from Osteopetro'sis a brittle bone disorder from birth. He had suffered many bone breaks and traumas but in his twenties had fractured his femur badly in his left leg. After many hours in surgery, they had to abandon a traction correction, as they could not drill through the brittle bone. This left him after many months in plaster with a bowed left leg. This resulted in a misaligned pelvis and a scoliosis of the spine. He had a pronounced limp and had to walk with the aid of a stick. Despite these and many other difficulties after treatment from me, he even began martial training.

After several years of training, he visited Dr. Hatsumi with me. Dr. Hatsumi observed him walking, asked him to lie down and began to palpate his damaged leg. After a few moments, he decided on a spot and said "This Place". He then pressed forcibly, quickly and deeply into the tissue of the leg. My friend's pelvis and spine contorted and twisted as he pushed with his fingers into his leg. Then my friend stood up unaided and walked a few steps with a slight limp and more uprightly aligned. He had straightened up so much that his stick was now too short to reach the ground from where he held it. He could also step forward from both feet almost equally.

I had now seen evidence of what I could only describe as a miracle. Dr. Hatsumi then pressed my leg in a similar spot so I could feel the depth and effort of the pressure. He explained that this feeling and the body motion that generates it was the most important thing to study.

All of my teacher's lessons were delivered in this oxymoronic manner. He would demonstrate a technique, which stretched your imagination and then let you ponder on the questions that would lead you there.

On another occasion, he pressed into my cheek with his thumb for a moment and relived all my symptoms of fatigue and jet lag immediately. He explained that these effects on the body were possible because of a principle known as Gairon, which translators explained it as "The Big Picture", private tutorials (1995) Dr. M. Hatsumi, the interconnectedness of all things, the feeling of nature.

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My research was to understand the relationship between the osteopathic lesion and the tissues that maintained the lesion.

Manipulation was based on either high velocity thrusts to a bone or forceful leverage principles. These techniques could be painful for the recipient and could also rupture the adjoining tissues.

In 1995 I had the good fortune to observe first hand a Japanese master realign a pelvic and spinal distortion in moments without force or leverage. He actually applied pressure to the inner thigh with his thumb for about two to three seconds. On re-examination of the client all the physical factors of the problem had realigned.

He said that this approach was possible because of a principle known in Japanese as Gairon.

“The relationship between the biosphere and Gaia is like that between your body and you. The biosphere is the three dimensional geographic region where living organisms exist. Gaia is the super organism composed of all life tightly coupled with the air, the oceans and the surface locks”. Lovelock. J, GAIA New Look at life on Earth, preface PX1.

“The continuity or global interconnectedness of the living matrix is essential to the understanding of the body and the role of energetics in health and disease.” Oschman. J, Energy Medicine (p232)

The underpinning of my new research was based on the following principles. It had to be natural, it was a feeling that came from the heart and was delivered through the fingers, it was produced in the spine and delivered through our walk.

Every time he taught a technique, he would explain these principles. “Its all in your walk, you must find it in nature, it must come from your heart and if you don’t understand Gairon, then you can’t continue”. The simplistic but mechanistic way in which he observed and then treated a condition was impressive but frustrating. My early attempts to mimic his technique were based on heavy pressure, which soon had

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my clients complaining. When I lightened up, I could not get the tissue to respond. This frustration led me to study many approaches to pressing into tissue from Shiatsu, different kinds of massage, Rolfing and other physical modalities. Nothing had the effect of Dr. Hatsumi's touch on tissue.

“The spirit and feeling of a technique are more important than the mechanical ways to achieve it.” Hatsumi personal discussion, 1995.

My main area of research in studying this man's natural movement principles and medicine were bipedal locomotion and our vertical competence against gravity. The main reason for this was that Dr. Hatsumi explained that human beings are the only creatures that need to be taught to move naturally. Dr M. Hatsumi (1995)

“Thus the neurodevelopmental stages of crawling, creeping, crude walking and mature walking through which normal children develop, is directly related to the amphibian, reptilian and mammalian evolutionary ancestors. Novella, S MD (p1).

As we move naturally, we move energy around our body and integrate the left and right hemispheres of the brain. My own personal experience of overcoming dyslexia was through a programme of cross crawl repatterning designed by two doctors called Doman and Delacato. They discovered that babies that do not crawl evolve from an early programming of homo-lateral movement to walking and skip the cross crawl development. This leads to a desynchronised brain pattern that can give rise to dyslexia, dyscalculia and dyspraxia.

Therefore, my search went further into walking patterns. The problem with research into bodily function is the reductionist approach, which disregards the overall coordination or integration of the body. “The reductionist approach assumes it is virtually impossible to study phenomena at the level of the whole organism simply because it is too complex”. Oschman J., p48 (2000).Energy Medicine

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Most of the data I could find on walking was the anatomical, Newtonian approach to movement. The whole idea of Hatsumi's Gairon approach was to include everything and he explained it was everywhere in nature.

The traditional Newtonian concept of causality excluded non-deterministic data, because the information did not fit into its paradigm. The accepted knowledge that muscles moved bones by contraction and that bones were the weight bearers of the body was not sufficient to demonstrate the co ordination of natural movement.

In nature there is concept known as ephemerisation, which means minimum effort and maximum output. When this is applied to a Newtonian approach of body movement, it does not apply.

The earliest form of movement evolved by the division of somites to become flexor muscles in the spines of fish. They simply contracted and at the end phase of contraction the opposing set of flexors would contract. This produced movement in the fish with minimal use of the brain and body with maximum diversity of its power. This was the kind of movement potential that Dr Hatsumi demonstrated in his almost floating walking style.

Dr. Oshman PHD., in the seventies began to study the effects of pressure on the tissues of the body. He describes research into the level of the simple cellular matrix. "We now know that the cell is filled with filaments and tubes and fibres and trabeculae collectively called the cytoplasmic matrix or cytoskeleton". Oshman, I. p45 (2000). This breakthrough in cellular makeup led to new information as to the evolvement and makeup of bodily tissues. It also demonstrated the scientific basis for the interconnectedness and continuity of the parts of the living organism. This was a piece of the puzzle in my quest for Hatsumi's Gairon principle.

Tissues evolve according to the stresses imposed on them in their developmental stages. This is the basis of Wolff's law of trabeculae development in bones and tissue. The fish and its spinal movement described earlier were sufficient for the compression forces of water to provide it with projectile movement with flexor muscles only on its spine.

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For a fish like organism to leave the watery environment, its first new stress was gravity, a compressive force. Now two flexor muscles are not enough to move through three-dimensional gravitational space. Therefore, the next development was to have antagonistic extensor muscles to work with the flexors. This also adds the extra dimension to bring in rotation and side bending qualities in the spine.

As creatures became more land capable, uprightness was a sought after quality. This caused the trabeculae formation in the cellular matrix to react. When collagen cells are close packed, they produce icosahedrons and the molecules of collagen when stacked produce triple helix shapes. These threads of collagen weave into the fabric of tissue to develop lines of stress balancing strength against compressive or compression forces. This ability at cell level is an inherent blueprint for organisms to balance against a stress and maintain its integrity. This tension balanced across integrity became known as the concept of tensegrity.

This concept was first developed by a man called Kenneth Snelson, born in Pendleton, Oregon in 1927. He said, “My art is concerned with nature in its primary aspect, the patterns of physical forces in three dimensional space.” He developed a three-way weave structure consisting of rigid compression, tubes pushing outward, held together by flexible tension cables pulling inward. These polyhedral units could be stacked in a way reminiscent of a beehive structure. Their antagonistic reciprocal tension and compression gives them powerful structural integrity omni directionally in three-dimensional space.

Robert Buckminster Fullers actually coined the term tensegrity and as a philosopher and engineer developed architectural design and developed a geodesic dome. Geodesics are based on the mathematics of special relationships. The dome is all or part of a sphere, the shell of which is made of rigid struts forming equilateral triangles. The tensegrity across these structures creates and “everywhere the same energy”, symmetry.

This was the Gairon, the interconnectedness I was searching for to explain the global effect of Dr. Hatsumi’s touch.

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In the 1970's a Dr Stephen Levin maintained that in fact the body is a tensegrity structure. The soft tissues of the body provide tension and the bones and incompressible fluids in the body compartments providing compression. In this model the bones act as spacers and providing the divergent force needed to hold the space open. He describes the body as "A soft tissue entity, with local bony spacers, rather than a hard tissue entity with soft tissue motor units". Live lecture 16th April (2005)

The ligaments and soft tissues are "constructed with soft viscoelastic materials that behave non linearly" Journal of Mechanics in Medicine and Biology. Volume 2, 3, and 4, 375-388 World Scientific Publishing Co.

This explained the body's archaeological trabeculae footprint in the formation of our bones. If the spine is constructed in a pillar and beam Newtonian way, then the calculated forces needed for a grandfather to lift his three-year-old grandchild would crush the spine.

The laws of tensegrity allowed me to understand the principles of Dr. Hatsumi's natural movement strategies and its power without strength.

The next problem was to be able to control the tensegrity of the body from an external source of contact. Dr. Levin in describing the body as a tensegrous unit also explained that the tensegrity breaks at the interface or periphery of the body.

Injury to tissue affects the play of movement of a joint, the play is the non linear part of a curve which is measurable and reproducible. My previous attempts at applying pressure did not produce the correction to the joints restriction. I began to work on the angle and depth of the contact hand, but it was body movement that fulfilled the criteria I was searching for.

The natural movement principles of Dr Hatsumi are the opposite of Newtonian or biomechanical principles applied to the body. The fundamental difference is that in natural movement principles you move bones together with the minimal amount of

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expenditure of energy. By approximating bones with minimal muscle contraction the body remains relaxed and your contact with the tensegrity interface melds as one unit. The recipient's body tissue accepts your applied pressure through the interface connection. This contact allows you to alter the pulls of the restriction to normalise joint play even at a distance from the contact point.

With this protocol it is now possible to act on the body's tissues to normalise musculo-skeletal injured sites with a reproducible and predictable pressure therapy approach. This approach is endorsed by Dr. Stephen Levin and can now form the underpinning of our approach in Amatsu and become the base for further research.

The human upright bipedal walk has in it the potential for a body- mind- spirit principle known as SHIN GI TAI ICHI. This translates as SHIN our spirit or affective domain, GI as the person in the kinaesthetic or psychomotor domain and the TAI the mind in the cognitive realm. As we walk move and work in this behaviour, any performed task is in the NOW ICHI as one moment. This form of awareness and movement is our heritage of nature's evolvement of the psyche-soma of the upright bipedal human.

I utilise and explain the virtues of this kind of movement to the therapists I train. Firstly, it encompasses a high level of ergonomic safety for the practitioner and secondly becomes the generator of the tactile power and feeling for the psychomotor skill of the therapy.

As my research develops, I hope to develop a programme of movement-orientated exercises to help dyslexic and dyspraxia conditions.

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