

# Symbolic Movement

## The Taijitu and Tai Chi Chuan

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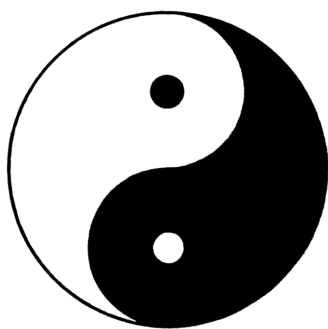
What exactly is tai chi chuan?

We can say that it is an effective martial art and a healthful exercise, but we also have to admit that it is an art born of mystery since we don't really know who invented it. Was it created by legendary Taoist monk Chang San-feng, the Chen family of Henan Province, or someone between, such as itinerate martial artist Wang Chung-yueh who reputedly taught the Chens? We'll probably never know, and this adds to the art's mystique, lending it a sense of emerging directly from the Tao as a gift to humankind.

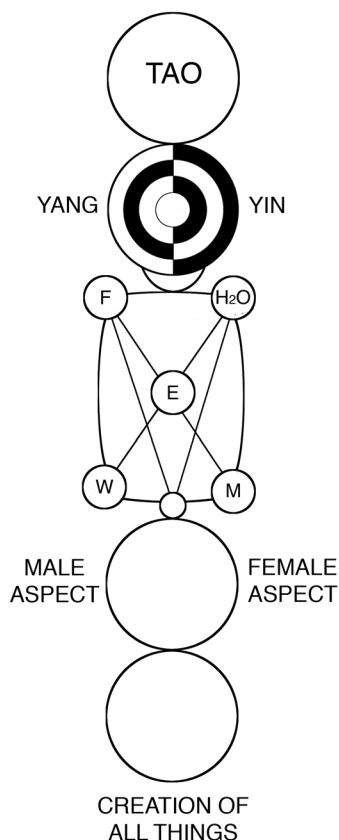
We also can say that it is an art of contradictions. You move slowly in order to be able to move fast. You move deliberately in order to be able to move instinctively. You move with continuity so you can disrupt continuity. You separate solidness and emptiness only to recombine them. You strive to be like steel embedded in cotton.

Obviously, tai chi is not a particular form or a specific set of movements, otherwise there would be only one version instead of the variety we now see: five major recognized styles and numerous modified, abbreviated, or hybrid forms. But the efficacy of these many styles—several of which are very different in appearance, “flavor,” and even specific points of utility—indicates that each has something that can be called “tai chi.”

Prior to the nineteenth century, the art was called, among other names, Chen boxing, soft boxing (because of the relaxed execution of the solo practice routine), long boxing (because of the lengthy solo practice routine), or often, the Thirteen Postures. This last refers to the sum of



**Figure 1** The taijitu depicts the major forces of opposition and cooperation that underlie the functioning of reality.



**Figure 2** Chou Lien-chi's diagram showing the five levels of reality, including the five elements (F= fire, H<sub>2</sub>O=water, M=metal, W=wood, E=earth).

tai chi's four principal energies, four ancillary energies, and five basic stepping patterns, all of which comprise the basic precepts by which tai chi operates.

Then, as one story goes, in the mid 1800s, a scholar in the Imperial Court named Ong Tong-he witnessed a demonstration match by the great and undefeated founder of Yang style, Yang Lu-chan. After the match, Ong wrote: "Hands holding Taiji shakes the whole world, a chest containing ultimate skill defeats a gathering of heroes."<sup>1</sup> Ong could only have been thinking of the way Yang's art embodied the dynamics of movement and physical reality expressed by the tai chi symbol—a symbol that depicts both the mysterious Tao and the manifold contradictions of reality that function together to create a unified whole.

The tai chi symbol—also called the *taijitu*—is well known almost the world over as a representation of Taoism. (Figure 1) This symbol is composed of a circle evenly divided by a symmetrical wavy line into two fish shapes embracing each other. One side is colored white and the other black, and each side is decorated in mirror image with a spot of color opposite that of its own composition. The white represents the active principle of reality—yang energy—and the black represents the passive principle—yin energy.

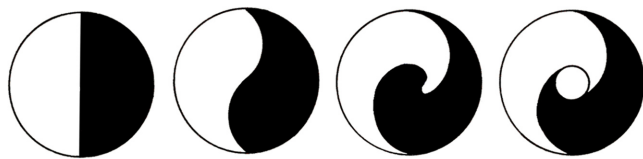
This familiar symbol wasn't the first attempt to create a graphic based on the interplay of yang and yin, the basic underlying energies of reality. The first we know of was by an eleventh-century Chinese philosopher named Chou Lien-chi. (Figure 2) Chou's complex diagram has five tiers, each of which carries a specific meaning in describing how duality and then multiplicity arise from the Tao, which is the ground state of being. But as graphic designers know, complexity leads to dispersion, while simplicity creates resonance. The simpler a logo, the more effective it is, particularly if its simplicity is charged with visual metaphor. Thus, later Chinese thinkers

reconfigured Chou's diagram, and the result was a symbol that, despite its visual simplicity, is one of the most profound images to be found on the planet. And it is an image that is of special importance to the tai chi chuanist.

The fish design not only was more aesthetic, but it also added two elements missing in Chou's original depiction. The first was the wavy line separating the two aspects of yang and yin. On the larger scale, the opposing halves of the taijitu illustrate the duality of all the universal conditions, forces, impulses, and states known in reality: forward/backward, male/female, up/down, hot/cold, on/off, good/evil, attack/retreat...the list is practically endless. In the West, we tend to pay little overt attention to such supposedly naïve concepts and outmoded philosophies in favor of science and technology, yet this is ironic considering the fact that inherent duality lies at the heart of our science, technology, and culture.

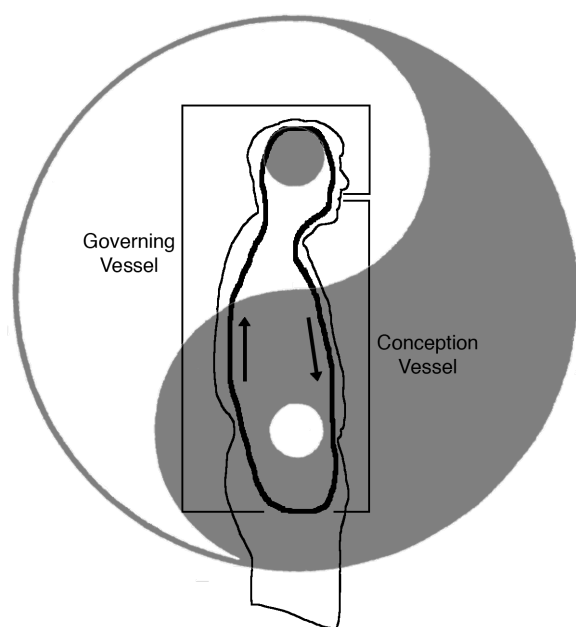
Theoretical physicists now recognize that the ultimate state of matter consists not of tiny material building blocks but of vibrations of energy that are composed of waves with peaks of positive energy and troughs of negative energy. Some even liken reality to a vast, three-dimensional projection—the ultimate virtual reality. Likewise, our modern technology and culture is based on computers, which utilize binary codes as their core function. And the very electricity that powers these computers—and our entire modern world—is charged plus and minus. Ethically, as well, we have long lived with yang and yin, disguised as the twin concepts of good and evil or, as the more agnostic might put it, good and bad or ethical and unethical. Some philosophers have gone so far as to state that there are really only two emotions: love and fear or, alternately, attraction and repulsion.

But the dichotomies of yang and yin are not the end of the tai chi symbol, merely the stage. The taijitu not only epitomizes the major forces of opposition and cooperation that create reality, it visualizes in two dimensions—height and width—a sphere, implying the three-dimensionality of reality. And the wavy line signifies spin, or motion over a duration, thus defining the fourth dimension, time. The spinning movement also suggests the cyclical nature of reality and being.



**Figure 3** the taijitu's wavy line demonstrates movement not just in space, but over time. The vortex that can develop in the center like the eye of a hurricane epitomizes the core of emptiness or tranquility that underlies all action.

The notion of the Tao is contained in this movement, as well, for if the spinning of the two fish increases in speed, the taijitu forms a whirling vortex, much like hurricanes, tornados, or whirlpools form eyes, with the void of the Tao in the center. (Figure 3) This void also can represent the es-



**Figure 4** The taijitu demonstrates the flow of chi through the Microcosmic Orbit.

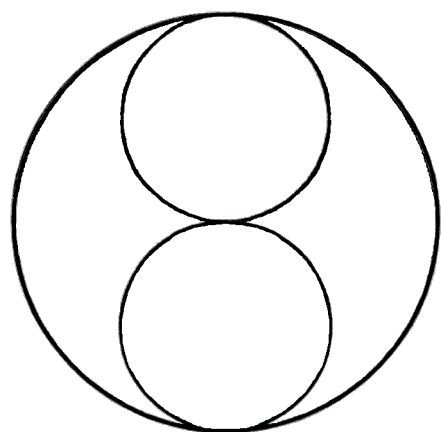
sential peace or stillness that resides within natural action. It is the calm at the eye of the storm, the warrior's detachment during the fury of battle, or the athlete's composure in the midst of competition.

The second new element added to this reconfigured diagram was the placing of spots of the opposite color within the largest part of each fish. These spots, or the "eyes" of the fishes, show that even in the fullness of a given state there resides the seed of its opposite. And the eyes lend the taijitu meaning in other directions. The symbol depicts, for example, two very important physiological structures. One is the bifurcated, left/right, rational/intuitive

brain with two eyes staring into the world—or into itself.

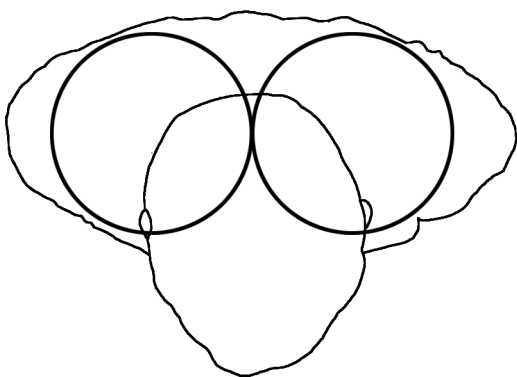
The other physiological structure is the Microcosmic Orbit, the principal circuit through which chi energy flows through the body. The Microcosmic Orbit consists of two main channels: the Conception Vessel, which runs downward from the tip of the tongue, through the digestive tract, to the perineum, and the Governing Vessel, which ascends the spine from the

tailbone and runs through the brain to the roof of the mouth. In terms of chi energy, the Conception Vessel is yin and its energy center is the tantien, located in the viscera. The Governing Vessel is yang, and its primary energy center is the brain. Symbolically, the taijitu suggests these two channels and the all-important circuit they form. (Figure 4) Add the idea of spinning, and the symbol actually depicts the chi cycling through the Microcosmic Orbit.



**Figure 5** If the taijitu reverses on every other spin, it creates a figure eight.

If the spinning of the taijitu is reversed on every complete spin, the composite wavy line forms a figure-eight. (Figure 5) Although the Chinese thinkers who created the tai chi symbol could not know that



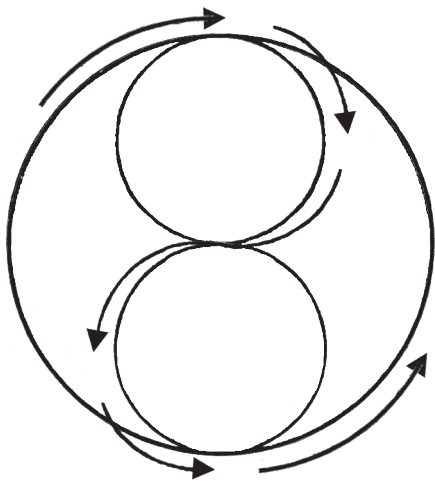
**Figure 6** The figure eight formed by reversing the taijitu's spin depicts the reversal of waist and hip motion that is so important to the functioning of tai chi.

an elongated figure-eight laid on its side eventually would be used as a symbol for infinity, it is interesting that the infinity symbol crops up here within the taijitu, which is, itself, a symbol of the eternal void. Nor could the taijitu's creators know that, centuries later, this figure-eight also would depict an important aspect of tai chi chuan: the constantly reversing circular motion of the waist and hips that is so important to the functioning of tai chi as an exercise and as a martial art. (Figure 6)

Interestingly, the recurved line through the middle of the tai chi symbol is a sine wave, which is a waveform with uniform peaks and troughs—or, balanced yang and yin. This waveform not only symbolically defines the waves of energy that create reality, it also defines tai chi's ability to create a wavelike energy that can be used to draw in an opponent's force and expel it or to unleash an explosive whipping force. These abilities align with two opposing forces that we know from physics: the yang of centrifugal force, which is the force that tends to impel an object outward from the center of rotation, and the yin of centripetal force, which is the force that pulls inward toward the center of a rotation. Never mind that centripetal force is considered to be a false force. It can be manipulated as if it were a real one, and both it and centrifugal force are implied in the tai chi symbol: centrifugal force in the peripheral circle and centripetal force in the curved central line.

It is the recurved nature of that central line that is significant for the tai chi chuanist, along with the idea that yang is constantly changing to yin and yin to yang, for the line is what provides a path to smoothly transition from one to the other and back again—smooth in the sense that the force does not have to stop to change direction, but can transform into its opposite without pause or angular change. And it is in the moment of change from yang to yin or yin to yang that tai chi's power manifests. As pure yang force swinging around the outside circle changes to yin, it spirals inward toward the inside of the circle until it reaches the center of the circle, or, the pure yin state. (Figure 7) At this point, the pure yin force begins to arc along the recurve, back toward the circumference, becoming, in the process, yang force and also reversing the direction of the circle's spin.

The thing to note about the way the yang and yin forces change as they move through this

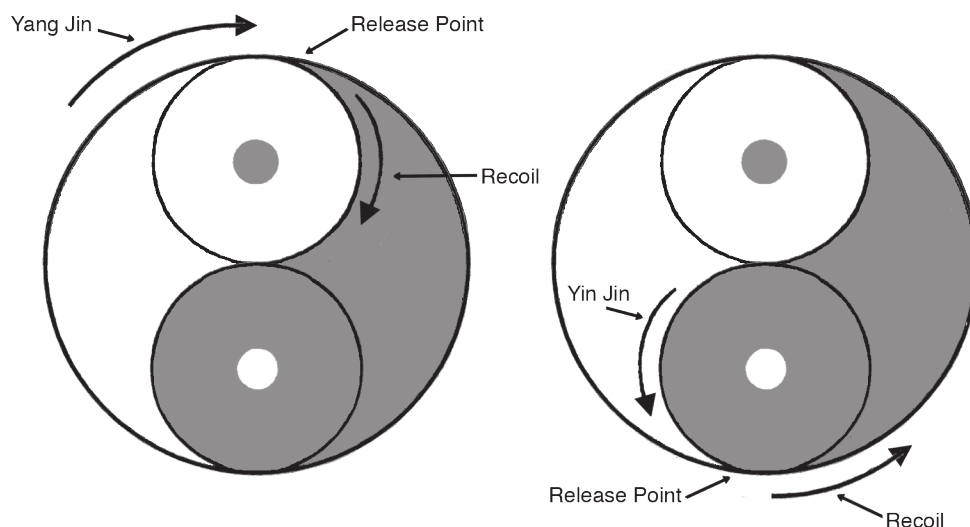


**Figure 7** The spin of the taijitu can change direction without stopping by threading the energy through the center and back out to the periphery.

configuration is that as the circular, expansive yang force curves inward, changing to yin, it tightens up and condenses. This stores a considerable compression of energy. Due to the rapidly increasing inward turn of the tai chi symbol's curve, the compression is not a simple linear deceleration but exhibits instead a progressively rapid deceleration and is thus exponential in nature. When the force reaches its ultimate compression at the center of the symbol, it begins to curve outward, decompressing as it expands with exponentially increasing acceleration. Circling exponentially inward from the peripheral circle releases yang jin, or force, and generates yin jin, and circling

exponentially outward from the center releases yin jin and generates yang jin.

So, the recurved line that separates the two halves of the tai chi symbol points to a way to quickly and powerfully gather, store, and release energy within circularity. The tai chi exponent moves his energy (force and chi), backed by the momentum of the entire body, along an arc around the peripheral circle, then suddenly changes the direction of the energy's trajectory by



**Figure 8** Yang energy is generated around the peripheral circle and released around the head of the yang fish. Yin energy is generated through the recurved central line and released around the head of the yin fish.



pulling it backward or pushing it forward—depending on whether the movement is yang or yin—around one or the other head of the recurved line. At the instant the energy rounds the head of the recurve, it reaches its maximum possible acceleration or deceleration and power, and at this moment, the chuanist abruptly releases the energy of the movement, not by forcibly halting it, but by simply letting it go. (Figure 8) This causes the limb carrying the energy to recoil a short distance further around the recurve, but because a great deal of momentum has built up behind the movement, the energy of the movement continues in a straight line and is released into the opponent in the case of yang force, or away from the opponent in the case of yin force. This rapid, exponential acceleration and deceleration around the heads of the re-curves followed by the letting go of the energy is the same thing that happens when a snaking whip is suddenly jerked back and halted to release its energy with a crack, and it also is what gives tai chi its characteristic whipping and jerking release of energy.

We can illustrate this using an example from the physical world to show how it is possible to “ride” the energy of the yang portion of the recurve and then release the energy outward. Tai chi power is often equated with the force of water. The Tai Chi Classics state: “No force is softer or more penetrating than water, yet none is more powerful.” For this, don’t think of a flood, which can be either a chaotic, rushing churn or a slowly rising inundation. Think instead of waves breaking on a beach, and put yourself inside the wave, as a surfer does when the wave breaks overhead and the surfer is then riding inside the “tube.”

The tube is formed of a highly organized, uprising, and powerful wall of water that, as it completes its upward sweep, arcs overhead and falls forward, dissipating into disorganization—yang to yin. And the tube in which the surfer rides is not circular in shape but is shaped like a warped teardrop—like one of the tai chi symbol’s fish. (Figure 9) Once the wave arcs overhead, it dissipates because it is no longer backed by the energy that propelled it. The surfer merely rides the wave’s upsweeping yang energy for as long as the wave lasts.



**Figure 9** A breaking wave forms the bent teardrop shape of one of the taijitu fish, and a surfer can ride the upwelling yang energy.

However, this only relates to a surfer who wants a long ride as opposed to

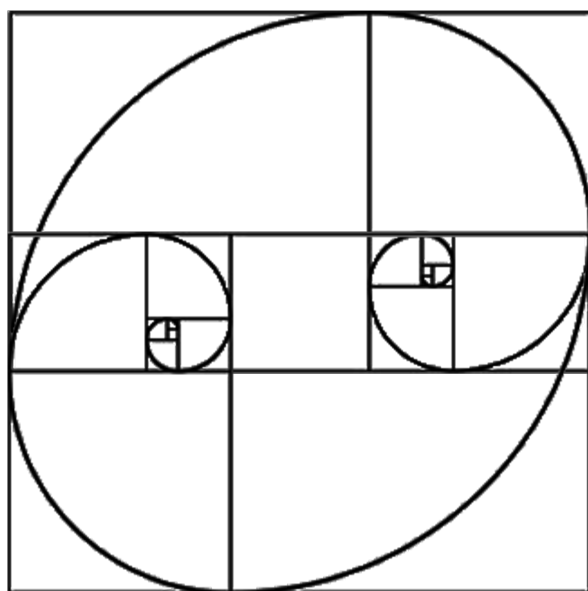
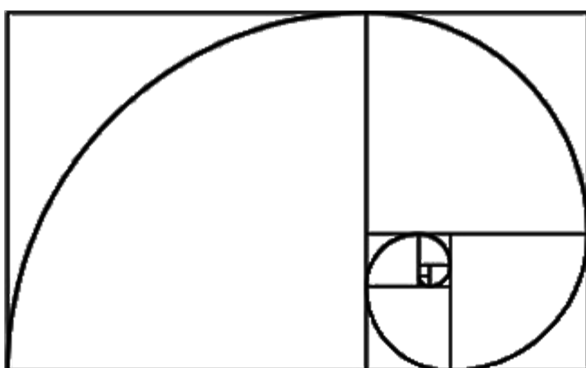
those who prefer to perform aerial acrobatics by jumping their boards over the lips of breaking waves. Any breaking wave consists of the yang upsweep, but some waves aren't powerful enough or don't contain enough water to actually break overhead and form a tube. Even so, the lip of the wave is the moment where the force of the wave circling around the head of the yang fish suddenly dips inward into the recurve, changing to yin and gaining a sudden final burst and release of energy. This also is the point at which acrobatic surfers can tap into the full strength of the yang uplift to propel themselves into the air to do spins and flips, leaving the propelling force of the water behind. They are taking advantage of the same energy that snaps off the tip of a whip, the same energy that the tai chi exponent uses when he whips his limb around the head of the yang fish then suddenly relaxes it, causing the energy of the movement to continue on in a straight line.

Now, let's look at the tai chi symbol and the idea of spiraling inward and outward in a way that illustrates not only the functionality of tai chi but also its universal beauty. This has to do with a mathematical concept called the "golden ratio." Mathematically, the golden ratio occurs when the ratio of two quantities is the same as the ratio of their sum to the larger of the two quantities. In other words, where  $a$  is the larger quantity, there is a golden ratio if  $a+b$  is to  $a$  as  $a$  is to  $b$ . Mathematicians since Euclid have studied the properties of the golden ratio, and in 1202, the Italian mathematician Fibonacci (Leonardo Pisano Bigollo) published a sequence of numbers—called the Fibonacci Sequence—that approximates the golden ratio. The Fibonacci Sequence has found application in computer algorithms, graphs, and other scientific and mathematical techniques.

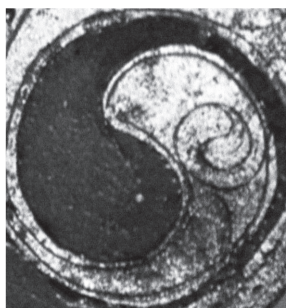
Indeed, the golden ratio also is called the "Divine Proportion" because it is exhibited in natural physical structures, such as the branching of trees, the arrangement of leaves on a stem, the fruit sprouts of a pineapple, the flowering of an artichoke, the uncurling of a fern, the arrangement of a pine cone, the veins of leaves, the spiral form of some mollusk shells, and many other instances. Adolf Zeising, whose main interests were mathematics and philosophy, found the golden ratio expressed in the proportions of chemical compounds, the geometry of crystals, and the skeletons and the branching of veins and nerves in animals. The golden ratio's ubiquitous presence throughout nature prompted him to see it as a universal law of natural structure.

Artists as well as scientists and mathematicians have been fascinated with the golden ratio. The Argentinean sculptor, Pablo Tosto, has listed more than 350 works by well-known artists whose canvasses feature the golden ratio or a close approximation. It is found in the architecture of the Great Mosque of Kairouan, and the famous Swiss architect Le Corbusier extensively used the golden ratio in his designs. It also is present in the proportions of Medieval manuscripts,





**Figure 10** The golden spiral, a foundation of order in nature, resembles a single taijitu fish. When the golden spiral is doubled, it creates a figure resembling the taijitu.



**Figure 11** Designs similar to the taijitu have been used by different cultures through the centuries: left, an ornamental Celtic bronze plaque from horse gear; right, a Roman army shield design.<sup>3</sup>

and even in music. Musicologist Roy Howat has observed that the formal boundaries of Claude Debussy's *La Mer* correspond exactly to the golden ratio, although it is disputed whether this was deliberate or not.<sup>2</sup>

For tai chi enthusiasts, the golden ratio should have its own special meaning, particularly when it is converted, using the Fibonacci Sequence or other techniques, into a visual representation

called the “golden spiral.” The golden spiral is a logarithmic spiral that gets wider by a factor of the golden ratio for every quarter turn it makes. One look at this spiral (Figure 10), and you will instantly see what I mean. A single spiral is similar to one tai chi symbol fish, and when the spiral is doubled, it forms an approximation of the entire tai chi symbol—or, rather, the tai chi symbol approximates a doubled golden spiral.

Interestingly enough, the tai chi symbol, in its modern form, was developed in China at about the same time that Fibonacci was defining his mathematical sequence, but it has a history that goes back much farther. It can be found in motifs of several Western cultures over the centuries, although there seems to be no direct influence by or upon the Chinese scholars who developed the Taoist version. (Figure 11)

The tai chi symbol, it would seem, does carry deep and manifold universal meaning, which is no great surprise considering its resemblance to the golden spiral, and the basis of both in the golden ratio. It's no wonder that tai chi chuan, which constantly evokes the form of the taijitu—and thus the golden spiral—in its movements, is generally considered to be the most elegant as well as one of the most functional of the martial arts.

I encourage the reader to look up the following entries in *Wikipedia* to see other examples from science and engineering regarding the operation of energy through the tai chi symbol: “Cassini Oval,” “Poinot Spirals,” “Spiric Sections,” “Trammel of Archimedes,” “Watt’s Curve,” and “Watt’s Linkage.” You may understand the science as little as I did, but the images are effective in demonstrating the universality of the energy transfer implied by the taijitu. The first three show still images, but the latter three feature very interesting animations of how energy can be manipulated and magnified by sending it through the taijitu’s curves or around the ends of elongated ovals.

## Footnotes

1 *Wikipedia* entry: “Tai Chi” ([http://en.wikipedia.org/wiki/Tai\\_chi](http://en.wikipedia.org/wiki/Tai_chi)).

2 *Wikipedia* entries: “Golden Ratio” ([http://en.wikipedia.org/wiki/Golden\\_ratio](http://en.wikipedia.org/wiki/Golden_ratio)), and “Golden Spiral” ([http://en.wikipedia.org/wiki/Golden\\_spiral](http://en.wikipedia.org/wiki/Golden_spiral)).

3 *Wikipedia* entry: “Taijitu” (<http://en.wikipedia.org/wiki/Taijitu>).