

Measuring Qi Energy

By Dr. Sadao Hayano

The Qigong therapist creates and directs Qi for internal and external purposes, a task that requires the highest degree of concentration and intention. The efficacy of the visualization process can be greatly augmented by a thorough understanding of the cellular, anatomical, and physics principles employed. It is our purpose to explore these areas from a scientific perspective and thereby to enhance the skills of practitioners of Reiki, Qigong and Huna therapies.

Ancient therapists were not subject to the distractions and complex cravings of the modern material world. It was much easier then to apply therapy in their society. Healing could be effective then purely through intuition, concentration and intention. However, the ramifications and complexities of modern life may render these traditional methodologies inadequate for use in today's world. At the same time, however, modern scientific developments have provided us with a deeper practical understanding of the forces employed in these ancient arts, an understanding which, when visualized and applied by the practitioner, can substantially enhance the effect of Reiki, Qigong or Huna therapy. This article contains some basic physics, chemistry and biology as well as insights into the actual healing processes.

Qi energy is directly affected by the therapist's thought process and visualization. For example, when the therapist is directing Qi to work on the heart meridian (either the therapist's own or that of a patient) he or she must visualize the meridian precisely, from the location and image of the physical heart to acupuncture point Ht 1 and through Ht 9 as much detail as possible, see Fig 1. When the therapist works on the cellular level of the human body, she needs to be extremely familiar with the detailed image of the cells and organelles and with their functions in order to achieve maximum healing power. When therapists send the color energy to the patient, they must have thorough knowledge of the basic relationship between color and electromagnetic wave properties. Thus, for example, therapists send a red hue with physical properties such as brightness, vibration of color, etc.

Energy

In energy work, the intention of the therapist is everything. The therapist focuses upon intention in order to heal the patient, and that intention brings the therapist's higher self down on the right organs with the right energy, emotion and spirituality. Energy in general is defined in science as that which moves objects, causes objects to change their state (such as water to ice), sustains life in living things, etc.

Then what is Qi energy ? Qi is an energy emitted by Qi therapists and carried by electromagnetic wave vibrations. However, all human bodies emit Qi energy, energy which may be measured as temperature with a thermograph. As the vibratory frequency of Qi energy in the air or in a vacuum falls outside that of visible light, thus we can not see its color directly with the naked eye. This vibration falls in the far infra-red part of the spectrum, to use physics terminology. Qigong therapists project Qi energy to the patient and move it within the body in order to heal human malfunctions. This was explained in the article "Quantum Gathering Qi" by Sadao Hayano, Qi, The Journal of Traditional Eastern Health & Fitness, Summer 2004. Although, as state above, the human eye is unable to see Qi energy directly, this energy can be calculated and measured by instruments.

Different forms of energy can be changed without loss of energy, for example, when the potential energy of an apple hanging from a tree and under the influence of earth's gravitational pull is converted to kinetic energy when it drops to earth. The potential energy becomes zero when it is converted to kinetic energy, which, in turn, ceases upon impact on earth, causing temperature rise of the apple and earth, for instance. In this case, the potential energy A of the apple before dropped is equal to the kinetic energy B of the apple after being dropped, consistent with the principle of conservation of energy in physics. That is, $A = B = C$ where C is the heat energy of temperature rise. Our interest in this article is to see how Qi energy changes to therapeutic energy based on the conservation of energy principle. For our purposes, Qi energy as projected by Reiki, Qigong and Huna therapies is assumed to be the same kind of energy, that is, a subtle energy.

As Dr. Chow states in her meditation process:

See that (balanced: the writer's note) part of your body, whether it be mental, physical or spiritual, as whole, healthy, vibrant and alive. Feel this vibrancy, aliveness, and healthiness. Whatever the image of being healthy is to you, let that image come to mind. Just let the image be beautiful and perfect.

The image may be glowing pink tissue, a white light, a lovely warm feeling, different color, beautiful flowers, clear water, etc. The body will choose the image(s) or feeling(s) it needs. Let good qi push all the negative energy out. Then spread the beautiful and perfect image throughout your body, mind, and spirit. Become

that beautiful and perfect image.

From the book "Qigong" by Charles T McGee with Qigong Master Effie Poy Yew Chow, 1994.
www.eastwestqi.com.

Color Energy

When Reiki, Qigong, or Huna therapists treat patients, they deal and work with light and color energy as a part of healing process. For example, the Reiki therapist sends an image of a Reiki symbol such as CKR (name of symbol) over the patient's body when initiating a Reiki therapy session. Those unfamiliar with the CKR symbol may think of it simply as a spiral pattern. The actual pattern in detail varies depending upon the individual Reiki school and is immaterial for purposes of this article. The reader desiring a fuller explanation may find it in any Reiki web site and in a book "Essential Reiki" by Diane Stein, 1995.

New therapists are able to imagine the symbol CKR by drawing CKR mentally and sending it over the patient's body. When the therapist becomes proficient enough, he or she is able to image CKR without going through the drawing process. It is the understanding of this writer that the top therapists image CKR in a mixture of white and violet and that this white color alone is spiraling in a prophetic hue. At this point, the patient is resonating with the Reiki energy as channeled through the therapist.

The following describes the Qi manifestation of Barbara F. Matsuura:

The Color Violet Experienced in Healing and Initiating

First I'd like to say that commonly we call it, the color 'purple', but technically it is called 'violet'. In this paper I will use the term 'violet'.

I notice when I am receiving the Reiki Energy, violet with a background of black and then green in violet's center, moves in and out of my third eye, very dynamic and very beautiful. Sometimes at first the violet can appear to be weak or cloudy. But when I get to a certain point under the influence of a Reiki Energy treatment and the healing is happening, the violet becomes brighter, so glorious, and moves dynamically in and out in a circle, then in the center of the moving violet, green appears. It also can be cloudy until the healing happens and it becomes vibrate and glorious. I perceive the green as the color of my heart energy.

When I pass a Reiki Attunement, I feel/sense/see the violet coming out of the Reiki White Light that I am transmitting to the Initiate. In other words, as the White Light energy touches upon my crown, the violet comes out of it, as its vibrational frequency is that of the crown chakra. The violet enters the crown on the ray of Reiki White Light which I become. Then the violet sinks down through the four upper chakras and continues moving through and mixing with the compassionate heart energy and goes out through the hands creating a balance awakening in the Initiate, see Fig 2.

In Reiki Healing, the Reiki Healing Energy goes to the very essence of one's life and heals Karma or what is recorded in the Akashic Records (infinite records of all actions, thoughts etc. from our past). The Reiki energy "heals the Cause" of the imbalance in the client. The perception of violet on black for me is a Yin aspect of the color violet. Note from the Japanese character of Rei, meaning spiritual wisdom, Rei is Spirit, Spirit is Yin. Whilst the violet on the spectrum of tints with white is Yang energy perception of violet.

According to Johanne Itten's colorstar...we can have the pure color mixed with white (tints) or mixed with black (shades) and it is still considered pure, as it is not mixed with any other color. Violet then remains very pure whether with black or white.

I sense the Yin violet on black in the lower part of the human physical body, a Yin area at the tan'tien which goes deep into the Akashic Records of our eternal lives past. I sense as well the Yang violet on white at the crown, a Yang area. Within our depths, there is infinity. Out to the heavens and beyond there is another infinity. Two infinities but not two, they are One, and the One is the TAO (DAO). The road is different going in and going out but the One remains as One.

So I believe that the color violet, with its Yin and Yang perspective is the highest vibrational color in our universal energy that when brought together and balanced we are in perfect synergy with God. By being continually in the pull between yin and yang in the human duality it is difficult to keep the perfect balance. In the 'healing moment' we are No-where and Everywhere. We are with the Dao, we are Dao, we are with God/Goddess energy we are the God/Goddess energy. And the vehicle is the radiant color... Violet.

Barbara F. Matsuura, Integrated Healing Arts Centre of Japan. June 1, 2006.
www.naturalhealingcenter.com/creative/barbara_matsuura.htm.

Red Light and Violet Light

Since Qi is an energy carried by electromagnetic wave, the therapists need to know something about the electromagnetic spectrum. The vibration frequencies of visible light color range from $f_r = 3.75 \times 10^{14}$

cycles/sec for red to $f_v = 7.89 \times 10^{14}$ cycles/sec for violet. We note that the speed of light is $c = 3 \times 10^8$ meters/sec. The energy E of one photon is calculated using Einstein Photoelectric Equation, $E = hf$, where h is Planck's constant and is 6.63×10^{-34} Joules·sec. Thus, $E_r = 6.63 \times 10^{-34} \times 3.75 \times 10^{14}$ Joules/photon = 2.49×10^{-19} Joules/photon for red and $E_v = 5.23 \times 10^{-19}$ Joules/photon for violet.

Thus, the energy of violet light is 2.10 (= $5.23/2.49$) times stronger than red light. Since the quantity of heat energy required to raise one degree Celsius for one gram of water is known as 4.19 Joules (this amount is exactly the definition of one calorie), the number of photons to do the job is $N_r = 4.19/(2.49 \times 10^{-19})$ photons = 1.7×10^{19} photons for red and $N_v = .8 \times 10^{19}$ photons for violet. However, the strength (brightness) of light is determined by the number of photons according to Einstein's Photoelectric Effect.

Note the adults require 2400 kcal per day to maintain health levels.

Qi Light

Qi energy is known to have the frequency $f_q = 3 \times 10^{14}$ cycles per sec. and a wave length $\lambda = 10^{-5}$ m, which define energy $E_q = 1.99 \times 10^{-19}$ Joules/photon for the Qi wave. We note again that the Qi wave is in the spectral region of far infra - red light and can not be directly seen with the human eye. The term 'Qi wave or Qi light' is introduced in this article as the electromagnetic wave (or light) having a wave length $\lambda = 10^{-5}$ m. We thus conclude that the number of photons needed to raise one gram water one degree Celsius are $N_q = 4.19/(1.99 \times 10^{-19})$ photons = 2.1×10^{19} photons for Qi wave.

The new readers may have problems inherently when they are asked to image abstract and inexperienced phenomena such as CKR, Qi energy or light. This is not surprising because our belief system is always connected with the past experiences and knowledge. We are not used to act ourselves based on the abstract concepts without cognitive experiences as such. However, the new Qi/ energy therapists should not be concerned too much about abstractness and unknowns. Real efficacy arises from the seemingly abstract and imaginary intentions at therapy that are in fact connected to and explainable with sciences as we are presenting here.

Atoms, Cells, Tissues, Organs and Systems

Living beings are organized on different levels. The most basic, the atomic level, is similar to that of inanimate objects. Above this level, however, living beings are more complex and organized into levels of cells, tissues, organs and then lastly, systems, in that order. One human is constituted of 6×10^{13} cells of 200 different varieties. With some of these cells used as sensors, changes in our internal and external environments are registered by sense receptors or organs. The sense organs detect changes of touch, vibration, light, sound, etc., and these messages are converted in the sense organs to the electrical neural impulses and are then relayed to the brain. We will discuss some of the senses.

The Sense of Touch

The skin which covers our entire body is the largest organ of the body, forming a layer over the internal organs which protects them from external elements. Nerve receptors as nerve endings in the skin are extremely sensitive, allowing the body to sense hot by heat thermoreceptors, cold by cold thermoreceptors, pain by nociceptors, pressure by Ruffini endings and touch by free endings of nerves, etc. Our sense of touch is also known as the tactile sense. The sense receptors in the skin are activated when we make contact with external objects. While tactile receptors exist throughout the entire body, those in some regions, the finger tips, lips and tongue, have much higher degree of sensitivity. Messages from these tactile senses are then transmitted through the spinal cord to the brain.

Reiki therapists in particular need to be aware of this biological structure of the receptors. The therapists may refer to "Anatomica's Body Atlas" by Laurel Glen Publisher, 2002.

Visual and Auditory Senses

Visual information comes from the external environment into the eye. In humans, visual information comprises 80% of the body's total sensory input. The eye receives rays of light which are sensed by the retina which can be considered to be analogous to film in a camera, see Fig 3. The retina converts light images projected upon it into electrical signals. These visual receptor cells of the retina, about one million cells per eye, consist of rod cells and cone cells, the former being sensitive only to changes in light intensity while the cone cells perceive color. Each visual cell is connected to a nerve fiber and these, combined together make up the optic nerve. The optic nerve, or neuron, relays signals to the visual center of the cerebrum in the brain, a process that results in vision.

Readers may skip the next paragraphs which describe in greater detail the optical/electrical transition process in cells. Just examine and understand Fig 4. The conversion from light signals to electrical signals is accomplished in the two steps. The first is initiated in the retina cell, which normally maintains a negative electrical charge. When a retina cell receives external light stimulus, it activates the cell's ion channel, which, in turn, causes the positive ions to flow in which results in a positive electrical state in the internal cell. This change of polarity of the retina cell is from its normal charge value of -70mv to $+50\text{mv}$. As the second step, this electrical polarity change signals the adjacent nerve cell neuron. Then this change is transmitted as an electrical impulse to the cerebrum in the brain.

Sound comes from the external environment to the ears. This auditory information reaches the cerebrum with electrical impulses very much like those used in visual information transfer. Huna readers may construct its mechanism themselves and may refer to "Defining Quantum Qi" by Sadao Hayano, Qi, The Journal of Traditional Eastern Health & Fitness, Autumn 2005.

Cell Energy: ATP (adenosine triphosphate)

Glucose from food is used to produce energy. Cells (see Fig. 5) break down the ingested food to glucose, $\text{C}_6\text{H}_{12}\text{O}_6$. The glucose, in turn, creates energy through chemical action mainly in an organelle, Mitochondria, in cells. This energy is then used to manufacture energy molecules ATP, $\text{C}_{10}\text{H}_{16}\text{O}_{13}\text{N}_5\text{P}_3$, in cells, see Fig 6. Thus, Mitochondria manufacture energy molecules ATP from glucose and ATP stores its energy internally. One glucose molecule produces 32 ATP molecules and glucose has available energy of $2,880 \text{ kJ/mol}$, while, the total energy in 32 ATP is 1160 kJ/mol . Thus, clearly we are able to convert 40% ($= 1160/2880$) of glucose energy into ATP.

In the cells level of living beings, the motion of cells, biochemical action and transporting of matter in cells consume energy. When cell needs energy, it breaks one of the phosphate bonds, PO_3 , of ATP molecules and obtains energy as noted above. In the systems level of living beings, the ATP energy is able to maintain body temperature, to contract muscles, to activate sensor cells, to transmit nerve signals, etc. Energy requiring in every life activity is supplied with ATP molecule energy. In extreme case, physical or emotional exhaustion depletes ATP completely, leading to death (rigor mortis).

Suppose that the therapist is to revive the patient in rigor mortis by applying Qi with the equivalent amount of ATP molecule energy alone and to cause the patient to start eating food and drinking water with her own volition. If the ATP energy is replaced with Qi wave photons, then the energy (1160 kJ/mol)/32 is needed from them. This is equivalent to

$$N_q = (1160/32)/E_q (\text{photons/ATP mol}) = 1.82 \times 10^{23} \text{ photons/ATP mol}$$

$$= .302 \text{ photons/ATP molecule}$$

where the mol is converted to molecule unit and 1 ATP mol is 6.022×10^{23} (called as Avogadro number) ATP molecules.

Hence, the therapist needs to send a Qi light equivalent to .302 photons to replace the energy of one ATP molecule. In our real world, Qi therapists can send only discrete numbers (1, 2, 3, ...) of photons and one photon is about 3 times of .302 above. Hence, the therapist sends one photon to replace 3 ATP energies.

Conclusion

Some examples of the energy mechanism are described in detail in this article so that we can see its connection to scientific visualizations. Energy with visual color as well as Qi light are presented and some numerical values, such as the number of photons required for healing are calculated using basic quantum theory. Visualization, intention and concentration are the most important aspects of the Reiki, Qigong and Huna therapist's energy work. Modern therapists need a basic scientific knowledge of the physics, chemistry and biology involved in order to achieve this goal successfully.

Fundamental structures in biochemistry are presented from atoms to cells, tissues, organs and systems. A few basic biological and chemical facts about the mechanisms of touching, seeing and hearing have been explained. At the same time, Qi relation to an energy molecule ATP was presented. Energy requiring in life activities is supplied by ATP energy. Assuming a rigor mortis condition caused by total a loss of ATP molecules in the human body, the number of Qi wave photons required to revive the patient was calculated, together with the equivalent ATP molecule energy.

It is to be expected that, armed with a practical grasp of the physical forces used, the therapist will be able to focus the visualization process with more dynamism and apply a far more potent therapy than would otherwise be not possible.

--

Dr Sadao Hayano is an IARP Registered Reiki Practitioner and Medical Qigong Therapist for the past 10 years in San Francisco Bay Area and is VP of Natural Health Organic Farm, a grower and processor of Ashitaba (Japanese whole dried vegetable) www.ashitabagreen.com. He earned his Doctorate from Purdue University in Mechanical Engineering after being educated in Kyoto, Japan. In his leisure time he teaches Tai Chi Chuan and Yoga. He has published articles on topics of Physics, Chemistry, Biology and Mathematics related with Energy Healings such as Qigong and Reiki. He participates and speaks in The World Congress on Qigong with the original science and healing articles. He and his wife, Linda, live in Saratoga, CA.

Article © 2006. Sadao Hayano. All Rights Reserved.