

Reification of Process and Confusion of Levels: the Problem of Qi.

Parallel to the “culture wars” in the USA between those who call themselves reality-based and science-friendly and those who call themselves essentially people of faith is a long-standing culture war between the opponents and proponents of Qi/Ki/Chi as an explanation of martial effectiveness. Often the verbal conflicts become bitter, pitting those who claim that invoking an apparently supernatural explanation is no explanation at all, and those who claim it is obvious that keeping thoughts limited to the material realm mires a person into ignorance and spiritual blight. The fundamental disagreement arises because individually felt experiences cannot not be telepathically co-experienced and validated by another individual. How can one transcend the problems of hallucination and self-deception? The scientific method claims to have the touchstone: independent replication, objective (masked) measurement of effects and consensus reality based on an assumption of an external, lawful universe with internally consistent operations (for an associated philosophy, see <http://www.naturalism.org/>). On the other hand, the supernaturalists claim that the only appropriate measurement tool is the human spirit itself, and that there is an underlying reality of which the surface reality commonly experienced is simply a veil of illusion. To place my biases up front, this article will attempt to uncover the roots for these claims and show that they arise largely from two components: the reification of process and the confusion of levels.

Definition: Reification (from <http://pespmc1.vub.ac.be/ASC/REIFICATION.html>) The process of regarding something abstract as a material entity, Whitehead's "fallacy of misplaced concreteness," e.g., the mistake of confusing a system, which is a construct, with the physical entity described in its terms (*see* general systems theory). In social systems reification is encouraged by the use of language and underlies many processes of constructing social reality (Krippendorff).

In simpler terms, it is taking something that really is a process and thinking of it as a “thing.” Things can be put into bottles, processes cannot. A classical example is fire. In pre-renaissance days, fire was considered an element, and was deemed to be a constituent of every thing seen in the world, along with earth, air and water. The Chinese used 5 elements (fire, water, metal, wood and earth; they seem to have missed out on air), but the idea is the same. When wood burned, it released this element, and left earth behind. Ashes were lighter than wood, so obviously something left, i.e. the fire. It took careful measurement and capture of all the gases and materials involved to determine that no mass was in fact lost (see <http://web.lemoyne.edu/~giunta/EA/LAVOISIERann.HTML> for some of the seminal work). Now, of course, we know that fire is a process: the process of oxidation. This chemical process liberates energy in sufficient quantity to make the molecules of the material and of the atmosphere in contact with the reacting material emit photons (light and heat). Since the atmosphere isn't stationary, the flames wiggle and we appear to see a thing - fire - without seeing that it is simply an epiphenomenon of an unseen process.

How does this apply to Qi? It applies in the same way as we think of “thoughts”, or “things” in our consciousness. Alternatively, consider the word “mind.” What is it? The language I just used automatically declares it to be a “thing”; “consciousness” suffers from the same reification. In actuality, the mind (and consciousness) is a process of the brain. The latter was stunningly demonstrated in an elegant experiment reported in Science, September 2005: Vol. 309(5744), pp. 2228 - 2232 “Breakdown of Cortical Effective Connectivity during Sleep.” I quote the abstract below:

When we fall asleep, consciousness fades yet the brain remains active. Why is this so? To investigate whether changes in cortical information transmission play a role, we used transcranial magnetic stimulation together with high-density electroencephalography and asked how the activation of one cortical area (the premotor area) is transmitted to the rest of the brain. During quiet wakefulness, an initial response (~15 milliseconds) at the stimulation site was followed by a sequence of waves that moved to connected cortical areas several centimeters away. During non-rapid eye movement sleep, the initial response was stronger but was rapidly extinguished and did not propagate beyond the stimulation site. Thus, the fading of consciousness during certain stages of sleep may be related to a breakdown in cortical effective connectivity.

Basically what this says is that consciousness is the result of a process of interconnection and harmonization of neural activity across a linked set of brain chunks. Disconnect the chunks, and consciousness is no more. Anesthesia tells us the same - put neurons to sleep (slow or stop neural processes) and sensation, perception and ultimately awareness (i.e. the mind) all fade. Brain damage points this out even more clearly; there is no mind without a functioning brain to instantiate it.

With this demonstration that the mind is a process even though we reify it, we can return to the idea of Qi.

Definition (from <http://en.wikipedia.org/wiki/Qi>): **Qi**, also commonly spelled *ch'i*, *chi* or *ki*, is a fundamental concept of everyday [Chinese](#) culture, most often defined as "air" or "breath" (for example, a term meaning "[weather](#)" is *tiān qi*, or the "breath of heaven") and, by extension, "life force" or "spiritual energy" that is part of everything that exists. References to qi or similar philosophical concepts as a type of [metaphysical energy](#) that sustains living beings are used in many belief systems, especially in [Asia](#).

It is this extension that is the problem - the idea that there is an “energy” of some subtle type in all things, most especially in living things, that can be directed by the mind, flows through defined channels in the body, produces defined physical effects both internally and externally and can be modulated by external inputs (see also <http://www.skepdic.com/chi.html>).

To give the acupuncturists their due, one can get repeatable physiological effects from needling particular areas on the skin. To give the martial artists their due as well, certain points on the body provide more pain than others, and some points can cause unconsciousness. These are hard facts, and are not in dispute. For acupuncture (and likewise acupressure), the western explanation is usually couched in a combination of pain gating in the spinal cord, distraction and hypnotism (expectation effects) along with neurochemical effects (e.g. histamine release via local irritation/damage). For the martial effects, smacking the skull at gall bladder 20 (see <http://www.fightingarts.com/ubbthreads/showflat.php/Cat/0/Number/15778510/an/0/page/1>) is a decent way to generate a concussion. Any internet search on “vital point strike” will turn up lots of examples of methods to target particular areas. Often these are grouped into “blood gates” and “nerve gates” to differentiate their major effects. Blood gates tend to do things to the blood pressure, usually dropping it so that the person struck loses consciousness. Nerve gates generate sufficient neural input (e.g. pain) to be at least disorienting, if not worse. Recipes are given for sequences of points that magnify the effects. As mentioned above, the recipes work, the points work; what is in discussion is why they work.

Qi is the fundamental concept that is offered as the explanation. Disruptions in qi flow, stoppages or excesses, are invoked to explain the effects and to provide a model of how to predict the effects of various strikes. And it is on this anvil of prediction that qi fails to survive as an explanation, while the western understanding based on nerves, blood vessels and organs succeeds. The fundamental qi model is comprised of 3 sub-models: 5 element theory, quadrant theory and yin/yang polarity theory. The basic assumption is anatomical: there exist actual channels (meridians) through which flows the substance qi, in a specific diurnal rhythm. Each meridian is punctuated by discrete points at which the flow of the qi is most easily influenced. Thus each point lies on a meridian (of a particular element), has an element associated with it as a point (which can be different than the element of its meridian), lies in a quadrant, and has a polarity (I ignore the extra points that lie off the meridians and the extraordinary meridians as well). This model is used to harmonize the recipes: striking across the body (crossing quadrants) is more effective than staying within a quadrant; using a fire point will strengthen the effect of a succeeding metal point, etc. 5 element theory is the most complex component and has 4 relationships series among the elements, normally called cycles: generation, destruction, thief (reduction) and insult (the latter 2 are rarely discussed, see <http://www.fightingarts.com/ubbthreads/showflat.php/Cat/0/Number/15776426/an/0/page/0>). In essence this is modulo arithmetic: set up the circle of elements, and count off skipping none, 1, 2, or 3 for each type of cycle. As you can easily see, this allows any point to be related to any other point. In other words, the theory adds nothing to explain anything. For any two point's elements, I can give you a reason (cycle) why they have a relationship, either positive or negative, or I can justify the statement that they have no relationship (by limiting which cycles I consider). The explanation by 5 element theory is no explanation at all since it has so many “free” terms that it can explain anything; it does not constrain the solution space, and so can never be verified or refuted. Thus it is not a scientific theory. Dr. Zoltan Dienes actually worked this out, by building a computer program that calculated point relationships. He tested it and found that it failed

to predict at least as often as it predicted expected effects (see <http://www.martialartsplanet.com/magazine/articles/fiveelementseq1.htm>).

So we can dismiss the “theories” of qi as having no validity without denying the observed effects of vital point strikes, since the “theories” produce more explanations that there are points needing explaining. But this of course raises the problem of existence - is qi itself “real”?

The only way to answer this is not to attempt the impossible: a proof of non-existence (e.g. I cannot prove that there is no tea cup in orbit around the star Alpha Centari at this very moment), but instead to demonstrate that for every instance where qi is invoked as an explanation, there is an alternate explanation couched in terms of real observables (anatomy, physiology) that accounts for the effect. In other words, if in each instance that an example is provided, I can demonstrate that qi is an unnecessary element, I can lower the need for it to exist as an objective thing to negligible levels. In fact, Bruce Miller has gone so far as to create courses in vital point techniques that do not depend on qi in any manner, but rely on modern western medical knowledge to explain and predict all their effects (see <http://www.quanlikan.com/CMEProducts.html#Anchor-Pressure-35326>). Further, if I can show why the explanation is invoked in the first place, then I can parse this invisible “qi” into observable components that can be demonstrated to have explanatory and predictive value. It is these components are most probably the underlying reality. And here is where reification comes into play.

My argument is this: Qi is the reification of a perceptual process involving kinesthesia and proprioception. Kinesthesia is conscious and provides the data you need in order to know where your limbs and body are even when you can't see them; proprioception is usually below the level of consciousness and provides the input for many postural reflexes and allows multi-muscle coordination.

Definitions (from <http://www.thefreedictionary.com/>)

kin·es·the·sia (kĭn ĭs-thē'zhə, kĭnĭs-) *n.* The sense that detects bodily position, weight, or movement of the muscles, tendons, and joints

pro·pri·o·cep·tion (prō'prē-ō-sēp'shən) *n.* The unconscious perception of movement and spatial orientation arising from stimuli within the body itself

Further, the concepts surrounding qi confuse the levels of subatomic physics (electricity, “energy”, and quantum mechanics), anatomy (brain/nerves, organs and blood vessels) physiology (autoregulatory processes and reflex arcs), and occasionally psychology (autohypnosis, suggestion, and expectancy effects) The concept has found resonance in the western world as well, since it maps easily onto the mind/body dichotomy many people still hold dear (see <http://www.csicop.org/sb/9806/reality-check.html>). The result is a very fuzzy term that can morph to mean almost anything anyone wants it to mean. It would be good for these discussions to be subjected to the discipline of E-Prime, a language convention that seeks to avoid the use of the verb “to be” in order to anchor all

statements in reality and force the explicit declaration of their assumptions (see <http://www.deepleafproductions.com/wilsonlibrary/texts/raw-eprime.html>).

As I see it, qi is often considered a concept beyond effective verbal explanation and subject only to experiential knowledge: you have it or you don't; you believe in it or not. As noted above, the flow of qi through the body is thought to determine health and illness. The issuing of qi is connected with effectiveness of technique in punching and kicking as well as throwing or unbalancing an opponent. Clouding the issue are apocryphal stories of masters blowing out candles from across the room by pointing a finger at them. When asked to explain such things, proponents start to use scientific sounding words. Since there is no way for the physics of a Newtonian world to explain any of the effects, nor within the corpus of modern medical anatomy based on dissection and histology, quantum effects and Heisenberg's uncertainty principle are invoked to provide an apparent rationale for qi. This reflects misunderstanding of these principles and the above noted confusion of levels. The Heisenberg uncertainty principle has significant effects if the item you are measuring and the measuring instrument are akin in scale. Thus one cannot determine both the position and the momentum of an electron, since the measurement device also uses electrons (and their associated electromagnetic fields). However, one can very nicely determine both the position and the momentum of a billiard ball – just bounce one off your forehead, and you will know very intimately both its position and its momentum, and at the same time. Quantum entanglement is also called on to explain how a master of qi can influence another person through an opaque wall, neglecting the problem that quantum entanglement is limited to particles on the quantum scale.

More obvious examples from human experience can be brought to bear. Local anesthesia prevents acupuncture effects (see for instance <http://www.acupuncture.com/research/anestho.htm>). Therefore there is no ancillary system of meridians needed for qi to flow in; anything attributable to qi is an effect of and depends on functioning real neurons. Further it is documented that there are non-responders to various qi manipulations. There is nothing in the theories of qi that permit this to be true. Nevertheless, there are manipulations that seem to work. How can these be explained without invoking qi?

For the point effects, most of the really useful vital points are in fact located over nerves, muscle spindle organs, Golgi tendon organs or other stretch receptors. Striking these produces reflex alteration in muscle tension, some of them leading to collapse of postural control. These are the nerve gates referred to previously. Strikes over the kidney, the liver, or the spleen as well as (obviously) the baroreceptors in the carotid plexus in the neck will cause changes in blood pressure, sometimes leading to unconsciousness. These are the blood gates. None of these effects depends on the existence of qi in any form.

Operationally, the application of qi (if one wishes to use the term at all) as a concept in martial technique can be broken down most usefully into two teachable components—dynamic leverage and mental coordination and visualization. The concept of dynamic leverage includes that of static levers—using small forces on long arms to move heavy

centers attached to them (e.g., any stance has at least one weak direction, any technique has at least one weak angle). Additionally, the concept includes the utilization of the forces produced by an attack in order to defeat it.

Examples include pulling on a moving punch just before its focus to more thoroughly upset an opponent than pushing it sideways or pulling at some other time; avoiding it to simultaneously counterattack into an oncoming body to multiply the impact. If, in addition, the counterattack is aimed into an anatomical weak point or nerve plexus, the perceived impact will be much greater than the physical one, all of which encourages the thought that some esoteric force (qi) was added to the technique that could not have been produced by the muscles. This belief does not help the student learn and can lead to an actual weakening of effort in the mistaken faith that qi will make up the difference.

The mental dimension of qi is the one that most often is taught—"extend your force to the horizon," or "flow with the movement," "...the opponent," or "...the technique" are the phrases used. This is used as a pedagogic trick designed to get the beginner's mind off of the physical details (in which the student tends to get swamped) and into the overall (and thus more coordinated) movement of a technique. Thus a punch done with qi has more power because the verbally thinking mind has gotten out of the way of the spinal and cerebellar feedback loops that have been trained past exhaustion into efficiency. If the mind focuses on a detail (say, the hand twist in a punch), this will interfere with the smooth adding up of all the microforces from the muscle fibers in the coordinated and timed sequence necessary, and the situation develops in which each punch is worse than the preceding. The only way out is to stop and "let go" of the technique, i.e., extend the qi. What this really defines is a control of the field of attention, removing the emphasis on focal attention and moving it into a more diffuse form called ambient attention. Again, no real qi is needed.

Finally, the only demonstrations of qi that seem to work are those that work on a qi master's students. There are sufficient examples reported, even on TV, of people bringing in skeptical martial artists who are simply immune to any qi projection, even though any and all coincidental happenings are immediately grabbed as "proof" and any counter examples are declined as disproof. The usual excuse is an unprovable and irrefutable assertion that it wasn't done right, or the master was "off" or something similar. No statement about qi has ever been shown to be verifiable and simultaneously not explainable by normal modern anatomical and physiological terminology. One specific example I know of involves a master "moving" a line of individuals who are standing behind a curtain. The line is placed front to back and closely coupled to each other with rigid arms having the hands placed on the shoulders of the next person in line. The master waves his hands at the line and the line begins to sway. The trouble is obvious to anyone who knows human physiology and thinks scientifically – first, the swaying has nothing to do with the phase (pulling or pushing) of the master's hands, is often at a different frequency, and is finally explained by the fact that no-one can stand still. By coupling a whole row of people who cannot stand still, the line will act as a set of coupled oscillators and sway, all by itself, no external inputs needed. There is a disturbing philosophical and methodological overlap with the New Age community of

psychics, dowsers, and other charlatans who have never been able to help Randi get rid of his \$1 million challenge (<http://skepdic.com/randi.html>). And until one of the qi masters of any stripe can do so, qi will remain shorthand for ignorance and gullibility when used as a reified term that claims to refer to some objectively real substance.