Energy Medicine East and West: A Natural History of Qi provides a unique, comprehensive overview of Qi or bioenergy for students and practitioners of energy medicines, Chinese and Oriental Medicine, and all disciplines of Complementary and Integrative Medicine. Mayor and Micozzi start with a comparative historical account of the ancient concepts of Qi and vital energy before covering theories of Qi, a discussion of the organized therapeutic modalities based upon Qi, and its applications to specific health and medical conditions. Contributions are included from international experts in the field.

The book moves from anatomical and bioenergetic complementarity of Western vital energy and Eastern Qi, through convergence of perspectives and models to demonstrations of how the traditional therapies are being melded together in a new, original and creative synthesis.

David Mayor and Marc Micozzi are experienced medical practitioners, authors and editors. David Mayor has been actively involved in bioenergy research, practice and publishing for over 30 years, and is author/editor of Electroacupuncture: A practical manual and resource (2007), as well as other acupuncture texts and studies. Marc Micozzi is Professor in the Department of Physiology and Biophysics at Georgetown University School of Medicine, Washington, DC. As author/editor of Fundamentals of Complementary & Alternative Medicine 4E (2011), and 25 other books, he has been writing, editing and teaching on bioenergy, Qi and related topics for 20 years.

"This book offers a timely and thorough examination of the experience and nature of qi, including a series of fascinating philosophical discussions with a direct application to our patients. Required reading for acupuncture practitioners seeking to justify and clarify their clinical reasoning."

Val Hopwood PhD FCSP
Physiotherapist, acupuncturist, researcher and educator
Course director, MSc Acupuncture, Coventry University, UK

"To simply review the chapter headings is to know the truly remarkable expanse of this book... a wonderful bridge between the mysteries of the East and the sciences of the West...well documented, well written, and enlarging both. Enlightening ...nicely depicts outstanding advances in energy psychotherapeutics, thus ultimately helping to move forward the human condition."

Maurie D Pressman MD
Emeritus Clinical Professor of Psychiatry, Temple University School of Medicine, Philadelphia, PA; Emeritus Chairman of Psychiatry, Albert Einstein Medical Center, Philadelphia PA; past President, International Society for the Study of Subtle Energies and Energy Medicine, Lafayette, CO, USA

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Systems theory: tracking and mapping healing with qi

Christopher Low

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INTRODUCTION

The core theme of this chapter can be put as a direct question:

Is there a way of thinking about qi which will enable us to bridge the gaps between the measurable truths of modern biomedical science, the embodied experience of 'energy', and metaphysical description?

For the past three decades there has been expanding public awareness of the potential safety, economy and perceived therapeutic efficacy of healing practices that purport to generate, strengthen and regulate qi. Predictably, this interest has created a need to understand the bodily phenomena associated with qi and the reputed health benefits in concrete, rather than metaphysical, terms. From a Western perspective this means asking 'how' and 'why' qi has the effects on the mind and body that are claimed for it and observed and experienced by many.

Alongside this development there are growing doubts within both complementary and alternative medicine (CAM) and orthodox biomedicine in relation to the current over-reliance on the prevailing scientific model as an investigative paradigm for the appraisal of health and disease. Fundamental questions remain about the nature and quantification of phenomena occurring within the therapeutic dyad of practitioner and patient. Some of these phenomena are widespread and include nonspecific (placebo) effects [1,2], nonlocal healing [3,4] and the therapeutic agency itself. Importantly, the last of these can be viewed as a discrete property of the healing encounter, distinct from the matrix of pharmacological and physiological effects in which it may be embedded.

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In concrete terms, how can qi simultaneously be described as, for example, a force with measurable magnetic properties [5] and also as a metaphor for mediation and interconnectedness [6,7], an intangible notion that is arguably bigger than the human mind can fully grasp? The phenomenon of qi, a Chinese term often loosely translated as 'energy', can be viewed from a dualist philosophical standpoint as the mediating principle between the polar opposites of yin and yang. In the human body this mediation is expressed as physiological process, structural change and substance generation (e.g. blood and body secretions). What is interesting about qi in relation to health and healing is that it does not presuppose a split between mind and body. In fact mind and body are seen as a ‘whole’, which leads to a worldview and a type of medicine that considers all bodily phenomena, including thinking and felt experience, as a continuum of denser or more rarefied aspects of qi. Moreover, qi may be considered as a metaphor with extended possibilities for linking image with bodily and mental processes. Given the Daoist origins of much Chinese medical philosophy, with its ancient roots in animism and the natural world, the concept of qi is clearly manifold and all-encompassing, and cannot simply be ‘trimmed to fit’ the requirements of modern scientific method.

**DEFINITION OF INTERNAL AND EXTERNAL QI**

One distinctive and remarkable feature of qi is that it can be experienced directly both within and outside the body (i.e. intrinsically and extrinsically). This property is at the core of extant health promotion practices such as daoqin (導引) healing, qigong (氣功) and later taiji quan (太極拳). For example, using certain simple techniques within Daoist health promotion practices it becomes possible for individuals to sense the qi of another person [8,9] in addition to observing and experiencing their own responses to the interaction within the dyad. When applied systematically for the purpose of health promotion, this cultivation of qi is known as qigong – literally ‘qi work’. The precursor and generic core of qigong, however, is the much older practice known as daoqin, meaning ‘guiding and pulling [of qi]’ [10–12] described below.

Internal qigong (Box 10.1) refers primarily to self-applied health promotion practices for the purpose of mobilizing, regulating, enhancing and transforming one’s own qi [13]. Essentially, internal qigong utilizes internal aspects of qi. In practice, this refers to qualitatively different forms of qi following the jingluo (經絡) or meridian circulation, the qi associated with the 12 zangfu (臟腑) organs within the trunk, and the ‘Three Treasures’ (san bao, 三寶) or resources of qi, known individually as jing (Essence, 精), zhen qi (True qi, 真氣) and shen (Spirit, 神).

### BOX 10.1 Practitioner experience of internal and external qi through the practice of internal and external qigong

<table>
<thead>
<tr>
<th><strong>Internal qigong</strong></th>
<th><strong>External qigong</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health promotion practices applied to oneself</td>
<td>‘Therapy’/’healing’ given to another person or group</td>
</tr>
<tr>
<td>One person is affected by the process, i.e. ‘self-healing’ is considered to occur</td>
<td>All participants are affected by the interaction, with the healer facilitating ‘healing’ in the others</td>
</tr>
<tr>
<td>e.g. qigong, taiji quan, xingqi quan, etc.</td>
<td>e.g. daoqin healing, external qigong, buqi, variants of acupressure using daoqin principles rather than physical pressure</td>
</tr>
</tbody>
</table>
In contrast, external qi gong refers to the mobilization of an external qi field by the practitioner to effect healing in the environment (proximally or at some distance away) [8]. In this way, healing can be given either to a single recipient or to a whole group within what we could loosely call the ‘healing space’. External qi gong utilizes external aspects of qi, including the field that is apparently generated and transmitted from healer to patient. Although the situation is more complex in practice, because of other interaction effects, we can say that external qi gong has a number of distinctive features irrespective of the specific skills of individual qi gong masters or healers and their particular lineages (Box 10.1).

Within this basic division, there is a wide range of therapeutic modalities that utilize qi: from the ancient practice of buqi (‘spreading qi’, 布氣), to more recent practices such as qi gong massage. Essentially these are hybrid forms of qi gong where the ‘healing space’ is shared between practitioner and patient and both internal and external qi may be used. It must be emphasized that laying on of hands with actual physical contact is not strictly necessary for qi gong healing. In fact, qi gong with touch is a hybrid healing modality, and in itself sets up complex interactions within the therapeutic setting that research may find difficult to unravel.

Finally, artificial ‘qi’ devices exist that have been designed to replicate an energy field, usually a correlate of qi (e.g. electromagnetic radiation) and probably not the ‘real thing’. This is an ill-defined area of enquiry since the range of devices is varied and the potential research parameters ambiguous.

**WHAT PART DOES INTENTION PLAY IN HEALING WITH QI?**

Qi does not just ‘sit there’, but has to be generated, mobilized and given direction and form. In the Daoist healing and medical traditions, qi can effectively be ‘made to happen’ in three ways according to three different kinds of intention blended into one integrated act of volition. These three activities comprise the generic core of healing practices using qi:

- **Visualization:** Thought with specific imagery generates the qi.
- **Breathing:** Breath gives power to what has been imaged.
- **Form:** Sequencing of movement, together with specific bodily postures, moves, directs and issues the qi.

These three aspects of intention are known as mental, breathing and postural dao yin in Chinese therapeutics and together can be considered to represent the therapeutic agency within the various Chinese internal and external healing modalities. The concept of dao yin predated that of qi gong by at least 1500 years [10], and can therefore be considered a precursor of the healing and health-promoting modalities developed in China since ancient times.

*Dao yin*, the ‘way of guiding and pulling’, was originally applied to health promotion practices designed to stimulate and regulate the flow of qi throughout the jingluo or meridian system – a Daoist medical concept which was well established by the Western Han Dynasty (c. 200 BC). Deeply embedded in the Chinese medicine tradition for millennia [10–12], dao yin is considered a significant and innocuous health promotion practice in its own right. Moreover, dao yin is still considered an important part of Chinese medicine in the present day [8].

**EXPERIENCING QI**

Arguably the two most distinctive properties of qi in the healing context are the fact that it can be felt and also that it moves. In other words, qi has an impact on both consciousness and the physiological dynamics of the body.
With the latter, interactions may be experienced in many individuals as a ‘felt sense’ that can vary in intensity from the extremely subtle to strong physical sensations [14]. Such responses to qi can include involuntary movements and tingling of the body, limbs and extremities, for example. Other sensations may be subtler and include perceptions of light inside the body, increased sensitivity to and appreciation of sound, a feeling of lightness and shifts in perceptions of body image.

NEW RESEARCH PERSPECTIVES

The last four decades have seen the development of chaos theory and the emergence of the new science of complexity. In the fields of physiology and therapeutics, for example, it may be possible to describe the structural and functional organization of the body – indeed health itself – in terms of a complex system with definable properties [15–18]. In recent years it has become possible, using computer software, to map fluctuations in robust markers such as heart beat intervals over extended periods of time. Far from being arbitrary, this dynamic behavior can be shown to contain hidden rhythmic order embedded within it. For example, different research groups have established that the rhythmic order of heart rate degrades to a more random condition in certain heart pathologies such as angina and congestive heart disease [17,19] and also, importantly, with healthy aging [20,21]. These findings suggest that complex rhythms are vital in maintaining the plasticity of our adaptive responses. This development has the potential to bring new insights to current perceptions of qi.

Here data are presented from recent original research [22] that appears to demonstrate that qi may itself be the therapeutic agency effecting cure. In this study, non-contact daoyin healing was adopted to investigate the aspects of qi outlined above (i.e. mental, postural and breath daoyin). These three approaches can be blended by the practitioner in many different ways – so making daoyin healing a useful model for researching qi. Using this approach, and new complexity measures for analyzing heart rate variability, this research reveals exciting new possibilities for mapping subtle physiological impacts, for example tracking the impacts of qi on the neuroregulation of heart beats during, and following, a healing session with daoyin healing using data from the electrocardiograms (ECGs) of both practitioner and recipient.

The fractal measure known as ‘Alpha’ can now be used to quantify the persistent patterns, or time structures, embedded in long sequences of heart beat intervals. As a robust measure, Alpha (generally split into Alpha-1 and Alpha-2) has been shown [20,23,24] to characterize the ‘landscape’ of complex heart beat fluctuations (heart rate variability, HRV) in a meaningful way by quantifying its ‘ruggedness’ (for these and other technical terms see the Glossary). Alpha-1 and Alpha-2 can be understood to represent the short- and long-term ‘memory’, respectively, of the neural networks that regulate the heart rate when the body is at rest. These correlations break down to a more random pattern in certain diseases and in healthy aging [25,26], leading to the suggestion that such quantitative measures of rhythm fluctuation might be useful in predicting certain disease states [27,28]. Figure 10.1 shows, for example, how HRV changes with healthy aging. Both traces exhibit a property known as self-similarity, but it is clear that complexity of variation is lost in the lower graph.

The question arises whether this ordering and pattern of heart beat intervals is sensitive to the emergence of qi in the ‘healing space’ and could consequently be used to track and map the healing process. (See also Ch. 24.)
EXPLORING THE CHAOS CONNECTION TO QI

A randomized baseline and placebo-controlled study was conducted to investigate the behavior of external qi reputed to be associated with daoyin. A total of 27 individuals ranging in age from 22 to 81 years were screened, of whom 25 met the entry criteria and were recruited. Participants attended for three sessions within 8 days. Continuous ECG recordings were collected for 45 minutes throughout each of the three sessions: baseline (BL), an intervention session – split into a mid-portion where daoyin and sham interventions of 5 minutes each were given in a randomized order – and a final 24-hour follow-up (FU) (Table 10.1). In each session the ECG recording was divided up into three equal time blocks for analysis, so that they could be compared. The raw ECG signal was delivered via a bipolar lead,
recording RR inter-beat intervals in normal sinus rhythm from participants lying flat and in a relaxed wakeful state throughout the collection period (the ‘R’ wave is the most prominent feature of the normal ECG). Baseline recordings were made 1–7 days before the intervention session in all cases. Entry to the intervention session was conditional upon there being a normal ECG at baseline. Follow-up recordings were collected 24 hours after the intervention session. Daojin and sham interventions were single blinded with a block randomized AB design [29], the ordering of interventions being independently assigned by a statistician. The assigned daojin and sham interventions were performed in the middle 15-minute segment of the intervention session and were separated by an interval of 5 minutes (Table 10.1). All ECG data collected were checked and analyzed by an independent observer to internationally accepted standards [30] before the heart rate data were analyzed statistically.

Interventions were performed for exactly 5 minutes by the researcher standing at a distance of 2 meters from the subject. Subjects lay supine on a treatment couch without physical contact with the researcher throughout. The researcher adopted a simple standing daojin posture combined with horizontal hand movements, with arms parallel and extended forward and approximately 30 cycles of movement during the intervention. The ‘sham’ movements outwardly appeared identical but differed in that they lacked focused mental activity or attention to breathing by the researcher.

### RESULTS OF STUDY WITH DAOJIN HEALING

Heart rate and fluctuation measures from baseline, intervention and follow-up sessions were obtained from 24 participants. Results revealed a significant difference in mean RR interval between first and last 15-minute segments of the baseline and follow-up sessions, whereas for the intervention session the mean RR interval varied slightly between study phases. The bar chart in Figure 10.2 shows how heart rate intervals changed during the Intervention. The ‘Active’ bar shows that, on average, intervals increased in the middle 15-minute portion of the session. As this segment contained the two 5-minute intervention periods, this result indicated the combined effect of the randomized interventions. The increased interval translates as a reduction in heart rate – a response normally associated with relaxation. This effect has also been broken down into separate bars for the daojin and sham interventions. Interestingly, there was no significant difference between these, suggesting that, in this experiment, the presence of the practitioner was more important than the interventions themselves!

Whereas conventional linear measures, such as ‘mean RR interval’, inadequately describe HRV, nonlinear fractal analysis is able to reveal additional information embedded within the ECG, including changes in the subtle rhythmic order of heart beats as a consequence of the interventions described above. The fractal
FIG 10.2 Shifts in average heart beat intervals ['RR intervals'] during different phases of the intervention session with dooyin and sham healing (n = 24). M = mean; SD = standard deviation. The difference between the preactive and dooyin phases was highly significant (P < 0.001), as was the difference between the preactive and sham phases (P = 0.005) and between the preactive and entire active phases (P = 0.001) containing 15 minutes of data, including both interventions. Differences between preactive and postactive phases and between dooyin and sham interventions were, however, not significant.

measures Alpha-1 and Alpha-2 for each of the study phases in the intervention session are shown in Figure 10.3A and B. Variation of these measures for the whole sample across the study phases is clearly apparent, with significant differences in Alpha-1 between the preactive and dooyin phases (P = 0.050) as well as between the preactive and postactive phases (P = 0.011). In contrast, there were no significant differences between the preactive phase and other study phases for Alpha-2.

The behavior of continuous series of heart beat fluctuations may be visualized for single subjects, using data from complete sessions. Plotting beat-to-beat behavior of the heart beat shows up distinctive fractal attractors for discrete time periods during the intervention session (Fig. 10.4). The salient feature of these attractors appears to be their ability to map the emergence of a more even distribution of points in the 'swarm' by the postactive phase compared with marked differences between the clustering evident in previous phases. The clinical utility and esthetic appeal of this method are compelling, and could greatly assist in making holistic appraisals of the transition states and subtle interactions that appear to be involved in the healing process.
FIG 10.3 Shifts in rhythmic order during different phases of the intervention session with *daoyin* and sham healing. An Alpha value of 1.0 indicates the presence of persistent fractal patterns associated with a dynamic and healthy physiological state. **M** = mean; **SD** = standard deviation. (A) Short-term ‘memory’. There were significant differences in Alpha-1 between the preactive and *daoyin* phases ($P = 0.050$) as well as between the preactive and postactive phases ($P = 0.011$). (B) Long-term ‘memory’. Both *daoyin* and sham phases were significantly different with respect to the postactive phase ($P = 0.018$ and 0.036, respectively). Note that, whilst the Alpha values fell during both interventions, the final Alpha value in the postactive phase is increased with respect to the preactive phase; this is associated with a more dynamic fractal pattern in the heart beat variation.
FIG 10.4 Three-dimensional phase space plots indicating behavior of heart beat fluctuations during discrete 5-minute phases of external qi healing (daoyin before sham) in a single study participant. 'Swarms' of points, or fractal attractors, are realized by plotting how each RR interval in the series INTERVAL varies over time [BEAT] in relation to the interval that precedes it [INTERVAL (Delay -1)]. (A) Preactive – 5 minutes immediately prior to daoyin intervention; (B) 5 minutes during daoyin intervention; (C) 5 minutes during sham intervention; (D) last 5 minutes of postactive phase. Note: There was a 5-minute pause between the daoyin and sham interventions (see Table 10.1).

This study therefore provides new information about the effects of subtle therapeutic impacts on the complex neuroautonomic output that regulates normal cardiac rhythm in healthy individuals. Both interventions appear to produce physiological impacts on the rhythmic patterns of heart beat fluctuations embedded in the ECG, since these were detectable during both daoyin and sham phases. Moreover, these investigations showed that neither the time domain measure (the RR interval) nor the fractal measures (Alpha-1 and Alpha-2) could detect any meaningful differences between the daoyin and sham interventions. This interesting finding suggests that, within the therapeutic dyad, the researcher’s proximity and presence during both interventions produced a measurable effect, whereas purported healing effects attributable to daoyin did not.
COMPLEXITY, CHAOS AND QI

The study above sought to map one of the key outputs of a complex system – the patient–practitioner dyad – during the application of a non-contact form of dao yin healing. Are we justified in ascribing therapeutic agency to this procedure? Observed changes in the linear RR measure in the present study suggested that the effects of both dao yin and sham interventions were transient and confined at most to the active phase itself. However, the nonlinear response, according to the Alpha-1 and Alpha-2 measures, appeared to be indicative of a more persistent effect. This impact could now be characterized in terms of altered correlation properties, the correlations reflecting changes in the self-organizing character of the heart beat fluctuations. This presents us with the counterintuitive notion that a healing intervention can evoke, for the duration of the procedure, a temporary degradation to a more chaotic state of the self-organizing behavior of the neural networks regulating the heart rhythm. Moreover, after this shift there appears to be a reinstatement to a more ordered condition than existed previously.

We have associated qi with altering physiological functions in potentially profound ways. In the new science of complexity such impacts on the whole organism are interpretable as shifts in self-organization, which can include abrupt, apparently unpredictable, nonlinear behavior indicative of transitions from order to chaos and vice versa. As we have seen, these insights have brought about new ways of tracking and mapping processes that remain ‘hidden’ to conventional, linear methods of analysis. Indeed, ‘subtle energy’ may be considered as an aspect of self-organizing behavior arising out of the complexity of the living state. For several decades theoretical biologists [31,32], through observations on the processes of evolution and change in living organisms, have referred to this property as autopoiesis – literally ‘self-creation’ – and the implications have been extensively studied on a cellular level. Might this also be an aspect of qi? This idea, together with the physiological adaptive responses and both ancient and modern ideas of connectedness (i.e. Daoist philosophy and systems theory), yields a holistic paradigm that is based on broader biological themes rather than narrower medical ones. Such a perspective offers the potential of bringing deeper insights into the purpose and mechanisms of self-healing, itself a key component of health restoration and health maintenance.

Taking all of the above into consideration, there are several features that appear to characterize the healing ‘encounter’:

1. The independence of the recipient’s system is challenged by healing.
2. A paradox arises: the healer provides the recipient with another system, making possible a combined field of interaction and an extended range of responses, putting both participants in a position of interdependence during the initial exchange (‘meeting’) phase of their therapeutic encounter.
3. In this encounter an exchange of information occurs that can have physiological potency. The subtle physiological impacts that arise can be detected, tracked and mapped as witness to this process.
4. Within this encounter the recipient ‘cherry picks’ information created by the combined information field generated by healer and recipient. This new input empowers the recipient to recreate a newly independent state.
5. Healing, through this relationship of encounter and information exchange, therefore eventually creates or reinstates a condition of wholeness, wellbeing and health on all levels.

This presents us with the unusual insight of ‘subtle energy as information exchange’ (see Ch. 12), which is suggestive of a pragmatic systemic response on the part of the body to ensure optimum creativity and, ultimately, survival of the individual.
However, clinical experience demonstrates such a ‘healing space’ is far more complex, and often conditions are far from ideal. For example, we could envisage the above scenario in the physiological domain, affecting the somatic level. What is less clear is the impact on mental, intuitive and spiritual levels of being. For example, which, and how much, of these aspects of consciousness are shared – either with the healer in the therapeutic dyad, or collectively? Another factor concerns the operation of the therapeutic agency as a discrete aspect of healing and the extremely wide spectrum of treatment modalities that may be associated with it. By its very nature, this agency will contribute more to the subtler treatment modalities, particularly those involving no physical contact. Moreover, ‘misreading’ real events occurring within the healing encounter could account for them being labeled as the ‘nonspecific’ effects frequently associated with a treatment modality. This circumstance could also help explain why subtle treatment interventions relating to qi, such as dao yin healing, qigong massage and buqi, may perhaps be equated with nonspecific effects in a dismissive way that belies their intrinsic therapeutic potency.

**COMPLEXITY, CHAOS AND HEALTH**

In the prevailing worldview, core assumptions are made in therapeutics about the ‘way we are made’ and about our relations to the external world which mitigate against a holistic approach to problem solving. The new perspectives brought by chaos and complexity theory to the life sciences, in particular, have already delivered insights into previously inaccessible areas of scientific enquiry. For example:

- There are ubiquitous aspects of complex nonlinear processes that occur throughout the natural world. As an instance, a power law relationship appears to exist between the size of naturally occurring forest fires and their frequency [33].
- These processes are seen to occur on all scales of magnitude [18,34].
- This ubiquity and scale invariance suggests that simple rules underlie complex biological systems. For example, quarter-power scaling may predict the essential features of transport systems, from blood vessels and bronchial trees in mammals to plant vascular systems [35] The Fibonacci number series and the ‘golden mean’ explain the embodied proportion and structural organization in many living things, from the human body to sunflowers, and are another well-known example.
- Simple rules provide explanations of transitional states from order to chaos and vice versa, such as bifurcations – abrupt shifts in behavior which bear no linear relationship to the parameters governing the complex system where they occur [36–38].
- There is a concept of criticality (‘the edge of chaos’) in complex systems operating far from equilibrium [16,34,39].
- Dynamic far-from-equilibrium behavior appears to be the norm rather than the exception in the complex living system [40–42].

Implicit in these notions of agency, potency, chaos and order are many and diverse possibilities for health and healing. Treatment interventions of one kind or another will have varying degrees of success assisting in the restoration, maintenance and promotion of health in the event of injury or disease. If this process is basically helping the body help itself (self-healing), then it is clear that a subtle intervention is just as likely to be effective as a radical one – a common principle in many holistic practices of CAM.

Clearly a means of detecting, observing and mapping the ‘agency’ that enables the body to restore, maintain and promote health would assist in understanding
ambiguities inherent in the therapeutic encounter. Moreover, orthodox medicine is
effectively in the same position as CAM when it comes to characterizing and quan-
tifying therapeutic potency in terms of a more protean health-promoting impact
on the body as distinct from pharmacological effects, which tend to be described in
terms of linearly deterministic processes.

In the science of complexity the healthy state can be seen as a dynamic interplay
between form and function, with each part of the organism capable of relating to
and influencing the whole, mediated in turn by the form, function and constitu-
tents of its component cells. Within this maelstrom of activity, it has become pos-
sible to delineate the ubiquitous mathematical ‘design principles’ upon which
the structural and functional integrity of the human body depend. For instance,
West et al have derived a general model describing how essential materials are
transported through space-filling networks of branching tubes [35]. This work
was significant for two reasons. First, it appears to indicate that allometric scal-
ing relations are ubiquitous among organisms. Second, the model predicts the
structural and functional properties of vertebrate cardiovascular and respiratory
systems and other distribution networks. Both findings were found to rest on
fractal properties of structural and functional elements. Of particular interest is
the fact that the fractal concept also applies to the functional domain. For exam-
ple, a fractal process may yield an output signal with a complex time structure
that is neither periodic nor random, but with the property of scale invariance
or self-similarity. These ideas are important in as much as fractal structure and
function seem to characterize the healthy living state on different scales of mag-
nitude. A subsequent study by West’s group [18] asserts that these fractal-like
networks endow life with an additional fourth spatial dimension that appears
to apply to all organisms and is independent of the detailed processes expressed
conventionally in linear reductionist terms.

CONCLUSION

The concept of qi as something both tangible and intangible – that is, at one and
the same time actual, subtle and metaphorical – contributes to its potential as a
therapeutic phenomenon with considerable explanatory power. Daoyin and the
healing modalities derived from it have survived through millennia and appear
to confer therapeutic benefits. These facts suggest that within the Daoist heal-
ing and medical traditions a successful synthesis of human talents and faculties
could be employed to understand human health, in addition to the application of
problem-solving strategies when health has failed. This corresponding union of
left and right brain activity, of systematic thought with mindfulness and feeling,
is arguably the greatest legacy of Daoist healing in modern times, yet presents
researchers with considerable methodological difficulties. As these challenges are
understood and overcome, a discourse about qi within the therapeutic domain
appears to be converging around several key themes, notably: mind–body inter-
action, the role of qi as a factor in health restoration and health maintenance, the
therapeutic mechanisms of so-called ‘nonspecific’ (placebo) effects, and nonlocal
interactions in space and time attributable to a ‘qi field’.

Qi can therefore be seen as a linking phenomenon in an interconnected view of
both the body and its environment, and can help explain many of the phenomena
seen in therapeutics and within patient–practitioner relationships. This connectiv-
ity can take several forms. For example, the use of qi as a metaphor is linked with
its imaginal components and they themselves may be capable of creating non-
local, affective responses and sensations [43–45] when practitioner and recipient
are separated by considerable distances. Similarly, a ‘felt sense’, experienced both inside and beyond the physical envelope of the body, provides a more tangible manifestation of qi.

Qi transcends boundaries, not just in mind and body, but in the transpersonal domain as well. Hence, in contrast with modern biomedicine with its overpowering emphasis on symptom control and physiological manipulation, the qi healing modalities described above appear to offer a broader range of therapeutic possibilities. Their manifold effects are consistent with a systems-oriented view of the body that is open to fluctuations in the body’s internal and external environments. From these, the body can orchestrate a healing response – sometimes in spite of the effects of constraint-oriented forms of concurrent therapy such as medication.

This chapter has presented a new approach to the quantitative study of therapeutic agency as distinct from the specific active components of the treatment accompanying it. A method is described for the mapping of subtle therapeutic impacts to quantifiable changes in the fractal variation of heart beat intervals using a non-contact healing variant of daojin as an experimental model. The results from this study appear to show that resting heart beat rhythms are a sensitive yet robust tool for mapping real-world encounters between practitioners and their patients. These results suggest further research possibilities:

1. The variant of daojin healing employed, being independent of verbal and physical contact, could provide an effective and holistic model with which to demonstrate and characterize therapeutic agency as a discrete phenomenon that has clinical value in its own right.
2. Opportunities may be created for observing the genesis, physiological impact and importance of therapeutic agency within the patient–practitioner relationship. The present study delineates a method that may be adapted for either single (patient) or concurrent (patient and practitioner) ECG recordings, and so may be helpful in this regard.
3. The availability and clinical utility of previously ‘hidden’ information derived from normal resting ECGs could be extended to the fields of complementary medicine and health promotion, outside the current focus on such ECG data as a diagnostic and prognostic indicator in heart disease and aging.
4. Insights of systems theory, in particular those from the new science of complexity, could enable more effective combinations of allopathic and holistic systems of therapeutics for integrative medicine.

There are clearly many possible interpretations of the findings of this study. Arguably, the most interesting conjecture concerns the existence of nonlocalized physiology as a new generic category of human function, with potentials for biological control, health maintenance and therapeutic interactions not confined within the envelope of the human body.
10. SYSTEMS THEORY: TRAPPING AND MAPPING HEALING WITH QI


