

The background of the cover is a photograph of a bicycle with a basket of white daisies. The bicycle is green and white, and the daisies are in sharp focus in the foreground. The background is a soft-focus green, suggesting a park or outdoor setting. In the top left corner, there is an orange circle with white radial lines, containing the word "Energy" in a white script font. To the right of this circle, the word "magazine" is written in an orange sans-serif font. Below the title, the tagline "Sharing Energy - Transforming the World" is written in a grey sans-serif font. In the top right corner, a white rounded rectangle contains the text "May/June 2017 - Issue Ninety-One" in a grey sans-serif font. In the bottom right area, a quote is written in a white script font, followed by the author's name in a grey sans-serif font.

# Energy magazine

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*Laughter and mirth  
are universal human  
states of being.*

– Lori Chortkoff Hops, PhD

# The Global Coherence Initiative: The Science of Interconnectivity

Rollin McCraty, PhD

**W**orldwide, an increasing number of people are experiencing mounting concerns about political upheaval, terrorism, extreme weather and other negative effects of climate change, shortages of energy, food and water, food and product safety, and economic instability. These concerns are creating a growing sense of urgency that we must change old structures that no longer serve humanity and the environment. Many people sense the current extreme polarization in society and chaos in so many of its institutions indicates we are on the threshold of a new era of social, spiritual and cultural evolution.<sup>1</sup>

We at the Global Coherence Initiative (GCI) believe humankind has reached a point in its consciousness that the evolution toward more interconnected, inclusive and cooperative social, economic and cultural systems is accelerating worldwide. That is precisely why GCI was created. This science-based, co-creative initiative was established to help facilitate a shift in global consciousness from instability and discord to balance, cooperation and enduring peace by uniting people globally in heart-focused care and intention. More than 200,000 people in 154 nations are involved with the initiative, which was launched in 2008 by HeartMath Institute, a nonprofit research and education organization.

Among GCI's areas of research is the science of interconnectivity, in which we are exploring the dynamic relationship between both human consciousness and Earth's energetic systems, and between people and other living systems such as trees and forests.

In addition to conducting research, GCI employs several strategies aimed at increasing personal, social and global coherence. For example, we maintain an internet-based network that connects people worldwide who want to participate in helping to shift global consciousness. GCI members receive regular updates that inform them where to direct their energetic contributions of heart-focused care and intention, often to areas of unrest or where natural disasters have struck.

## **Rise of the Field View of Reality**

Classical physics conceived of reality as elementary building blocks made up of solid objects, separated by empty space. This view continues to be most people's view of reality, including scientists. With the discovery of radioactivity and electromagnetic fields and the development of modern quantum physics, whose validity in the understanding of elementary particles, atoms and molecules was fully established in the last century, a new view of reality has emerged.

In this new reality, especially in light of the experi-



mental confirmation of *entanglement*, physical objects cannot be understood or observed in isolation, but rather must be viewed as part of a holistic web of interconnectedness in which fields and relationships are pivotal.<sup>2</sup>

From this new perspective, the worldview shifts away from seeing the world only from the outside and interacting mechanistically to a participative, field-connected viewpoint in which there are no clear boundaries between nonmaterial fields and the physical world.

*... our attitudes, emotions and intentions are not limited to the space inside our bodies, but they also can affect the mental and emotional states (consciousness) of others.*

Early 20th century biologists like Paul Weiss and Alexander Gurwitsch proposed that “biological fields” play a crucial role in the development of organisms and that human beings have, in addition to a solid physical body, a field component reaching out beyond the body’s boundaries. This is a view that most prescientific cultures embraced.<sup>3</sup> More recently, biophysics has shown that all living organisms are indeed permeated and surrounded by a weak electromagnetic field composed of optical photons and radio, microwave and extremely low frequencies.<sup>3,4</sup>

Based on experimental evidence indicating the existence of bioelectromagnetic fields, or *biofields*, new biophysical models have been developed that view human existence as multidimensional. Among the models is one with several levels of nonmaterial field organisms that have the field-related aspects of our thoughts, emotions and intuitions.<sup>2,5,6</sup>

Heliobiology is the branch of science that studies how solar and geomagnetic activity affect living organisms, especially humans. The majority of research in this field to date has focused on how magnetic field disturbances affect physiological health and, to a lesser

degree, mental health and behavior.<sup>7</sup> Data from solar and geomagnetic field detectors and human nervous-system activity, as reflected in brain waves and heart rate variability (HRV), show that human physiological rhythms and collective behaviors are synchronized with solar and geomagnetic activity. Disruptions in these fields can create adverse effects while other solar and magnetic indices are correlated with improved HRV and mental and emotional states. This likely is the result of a coupling between the human brain, cardiovascular and nervous systems, and reso-

nating geomagnetic frequencies called Schumann resonances, which occur in the earth-ionosphere resonant cavity, and other ultralow frequencies called field-line resonances.<sup>1</sup>

There is growing evidence suggesting that magnetic fields, in addition to serving as a protective shield, also help to synchronize, energize and nonlocally interconnect living systems. The evidence suggests these fields act as carriers of biologically relevant and patterned information, which is embedded in the field and is distributed to all other living systems.<sup>8-10</sup> This implies that our attitudes, emotions and intentions are not limited to the space inside our bodies, but that they also can affect the mental and emotional states (consciousness) of others. This broadens our view of what interconnectivity means and how coherent, cooperative intent can be intentionally utilized to shape the future of the world in which we live.

GCI is hearing from an increasing number of people in all walks of life and cultures that they are developing new sensitivities that are enabling them to perceive the subtle energy fields around their bodies. The most common reports are related to the percep-



tion of an “energy” (like a subtle wind) flowing in and out of the heart area and hands or the perception of this energy flowing between people, trees and plants. If we can successfully help to cultivate people’s competence in perceiving their own biofields and the “frequency pitch” of the fields they are radiating, as well as the biofields of other people, and then this becomes accepted by society, it would be an enormous advancement in collective consciousness. It certainly could have a positive effect on the quality of human relationships and society once people truly “know” that we are not fully isolated from each other, but rather that we are interconnected and entangled with one another. We not only would have to accept responsibility for how our thoughts and emotions affect us, but also for what we are “feeding the field” and how that affects others.

An important aspect of that research is the Global Coherence Monitoring System (GCMS), a global network of magnetometers. The GCMS is a globally distributed network of ultrasensitive magnetic field detectors specifically designed to measure the magnetic resonances in the earth-ionosphere cavity, as well as resonances that are generated by the vibrations of the earth’s geomagnetic field lines and ultralow frequencies that occur in the earth’s magnetic field. Many of these magnetic frequencies occur in the same range as human physiological frequencies such as those of the human brain and cardiovascular systems. This network is providing a significant research tool to explore not only the effects of solar and geomagnetic disturbances on human health and consciousness, but also the interconnectivity of human beings with each other and with the earth’s magnetic field environment.

### **Magnetic Fields Carry Information**

In the same way that electromagnetic fields are used by cell phones (or any other communication device) to transmit information between the phone and the cell tower, we have found that biological systems work the same way.<sup>11</sup> Building on these findings, one of our hypotheses is that the earth’s magnetic fields also act as carriers of biologically relevant informa-

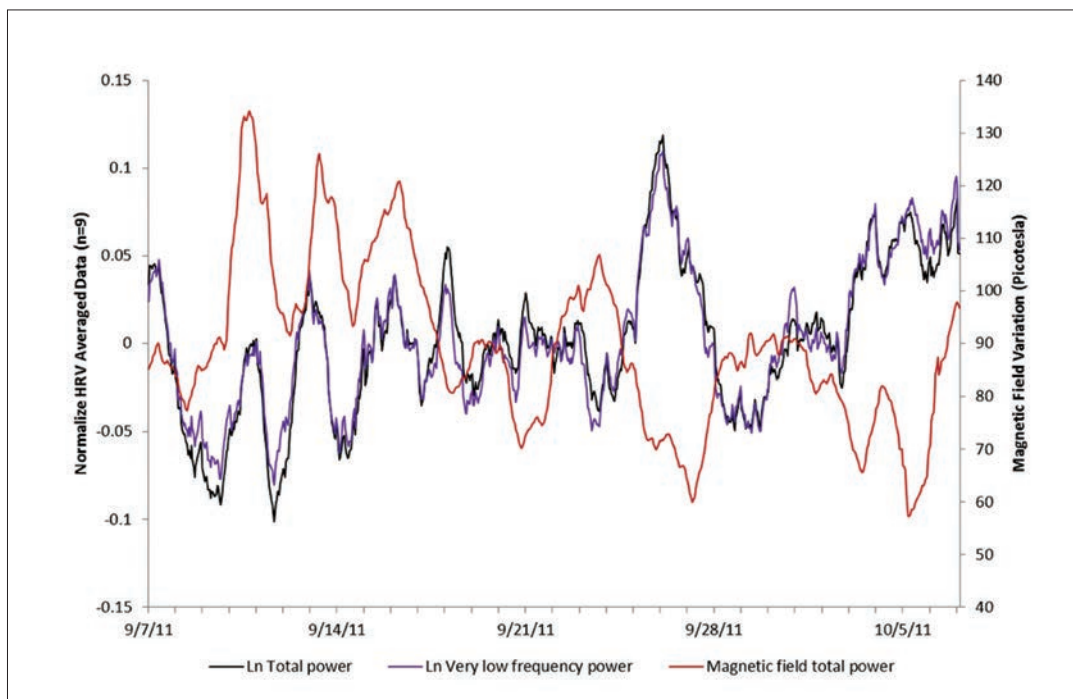
tion that can connect all living systems that are embedded within the field, which in this case is all living systems on Earth. As an extension of this hypothesis, we also suggest that we not only are receivers of biologically relevant information, but additionally, that we can feed information into a “global field environment.”

There is experimental evidence that human bioemotional energy can have a subtle, but significant and scientifically measurable nonlocal effect on people, events and organic matter.<sup>8,12-16</sup> For example, Steve Morris studied the effect of heart coherence in a group setting with people trained in maintaining states of heart coherence for several minutes and found that they could promote an increase in the coherence of untrained participants who were unaware of the experiment’s goal.<sup>17</sup>

In one of our studies in which continuous HRV recordings were obtained from 10 participants for 30 consecutive days, we found some surprising and unexpected results. Our findings emerged after time-synchronizing and removing all circadian rhythms from the HRV time series data. We found that participants’ HRV rhythms synchronized with each other across the 30-day period even though all participants simply went about their days normally and were in separate locations across California. (Figure 1).

### **Heart Coherence**

Our past research identified a psychophysiological state known as *heart coherence* that is the underpinning of optimal function.<sup>18,19</sup> Practical techniques, tools and technologies, frequently referred to as the HeartMath System, have been developed that help people shift into and maintain a state of heart coherence. The HeartMath System empowers people to better manage stress, increase performance and connect with a deeper self-awareness and intuitive intelligence.<sup>18-20</sup> Improvements in cognitive performance, focus, effectiveness, self-responsibility and social cohesion through use of the HeartMath System have been demonstrated in youth and adult populations.<sup>18,19,21-24</sup>



**Figure 1:** Shows the averaged time-synchronized HRV data from participants located in separate locations across California over a 30-day period. The rhythms for the HRV total power (black), very-low-frequency power (blue) and the time-varying magnetic-field-strength power (red) are shown for the 30-day period. This suggested that the participants were synchronizing to an external signal, and a significant correlation was found between the group’s HRV indices and the measures of the earth’s time-varying magnetic-field data across the 30-day period. To follow up and confirm these profound findings, an international study with 104 participants in five countries was conducted. The findings of the second study confirmed and extended the results of the first and indicate human heart rhythms are synchronized on a global scale, not only with each other, but also with the earth’s energetic systems. (Manuscripts on this are in preparation).

At the individual level, a person’s level of heart coherence can be assessed by monitoring the rhythmic patterns reflected in the individual’s heart rate variability—the beat-to-beat changes in heart rate. Positive emotions such as love, appreciation and compassion tend to generate a heart-rhythm pattern that is more ordered and coherent, whereas negative emotions such as anxiety, anger and fear generate a disordered, incoherent heart-rhythm pattern. Ongoing feelings of impatience, frustration, irritation, worry or blame are associated with incoherent HRV rhythms, indicating that the body’s inner rhythms are out of sync.<sup>18</sup>

Studies, by HeartMath and other entities, have found

that the combination of using HeartMath’s heart-rhythm coherence-monitoring technology (emWave® and Inner Balance®) to promote skill acquisition and its mental and emotion self-regulation techniques are highly successful at reducing stress, anxiety, anger, chronic pain, fatigue and burnout as well as many other stress-related conditions.<sup>18,19,21-24</sup>

As more and more people increase their personal coherence and ability to self-regulate, they benefit themselves and others because their hearts’ magnetic fields, which are radiated out into the local magnetic-field environment, become more coherent (Figure 2).



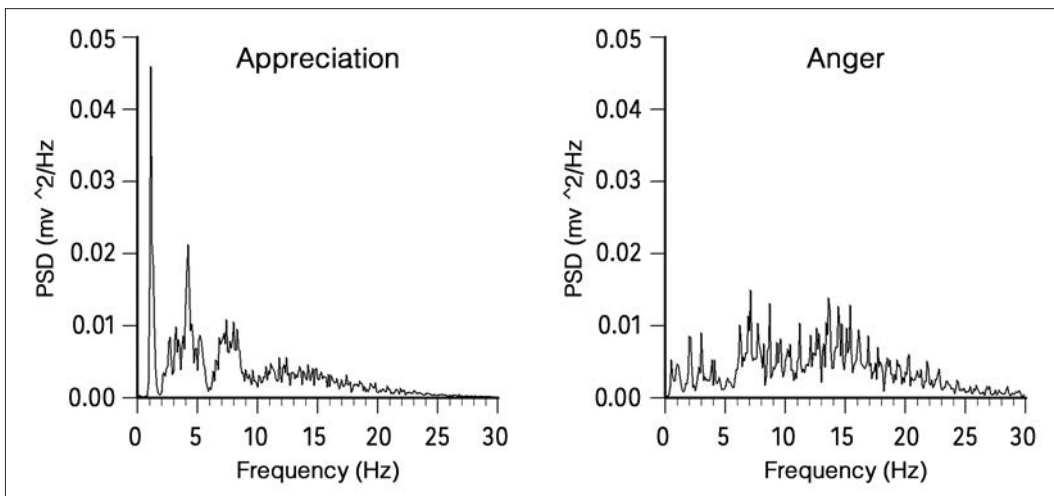
There is some preliminary data that suggests being in a heart-coherent state strengthens and stabilizes the coupling and transfer of bidirectional information between individuals and the planetary magnetic fields. We believe that as greater numbers of people in any social group (family, team and community) increase their overall personal coherence, they help to establish a more coherent standing wave at the group level and this wave is reinforced and amplified through collective coherent intention and actions. This “group field” then makes it easier for people in the group to sustain their coherence and self-regulatory capacity and lift their consciousness, which over time is reflected in increased and sustained social coherence.

### Global Coherence

If living systems are indeed interconnected and communicate with each other via biological and electromagnetic fields, it stands to reason that humans can work together in co-creative relationships to consciously increase the coherence in the global field environment, which in turn distributes this information


to all living systems within the field. Every individual contributes to the global field environment, and each person’s attitudes, intentions and emotional experiences count. This is empowering for many individuals who often feel overwhelmed by current conflicts on the planet and negative predictions about the future. This helps them realize that their actions can make a difference and that by increasing their own coherence, they can become “coherence builders” and contribute to the shift that many now perceive to be occurring. Of course, the idea is not new that shared intentions can influence others at a distance. Such ideas have been the subject of numerous studies that have looked at the effects of prayer, meditation and groups sending intentions in various experimental contexts.<sup>15,25-27</sup>

Our basic hypothesis is that when enough individuals and social groups increase their collective coherence, a more coherent standing reference wave is created and amplified in the global field environment and this will help lift individual, social and global conscious-



**Figure 2.** ECG spectra during different emotional states. The above graphs show the average power spectra of 12 individual 10-second epochs of ECG data, which reflect information patterns contained in the electromagnetic field radiated by the heart. The graph on the left is an example of a spectrum obtained during a period of high heart-rhythm coherence generated during a sustained heartfelt experience of appreciation. The graph on the right depicts a spectrum associated with a disordered heart rhythm generated during feelings of anger.



ness. In time, as more and more individuals become increasingly self-regulated and aligned with who they truly are and their conscious awareness grows, their personal coherence increases, in turn increasing social coherence, which is reflected in greater cooperation and effective co-creative initiatives that benefit society and the planet. This will become increasingly apparent as countries adopt a more coherent and inclusive planetary view. This planetary view will be critical for meaningfully and successfully addressing social and economic oppression, wars, cultural intolerance, crime and disregard for the environment. 



Author Rollin McCraty can be found at [www.HeartMath.org](http://www.HeartMath.org).

## References

1. McCraty, R. and Deyhle, A. in *Bioelectromagnetic and Subtle Energy Medicine*, Second Edition (ed Paul J. Rosch) 2015.
2. Bischof, M. and Del Giudice, E. "Communication and the Emergence of Collective Behavior in Living Organisms: A Quantum Approach." *Molecular Biology International* 2013.
3. Bischof, M. "Synchronization and Coherence as an Organizing Principle in the Organism, Social Interaction, and Consciousness." *NeuroQuantology* 6 (2008).
4. Hammerschlag, R. et al. "Biofield Physiology: A Framework for an Emerging Discipline." *Global Advances in Health and Medicine* 4 (2015): 35-41.
5. Ho, M.-W. *The Rainbow and the Worm: The Physics of Organisms*. Singapore: World Scientific Publishing Co., 2005.
6. Persinger, M. A. "Electromagnetic Bases of the Universality of the Characteristics of Consciousness: Quantitative Support." *Journal of Cosmology* 14 (2011).
7. Palmer, S. J., Rycroft, M. J., Cermack, M. "Solar and Geomagnetic Activity, Extremely Low Frequency Magnetic and Electric Fields and Human Health at the Earth's Surface." *Surveys in Geophysics* 27 (2006): 557-595.
8. Nelson, R. "Effects of Globally Shared Attention and Emotion." *Journal of Cosmology* 14 (2011).
9. Persinger, M. A. "On the Possible Representation of the Electromagnetic Equivalents of all Human Memory Within the Earth's Magnetic Field: Implications of Theoretical Biology." *Theoretical Biology Insights* 1 (2008): 3-11.
10. Persinger, M. A. and Saroka, K. S. "Human Quantitative Electroencephalographic and Schumann Resonance Exhibit Real-time Coherence of Spectral Power Densities: Implications for Interactive Information Processing." *Journal of Signal and Information Processing* 6 (2015): 153.
11. McCraty, R. in *Bioelectromagnetic and Subtle Energy Medicine*, Second Edition (ed Paul J. Rosch) (2015).
12. Radin, D. *The Conscious Universe: The Scientific Truth of Psychic Phenomena*. HarperEdge (1997).
13. Scott, M. A. et al. "Experimental Production of Excess Correlation across the Atlantic Ocean of Right Hemispheric Theta-Gamma Power Between Subject Pairs Sharing Circumcerebral Rotating Magnetic Fields" (Part I). *Journal of Consciousness Exploration & Research* 6 (2015).
14. Nelson, R. in *World Forum of Spiritual Culture*. 1-18.
15. Jain, S. et al. "Clinical Studies of Biofield Therapies: Summary, Methodological Challenges, and Recommendations." *Global Advances in Health and Medicine* 4 (2015): 58-66.
16. Sheldrake, R., McKenna, T. and Abraham, R. *The Evolutionary Mind: Dialogues at the Edge of the Unthinkable*. Triologue Press, 1998.
17. Morris, S.M. "Facilitating Collective Coherence: Group Effects on Heart Rate Variability Coherence and Heart Rhythm Synchronization." *Alternative Therapies in Health and Medicine* 16 (2010): 62-72.
18. McCraty, R., Atkinson, M., Tomasino, D., and Bradley, R. T. "The Coherent Heart: Heart-brain Interactions, Psychophysiological Coherence, and the Emergence of System-wide Order." *Integral Review* 5 (2009): 10-115.
19. McCraty, R., Childre, D. "Coherence: Bridging Personal, Social and Global Health." *Alternative Therapies in Health and Medicine* 16 (2010): 10-24.
20. McCraty, R. and Zayas, M. "Intuitive Intelligence, Self-regulation, and Lifting Consciousness." *Global Advances in Health and Medicine: Improving Healthcare Outcomes Worldwide* 3 (2014): 56-65. doi:10.7453/gahmj.2014.013
21. Bradley, R. T., McCraty, R., Atkinson, M., Tomasino, D. "Emotion Self-regulation, Psychophysiological Coherence, and Test Anxiety: Results from an Experiment Using Electrophysiological Measures." *Applied Psychophysiology and Biofeedback* 35 (2010): 261-283.
22. Ginsberg, J. P., Berry, M.E., Powell, D.A. "Cardiac Coherence and PTSD in Combat Veterans." *Alternative Therapies in Health and Medicine* 16 (2010): 52-60.
23. Lloyd, A., Brett, D., Wesnes, K. "Coherence Training Improves Cognitive Functions and Behavior in Children with ADHD." *Alternative Therapies in Health and Medicine* 16 (2010): 34-42.
24. McCraty, R., Atkinson, M., Lipsenthal, L. and Arguelles, a. L. "New Hope for Correctional Officers: An Innovative Program for Reducing Stress and Health Risks." *Applied Psychophysiology and Biofeedback* 34 (2009): 251-272. doi:10.1007/s10484-009-9087-0
25. Ameling, A. "Prayer: An Ancient Healing Practice Becomes New Again." *Holistic Nursing Practice* 14 (2000): 40-48.
26. Gillum, F. and Griffith, D. M. "Prayer and Spiritual Practices for Health Reasons Among American Adults: The Role of Race and Ethnicity." *Journal of Religion and Health* 49, 283-295.
27. Schwartz, S. A. and Dossey, L. "Nonlocality, Intention, and Observer Effects in Healing Studies: Laying a Foundation for the Future." *Explore* (NY) 6, 295-307.