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Foreword by Dean Radin, Ph.D

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The Electromagnetic Brain
A Review of *EM Theories on the Nature of Consciousness* by Shelli Joye
Foreword by Dean Radin, Ph.D.

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Readers familiar with Shelli Joye's earlier works: papers (such as "The Pribram-Bohm Hypothesis [Parts I and II]") and books (such as *Tuning the Mind*, *The Little Book of Consciousness*, and *Exploring the Noosphere*) will find her book *Ten Electromagnetic Field Theories of Consciousness* to be by far the most complete, informative, and well-organized of all of her efforts to date. Much of the content contained in the work is also contained in her earlier works, however there is much more information included here – which has great value. While there is still a focus on the work of Pribram and Bohm, the work of these two scientists is integrated with the work of nine other thinkers who have put forward different "field theories of consciousness."

Joye studied at the California Institute of Integral Studies under the guidance of Allan Combs, Brian Swimme, and Dean Radin – and she certainly writes within what used to be called the "perennial philosophy" tradition – now known more generally as "integral theory." It is not uncommon for Joye to acknowledge in her writings the impact that thinkers such as Sri Aurobindo, Teilhard de Chardin, and Ken Wilber have had on her own development as a thinker and writer. She is also indebted to John Lilly who she sees as a fellow "psychonaut."

The description of the book found on Amazon reads as follows:

It is the thesis of this book that consciousness is to be found in the structure and process of the electromagnetic field, and that the properties of awareness, information, and comprehension are all properties of the holonomic dynamics of the electromagnetic field itself. Within this book ten field theories of consciousness, put forth in published form by prominent professionals with deep scientific backgrounds, are examined and are shown to be in congruence with one another and with an electromagnetic field theory of consciousness.

Joye points out at the outset that many of the theories discussed in her book emerge from a wide variety of academic inquiry, "beyond the traditional disciplines of brain research, biology, and neurophysiology" (p. 3).

She points out that all of the researchers exhibit cross-disciplinary interests and training – and thus are more inclined to

employ an integral perspective of consciousness. She is also quick to state that in sharing the various theories presented in the book, care was taken so that each concept might be understood by the general reader. I must say that she was successful in this endeavor.

Ten Electromagnetic Field Theories of Consciousness is a very *useful book*. Even a newcomer to the contemporary study of consciousness could pick this book up and use it to get a very good understanding of developments taking place in the field. The "Introduction" to the book – where Joye vividly describes her first "LSD trip" in Big Sur California in 1967, her subsequent meeting with John Lilly, and how she concluded that "the electromagnetic field is the substrate and basis for human consciousness" (p. xviii) -- is enough to hook anyone even slightly curious about the nature of consciousness.

According to Joye, the ten theories offered in the book support her conviction that "consciousness has an electromagnetic basis or substrate, and that further research in this area will pave the way toward development of devices in the future that will interact with electrophysiological systems of the human to enhance, heal, project, expand, and empower human consciousness in ways currently unimaginable" (p. xviii).

Readers familiar with Joye's work will find the last two chapters of the book quite interesting, for Joye covers new ground; that is to say, the content is "practical" and I suspect will be very stimulating for readers interested in doing research within the field of consciousness studies. For example, Joye has a chapter on "Electromagnetic Brain Stimulation" where she offers "a glimpse into the range of *hardware devices* that have been developed in the effort to modify brain/mind activity through the application of electromagnetic fields" (p. xviii). The last chapter is entitled "Mind of Light: Optical Networks in the Brain" which is an effort to point the way to new directions in consciousness research.

The last chapter operates as a summary chapter where Joye attempts to tie up what she presented throughout the book. But she also seeks to "move beyond the ten theories previously discussed to consider how future progress, both in understanding the mechanics of consciousness as well as for the development of truly effective consciousness-interactive systems of hardware, might be better advanced through the consideration of a wider, less conventional approach to understanding and mastering a psychophysics of consciousness" (p. 251). Joye feels that the following six considerations have been largely neglected by the majority of recent neurophysiological approaches to the study of consciousness (and there is a section dedicated to each of these considerations in her last concluding chapter):

1. Harmonic resonance
2. *Scale* (the relationship of bandwidth to wavelength size)
3. Signal modulation of electromagnetic waves
4. *Biophotonic information packets*
5. *Biophotonic communication networks* (powered and modulated by DNA supercoiling)

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6. *Spherical harmonics* of electromagnetic fields in the cosmos (p. 251)

What Joye says about each of these considerations is indeed fascinating – and does make sense after reading through the presentation of her ideas; again, I am certain that future researchers will be stimulated here. One of the most appealing aspects of this book is that the overall tone of the book is informal, and thus the reader does not need to have a scientific background in order to understand what Joye concludes and proposes; but at the same time, if a reader does have a scientific background (especially one in electrical engineering), Joye offers up a lot of food for thought (i.e. new avenues for possible research).

The focus and organization of the book is straightforward. Each of the chapters that comprise the book is dedicated to a single "field theory of consciousness"; and note that there is a handy graphic (Table 1, pg. 11) that summarizes the names of the thinkers and their respective theories. (It also needs to be mentioned here that the book has a number of illustrations that greatly aid the reader in effectively assimilating Joye's various proposals and the research she shares.)

The chapters cover, in the following order, the theories of:

Susan Pockett
(Electromagnetic Field Theory of Consciousness);

Johnjoe McFadden
(CEMI Field Theory of Consciousness);

Rupert Sheldrake
(Morphic Fields/Morphic Resonance);

Ervin László
(Akashik or A-Field);

William Tiller
(k*Space);

Harold Saxton Burr
(Electric Fields of Life);

Stuart Hameroff and Roger Penrose
(Orchestrated Reduction [OrchOR] Model of Consciousness);

Mari Jibu and Kunio Yasue
(Quantum Brain Dynamics);

Karl Pribram and David Bohm
(Holoflux Field in the Implicate Order);

Alfred North Whitehead
(Electromagnetic Societies and Actual Occasions).

Joye begins by stating that the scientific materialistic point of view taken by modern neurologists, an approach that sees consciousness as the epiphenomenon of a mechanistic activity of neuronal activity, is much too narrow. Joye seems to mourn how such scientists have excluded *the concept of soul* [italics hers] as it relates to consciousness. For Joye,

Mystics, saints, and psychonauts down through the ages would strongly disagree [with the strict scientific materialistic point of view] (p. 2).

Again, Joye seems firmly entrenched within the perennial philosophical (integral) point of view. She immediately shares her contention that "the underlying *source* of consciousness may be found *beyond* observable activity of mind/brain processes, most likely to be found in areas within which our modern scientific tools of exploration are not yet adequate to detect unsuspected phenomena, or in areas where

few have yet been motivated to look." She goes on to ask:

Might it be that we have been looking for the source or sources of consciousness in all the wrong places? (p. 1).

This is, of course, "the $64,000 question" – a question that has its roots in the attempt to "solve" the "hard problem of consciousness." Joye addresses the hard problem head on, and, in a section entitled "Solutions and Recommendations" – in what many readers may conclude to be her strongest chapter ("Consciousness in the Frequency Domain"), Joye writes:

The topological model set forth in this section provides a feasible solution to the Chalmers "hard problem of consciousness." If consciousness is considered to be manifesting as energy flow in electromagnetic-frequency fields, then one should be able to determine experimentally the location of high information bandwidth channels within human physiology. Such channels must provide the data network infrastructure through which electromagnetic information interchange guides the growth process, effects repair, and catalyzes evolutionary mutation. The widespread assumption of contemporary neuroscience has been that consciousness emerges from neuronal activity in the human brain only as an epiphenomenon. Accordingly, there are regions within which a search would be recommended, outside of the domain of neuronal linkages and synaptic potential dynamics. (p. 211)

Joye goes on to state that "dimensional analysis indicates that feasible candidate ranges for testing an electromagnetic field component of consciousness can be found in the **near infrared spectrum**" (p. 211). She mentions two approaches:

1) "One approach in the search for an infrared component of consciousness would be to monitor the dynamics of an infrared spectrum emanating from within the human body in an attempt to detect information-carrying photons escaping the body as modulated infrared radiation;" the challenge would then be to demodulate and decode these detectable photon packet streams; and

2) "An alternate approach would be to search for infrared energy signals flowing as patterns *within* potential physiological waveguide channels located throughout the human body. **The ubiquitous blood system** (consisting of over 100,000 miles of arteries, veins, and capillaries within each adult human body), for example, with capillaries having typical inner diameters of 10 microns, is clearly a candidate to act as an infrared waveguide much like our current global optical internet waveguide." Joye of course has hinted at this approach earlier in her book specifically by integrating the work of Jibu and Yasue (Quantum Brain Dynamics) with that of Pribram and Bohm, integrated even further within her own novel "Pribram-Bohm Hypothesis."

Joye goes on to summarize the research of Hameroff and Penrose and their "Orch OR" theories that support the idea that **the structure of microtubles provides a mechanism for consciousness as a quantum process.** Microtubule structures play a major part in human cytoskeleton, a microscopic network of protein filaments found throughout the body. Building upon Penrose and Hameroff, Joye extends their

theory by pointing out the fact that the inner diameter of the cavity of these straight, hollow microtubule cylinders has been determined to be 12 nm, *precisely* the wavelength of ultraviolet radiation. She describes how consciousness as an electromagnetic field might thus exist and be channeled as ultraviolet radiation throughout the ubiquitous microtubule network. An obvious advantage of "ultraviolet consciousness" over "infrared consciousness" would be that ultraviolet signals lie within a frequency range that is 10^3 higher than the infrared range, and thus offer an information processing capacity 1,000 times greater than would be possible with infrared signals alone. Even more intriguing, Joye cites several recent studies that have repeatedly detected ultraviolet radiation occurring within living animal tissue.

Because Joye takes an integral approach, she attempts to cover a lot of ground in this book, and in attempting to integrate a large number of different concepts and theories, some readers may feel that her writing lacks unity in places, but this certainly does not detract from the overall value of the book. I hope I have indicated thus far that many readers will conclude that this book does have a lot going for it.

For example, Joye must be praised simply for the fact that she places a spotlight on the work of Pribram and Bohm. Hameroff (probably as a result of working in conjunction with Penrose – who, it must not be forgotten, worked with Bohm at Birkbeck, University of London) has indicated that the notion that the cosmos is metaphorically holographic must be brought back in vogue (Mishlove). Shelli Joye obviously agrees – and so do I. I have always been shocked by the extent to which David Bohm's work was actively shunned/ignored by the majority of the pioneers working with quantum theory. (Recall J. Robert Oppenheimer's now famous quip, "If we cannot disprove Bohm, we must conclude to ignore him" (Peat 133).) And it was a quite a shame that the popular culture in the 1980s and 1990s – the "new age" – misinterpreted the work of both Pribram and Bohm.

The thing that I find most appealing about Shelli Joye's work (this book and her earlier work) is that like Bohm and Pribram, she is *a courageous maverick* (both with regard to her philosophy and her approach to science in general). I have to conclude that like Bohm, a "theory" has less to do with "the accumulation of knowledge" and has more to do with a "way of seeing" (Bohm 4-9; Pylkkanen 157, 231) for Joye. As such, no theory – not even a theory about how to solve the "hard problem of consciousness" can ever be "absolute." Like the ground of reality, theories themselves are a *movement/process*. (It is not that "all things are in flux"; but rather that "all *is* flux" (Bohm 61).) Like consciousness, theories have more to do with **resonance** than anything else – and this is what Shelli Joye writes about -- with great effectiveness.

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