



*ZEN-BRAIN  
REFLECTIONS*

*James H. Austin, M.D.*

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## *Zen-Brain Reflections*

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**Reviewing Recent Developments in Meditation and States of  
Consciousness**

*James H. Austin, M.D.*

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To my early teachers Nanrei Kōbōri-Rōshi, Myōkyō-ni, and Joshu Sasaki-Rōshi, for inspiration; to my wife Judy for her support; and to all those whose contributions to Zen, and to the brain, are reviewed in this book.



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The test of a religion or philosophy  
is the number of things it can explain.

Ralph Waldo Emerson (1803–1882)





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## *Chapters Containing Testable Hypotheses*

It is a good morning exercise for a research scientist to discard a pet hypothesis every day before breakfast.

Konrad Lorenz (1903–1989)

These chapters suggest potential correlates between brain functions, meditative training, and the phenomena of alternate states of consciousness. Discard any that do not pass critical testing (at any time of day or night).

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## Preface

More wisdom is latent in things-as-they-are than in all the words men use.

Antoine de Saint-Exupéry (1900–1944)

Over a century ago, William James chose “Religion and Neurology” for the title of his first Edinburgh lecture, a series that evolved into his classic work, *The Varieties of Religious Experience*.<sup>1</sup> As this millennium began, Koenig and colleagues published their *Handbook of Religion and Health*. Its 768 pages cite evidence suggesting that a person’s religious orientation could benefit both brain and body.<sup>2</sup> Skeptics still wonder: can religion help our brains and bodies, and if so, how?

In late 1997, I sent off my manuscript of the earlier book that ventured to integrate Zen with the brain. Since then, countless books and journal articles have been published on separate aspects of neuroscience, Buddhism, and consciousness. For the present book I have selected pivotal areas in which to integrate these huge, separate topics.

This volume is no rehash. It takes up where the earlier book left off. Its new chapters address such questions as: How does acupuncture work? Can neuroimaging localize where our notions of self arise? How can brain imaging during meditation become more informative? Is there more than one kind of experience of “Oneness?” How do decades of meditative training and momentary enlightened states transform the physiology of the brain?

Requests for a less bulky sequel have been met by including far fewer source notes and references than were included in the 113 pages of reference citations of its 1998 predecessor.

*Reflections* occurs in the latest title for two reasons. First, “Reflections” represents a major update of the chapter in the first book entitled “Reflections on Ken-sho, Personal and Neurological.” Second, the new title serves also to introduce a major new section, part IX. These final chapters do more than explore ancient literary and artistic traditions that had linked Zen enlightenment with moonlight. They present novel interpretations. These arose when I rethought earlier personal experiences and reviewed the latest research. These are new reflections, based on data new and old. They envision links that I could never before have imagined between four diverse topics: migraine, metaphors, moonlight, and mysticism.

In the past, Zen has also had more than a fair share of unimaginably dense riddles. Herein, I try to clarify matters and demystify the subject. Do not be surprised when you encounter chapters uneven in texture which set old lines of historical evidence right next to new research data out at the very frontiers of neuroscience. I integrate topics when possible, but offer no final pat answers. As before, a few testable hypotheses are ventured. Page xvi lists the chapters that contain them.

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Part I revisits a major Zen theme: our personal interior *self*. I ask: How do we relate our private self, both to other people and to other things that we think lie “outside” our self/other boundary? Part II highlights several preliminary studies of meditation. I examine both the limitations inherent in their design and those of neuroimaging methods in general.

Part III updates information about the brain, including the amygdala and other parts of the “old” limbic system. Here, I comment on recent research that clarifies its “paralimbic” extensions. Do not get bogged down in these 31 chapters. Lay readers are encouraged to skim them and move on to part IV, which explores states of consciousness. Part V considers some elementary expressions of these states and comments on how appropriate it is to use drugs to simulate them.

Part VI pays a brief visit to the superficial states called absorptions, leaving more room for part VII to revisit the later states that confer crucial insights. Zen refers to such insightful “peak experiences” as *kensho* and *satori*. Part VIII comments on still more advanced states of awakening that realize “Being,” then moves beyond to the rare ongoing *stage*. Only very few persons manifest this stage of “sage wisdom.”

Part IX is the new section just referred to. It reviews the old history of how “moonlight” came to be linked with *kensho*. Its personal reflections begin by focusing on an unusual *late phase* of “*kensho*.” This delayed “moonlight” phase has implications for the neurosciences, for Zen Buddhism, and for steering clear of the confusion caused by misidentifying genuine visual *illusions* as mere literary *allusions*.

Meditation, enlightenment, and consciousness are complex topics. The Path of Zen and its intricate interrelationships with the neurosciences call out for some temporary oversimplifications. Cast in this secular role, your author/guide invites you to peruse the simplified figures, tables, four (mondo) summaries, and glossary.

Also for the reader’s convenience, many topics here have been cross-referenced to pages in the earlier book. For example, when you come across a citation in brackets like [Z: – ], it points you to relevant pages in *Zen and the Brain* that can serve as an introduction.

Why are samples of Zen poetry included? Because their verses often express meaning more accurately than do my words of prose.

Even so, the reader will find not only that the essence of Zen continues to elude words but that crucial facts in the neurosciences still remain to be discovered. We are still very early on that path toward which James was pointing, still straining to integrate the potentials latent in “religion and neurology” into that singular unification which Saint-Exupéry distilled into the phrase, *things-as-they-are*.

---

## *Acknowledgments*

Professor Nick Gier kindly invited me to give several lectures in his course on Buddhism. Fortunately, this led to an invitation to teach an entire course entitled “Zen and the Brain,” and to my becoming formally affiliated with the University of Idaho. I am most grateful to him and to the Department of Philosophy for the opportunity this provided to access the library and interlibrary loan facilities of the university.

I also thank the many editors and program directors, now too numerous to list, who—because they invited me to write or speak at conferences—stimulated me to update and simplify the subject matter for the general audience.

This sequel is the direct result of my being invited by MIT Press to write a *slender* update of the first book. I now take this opportunity to thank Barbara Murphy, the neuroscience editor, for her constant encouragement, to thank Katherine Arnoldi Almeida for her skilled editorial assistance, and to thank Yasuyo Iguchi for her artistry in novel cover designs and illustrations.

I am especially grateful to Kathy Mallory for her ongoing patience and skill both in deciphering my handwritten revisions of her excellent typing, and in bringing the drafts of the manuscript to completion. Many thanks also to James W. Austin, Scott Austin, and Lynn Austin Manning for reviewing and commenting on the manuscript.

In recent years, as a member of Mountain Lamp Idaho, I have been privileged to share in the inestimable bounties of regular Zen practice with our local sangha, as well as in the retreats led by Eileen Kiera and Jack Duffy.

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## *By Way of Introduction*

Zen lies beyond the details of words and letters, outside mental conditions, in the inconceivable, in what ultimately cannot be grasped.

Eisai (1141–1215)<sup>1</sup>

This is the second book in a quest for the inconceivable. Its author has been attempting to repair his ignorance in three major areas: (1) Zen—What *is* it? (2) The human brain—How does it *actually* function? (3) Meditation and enlightened states—What *really* goes on? And there is a fourth area we still need to know more about: How has the brain been transformed in the rare sage who has entered the late *stage* of ongoing enlightened traits?

Most chapters in this book are expressed as essays, yet some require the form of a personal narrative. All chapters reflect the personal biases of someone raised as a Unitarian, trained to solve neurological problems at the bedside, who then pursued clinical questions into the research laboratory.

By 1967, I had become fascinated with the psychology of the underlying creative process in biomedical research. So much so that I started to write about it.<sup>2</sup> I soon realized how little I knew about the basic physiology of creative intuition. When I began Zen training in Kyoto 7 years later, my ignorance was compounded. I knew nothing about what caused another flashing form of insight: the flash of enlightenment known as *kensho* or *satori*.

What else happens that steers an otherwise conventional academic neurologist in the direction of Zen? It may help to revisit an interview conducted in 1998. It addresses this and other questions related to the earlier book, entitled *Zen and the Brain*.

**You came to Zen both as a medical doctor and as a practicing scientist. What attracted you to it?**

Well, I encountered Zen by chance during my first sabbatical in Japan. I was first attracted to it by the aesthetic qualities of the Zen temples and gardens in Kyoto. I was also drawn to it because I had seen that Zen had shaped the cultural life of Japan in many influential ways. There was one final crucial factor: the opportunity to learn from Kobori-Roshi. He was a remarkable Zen master. His presence communicated the essence of Zen, and I could converse with him in English.

**Did Zen largely challenge, or corroborate, what you knew from science?**

It did both, at different times. At the outset, nothing in my previous medical or neuroscience training had prepared me for Zen. The challenge stimulated me to learn more—both about Zen and about the rapidly expanding frontiers



- [click Demon's Door \(Jim Rook, Book 7\)](#)
- [Clinical Research: Case Studies of Successes and Failures online](#)
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