The Neurobiology of Mystical Experience

If you have fallen in love or have ever been wonder-struck by the beauty of nature, you know how it feels when the ego slips away and for a dazzling moment or two you vividly understand that you are a part of something larger. Like all experiences, moods, and perceptions, these unitary states are made possible by neurological function. They are the result of the softening of the sense of self and the absorption of the self into some larger sense of reality that may occur when the brain’s orientation area is deprived of neural input.

We might be moved to a state of mild unitary absorption by art, or music, or walks in the autumn woods. We may reach deeper unitary states during periods of intense concentration or through the transforming intoxication of romantic love. As we move along the continuum we find a progression of increasingly intense unitary states, characterized by feelings of spiritual awe and rapture. Where prolonged and rigorous rituals like the Native American Sundance are involved, trance states may occur, featuring moments of ecstasy and hyper-lucid visions.

But no matter what specific methods any given tradition of mysticism might employ, the purpose of these methods is almost always the same: to silence the conscious mind and free the mind’s awareness from the limiting grip of the ego. There are passive approaches, in which the intention is to clear the mind of all conscious thought, and active approaches, in which the goal is to focus the mind completely on some object of attention.

Passive meditation, which is practiced in various forms by many Buddhist orders, begins with the willful intention to clear all thoughts, emotions, and perceptions from the mind. Usually, such high levels of quiescent activity would cause a corresponding decrease in arousal function. Under certain conditions, however, a neurological “spillover” can occur in which the maximal activation of the calming system triggers an instantaneous maximal arousal response. As the quiescent and arousal systems both surge, the mind is subdued by simultaneous floods of calming and arousal responses.

The right orientation area, responsible for creating the neurological matrix we experience as physical space, would lack the information it needs to create the spatial context in which the self can be oriented. Its option, when totally deprived of sensory input, would be to generate a subjective sense of absolute spacelessness, which might be interpreted by the mind as a sense of infinite space and eternity; or conversely, as a timeless and spaceless void.
Meanwhile, the left orientation area, crucial in the generation of the subjective sense of a self, would be unable to find the boundaries of the body. The mind’s perception of the self now becomes limitless; in fact, there is no longer any sense of subjective self at all. There would only be an absolute sense of unity – without thought, words, or sensation. The mystical traditions of the East have all described some version of this ineffable unity – Void, Consciousness, Nirvana, Brahman-atman, the Tao – and all hold it up as the essence of what is inexpressibly real. On the neurological level, these states can be explained as a sequence of neural processes set in motion by the willful intention to quiet the conscious mind, the age-old goal of passive meditation.

Active types of meditation begin with the intention to focus intensely upon some thought or object of attention. A Buddhist might chant a mantra, or focus upon a glowing candle or a small bowl of water, for example, while a Christian might pray with the mind trained upon God, or a saint, or the symbol of a cross. Since the intention is to focus more intensely upon some specific object or thought, the attention area facilitates, rather than inhibits, neural flow.

Continuous fixation upon this image, induced by sustained contemplation, causes discharges from the right attention area to travel down through the limbic system to the hypothalamus, triggering arousal resulting in a mildly pleasant state of excitation. As contemplation deepens, the flow of these discharges increases in intensity, until the arousal function of the hypothalamus reaches maximal levels. At this point, spillover occurs, causing the immediate maximal activation of the hypothalamus’s quiescent function.

As the sense of self is completely released, the mind would experience a startling perception that the individual self had been mystically absorbed into the transcendent reality. At this point, the mind would enter the same selfless and limitless reality that can be reached through the act of passive meditation, the reality of absolute unitary being.