

# **CHAOS AND THE EMERGENT MIND OF THE POND**

**a collage of underwater insect sounds for stereo playback**

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## CHAOS AND THE EMERGENT MIND OF THE POND

Beneath the water's surface are a variety of plants and small insects. At first their numbers seem sparse but multiply to immense proportions the longer you stare at even a small segment of the pond's geography.

While the sounds above water are comfortable and familiar, those occurring under the surface are shocking. Their alien variety seems unprecedented as if controlled by a mysterious but urgent logic. The minutiae which produce these audible rasps and sputters remain mostly unseen amongst the tentacles of plants and layers of silt but each contributes to a sonic multiverse of exquisite complexity.

The timbres of these sounds are obviously magnificent, a tiny orchestra of homemade percussion seemingly intoxicated by the infinite diversity of audible colors, but what strikes my ears most readily are the rhythmic structures. They appear to consist of an order of complexity greater than most humanmade music, rivaling the most sophisticated computer composition or polyrhythms of African drumming.

Amid a background hum of distant chatter the persistent clicks of several different insects pulsate. Many of these sounds are continuous but elastic, their constancy appears sensitive to the assertions of others. This fabric is punctuated by the intermittent cries of something unseen or the wheezing of larger beetles carrying their air supply between their legs. Steady state bands of sawtooth resonance waft across the distance between schools of insect thought that together form an emergent cognition. This infinitesimal world seems complete. I stand at its edge as a voyeur listening to the interstices of its autonomous knowing.

While I understand the scientific need to reduce the complexity of these sounds to their essential attributes, I cannot be satisfied with the standard explanation that these are merely instinctive behaviors. Nor can I accept the assumption that the creatures themselves are mindless specs of protoplasm forever doomed to reiterate a few automatic mating calls or territorial assertions. The musician in me cannot help but hear much more.

First of all there is this sense of urgency. While every one of these sounds seems suspended in an aura of necessity it is something beyond the mere action of automata. I hear the purposeful urgency of joyful experience, what Alfred North Whitehead called "the self-enjoyment of being one among many, and of being one arising out of the composition of many." This is the poignant urgency of self-reference and the bringing into being of an autonomous world in the presence of others.

Then there are these emergent rhythms, these elastic pulsations of life, sounding as if the very morphology of these little beings and the pond's macro body were dependent

upon this aquatic jazz for the maintenance of time and space: primal drummers collectively engaged in the creation of worlds through jamming together the stridulatory resonance of their viscera. This is a dance between periodicity and chaotic swirl, the expansion and contraction of momentary self-resonance within the mutuality of mind.

This is not the mechanistic modelling of a chaotic system. It is the real thing and its vitality speaks to me. You cannot dismantle this whole with an expectation that its guests will reveal their motivations in isolation from the party. The profuse interconnections between these organisms betray the limitations of reductionist thought and I am left with the realization that it is the evidence of this wholeness manifesting as sound which I must learn to respect if not comprehend.

Bio-acousticians have hypothesized that every location on earth, inhabited by living organisms, has a unique acoustical biospectrum. The chorus of sounds which comprise these biospectra may provide information about the dynamics of the resident ecosystem such that status information about the collective ecology is transmitted to its coexisting organisms. From this perspective I can imagine the pond's audible biospectrum as a strange attractor of recursive utterance, a chaotic voice that helps to keep the ecosystem alive.

Perhaps the complexity of these tiny rhythmic entrainments and chaotic cycles of microcosmic heart beats hover around that basin of attraction known as thought and together bring into being an awareness which I cannot fathom. The placidity of the water's surface takes on the sense of a membrane enclosing a collective intelligence. I know that this is not a rational thought but I find it to be irresistible.

I'm delighted that it is through listening to the pond that I am forced to grasp its wholeness. Our dependency on visual spatiotemporal metaphors eludes the dense interpenetration of living things. If one is to speak of the chaos of living systems, I prefer to hear it. Life is a vibrant plenum resonating in at least four dimensions and not merely the topological detritus of matter.

For all of my fascination with science and delight in its accomplishments, there is one metaphysical notion which it has not yet forced me to abandon. My direct experience of nature convinces me that the worlds I hear are saturated with an intelligence emergent from the very fullness of interconnection which sustains them. Every living being is a sacred event reaching out from its unique coherence to construct a reality. We need not anthropomorphize the life around us. Instead we may celebrate those mysterious occasions which have given rise to each form of mind.

One of the most fascinating scientific concepts of the 20th century has been the idea of emergent properties: that patterns can arise from a complex process which appear to transcend the agents which bring the process into being. If, as nonlinear dynamics and the new sciences of complexity suggest, we cannot truly understand such

emergent patterns through isolating the component agents of their generative processes but only through observing the dynamics of the system as a whole, then the pond is more than a simple metaphor. Is it only a place where little creatures roam with blind instinct, or is this the voice of a *genus locii* speaking through a distributed network of autonomous beings, each perceiving a rich and complex world of sensation?

For centuries it has been the habit of much of humanity to assert the inferiority of non-human life forms. Animals were denied their own autonomy and relegated to machine status. The justification for this attitude was based upon an assumption that animals did not possess language and could therefore not be aware. A reexamination of contemporary versions of this premise in the light of current knowledge betrays a serious contradiction. To assert that human consciousness, arising out of a network of material interactions similar to those which give rise to the very existence of all life, is more important than other forms of mind not operating within the human linguistic domain is absurd. While it can be said that other forms of life do not dance within the social web of our peculiar way of being conscious, we cannot assume that they don't have their own webs and ways of being self-aware.

My view of evolution is not of a simple hierarchical ascent but of a holarchical hierarchy of potentially infinite bifurcations. Some of these branchings can be regarded as simple variations on extant morphologies while others, such as complex metacellular organisms, subsume the developments of predecessors into more complex structures. But an understanding of this complexification process cannot justify the belief that any individual species is the singular manifestation of mind in nature.

Instead I embrace Whitehead's concept of a primordial God: an immanent force self-realized through an intensification of experience and unfolding of novelty in the world. Each cognitive entity is at the threshold of that self-realization, a unique frontier of manifestation realized by God's dynamic actuality. Perhaps all creatures are the distributed sensors for that larger mind and each expresses a special reality into existence through its own dynamic coherence. The pond and its creatures are an exquisite part of the coming into being of both self and other.

The following sounds are a compilation of underwater recordings made in a variety of North American freshwater ponds. They were digitally recorded with a portable DAT recorder using a pair of omnidirectional hydrophones at a 12 inch separation. Some of the sounds are at actual speed while others are slowed to an octave below their true frequency and time domains. Besides their sequencing, no other alterations of the sounds have been made. Since most of the insects generating these sounds have not been studied for their sound making capacities, the specific sources remain a mystery.