



# The Waters of Chaos

by West Marrin

## Ancient Chaos

Are we—and everything around us—the children of chaos? Apparently, people from many ancient cultures believed that the material world owes its existence to a primordial state of chaos. The power to unleash or restrain the chaos, which was understood to profoundly impact the manifested world, was solely that of a Creator. While all manifestation (including both observable and unobservable realms) owes its existence to the chaos, the encroachment of that chaos into an ordered world necessarily brings change. Such change is associated with the destruction of existing structures or relationships and the creation of new ones. There are two themes that seem to be consistent among ancient myths. First, a delicate balance between chaos and order must be maintained in creating, maintaining, and destroying the manifested world within its never-ending cycles of change. Second, all ordered forms within the manifested world arise from a chaotic and unmanifested source.

Ancient descriptions of events and locations often pose a challenge to modern people due, in large part, to cultural differences in perceiving observable aspects of the manifested world and intuiting their relationship to unobservable aspects. Perhaps more challenging to our modern intellect are descriptions of

events and realms that are, by their very nature, unmanifested and describable only in terms of symbols and metaphors. Author Tamra Andrews notes that myths from around the world recognize that creation was preceded by an original chaos, which defined a state of formlessness and was often identified as a void, abyss, or primordial sea.<sup>1</sup> Of all the ancient metaphors used to describe this original state of chaos, water appears to have been the most popular (at least according to translations into the English language).

A sixth century B.C. philosopher named Thales hypothesized that water was the primary physical component of all things. In doing so, he identified water as the original substance of the universe from which everything is created and to which everything returns. According to early civilizations of Mesopotamia, everything was born from a watery place that best represented the primordial chaos. Mathematician Ralph Abraham has traced the origin of this word “chaos,” not to disorder, confusion, or randomness, but to the source of all worldly forms that is commonly known as the *waters of chaos*.<sup>2</sup> Similar to ancient myths from the Mesopotamian region, Vedic and Taoist traditions recognized water’s connection to everything, while the Bible’s Book of Genesis identifies water as the primal “substance” over which the Spirit of God was hovering before the creation of heaven and earth. Obviously, the substance of water could not have been present prior to the act of creation; hence, water served as a symbol for the unmanifested realm that, by definition, is the antithesis of substance. Kabbalistic tradi-

tions maintain that water gives rise to matter,<sup>3</sup> or earth, and acts as an undifferentiated fluid. While clearly distinct from the primordial chaos (tohu), water is understood to receive its structure from something outside of itself and to be the physical expression of a spiritual force that permeates the so-called higher realms or dimensions of our world (i.e., those not routinely observed by us).

The Egyptian sun god Ra supposedly appeared above the waters of chaos as one of the first acts of creation, thus signaling the beginning of time.<sup>4</sup> Ra made his journey over the water in a boat because the Sun was made of fire and, therefore, could not have risen out of the waters of chaos on its own. In contrast to a fiery creator, most interpretations of Hawaiian mythology maintain that the primary creational god Kāne, who is intimately associated with water in the physical world, manifested heaven and earth from the original chaos. The Chinese was one of only a few cultures that did not associate the primordial chaos with water in the form of a sea or river. Instead, the ancient Chinese apparently portrayed the chaos as a misty vapor that gave rise to all earthly life forms through the duality of yin and yang. Whether portrayed as a primordial sea, an underworld river, or a misty vapor, most ancient peoples seem to have routinely used “the waters” to describe a primordial chaos.

What insight were ancient people sharing with regard to the watery nature of the original chaos? The most common answer seems to be that the waters best symbolize a formless, fluid, unbounded, and undifferentiated state. The waters of chaos were believed to possess a storehouse of unmanifested possibilities, such that they could give rise to forms from their very formlessness. The act of creating forms, or at least mediating the creation of forms, from a boundless sea of infinite potential was frequently used to describe the sacred act of creation. Another clue as to why ancient people used “the waters” as a metaphor for the primordial chaos may be rooted in a seemingly pervasive belief about the physical substance of water itself.

### **A Chaotic Mediator**

Myths from a variety of ancient and indigenous cultures have been interpreted as indicating that water mediates the transition of physical forms between the seen and unseen worlds.

The insight that all worldly forms emerge from the waters (the metaphor) through water (the substance) and eventually return to the waters through water has been handed down to us, in one rendition or another, from a variety of ancient sources. While ancient peoples probably did not actually observe worldly forms emerging from liquid water, they seem to have intuited that water was somehow instrumental in the process of creation. This type of mediating water was considered by many cultures to be so sacred that it was given the name living water. While living water is generally understood to have been distinct from waters of chaos, the perceived role of the former may have influenced ancient people’s selection of a metaphor for the latter.

While we may never know precisely why ancient peoples selected the metaphor of waters, modern naturalists and scientists have speculated on the mediating roles that water performs in our world. The twentieth century German naturalist Theodor Schwenk hypothesized that water acts as the mediator between the creational forces and physical manifestations of the universe via its rhythmic waves, ripples, whirlpools, and other flow forms. Accordingly, he identified water as the ideal medium for form-creating processes because its many and varied rhythms permit the merging of energies at boundaries, such as those created by ocean currents or cell membranes. At the very least, every living organism on Earth perceives its world through the substance of water because all biological cells are enclosed in membranes that utilize water for their structure and function, thus enabling the cells to exchange information with their environment. Schwenk proclaimed that no material change could ever occur in Nature without water.<sup>5</sup>

Whereas most contemporary scientists do not subscribe to Schwenk’s poetic and grandiose descriptions of water, they do acknowledge that water mediates a substantial number of worldly processes. Water’s mediation reveals itself on scales ranging from the molecular to the cosmic. At the molecular level, water is essential to both the structuring and functioning of common biomolecules such as proteins and DNA. Scientists have discovered that biology’s life-sustaining information is passed through the intermediary of water, which is able to mediate conformational changes that essentially serve as an information stream for biological life. Water’s ultra-dynamic, self-

organizing network and its unique way of connecting adjacent molecules (both its own and those of other substances) permit water to mediate an information-conformation exchange that we recognize as diversity and adaptability in the biosphere. Because earthly organisms are water-based, biomolecules are sometimes characterized as supporting, rather than orchestrating, the role of water in life's processes. Similarly, organisms may look different to us simply because water (recognized as a link to the life force) is structured uniquely by the biomolecules specific to each individual and species.

Water in the form of oceans, clouds, and atmospheric vapor (i.e., humidity) is the major controller of long-term climate regimes and short-term weather patterns on Earth. In this role, water mediates the redistribution of incoming solar energy over the surface of the entire planet. In this period of rapidly changing global climate, it is water that will deliver both the consequences and the reversal of climate change. Water is the only greenhouse gas (including carbon dioxide) capable of affecting Earth's climate on a short-term basis. Moreover, water is instrumental in connecting the outer reaches of the planet's atmosphere with

the ground surface (via lightning induced by ice particles), the surface weather with the most fundamental vibration of the planet's interior (via seawater's acoustic wave guide), and the cycling of the planet's massive plates between the solid crust and molten mantle (via water's roles in lubricating, crystallizing, and even healing rock). Gaia uses the substance of water in producing, modifying, and dissolving the vast array of features that we recognize as Earth's surface.

Finally, water has been identified as a kind of midwife in assisting to birth stars from interstellar dust and gas clouds that are scattered throughout our galaxy. Actually, water both assisted in the birth of the Sun and was created during its birth—accounting for most of our planetary water. When stars eventually die (sometimes observed in a flood of water), they release into interstellar space the atoms that comprise the observable world. A very unique type of water ice that exists only in the depths of outer space is believed to have gathered, combined, and delivered to Earth a few simple compounds that served as the basis for life's biomolecules. Water is definitely not unique to this planet, but instead is found throughout the universe in one of its three phases (vapor, liquid, or solid).

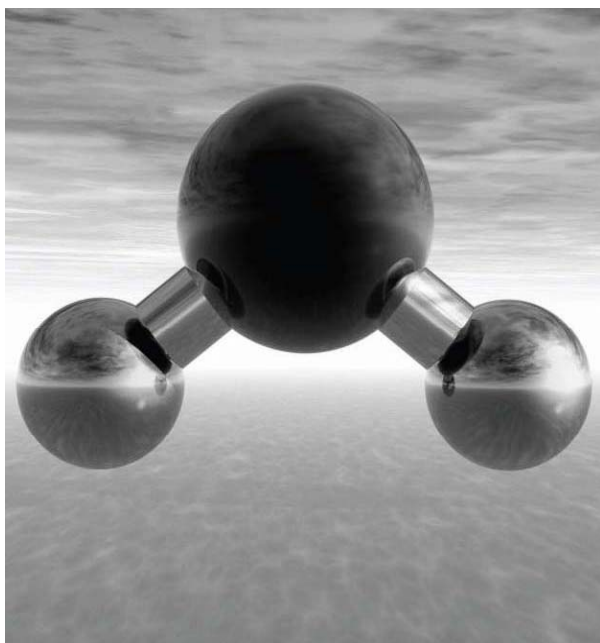


Gaia, © Gaia-Project (Maya-Gaia)

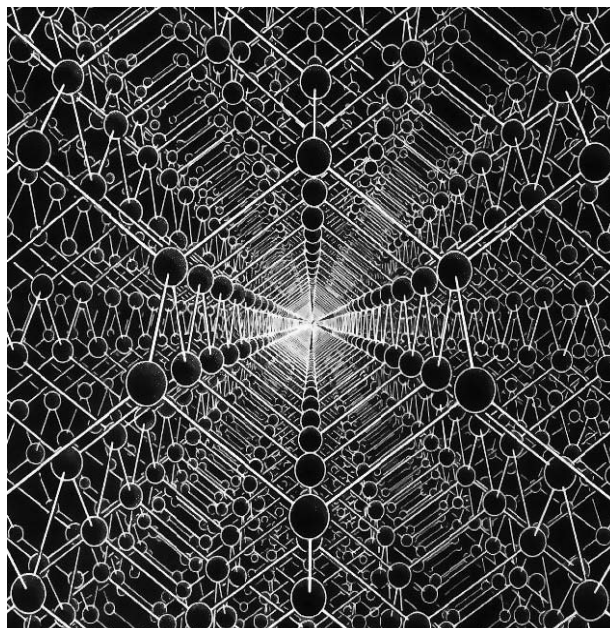
## Molecular Networks and Chaos

Water's ubiquitous presence and uncanny gift of transforming energy permit it to mediate these diverse planetary and cosmic events. Water's ability to transform, transport, and perhaps even "rhythmically merge" energies is a consequence of the way in which its individual molecules arrange themselves into complex patterns, which are known collectively as networks. Individual water molecules serve as the network's components or nodes, which constitute the most basic building blocks for

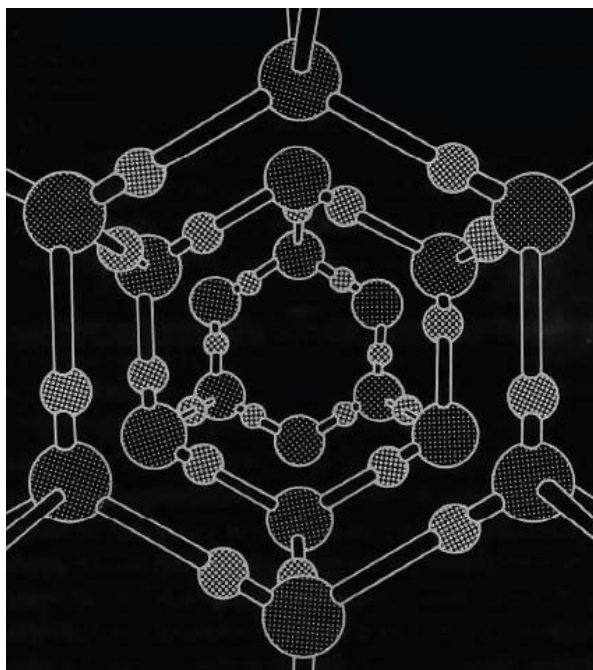
water's primary network (as contrasted with its secondary or tertiary networks that may include clusters or groups of clusters). Components of water's molecular network are linked to one another via a type of magnetic connection known as a hydrogen bond. The network is often described as highly dynamic inasmuch as the connections between components are exchanged as rapidly as a trillion times per second. This frantic switching of linkages, or bonds, permits the water network to flow and behave as a liquid even though it retains most of the molecular geometry of a solid.



Water Molecule above Ocean, © Vladimir Grishin (123RF)



Water's Molecular Network, adapted from a figure by W. Brandt (Scientific American, March 1968)



Hydrogen Bonding in Water, adapted from a figure by W. Drost-Hansen (International Science and Technology, October 1966)

The three illustrations on this page are believed to depict liquid water; however, scientists have been able to observe only a fraction of the network using current technologies. The first illustration is of an individual water molecule, consisting of an oxygen atom covalently bonded to two hydrogen atoms. The second one depicts large dark spheres (oxygen atoms) connected to smaller and lighter-shaded spheres (hydrogen atoms) that are situated along the connecting hydrogen bonds. Water's hydrogen-bonded network is difficult to depict at the scale portrayed by the third illustration; nevertheless, a seemingly infinite matrix or network of water molecules is created as hydrogen bonds (white lines) intersect oxygen atoms (black spheres).<sup>7</sup>

Unfortunately, the shuffling (i.e., breaking and forming) of hydrogen bonds within water's network is so rapid and complex that scientists are unable to decipher the rules governing the process. This inability does not imply that the

switching rules are haphazard—only that scientists are overwhelmed by water’s dynamism, which has been traced to quantum events known as zero-point vibrations. These vibrations govern the exchange of water’s hydrogen bonds and are impossible to predict due to the uncertainty inherent in quantum events.

Unlike the dynamics of common chemical bonds that hold molecules together (e.g., water’s covalent bond vibrations) and that conform to the familiar laws of motion and heat, the dynamics of water’s hydrogen bonds are propelled by an unknown energy from seemingly empty space that persists even at a temperature of absolute zero.<sup>8</sup> Emanating well beyond the most fundamental level of Nature that scientists are able to currently observe, water’s network dynamics appear truly etheric.

Researchers who work at the fringes of post-modern science hypothesize that water’s vast and ever-changing networks may serve as a kind of information system—not unlike the binary systems that characterize today’s computers. While there are no scientifically accepted data to confirm such hypotheses, much of water’s magic seemingly lies cloaked behind the dynamics of its currently undecipherable network. In other words, however simple the components of water may appear, their collective dynamics remain enigmatically complex. Do any other networks—besides the one composed of individual molecules—exist in liquid water? It has been suggested that water clusters (e.g., hydrogen-bonded assemblages of water molecules) may represent the individual elements of a secondary water network. In some aqueous solutions (e.g., seawater), individual water clusters may be positioned sufficiently close to each other to actually share water molecules. Hence, these

common water molecules could represent the links between adjacent clusters of a secondary network. Although network hierarchies within water have only recently been investigated, self-organizing structural hierarchies within water are well described. Self-organization implies that water molecules and water’s molecular clusters arrange themselves into increasingly complex states without any “outside” orchestration.

It is self-organization that reportedly permits a network of simple interconnected elements (and their associated switching rules) to display coherent behaviors on an unexpectedly large scale. Researchers have found that water’s assembly algorithms, representing the rules by which it self-organizes at all hierarchical levels, are a result of fractal or fractal-like structures.<sup>9</sup>

Fractals represent patterns that remain exactly the same (i.e., possess identical proportions) on vastly different scales (e.g., microcosm and macrocosm). The fractals produced by complex systems have been traced to so-called strange attractors that are associated with chaotic behaviors—a subset of which seem to describe water’s hydrogen-bonded network.<sup>6</sup>

Moving from microcosm to macrocosm, both the complex motions of seawater within the oceans and the flow paths of surface or ground water within watersheds can be described by chaos and fractal patterns. Water’s patterns are even displayed as basic structural properties of the biosphere, such that common flow forms (e.g., spirals, ripples) are often mimicked in the morphology of aquatic animal and plant species.<sup>10</sup>



Water Fractal Illustration, © Germán Ariel Berra (123RF)



Whereas the processes of forming and breaking clusters on the molecular scale and creating oceanic gyres on the planetary scale may initially appear unrelated, there are fundamental patterns, behaviors, and rules that apply to both. Nature's complexity is often described as hierarchical, such that the emergence of higher levels of order, function, and even "meaning" result from a degree of organization that is simply not present in the lower levels.<sup>11</sup> By the same token, lower level processes and structures serve to make the higher level ones possible. Consequently, cause-and-effect relationships interpreted from

only one level of Nature's hierarchy are often oversimplified and incomplete.

The following table presents a number of properties and processes attributed to water, along with corresponding observations or characteristics pertinent to the respective hierarchical levels. Although the entries are admittedly limited and somewhat arbitrary, many of the processes and properties discussed thus far are included. Table entries followed by a question mark have not been accepted and/or recognized by mainstream science.

PROPERTY OR PROCESS	RELATED OBSERVATIONS	LEVEL
Life force	etheric or extra dimensional?	strings/branes?
Zero-point vibrations	high energy and uncertainty	quantum
Hydrogen bond dynamics	unknown switching rules	atomic
Connectivity and Order	binary (or ternary?) coding	molecular
Localized structure	clusters versus bulk fraction	aggregate
Network organization	patterns and behaviors	system
Physical	dielectric and cohesion	substance
Chemical	solutes and reactions	mixture
Biological	all structures and functions	matrix



## Analogy and Complexity

While the specifics of how and why water molecules form their complex networks are not fully understood, there appears to be an interesting analogy between water's networks and a theme of many ancient creational myths. Namely, ordered or structured forms are created from chaotic or unstructured sources. In the case of liquid water, the bulk component of its network is characterized as unstructured because the connections, or bonds, between its adjacent water molecules are frenetically and unpredictably switched.

Surprisingly, clusters of water molecules are produced from this bulk component by predictably arranging themselves into three-dimensional structures that switch their intermolecular connections at a more leisurely pace. Hence, the ordered water clusters are ultimately produced from a seemingly chaotic "sea" of bulk water molecules. The analogy between creation and water (in terms of a chaos-order dichotomy) is even more curious in light of modern and controversial contentions that water's clustered, or structured, components are responsible for its designation as "living."

Recall that living water was the label given to the substance that was understood by ancient peoples to serve as a creational mediator between the seen and unseen realms. Hence, the presumed mediator of creation (water) displays within its complex network a balance between order (as its clusters or highly structured assemblages) and chaos (as its bulk fraction or less structured assemblage). Theorists maintain that the true complexity of

any system arises between the states of order and chaos, which really represent two different types of order. A system positioned between order and chaos has both the stability to exist as a recognizable entity and the instability to change or adapt.

The question of how complex system behaviors emerge from a relatively simple set of rules is addressed by the study of *complexity*. While the rules governing the exchange of hydrogen bonds within water's molecular network are beyond the understandings of contemporary science, complexity theory attributes water's so-called cognitive behaviors (e.g., response, change) to relationships, patterns, and dynamic feedback loops among individual water molecules, rather than to specific properties of those molecules.

Perhaps the odd physical properties of water are a reflection of these switching rules and the associated information transfer. If so, water's dynamism (i.e., hydrogen bond switching) may play a more pivotal role in converting quantum events (i.e., zero-point vibrations) into molecular arrangements (e.g., connectivity and orientation) than is currently recognized. And perhaps this is why water has been linked to the life force (or at least life-sustaining information), the etheric (akashic) realm, and the chaos that gave rise to water itself. Stated somewhat differently, water has been identified throughout human history as playing a pivotal, if not definable, role in creating life forms, transferring information between the observable and unobservable realms, and symbolizing worldly and otherworldly chaos.

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