

## **Cosmometry: Embracing a New Paradigm of Understanding and Design**

Cosmometry is the study of the fundamental patterns, structures, processes and principles that are at the foundation of reality, and the application of this knowledge in the design of human social and technological systems.

Throughout nature, at all scales from micro to macro, we can see and discern patterns, structures and processes that are common to all manifestation. For example, the vortex spiral is clearly present in galaxies, in the gas clouds of planets, in our own clouds and the oceans of Earth, in hurricanes, tornadoes, in our sinks as water drains, in plants and shells, and even in the flow of hair at the back of our heads. These same patterns are also present at the micro scale in cells, DNA molecules, and in atomic structures.

The spiral is one pattern in an array of patterns, structures and processes found throughout the cosmos that combine to reveal a whole unified model of what we call a cosmic geometry—a cosmometry—that underlies all form and process. Though often we can only see a small portion of this unified model, such as the vortex in the examples just mentioned, there is emerging at this time an understanding of the integrated whole system of which the vortex is a part.

Universe and the natural systems found in it are exemplary of sustainable design. For 14 billion years the cosmos has evolved without depletion of energy as a whole. Life on Earth has experienced many a radical change over millions of years, yet all in all it continues to thrive when left to its own natural evolutionary processes. And yet now the impacts of its preeminent species, human beings, are clearly affecting the balance of natural systems on this planet which are increasingly exhibiting rates of change towards instability and potential systems collapse with every scientific investigation. Nature will eventually return to a state of balance, as it always does, but the consequences may be extremely challenging and potentially fatal for humanity and many life forms affected by these changes. It is well known that the extinction rate of species is now as much as 1000 times the natural background rate, the primary cause apparently being human impacts on ecosystems, habitat and the biosphere as a whole.

It is clear that the course we are on is not sustainable, let alone one by which we and all life can thrive. In order to address this dilemma, to course correct our trajectory, we must now embrace a paradigm shift in the understanding of what constitutes a sustainable, thriving system. The assumptions of how to design our economies, our educational and political systems, our communications media and its truly effective use, and all our human-contrived social and technological constructs, are generally based on an old and very limited perception of how life and the cosmos actually work. At a fundamental level of understanding, we humans have built our world based upon beliefs and perceptual frameworks that are grossly limited in their sustaining effectiveness simply due to the fact that they do not include a large portion of understanding about what constitutes a whole and sustainable system. We are fortunate, though, to have arrived at the threshold

of awakening to a new paradigm of the fundamental perception of how cosmic design, at all scales, innately produces sustainable systems, and what the factors are—the patterns, structures, processes and principles—that comprise these systems.

In the first half of the 20<sup>th</sup> century, Buckminster Fuller began exploring a new way of understanding nature's patterns, structures and processes which developed into one of his life's masterworks, *Synergetics: Explorations into the Geometry of Thinking*. Fuller perceived that nature and the universe employ a particular set of energetic relationships that are at the foundation of nature's coordinate system and the way nature designs organic structures and systems of high integrity and sustainability. Synergetic Geometry lays the groundwork of the paradigm shift in our understanding with a simple, yet fundamental, shift in our perceptual framework: the shift from a primarily cube-based, 90° X-Y-Z coordinate system (generally regarded as the standard by which to measure and map reality) to a 60° coordinate system wherein the tetrahedron is understood to be the fundamental structural form and the root of an elegant and synergetic integration of all geometric structures, including the cube. Our old cubic paradigm is not wrong, just grossly limited! Fuller found that by designing structures based upon synergetic geometries and principles we can increase efficiency of performance per unit of energy input quite dramatically to achieve sustainable, thriving systems.

Following the foundational groundwork of Fuller's *Synergetics*, a number of pioneering researchers have begun to expand our understanding of this new paradigm, perceiving in natural systems the underlying processes and principles that are at play in the design of healthy living systems. One essential understanding is that nature inherently includes feedback loops in such systems, a self-reflexive process by which the system learns from its environment, adjusts accordingly to maintain balance and well-being for itself and its surroundings, and communicates back out to its environment new patterns and behaviors that exhibit these adjustments and informs the living system as a whole. The form that underlies this process is the torus. This form can be seen literally and discerned conceptually in all natural systems, from blood cells and biological processes, to the resource exchange of plants and animals with their environment, outward to the macros cosmic realms of planets, stars and galaxies, and inward to the microcosmic elemental and atomic realms. The synergetic geometries and toroidal flow patterns appear to be fundamental to all cosmic creation.

With this greatly increased understanding of the fundamental patterns, structures, processes and principles of cosmic manifestation now emerging in consciousness we have a new opportunity to design our human systems based upon a more whole, integrated and naturally sustainable design foundation. Here's an example of how doing so can greatly enhance the efficiency of our technologies.

“A three-dimensional logarithmic spiral is found in the shells of mollusks, in the spiraling of tidal-washed kelp fronds, and in the shape of our own skin pores, through which water vapor escapes. Liquids and gases flow centripetally through these geometrically consistent flow forms with far less friction and more efficiency. PAX

Scientific (USA) has designed fans, propellers, impellers, and aerators based on this shape.

Computational Fluid Dynamics and Particle Image Velocimetry tests showed the technology's streamlining effect can reduce energy requirements in fans and other rotors from between 10 and 85%, depending upon the application; the fan blade design also reduces noise by up to 75%. The first air-handling products scheduled for release are fans in computers, auto air-conditioners, and kitchen range hoods. The Pax streamlining principle could also lead to improvements in industrial mixers, water pumps, marine propellers, and devices for circulating blood in the body.”

*Source: Biomimicry Institute, <http://biomimicryinstitute.org/case-studies/>*

By simply aligning the design of technologies with the patterns and ratios that nature incorporates we are already gaining efficiencies in basic systems and technologies that clearly lead to the development of sustainable solutions. Imagine applying this kind of knowledge to the design of all of our human systems, not just the technological ones. Imagine a media and communications system that is designed to not only broadcast information but to also provide a feedback mechanism that allows for a self-reflexive and adaptive environment of learning and exchange for all involved. With the capabilities now at hand through Internet media we can do exactly that and for the first time empower our communities to create their own news, provide vital information needed to make informed decisions, and feedback into this communication system the choices best suited to evolve into a healthy and thriving community system. The same fundamental principle applies towards creating balanced and effective political, educational and economic systems locally and for the world as a whole.

Cosmometry offers a deep inquiry into this emerging field and a means to present and promote this knowledge as a foundational basis for the design of sustainable and healthy living systems.

Humanity is challenged to shift our ways rapidly so as to tip the scales back towards a balanced and healthy planetary ecosystem. Old paradigm solutions cannot meet these challenges, and in fact are a primary contributor to the cause of the problems we face. We must now look deeply into the underlying constructs of the unified whole of nature and the universe, not only from a scientific perspective but from the innately intuitive realization that we are truly awakening to a new paradigm of unity consciousness and the intrinsic interconnectedness of all things.

Marshall Lefferts  
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Honaunau, Hawaii