



# Gaia theory

**Acc. To 17thC  
“Enlightenment”  
Thinkers  
Descartes and Newton**

**Earth is a  
predetermined,  
clockwork universe  
that can be  
measured and  
harnessed. Earth /  
Nature is  
mechanical.**



# **Pre-Lovelock and Gaia Theory: the Goldilocks Principle Explained the Cosmos**

**Temperature and atmospheric conditions had randomly become “just right” for life to emerge.**

**Earth is a Random Rock falling through space.**

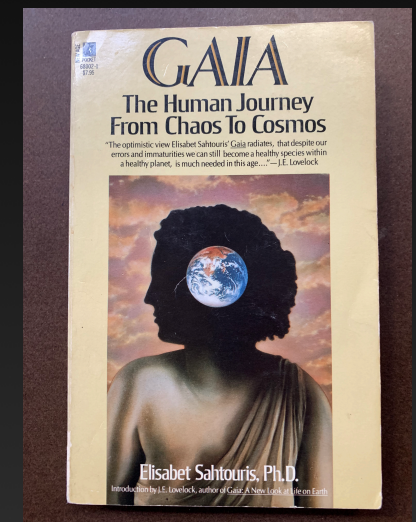
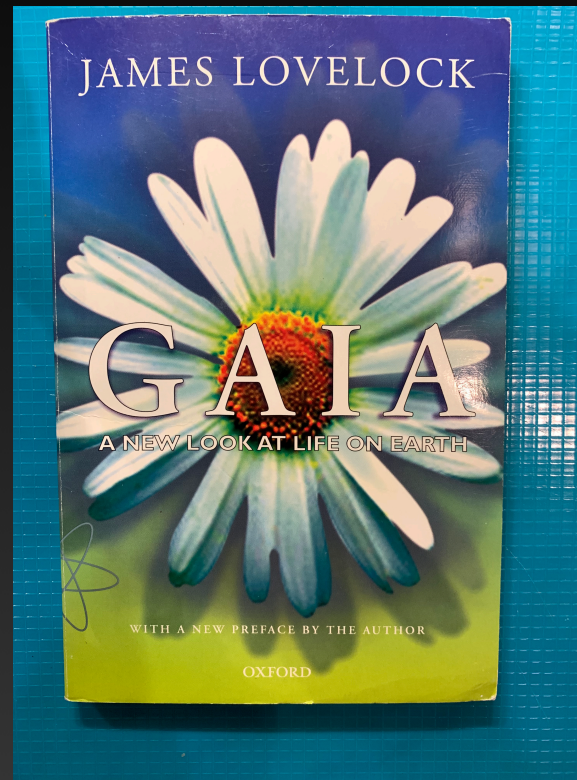
**Life evolves through random mutations.**

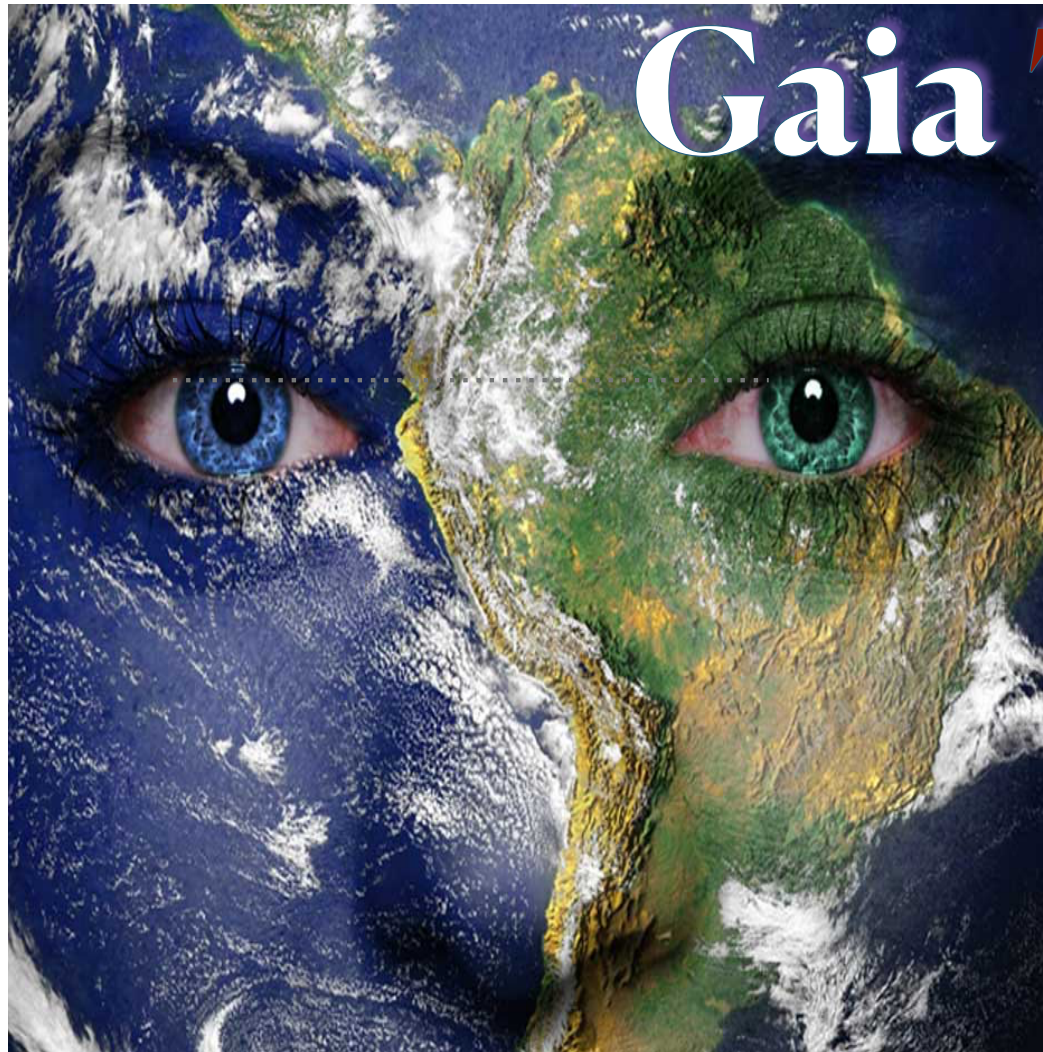
**No meaning to any of it.**



# James Lovelock and Gaia Theory-1979

- Gaia was Greek goddess of the Earth — William Golding suggested the name, Gaia, to Lovelock
- James Lovelock was asked by NASA (1963) to explore the possibility of life on Mars.
- Published 1979.
- Life on Earth is not random or a result of chemical chance.
- Life creates the conditions for life.

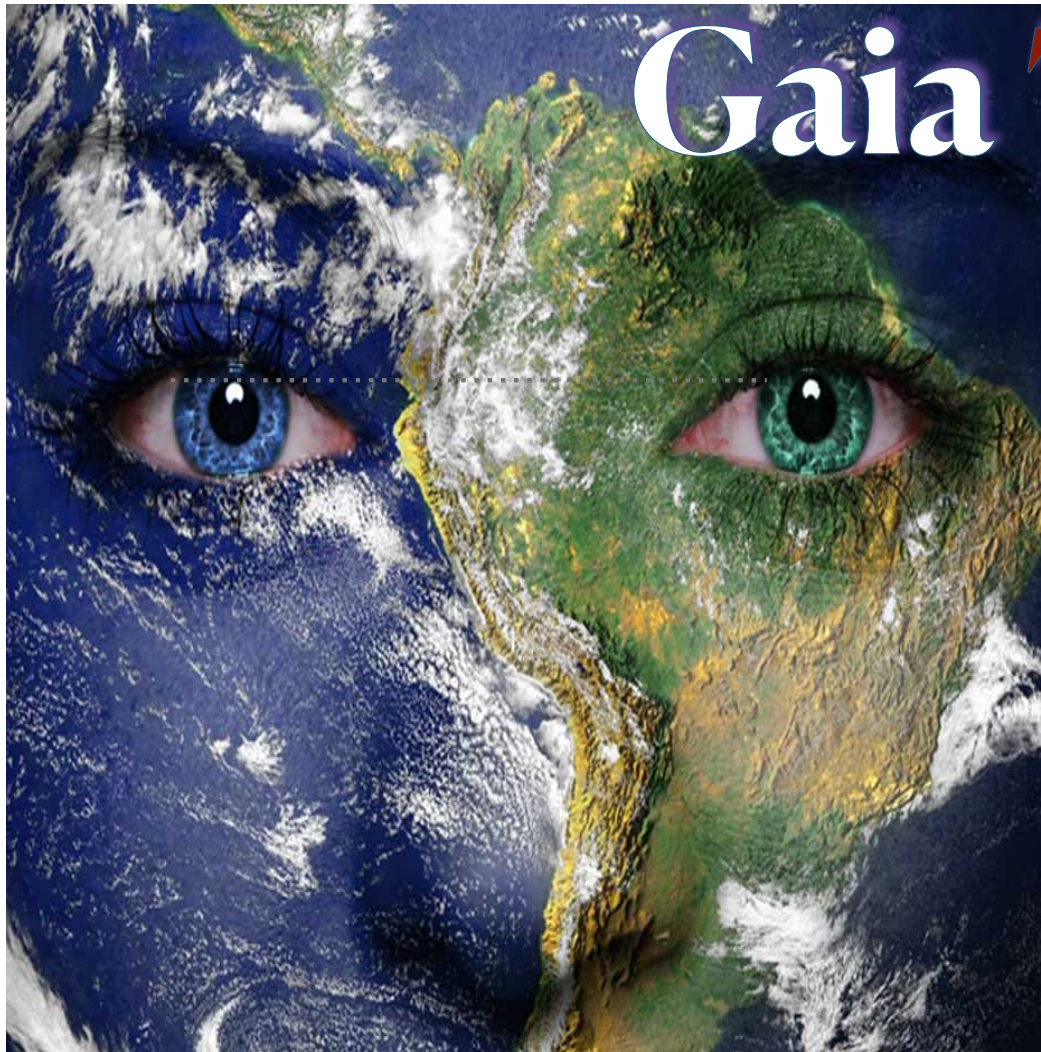




# Gaia Theory

Lovelock's Gaia theory showed that life itself —through the processes of living— had altered and does alter the environment.

Life on the surface of the Earth has been regulating the composition of the atmosphere ever since life began.



# Gaia Theory

Rather than being a machine whose outcomes are predictable, Gaia is an open, evolutionary, feedback looping, self-organizing system whose future states can never be determined in advance.

## **“MAKING WITH”**

Creativity, diversity, and symbiosis (partnering, collaborating) drive the unfolding universe forward — creating in every moment the conditions for further living.

**Lovelock: “I see the earth and the life it bears as a system ... that has the capacity to regulate the temperature and the composition of the Earth’s surface and keep it comfortable for living organisms.”**

— J Lovelock, *Ages of Gaia*, NY:Norton, 1988, 19-20.

**The self-regulation of *the Earth system* is  
*an active process* driven by the free energy  
available from sunlight.  
Self-regulation is an emergent property  
of the system.”**



**“the evolution of the species and the  
evolution of their environment  
are tightly coupled together .....**

**as**

**a single and inseparable process” ...**

**“...conditions are only constant *in the short term* and evolve in synchrony with the changing needs of the biota as it evolves.”**

— J Lovelock, *Ages of Gaia*, NY:Norton, 1988, 19-20.

**“Life and its environment are so closely coupled that evolution concerns Gaia, not the organisms nor the environment taken separately.”**

— J Lovelock, *Ages of Gaia*, NY:Norton, 1988, 19-20.

**What we have considered to  
be “out there,” isn’t.  
Everything is right here  
making with every other  
thing.**

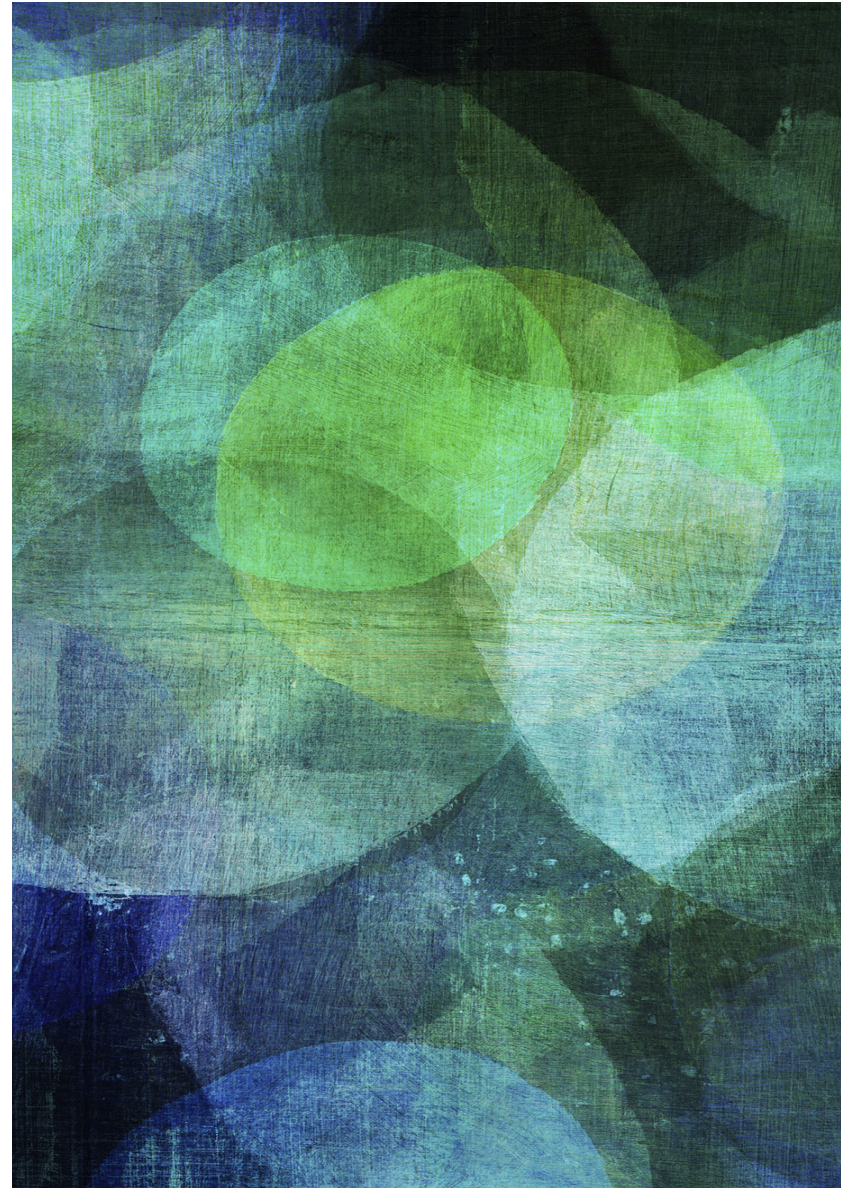
**There is no “environment” in which we are objects. We are a temporary assemblage of living matter embedded in an assembling of living matter; a Making With.**

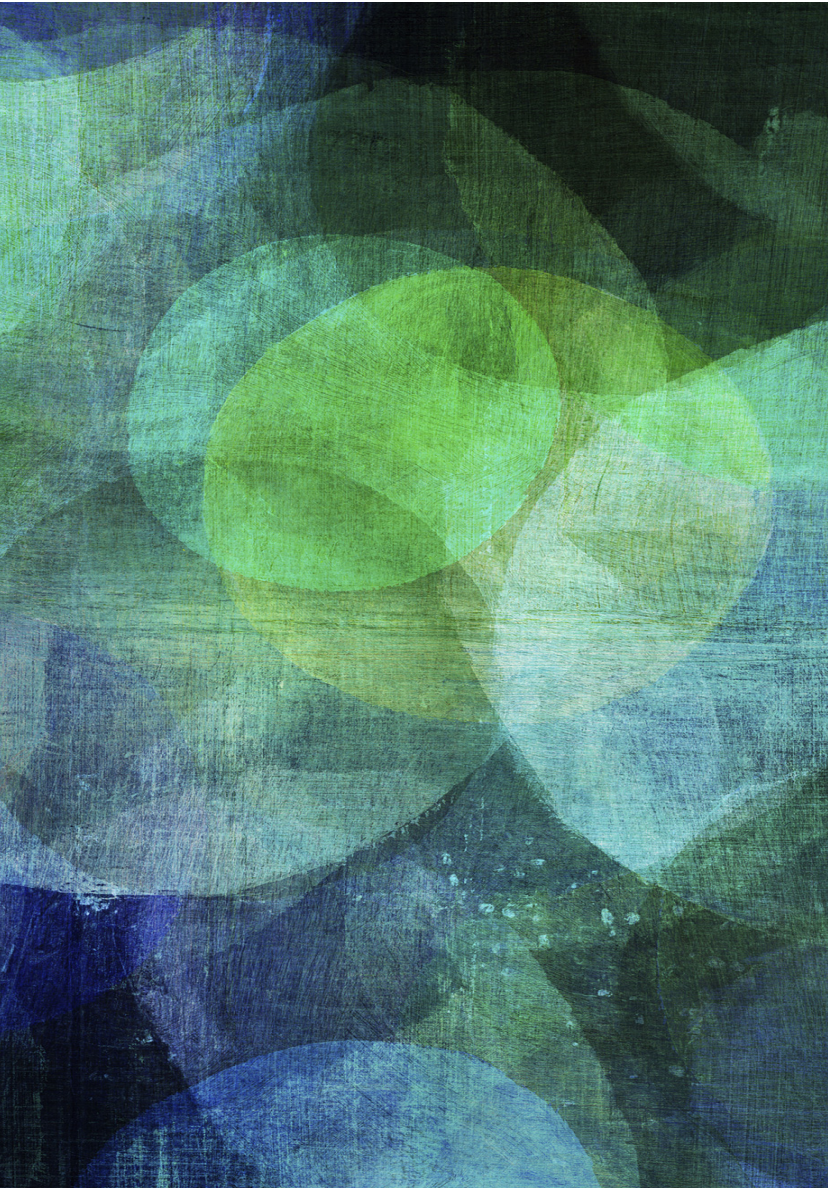
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**Every living “thing” of/on/in Earth is an interacting essential and necessary part of the Whole called Gaia.**

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**Each one —person, hummingbird, stone, water droplet — is a “holobiont” itself - in a Whole ONE or “holobiome” called “Earth.”**





**Each element or one *is essential* to the living homeostasis of the Whole of Gaia.**

.....

**Each interacts/“makes with” with all others; and in so doing, creates an “environment” or chrysalis which, in turn, creates opportunities for all the one’s to be alive in this moment.**

**All the one's collaborate/“make with” to produce, maintain, and regulate “environmental conditions” for Gaia (the ONE)..and are regulated by Gaia.**

# The Gaian Shift

The Gaia Theory Shift in  
Understanding:

**Earth/Gaia is a Living Super-organism who is continually *self-organizing* (through biological and chemical collaborations, regenerations, decomposings and recomposings) in order to create the conditions for life to continue.**





## The Gaian Shift

Every thing or  
every one  
on/in/of Gaia is  
InterConnected and  
Intra-connected and  
“makes with” every  
one else.



Levels feed up and down, back and forth in feedback loops

# The Gaian Shift

**Matter is not static or fixed; rather, matter is actively flowering into more complex states. Future states can never be determined in advance because the world is continually being made.**



# The Gaian Shift

**“Environment” is “emergent”. It arises out of the present moment interactings of all the elements.**

**Collaborations are key for mutually beneficial outcomes; reciprocity rules. Current “conditions” will constantly change and are malleable and pliant.**



# The Gaian Shift

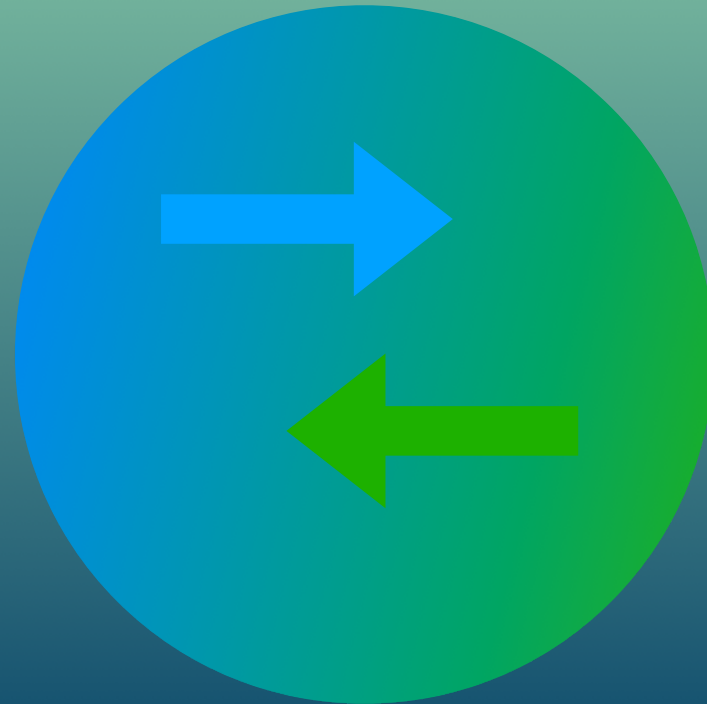
**Creativity, diversity, and symbiosis (partnering and collaborating) are continually co-creating an unfolding universe.**



**Gaia is always developing, self-organizing, and evolving.**

## The Gaian Shift

**From this  
Gaian  
perspective,  
living becomes  
Participatory  
Art.**



**Living (being alive) is a  
dialogue and a dance, not a  
soliloquy or solitary safari.**

**No “one”  
Is not  
In-volved.**

**Living is a *Togetherring* of Parts**

**—Collaborating and Co-creating,  
Regenerating,  
Decomposing and Recomposing—**

**In order that the Whole may flourish.**



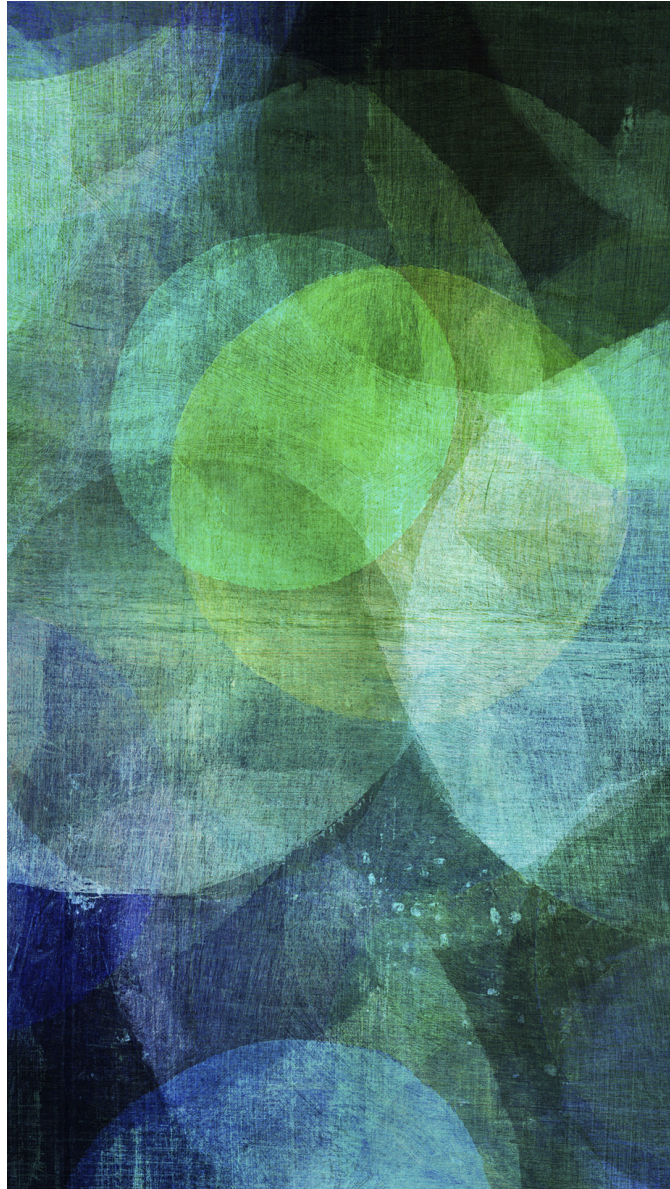
What happens when we step out  
of togetherness, diversity, and  
collaboration? What happens  
when there is no  
interconnectedness?  
When there is only solo-ing?

**Multiplying A's with A's  
and**

**B's with B's**

**Results in suicide  
through error replication**

**A and B require each  
other in order to continue  
to live and for life to  
continue.**





**Darwin imagined evolution as a mechanical affair in which there is:**

- 1) variation (all the individuals are slightly different),**
- 2) fecundity (all creatures tend to produce more offspring than the environment can support),**  
**and**
- 3) natural selection or natural preservation (differences between individuals, coupled with environmental pressures, will determine which individuals will survive longer and pass on their characteristics through reproduction).**



**But Darwin  
said little  
about the  
nature of  
living  
organisms,  
their  
dynamics,  
or how they  
arise.**

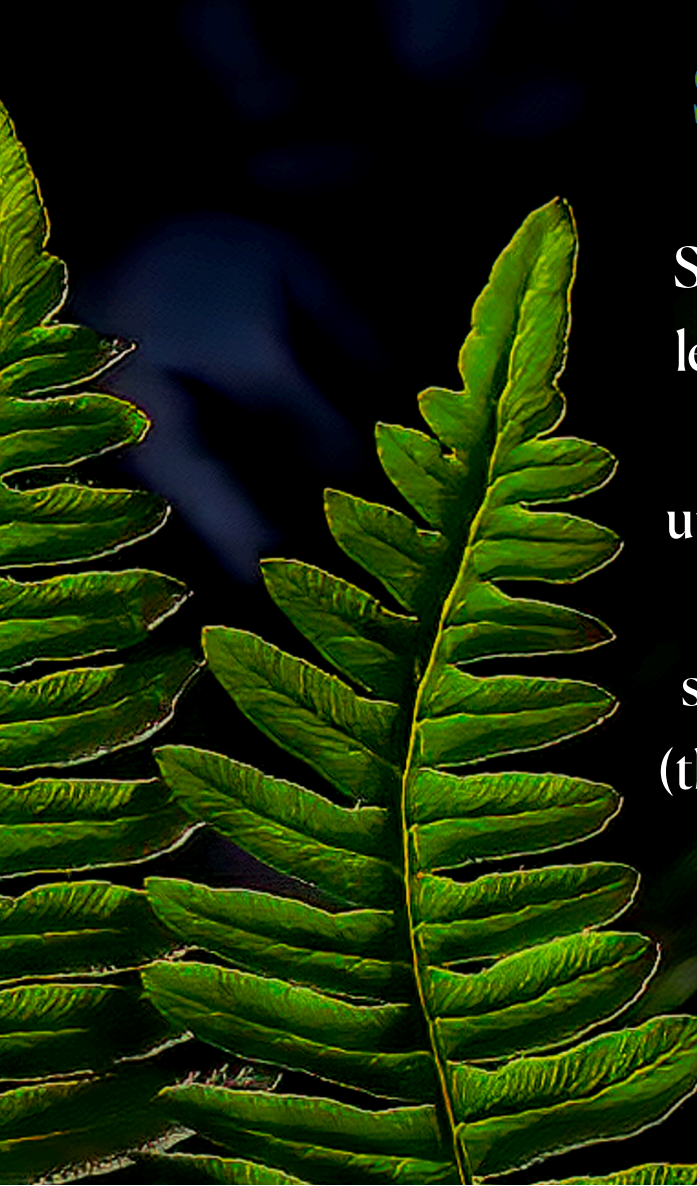


# Life Is Community

The Universe is not a collection of mechanical cogs, but a community of beings. Through self organization, parts come together to form organic, emergent, and autonomous entities. In the process of self organization, each part maintains its identity at one level, but is folded into a larger organism at another level. The parts are always subordinate to the greater, self regulating power of the Whole.



## Self-Organization. Mind in Nature .



Self organization, a form of intelligence in nature, occurs at all levels of life from Gaia, to galaxies, to the solar systems, to the unfolding of the generations of one's family. Self organized units possess the innate tendency to preserve and extend their own existence. All organisms, whether living or nonliving, spontaneously act in three ways to increase the generation of (their) Form in space and time. These three ways are: *synthesis* (synthesizing smaller units into larger ones), *selection* (facilitating the creating of better adapted forms) , and *self preservation* (regeneration of their existing form).

(See Louise Young. 1986. The Unfinished Universe.)

**All Life Lives by Means of and  
for the Other. Making With.**

Organisms are self created, emergent unities that are coherently folded back on themselves through a process of self regulating feedback and metabolism. Every part exists for the other AND by means of the other. In evolutionary history, our lungs influenced the development of our heart and our heart influenced the development of our lungs.



**Biological life is a “dissipative” circular system** that exists far from chemical equilibrium; dissipative systems take in matter and energy and expel them. Their characteristic features only emerge spontaneously in the presence of a flux of energy. Our own disequilibrium ensures that matter and energy will continue to flow through us. A state of chemical equilibrium is inactive, a state of death.





In dissipative circular systems feedback occurs; one part begins to act on other parts and this is looped back and reinforced through feedback. When a system enters into a state of “chaos” as a result of even the tiniest difference in feedback, the feedback in the system causes the system spontaneously to (re-)self-organize and emerge from the chaos transformed at a new and different level of order.

## Living at the edge of chaos



## Living at the edge of chaos

**Chaos: When the present determines the future but the approximate present does not approximately determine the future. Chaotic behavior exists in many natural systems, including fluid flow, heartbeat irregularities, weather and climate.  
-Edward Lorenz**



**“Our own capacity to learn and remember is rooted in the fact that all life is capable of learning and decision-making at some rudimentary level ... if we look at evolution as a learning phenomenon, it becomes obvious that mind and memory exist in all living organisms, including the smallest bacteria. Living organisms are not mindless machines, but coherent, self organized entities that are open to their environment and capable of further growth and transformation.... They have the power to heal themselves in almost magical ways.**

**Self organization is dynamic and occurs at the edge of chaos. In order to live an organism cannot become too static, but too much stability is death. In order for us to grow as human beings, we must not become too frozen or controlled. Only by entering into unpredictable situations can life truly be lived. Only by coming undone in the dynamic flux of chaos can we enter into a higher level of self organization through the soul-forging power of feedback and knowledge.” Fiedler, p.213**

