

AUTOPOIESIS AND SPIRITUALITY

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*Caminante, son tus huellas el camino, nada más;
Caminante, no hay camino, se hace camino al andar...*
A. Machado

Introduction: Spiritual Connotations of Autopoiesis

The term "autopoiesis" was introduced by Maturana and Varela [1] around 1972 by combining the Greek words auto (self-) and poiesis (creation, production) to refer to the mechanism by which living systems continually produce themselves as autonomous unities.

When we speak of living beings, we presuppose something in common between them... Our proposition is that living beings are characterised in that, literally, they are continually self-producing. We indicate this process when we call the organization that defines them an autopoietic system... The most striking feature of an autopoietic system is that it pulls itself up by its own bootstraps and becomes distinct from its environment through its own dynamics, in such a way that both things are inseparable.

Inseparability of Living Systems from their Environment

Inseparability of living systems from their environment claimed by autopoietic theory expresses the unity of universe and this unity is at the core of any spiritual doctrine and experience. To see and grasp the unity of life is the ultimate drive of any spiritual endeavour.

In the stream of spiritual writing the idea of inseparability is usually extended to encompass not only species in relation to their environment but also species in relation to each other. For this reason, spirituality resists Darwinian biology where evolution is considered as a chronic, bloody competition (struggle for survival) among individuals and species. The new biology rooted in Complexity Science (and autopoiesis is in this biology) alters this view of evolution. Life did not take over the globe by combat, but by networking. Life forms multiplied and grew more complex by co-opting others, not just by killing them.

For example, bacteria – the only inhabitants in the first two billion years of life on Earth, continuously transformed the planet's surface and atmosphere and invented all life's essential, miniaturised chemical systems. Their ancient biotechnology led to fermentation, photosynthesis, oxygen breathing, and the fixation of atmospheric nitrogen into proteins. Bacteria can routinely transfer their genes to bacteria very different from themselves. The receiving bacterium can use the visiting, accessory DNA (the cell's genetic material) to perform functions that its own genes cannot mandate. Bacteria can exchange genes quickly and reversibly. All the world's bacteria have access to a single gene pool and hence to the chemical prowess of the entire bacterial kingdom. This extreme genetic fluidity illustrates bacteria's inseparability. All scientific attempts to organize bacteria into separated phylogenetic groups or family trees proved to be invariably difficult and unsatisfactory. Of course, with the increase of biological complexity, inseparability between species takes much more subtle forms of manifestation.

Structural Determinism and Structural Coupling

Key concepts in Maturana and Varela's writings are structural determination and structural coupling - they are essential for understanding autopoiesis as a completely different paradigm in the understanding of life and cognition.

According to the principle of structural determinism, the actual course of change in a living entity is controlled by its structure rather than direct influence of its environment. While a given perturbation may 'trigger' a change of system state, the particular change triggered is a function of

the system's own organization and structure. Thus the external world becomes a manifestation or projection of the process of autopoiesis.

Spiritual connotation of the principle of structural determinism is straightforward:

- **Recognise that your reality is not changed by external things in order to get to the internal things. Your reality is changed by changing the internal things, which then affects the external things.**
- **We cannot see outside what we are not inside.**
- **We can understand only as much of the world as we have developed and realized within ourselves.**

Structural coupling is the term for structure-determined engagement of a given unity with either its environment or another unity. Structural coupling describes an ongoing process of mutual co-adaptation (co-drifting).

Structural coupling has also strong spiritual connotations:

- **Adjust the microcosm – which is in your power to do, and the macrocosm will adjust itself for you.**
- **Spiritual unfolding of the universe is a cooperative process in which all living creatures take part, each according to his(her) individual uniqueness and stage of evolution.**
- **As you rise and are true, you lift the whole world with you; for as you tread the path it becomes plainer for those who are coming.**

Cognition

In the publication quoted above [1], Maturana and Varela bridge autopoiesis with cognition: "Living systems are cognitive systems, and living is a process of cognition" and "For every living system, its organization implies a prediction of a niche, and the niche thus predicted as a domain of classes of interaction constitutes its entire cognitive reality". In other words, cognition in the autopoietic view is no more and no less than a living system's flexible and effective behaviour within its domain of interaction.

Carrying forth autopoietic ideas of cognition as interaction, Varela considers cognition strongly depending upon the kinds of experience (experiential enacting) that come from having a body with various sensorimotor capacities "themselves embedded in a more encompassing biological, psychological, and cultural context"[2].

Once bridged with human experience, autopoiesis becomes widely open for spiritual interpretations and influences.

Intrapersonal Autopoiesis

The idea of intrapersonal autopoiesis [3] represents a further exploration of the experiential dimension of the autopoiesis. *The self-reproduction, self-realization and self-evolvment of individual's inner nature in a vital coupling with the environment is what we call intrapersonal autopoiesis. The core process in intrapersonal autopoiesis is the process of self-knowing.*

Three Streams of Intrapersonal Knowledge

Self-knowing includes three streams of knowledge:

€ Knowledge About the Ideal (KAI). This type of knowledge pursues answers to the following question:

What kind of ideal personality would I like to develop (nourish, grow, realise) in myself?

€ Knowledge About the Obstacles (KAO) on the way to the Ideal. This type of knowledge pursues answers to the following question: *What kind of obstacles (both external and internal) prevent me from achieving (developing, realising) my ideal?*

€ Knowledge About the Energy (KAE) of an individual. This type of knowledge pursues answers to the following question: *How can I increase and use better my energy potential (strengths, willpower, determination) to deal with (or overcome) the obstacles on the way to my ideal?*

Like the three 'gunas' - a Sanskrit name for the fundamental qualities of human nature, described in the ancient yoga philosophy of Patanjali - the three streams of self-knowledge are never in equilibrium - they always move so that in each moment a specific stream can prevail.

If KAI prevails, we often are in a contemplating or dreaming mood - either actively generating ideas, plans, visions and scenarios about the future, or passively imagining ourselves in some desirable ideal states and conditions.

If KAO prevails, we could feel depressed: we might be aware of how difficult it would be to achieve the ideal state (seen in our dreams, plans, and visions) and how much effort, knowledge and vigilance would be required to maintain this state.

If KAE prevails, we are usually in an active and creative mood - we act in order to realise our ideas, plans and dreams about the ideal.

As usual, the above three streams interact with one another through various positive and negative feedback loops.

The most promising for personal growth and spiritual self-realization seems to be the positive feedback between KAI and KAE: the image of the ideal stimulates human actions, the actions make the ideal more real, closer and achievable.

A negative feedback loop between KAE and KAO seems to act against spiritual self-realization and growth: the less active we are, the more obstacles appear on the way to our ideals; when seeing the increasing number of obstacles, our activity goes down.

The self-knowledge streams and their interactive patterns emerge in structural coupling with the environment where the human experience takes place. We call this ever changing (dynamic) environment *Human Experiential Space*. Human Experiential Space provides a milieu where the Intrapersonal Autopoiesis manifests itself.

Human Experiential Space

Human Experiential Space (HES) is:

€ *multidimensional*

An almost infinite number of 'external' and 'internal' interrelated factors contribute in experiential dynamics. Out of the turbulence and vorticity of these dynamics, self-organizing forces emerge: they are responsible for personal growth and spiritual evolution of humans;

€ *chaotic*

We cannot predict what experiential patterns will emerge in our life even in the nearest future. Tiny little changes in the stories we have about ourselves and the world we live in can bring forth

dramatic changes in our daily experience. Seemingly simple and routine modes of behaviour can lead to extremely complicated experiential patterns.

- *free from linearity of time*

Both past and future meet in each present pattern of experience. The nature of an experiential event directly reflects human perception of its time span - it is not fixed, it is not linear, it is not irreversibly lost.

- *an evolving continuum*

In HES, chaotic dynamics of each human life has its own evolutionary trajectories. The trajectories reflect people's activity during their life time. Driving forces of this (quite diverse) activity are permanently emerging and evolving desires of any kind.

Attractors In Human Experiential Space

According to the ancient Vedic literature, people's actions are usually directed towards achievement or acquisition of power, knowledge and freedom, as well as towards experiences of love, pleasures and longevity. Whatever an individual does, his or her actions are pulled towards one (or more than one, in parallel) of the above attractors.

There are enough experiential evidences supporting the ancient Vedic wisdom: it does not matter how diverse our every day life activity appears to be, it is inevitably driven (consciously or unconsciously) towards securing our long time survival (*longevity*), towards exercising *power* in various forms (acquiring of possessions and money, higher social status and prestige, advantage in force or skills), towards extending the degree of our *knowledge* (intelligence, education, cultural or spiritual enrichment). The thirst for *freedom* is crucial for opening spaces of new possibilities for realization of our skills, creativity, intellectual and artistic ability, talents, dreams, etc. And, of course people's lives are powerfully driven towards the experience of *love* and a multitude of *pleasures*, some of which could be quite addictive and even threatening individual or social survival.

Longevity, Power, Knowledge, Freedom, Love, and Pleasure represent six dynamically stable patterns – six *chaotic (strange) attractors* in HES [4].

Usually human desires drive life dynamics to more than one attractor, for example: pleasure *and* love, or knowledge *and* power, or freedom *and* knowledge *and* long life, etc.

Although one cannot predict a specific life trajectory of an individual or group, one can find out the attractor (or attractors) at which this trajectory is located in HES. Each attractor or combination of attractors strongly influence people's behaviour, emotions, mentality, moral, cultural and spiritual life.

There is only one non chaotic, that is, *fixed attractor* for human life dynamics in HES - the attractor of death. As far as life dynamics of each individual are dissipative, they 'shrink' with time, gradually (or suddenly) stop to be connected with any strange attractor of life activity and fall into the fixed attractor.

Dealing With Attractors' Dynamics

Chaotic attractors of life dynamics have some similarity with Jung's *archetypes* representing inherent human predispositions and habits. The same irresistible urge of the unconscious psychic forces (to assimilate all outer sense experiences in dynamic and yet stable inner patterns, images and events) which energises the archetypes is responsible for the emergence of the chaotic attractors in HES.

To overcome the gravitational forces of chaotic attractors, particularly when the forces have roots deeply in unconscious human psyche, is extremely difficult. The studies of alcoholism and drug addiction - complex phenomena with dynamics 'stuck' at the chaotic attractor of pleasure,

demonstrate that *fighting* against addiction not only fails but has totally opposite effects: fighting intensifies the degree of attraction, that is, makes the attractor more robust and statically stable. The energy feeding the attractor puts into operation a special self-protecting and self-justifying mechanisms which produces impossible to untie 'double binds' eventually reinforcing the drive to addiction [5].

And yet, it is possible for humans to become free from the repetitive patterns of attractors' dynamics. First of all, efforts are needed to see and grasp how these dynamics manifest in our inner experiential space. This inner space is sacred - only we have access to it through our *awareness*, *vigilance* and *watchfulness*. The awareness, vigilance and watchfulness are autopoietical attributes - we are entirely responsible for them to be developed and self-reproduce. No one from 'outside' can inject them in us or make us aware of what happens in our selves.

Uniqueness and Spirituality of Autopoietical Self

‘Follow not me, but you’

The above quotation belongs to Nietzsche. It strongly relates to the functioning of the Intrapersonal Autopoiesis. Intrapersonal Autopoiesis that manifests itself in an individual cannot be transplanted into the inner space of another individual.

If you follow others, instead of being yourself, you quickly lose your spiritual sparkle and stop reflecting the light of your unique individuality. Without that light, there is no self-awareness, no personal growth, no spiritual progress in life.

To follow another person (mentally, emotionally or spiritually) means to copy, imitate or identify with another's mechanism of Intrapersonal Autopoiesis, forgetting your real self. This can result in fatal conflicts between the self and mind (confusion in thinking), the self and heart (confusion in feelings), the self and spirit (confusion in the search for identity).

Intrapersonal Autopoiesis needs freedom for its functioning. The moment we surrender ourselves to some other self, the freedom is lost and we become unable to express ourselves. The lack of freedom makes individual self-awareness impossible and results in missing individual opportunities for self-knowing, self-realization and growth

The Power of Inspiration

Inspiration generates a powerful flow of energy in HES. This energy can be enough not only for a sudden jump (bifurcation) to another attractor but also for bringing forth emergence of new attractors in HES. In this sense, inspiration is a powerful stimulator of human creativity.

Similarly to creativity, inspiration occurs spontaneously in HES. 'Trying to be inspired' or 'to impose inspiration' is like 'trying to be spontaneous' - it does not work. On the contrary, it creates obstacles for the 'flash of inspiration' to be ignited. But there are many powerful catalysts of inspiration - external (like beautiful scenery, personality, picture, music, reading, etc.) or internal (related to individual achievements, self-realization, will-power, experience of love, faith, hope, etc.). Different catalysts can have different inspiring effects on different individuals.

It is interesting that the dynamics of an acquisition-oriented attractor in HES (even those related to 'knowledge-accumulation') can be reinforced but never inspired. Attachment can never be inspired - its reinforcement usually hastens exhaustion of the attractor. However, a genuine act of inspiration can help a person to resist the pulling forces of some attractor detrimental for the body or mind, and thus to become free from attachment. (Alcoholic Anonymous is an example of spiritual inspiration helping people to deal with the detrimental power of the alcoholic addiction.)

Any genuine spiritual endeavour needs a flash of inspiration, otherwise it loses sincerity and wilts quickly. Inspiration is needed to energize the human search for identity and authenticity, for self-realization, spiritual enlightenment and wisdom.

Inspiration is not a 'logocentric' phenomenon, that is, it is not based on any logically consistent 'system of thought' that claims legitimacy by reference to external, universally truthful propositions. It is grounded in self-constituted human logics which are circular and self-referential and, therefore, paradoxical.

Being a stimulator of creativity, inspiration needs intermittency (discontinuity) of causality: the chains of cause-effect melt under lucidity of inspiration. Any a posteriori analysis of how inspiration works can possibly reveal some relations of geometrical (or topological) similarity in experiential trajectories, rather than congruence of physical causes.

Ability for Spiritual Learning

Individual ability to learn spiritually is crucial for establishing, whether spontaneously or intentionally, connections and interdependence between the experiential events, patterns and processes. By seeing events and processes as interconnected, we can extract spiritual meaning from their occurrence and thus use them as personal lessons of life.

Unfortunately, our ability to grasp the meaning of the experiential events is quite limited: we can ruminate only the 'global' turning points in our lives. And they are but very few. A plethora of tiny, difficult-to-notice events permanently occur, influencing strongly the way we live. Can we learn to see these events? The positive answer relates again to the awakening of awareness.

Human awareness is endless. Once open, it extends and helps to see more and more things happening in our everyday life - not as isolated insignificant events, but as vital constituents of an integral and dynamic web of life pulsating through each of us, through all animated and non-animated creatures of the universe.

We are born to be aware of ourselves. What is needed is to learn how to reveal this inherent property, how to uncover it from the layers of prejudice, stereotypes, habits and ignorance accumulated through years of blindly following the instructions of others or of a robot-like activity in the basin of some acquisition-oriented attractor.

The techniques of *Concentration*, *Contemplation* and *Meditation*, specially adjusted to each individual nature, can help tremendously in honing our ability to learn spiritually from the events of life, no matter how tiny they seem to appear.

Of all the experiences we can have, the experience of our inner self is the most important for our spiritual growth. Our physical bodies are ever-changing; our minds with their thoughts, feelings and desires, also come and go. They are both experiences locked in time and space; they are not the experiencer.

"The one who is having the experience is beyond time and space - it is the timeless factor in every time-bounded experience, the feeler behind the feeling, the thinker of thoughts, the animator of our bodies and minds." [6] It is our *autopoietical self*. Its self-reproduction and self-evolution in an unbreakable coupling with the universe is at the focus of the intrapersonal autopoiesis. The understanding of the intrapersonal autopoiesis is understanding of ourselves. And this is the highest spiritual understanding.

Conclusion: Towards a New Concept of Autopoietical Time

Why do People Believe that Time Flows from Past to Future?

This temporal asymmetry is deeply ingrained in our thinking. The reason for this is because we consider change and time inseparable. We become older, therefore time moves from past to future. And vice versa – because time moves from past to future, we become older. So, we can't help but judging about the flow of time from a position which is rooted in time.

Could we try to look at time from a position which is out of time? Price called this '*view from nowhen*' [7]. According to Price, from such a position, the notion of 'time flow' becomes senseless:

if time flows, we must be able to define how fast it flows: second per second?, minute per minute? – such 'dimensionless' answers do not seem sensible.

Is there any 'objective' reason to take for granted that the positive time axis lies toward what we call the future? Answers like "because the hands of our clocks move clockwise" or "because the sun 'moves' from east to west" cannot provide a serious grounding for such a convention. None of the basic principles and laws of classical or quantum physics indicate any basis for the common belief that time flows only in one direction - the physical laws work equally well in both temporal directions.

Even the notion of 'now' is observer-dependent - according to Einstein's theory of special relativity, 'now' doesn't happen simultaneously for two spatially separated observers. So 'now' cannot be accepted as an *objective* category. 'Now' is dependent on an observer's point of view in much the same way that 'here' is.

Price considers time irreversibility as an illusion - "a kind of artefact of the particular perspective we humans have on time". But the majority of scientists and philosophers continue to describe phenomena in terms of the direction of time of commonsense experience, as if all causal influences exist and act only in that strongly linear direction.

Time is Reversible

In 1890 the great French mathematician Henry Poincaré – the chaos pioneer who discovered chaotic patterns in the dynamics of planets' interaction, proved his famous ***Recurrence Theorem***: *systems return infinitely close to their initial positions in the state space*. For systems that vary its state continuously, the interval between arbitrary close returns is not fixed but can vary. If the interval is fixed, the system is periodic, if not – it is chaotic. (Most systems which evolve under Newtonian laws are not periodic, but chaotic, which means that their evolution is unstable: a tiny change in the initial conditions results in an enormous change in systems behaviour.) Poincaré's Recurrence Theorem strongly supports the idea of time reversibility.

Time is Fractal

Fractals are similar structures – they demonstrate their similarity at different scale levels. Life events do not exactly repeat themselves, they are similar.

When we speak about time reversibility, we apply the approach of fractals – while saying that history repeats itself, we emphasise similarities in the events occurring at different levels of time dimension of social complexity.

The fractal approach helps us to map the scenarios of complex autopoietic systems. These scenarios reveal chaotic attractors of systems' behaviour. As far as the structure of chaotic attractor is fractal, when we see what changes are likely to manifest at one level of its structure, the approach of fractals helps us to construct a picture or a map of what is likely to occur at another level. As complexity of fractals increases when we 'zoom' deeper into the fractal structure, it is easier to reveal the changes occurring at a higher (more general) level of system's description structure and then to 'project' them onto the description of patterns of change possible to occur at the lower (more detailed) levels of description.

Ability of spiritually advanced people to predict the future of chaotic and, therefore, inherently unpredictable systems could be related to time fractality.

Systems are Correlated Before we see them involved in Interaction

The mistake made by all those who consider time irreversible is that they automatically agree that interacting systems are not correlated before they interact. This is the case when demonstrating some chemical reaction or a physical experiment. In the reality of life, where everything relates to everything, *systems are correlated long before we see them involved in direct interaction*. Nature simply does not tolerate non-correlated systems. A cell when isolated immediately put into action

its genetically programmed mechanism for committing a suicide (a phenomenon called *apoptosis*). As we mentioned above, autopoiesis is entirely permeated by the idea of the all-embracing connectivity (interdependence and intercorrelation) of the phenomena, processes and systems manifested in the Universe.

Reality represents an integrated entity of which time is only one of many other dimensions introduced by humans to understand and deal with complexity of their existence. The reality is not something dropped into time (when our universe was born) with a special purpose to see it changeable.

In its Unbreakable Unicity Reality is Changeless

In its unicity reality remains *within* itself – all that 'was', 'is' and 'will be' is included in this unity. What we see as an apple seed contains simultaneously its present form (it 'is' a seed), its past form (this seed 'was' inside an apple belonging to an apple tree) and its future (it 'will be' an apple tree when suitable conditions repeat).

In order to sustain its unity, reality relies on itself. In order to explain this unity, reality refers to itself. This *self-referentiality* is a crucial factor for understanding changes which happen with reality. *Changes do not happen because of time but because they reveal the way reality exists.*

When Reality Refers to Itself, it Creates

When reality refers to itself (reflects itself), the *internal changes manifest themselves outward*. That is why we speak about dynamic nature of reality and about the changes we see, study and live with, and not because time is irreversible.

We call the time in a reality which reflects upon itself *autopoietical time*.

Autopoietical is the time dimension for people who are *fully aware* of and *responsible* for the flow of their lives because they are *creators* of their own lives. Unlimited and eternal is their potential for spiritual evolution and growth.

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