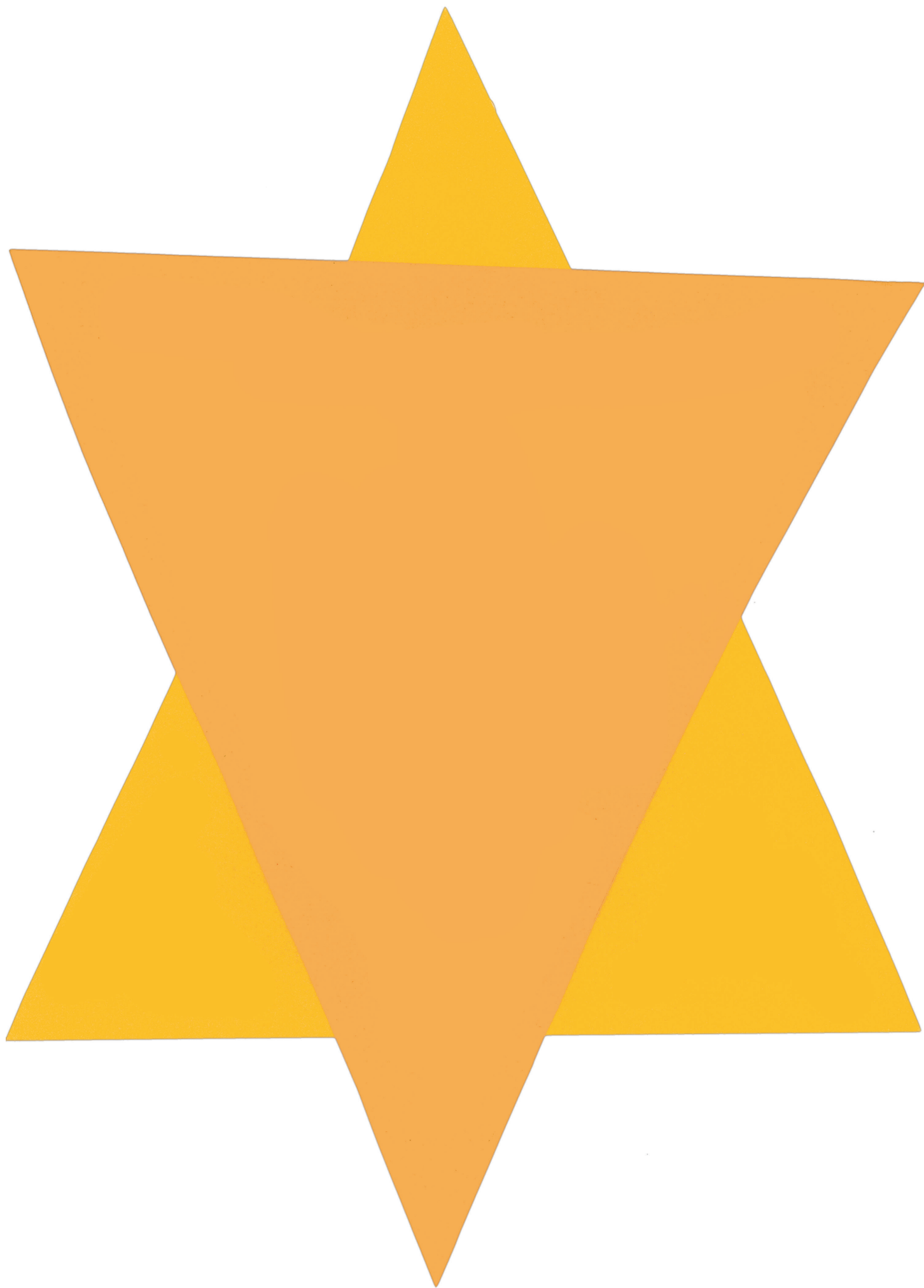






# The Origin of Life and the Origin of Living *Matríztica*

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The question about the origin of life and the question about the origin of the living beings lead us to different angles of response. We cannot talk about what we are, we can only talk about what we do. In other words, we can only talk about the present. The question to be answered is, therefore, what is the living that dies? Because living beings die. They are discrete existences that occur, and their occurrence can end. And when a living being dies, a cadaver appears, which is something completely different.

In 1960, there was already talk about nucleic acids, but the thinking of that time was very different from that of today. In that era, the living was something very difficult to understand, something very complex, and perhaps ultimately incomprehensible. On the walls of university biochemical laboratories there normally are posters, pictures and illustrations that depict metabolic processes, such as the synthesis of glucose, the synthesis of amino acids, and others. These are all cyclic processes: molecules enter on the one hand, products leave on the other, but the dynamics is always cyclical. As living beings we must be cyclical systems, yet we are individuals, discrete entities.

And, in this reflexive orientation, we can learn something through a game which is a very famous experiment of Langmuir: if we put water in a frying pan, sprinkle talcum powder on the water's surface, touch with our finger a drop of oil and then the floating talcum, this will produce a wave of expansion in the powder. Langmuir shows that the molecules of fatty acids arrange themselves with the hydrophilic part on the bottom and the hydrophobic part at the top of the monomolecular layer. And this occurs spontaneously, because the natural processes are spontaneous. As living systems, we are therefore wonderfully spontaneous. We were not manufactured, we are not robots, we were not designed. The question is, therefore: how did we arise in this way? We arose as networks of cyclic metabolic processes whose result is ourselves. What is at play is always molecules.



We are molecular systems that self-produce within a network of cyclic processes. We are the result of an operation, of a way of doing, that results in a living being. An *autopoietic* molecular system that spontaneously produces itself. Deep down, we all know this.

- Mom, why do I have to eat vegetables?
- Because they nourish you.
- What happens to the vegetables, mom?
- They go into you, they dissolve in your little body and construct your bones, your muscles...
- Oh, mom, so I produce myself?
- Yes, of course.
- Am I autopoietic?
- Yes. You are autopoietic. You produce yourself.

The question that we ask ourselves at Matriztica is: what is the living being that dies? How does it originate? And we answer that the living being arose as a minimal autopoietic molecular system, in the form of a primordial bacterium, most likely about 3.8 billion years ago. This had to occur spontaneously. Because, since we are molecular systems, the outer world that has effects on us does not prescribe what happens to us. We know – by our understanding of how the living beings operate as systems determined by their structure – that we cannot talk about a reality as some outer thing that affects us; only the interactions that we experience can bring about specific changes in our structure.

For example, today we know that the outer world does not precisely determine what happens in the eye. It triggers structural changes in the cells of the retina, in the photosensitive membrane of the photoreceptors, resulting in a series of structural changes throughout the organism. Nevertheless, how is it that when we see what there is outside, as for example a flower, I say that there is a flower there? How does this happen if the outer world does not tell us what that is? When we receive documents and they say “here you have all the information you need,” how many times do we read it and not understand anything? These sorts of situations arise all the time.

And what must take place in such circumstances for us to understand? We must converse and, as a result of this conversation, the document takes on a meaning. This is to say that, for example, when a salamander flicks out its tongue to capture a dragonfly or a worm, this phenomenon is the result of a sensorial, relational and operational history. A history that has to do with the origin of the living being. If we want to go to the moon, what do we need to consider? That we need transportation, a ship. And what do we want to bring in the ship? Food, oxygen and pressure! Ideally, a radio system that allows us to stay connected with the Earth.



In other words, what we need to bring with us is our ecological niche – which is the relational environment in which the living being lives. In this reflection we can therefore add here that when the primordial bacteria originated, their ecological niche originated along with them within the same space-time. We talk about the ecological niches – just as we talk about everything we see in our surroundings – as though they were there beforehand, and the organisms simply occupied them. But that is not how it happens. In their process of living, the organisms slide along the tangent of the preservation of their coherence with an environment that arises together with their living and gradually changes along with them. If we go out with a friend and stop to appreciate a landscape, we each see something different.

And what is related to what each person sees? The fact that each person moves together with his or her ecological niche. Because this environment arises with each being. We thus see that when living beings arise, an ecological organism-niche unity is established. What arises on the Earth at some moment is not a living being, not an isolated organism, but rather an organism and simultaneously the environment that makes it possible, and they arise together in a dynamic ecological organism-niche unity. The ecological niche is not static. It changes. Right now, all of you are part of my current environment, as I am part of yours. The cell is a discrete unit in the production of itself. But this ecological organism-niche unity is also continuously formed during the course of its process of living, and the living being will live as long as there arises along with it an environment that makes it possible.

To further understand what takes place in this process, we need to believe in what we, at Matriztica, call the fundamental inertia, meaning that what occurs will continue occurring unless some other event interferes with it. And this takes place due to the nature of the physical phenomena. Because, fundamentally, nothing occurs in just any way. We speak of probabilistic, quantic, molecular and submolecular processes and we make calculations of probabilities, but, to calculate the probabilities, we rely on our confidence in the existence of a fundamental structural determinism that is unknown and unexplained, though by means of some experiment, we could perhaps describe it in a context of spontaneously conserved structural coherencies.

All of us living beings belong, at this instant, to the same history of a changing organism-niche unity in the formation of lineages of systemic reproduction, since 3.8 billion years ago, in a harmonious way. It could not have been otherwise. We living beings are conservative. What do we conserve? Our living, our ways of life. In different ways. Our ecological concern lies in the fact that we know that if we take a particular organism out of the environment of the biosphere, everything will change. Because everything is interconnected. In our shared existence, we are interrelated and we transform in a coherent way.



The organisms slide not in the preservation of adaptation, but rather in the preservation of living, and the ecological niche changes along with them. We are not adapting ourselves to “X,” but rather sliding, like skiers. Preserving what? Harmony. When we ski, our form and our posture are constantly changing, just as our ecological niche is continuously changing – because what we see, and what we do, changes along with it. And we slide along preserving, according to our sensoriality, the harmony with the environment that is continuously arising with our process of living. We, the living beings, slide in our living while preserving our living, our well-being. And when we do not preserve our well-being, we get sick, and if we do not recover our well-being, we die. When the physician treats us for a wound, is it the physician who cures us? We cure ourselves by ourselves! The physician helps us to cure ourselves. Alone.

In the continuing process of our molecular autopoiesis. And what does the physician do, then? He or she disturbs our structure, triggering transformations in it. That is, the physician modifies the environment in which we exist, in such a way that we can slide in the preservation of our ecological niche. How do we know how a given organism lives? By letting it live. Observing it. That way, we can see how it lives, and explain its way of life with the things and circumstances we distinguish, and we see that they also change together. We see, for example, that as my wound heals, everything gradually changes: the way I move around, what I say... And that what happens is that the physician helps the patient to have the possibility of realizing his or her ecological niche in terms of the corporeal, physiological, or psychic relationships.

We living beings, moreover, transform together. We form communities. And in doing so, we currently transform what is happening in this space of relationships in which we are interacting. And it is in this mutual transformation that we arise as human beings in history, within an ancestral family in which language arises as a means of living together. Not as a symbolic way of referring to a reality about which we cannot speak, but as a way of coordinating our feelings, our actions and emotions.

As a fundamental means of preserving love and tenderness, the emotions that guide our living and our living-together in the coherencies and harmonies that arise and remain preserved in the natural drift of the living beings in general, and of the human beings who preceded us in particular. At the present historical moment in which we live, however, many human communities are now inhabiting unforeseen and undesired contexts that are both incoherent and nonharmonic, which arise from the intrusion of ideas, notions or theories arriving from an outside context... or arising from themselves as a desire that hopefully was to lead to a continuous well-being that did not occur.

This is what happens with us when we imagine the coherence and harmony in the well-being of living and living-together as a success that is only possible if we adapt or control our surrounding world in accordance with what we wish to obtain, and we do not see that the history of the natural drift of the human beings shows us that the coherence and harmony of any process of living and living-together are the result of the preservation of well-being in this living and living-together in the harmony of love and tenderness. All this, in the history of the living beings, in our natural drift or in the coherent transformation of the biosphere, occurs spontaneously, without requiring any notion of meaning, information or purpose.

But when we human beings arise, we appear together with language, conversation and reflection. And in this reflection we take a look at ourselves and at what we do, and the possibility of choice arises. And what do we choose? We choose something according to what we want to preserve. This is why our real question in regard to the future is how we want to live now as beings who reflect, and who can choose what we choose, or not choose what we say we want to choose in the fundamental act of the human, which is reflexive conversation. What do we want to preserve now, in order for the future to be how we want it to be?



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