

Ayahuasca, Salutogenesis and the Need for „Ecological“ Approaches

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1. Introduction

„Rationalism separates things to understand them. But its fragmented disciplines have limited perspectives and blind spots. And as any driver knows, it is important to pay attention to blind spots, because they can contain vital information. To reach a fuller understanding of reality, science will have to shift its gaze.“

Jeremy Narby, *The Cosmic Serpent*, p. 160

In Western science, extraordinary or visionary states of consciousness are traditionally discussed mainly in terms of psychopathology, that is, in the sense of mental disease. This applies even more when they are associated with psychoactive substances such as the herbal decoction Ayahuasca, which are generally called “hallucinogens” with the connotation “not objective, unreal”. However, responsible work with psychoactive herbal decoctions like Ayahuasca – similar to many forms of meditation – has salutogenic potential, i.e. it can enhance physical, mental and spiritual health by calling into play what is referred to as “participating consciousness”. Rigid feeling, thought, and behavioural patterns can unclench, the self can rearrange itself and develop its inner and outer resources more deeply.

The thesis of this article is that for an adequate understanding of these processes, the familiar “linear” thinking no longer suffices, rather, an “ecology of mind” is needed (Bateson 1972), i.e. less divisive, less objectifying explanations which also do not exclude the fundamental paradoxes of human existence. Of course, such approaches occasionally need some getting used to.

In the following, a few basic elements of the ecological approach will be explained (chapter 2). Chapter 3 ff. will then analyze whether or not and to what extent this approach can explain extraordinary states of consciousness better than traditional, linear thinking.

2. Basic Elements of an "Ecology of Mind"

Self-referential logic

An essential feature of ecological thinking is its circular, self-referential logic, that is, it operates with self-referential units. An example is the declaration: "This sentence is false". Is it correct or not? There is no definite answer to this question; self-referential statements can possibly rule out the identification of unambiguous truths, hence they are proscribed in the domain of classical (Aristotelian) logic. This is not necessarily the case in an Ecological epistemology. Scientific approaches that work with self-referential logic are primarily to be found in so called "second-order cybernetics" (Maturana, von Foerster, Luhmann). This area of cybernetics attempts to explain what constitutes life and personhood, particularly with regard to what distinguishes them from inanimate nature, or artifacts like machines. Maturana's theory of "Autopoiesis" (Maturana et al., 1987) i.e. of the self-generating, living system solely becomes possible on the basis of self-referential logic. The issue will be addressed at length in the course of the article.

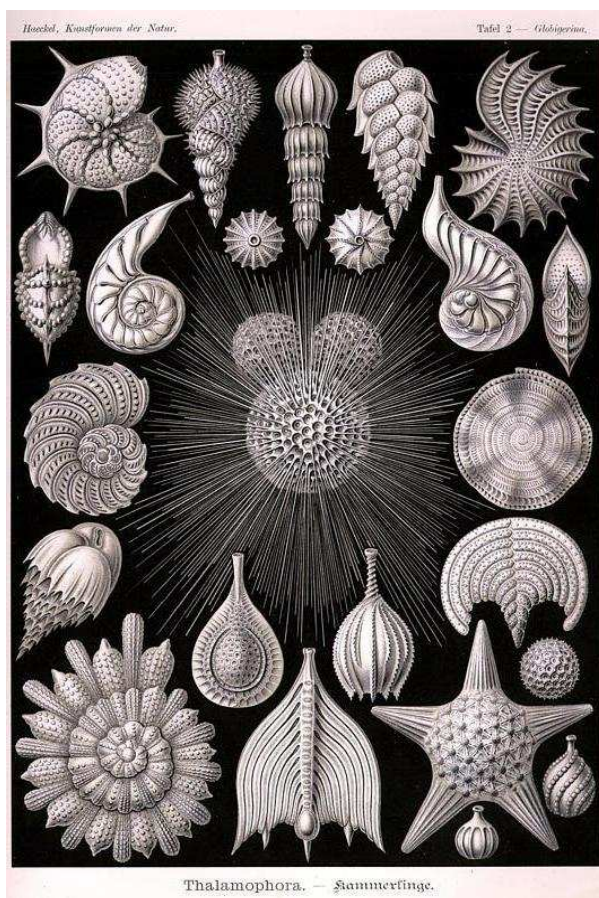


Fig. 1
Thalamophorae
 Ernst Haeckel, *Kunstformen der Natur (Art Forms in Nature)*
 Leipzig, 1899-1904

Fractal Logic.

Today ecological thinking also includes the so-called fractal logic. It originates in approaches such as chaos theory (see Briggs et al., 1989) and the theory of complex adaptive systems (q. v. Waldrop 1992). The term “fractal“ (from Lat.: fractus = broken) refers to arithmetic operations, in which by means of comparatively *simple* operators *highly complex* structures are generated, as can be seen for instance in *fig. 1*. This occurs gradually and in iterative back-couplings. That is, the result of each step of the procedure is the starting basis of the next one, until either a stable intrinsic value is reached (that means the “complex structure”) - or until the whole procedure ends up in an impasse or in chaos. In the pattern that emerges from the process, order (the operator) is inextricably interwoven with chance (or chaos). This recurs time and time again in new variations on the micro-level as well as on the macro-level which means the structure is *self-similar*. Self-similar, fractal forms are to be found everywhere in nature. *Fractality can be seen as a building principle of nature*: in other words, with its help, nature is understandable by imitation. Thus, a wide range of different life-forms can be “simulated” with fractals: the firing of neurons, the pattern of arousal in a heart muscle or just so the typical spiral or snake pattern of an Ayahuasca vision, which often comes very close to the life forms in *fig. 1*.

Thinking Self-referential and Fractality Together

I put the term “to simulate“ in quotation marks, because after all something can only be simulated if its functional principle is cognizable. But from the point of view of the ecological epistemology “one” – i.e. man – can never know what a creature in every last detail “is”, hence it can actually not be simulated. But by means of self-referential logic, the term “fractality” can be used in order to get an idea of how living systems emerge, develop and finally decay as dynamic equilibriums or autopoietic systems. In my view, Maturana’s theory of the autopoietic, that is, self-creating living systems (Maturana et al., 1987) can briefly be characterized via the following four principles:

- Firstly, there is the principle of *spontaneity*, i.e. it is assumed that life emerges and elapses from moment to moment out of itself, and in order to do so it does not require a separate “soul” or “vital force” or control programme.
- Secondly, a living system can not be understood when separated from its environment / its ecological niche which it always generates simultaneously (!). In other words: the only way a living system can become adequately understandable at all is as *an inseparable part of a wider context*, if you will: of the web of life – whose bor-

ders in principal can not be defined in an irrevocable or objective way (cf. Varela 1990).

- Nevertheless –thirdly– an *organizing principle* is needed. One can call it „spirit“ or “soul”, but one has to be aware that it is not an “entity” nor is it “palpable”, rather, it is a matter of being in relationship with oneself and one’s environment. However, one can try to understand the organizing principle by means of “ecological” thinking, and employ it usefully.
- Fourthly, an observer is needed who does not consider himself to be a neutral, abstract being, but rather *part of the processes* that he tries to understand. Hence, an imitative production of “imagery”, in the broadest sense, seems to be an indispensable agent for the understanding of natural processes. An example is the brain researcher and Nobel Prize laureate S. Cajal (1852 – 1934) who studied the cellular tissue of the brain under the microscope. Similar to Haeckel (see above) he very accurately portrayed that which he saw. By „imitative empathizing“ he discovered the neuronal circuitry (Cajal, 1999). Galilei, Leibniz, Darwin and others also explored nature by primarily “thinking with eyes and hands” (Widmann 2007) and as the next step formulated their abstract concepts using their head.

Now if you observe typical Ayahuasca-visions, then you can rediscover all these features in them: the spontaneous, the “infinite” web of life, the “unseizable” organizing principle and the observer as part of the observed. They are also to be found for instance in the following field report of a participant of a Santo Daime dancing ritual:

“Arms and legs move precisely, easily and economically with slight chaotic escapades, and an optical feeling arises – I intentionally speak about a feeling rather than of a phenomenon or impression, because I rather sense it than see it and yet with words I can express it most simply in the visual way: a structure, a tissue of little, multicoloured cells, and namely not microscopically little, but easily to spot and distinguish with the eyes, although they permanently oscillate, are in motion, alter and interchange positions (...) Incidentally, they are of simple shape, somewhat elongated and in vertical alignment – comparable to monads, of which G.W. Leibniz spoke back in his time. It is I who consists of these cells and they are, at the same time, the matter out of which the universe is assembled, this I perceive with utmost certainty. And so we are connected, the universe and I, not only are we connected, but we are one. In the way a rain puddle merges into the ocean when added to it, I am added to the world, but since time immemorial - therefore, the dynamic of the preposition “to” is redundant, I have always been and will always stay: an integral part of the universe”.

The following will outline how an "ecology of thinking" allows us to interpret experiences of this kind in a meaningful way, and how to uncover their salutogenic potential.

3. Language, Observer Perspective and Human Mind

We tend to think that language represents an "objective" reality that exists in and for itself. Maturana opposes this with: „Anything said is said by an observer.“ (Maturana 1980) In other words: reality as it is experienced by human beings, is already linguistically organized reality, i.e. *at all times* and inevitably it *already* mirrors certain experiences and hence a certain observational perspective that is cut off from the living process *here and now*. For to operate in language is to pretend to be able to refrain precisely from the here and now, and instead act as if reality could be described *objectively*, independent from observer perspectives; metaphorically speaking: as if one could detach oneself from the network of life and describe it objectively. The objectification of living processes that becomes possible through language offers advantages, e.g. the possibility to consciously plan and to strive for goals. However at the same time the natural incorporation into the web of life becomes initially lost. Thus, at all times humans probably have developed certain forms of acting (e.g. rituals) in order to overcome the separation intrinsic to the medium of language and to rebind themselves time and again into the network of life – the Here and Now. But what exactly does this separation mean? And how can it be transcended?

Before *anything* at all can be recognized - simply qua the physical, mental and social nature of the recognizing person - the relevant signals have to be separated or distinguished from the irrelevant ones. For instance in order to see, a readily developed eye is necessary. However its specific means of operation already implicitly determines what can and what can *not* be seen. And the eye sees all sorts of things – anything but its own means of operation and the limits intrinsic to it. Likewise necessary is an *pre-established* observer perspective (in which certain determinations and fade-outs are preset) before anything at all can be distinguished (like "Mama", "ball", "I" etc.). Hence, an observer operating in language can not see that he does not see what he does not see ("blind spot"); he inevitably describes the observed as possessing "object" character. The observer *at the instant of the observation* is always a naïve observer. Or in Varelas words: „In finding the world as we do we forget all we did

to find it as such, entangled in the strange loop of our actions through our body.”
(Varela, 1984, p. 9)

However, language allows *reflection* that is, within the medium „language“ it is possible to observe and describe the perspective of an observer together with all its blind spots. As everybody knows from his own experience, this works particularly well with others: one can relatively easily describe not only that which the others see, but also that which they do *not* see, namely their blind spots or deficiencies. Likewise, if one intends to do so, one can retrospectively describe one’s *own* observer perspective including the blind spots and deficiencies associated with it.

This thought is well symbolized by the person in *figure 2*: although not in the moment of the actual observance, but in the *reflected review* she can describe the constraints of her world-view. Through *reflexive observation* people are enabled to not only pile up mere knowledge upon knowledge – what with Gregory Bateson could be termed “Learning I” (Bateson 1972, p. 291 ff) – but, moreover, to gradually learn the “rules of the game”: namely the *context* in which each piece knowledge is valid. Gregory Bateson calls this „Learning to learn”, or “Learning II”. However, the actual *context* from within which an observer can describe the limits and deficiencies of observer perspectives (and which becomes possible by means of Learning II), he can not describe, as it remains invisible to him. In other words: the context will be recognizable only, when it is observed on its own from the position of another context. But this other context as such remains invisible as well, etc. etc. Thus, the separation intrinsic to language is not repealed by reflection – not even when people claim possession of objective knowledge.

It is within the context of culture (culture of family, occupational category, scientific discipline etc.), as a result of “Learning II”, that people evaluate something as „true“, „false“, etc. From this point of view, intelligence is not the ability to solve objectively given problems, but rather “the ability to *step into* a world that is shared with others” (Varela, 1990, p. 111, accentuation in the original). From their first breath onward, people grow into their culture without being aware of any learning process, and thereby they adopt the separations and blind spots specific to this culture. The quintessence of the context developed by means of Learning II is that which we perceive as the character or the idiosyncrasies of a person, or as that which – referring to us –

constitutes our “self” whose deficiencies are seen by others far more precisely than by ourselves.

The context established by Learning II, i.e. cultural knowledge as well as the character of a person, tends to reinforce itself over and over again. It may well turn into a trap or vicious circle, and further and further unhinge itself from the “web of life” if it is not transcended now and then by yet another mode of observance. From the point of view of an “Ecology of mind”, beyond *naïve* observation (Learning I) and *reflexive* observation (Learning II) there is a third, non-dissociative mode to be distinguished (Learning III), which in the following I shall term “*open*” observation. In this mode one is aware of the inevitability of a limiting perspective and of the impossibility of objective knowledge. At the same time one perceives oneself as *part of the universe*: one is aware that anything one does has consequences for oneself as well as for others and that, therefore, one is responsible for one’s actions, including the choice of one’s observer-perspective – even though one knows that one has little to no control over the consequences of one’s actions. According to Heinz von Foerster (1992) there is only one guiding principle left in this dilemma:

“Act always so as to increase the number of choices.”

This concept of “open observation” clearly bears resemblance to what Berman calls “participating consciousness” (1981, p. 343). What he means by this is a thought process which he sees in animism (in shamans) as well as in present-day artists¹, and in which it is assumed, “that in a literal or figurative sense, everything in the universe is alive and interrelated, and that we know the world through direct identification with it or immersion in its phenomena (subject/object merger)” (Berman, p. 343). In former times shamans were presumably artists in the sense of image- and symbol-creators, and likewise such artists were shamans.

I hold the view that open observation or participating consciousness belongs to the same category of conscious states that includes visionary experiences.

4. Open Observation: Another View of the Self and the World

On the one hand, open observation can occur as a *punctual, extraordinary experience*. For example, after an ayahuasca experience people often report that they have

¹ Here of course one has to differentiate between the various conceptions of art in the postmodern age. Many of these cannot be considered to be examples of mimesis.

seen "inner pictures", or an "inner voice" has told them that they should give their lives another direction, or "give up this or the other destructive way of behaviour" if they do not intend to ruin themselves.

On the other hand, "open observation" can become a lifelong *exercise* or *discipline*. It is the core of this exercise to "become aware of one's own blind spot" again and again, and radically question every "accepted common knowledge", every certainty. Exercising this approach means trying to perceive without judging, that is, to simply be present. In this context meditation trainer Jon Kabat-Zinn (1990) speaks of "mindfulness": he says it increases the awareness and supports clarity as well as the ability to accept the reality of the present moment. It brings into mind the fact that life consists of a sequence of moments. If one is not absolutely present in many of those moments, then one would not only miss what is most precious in life, but also not recognize the abundance and the depth of the possibilities for growth and change.

In the course of such an exercise, one will little by little recognize the enormous extent to which one always has always taken for the expression of one's individuality, is actually based on stereotyped "feeling-thinking-behaving programs" (Ciompi 1997). One even might discover that one walks through life virtually like a robot - always in search of confirmation of one's own worldview (being right, feeling attacked, wanting to be liked etc.).² But with awareness of this insight, the disposition to venture into one's own shadows (and not those of others) can develop. Such observation can be considered a training program in self-responsibility, and hence is situated inside an ethical frame. If it succeeds, a range of "more choice" emerges (in the sense of Heinz von Foersters, see above), that is, of greater freedom. Surprisingly, one will increasingly experience that "it" thinks for one; which means that the mind, perpetually circling around itself – the "I" – becomes permeable to "messages" of the unconscious.

Bateson holds the view that Learning III leads "to a collapsing of much that was learned at level II, revealing a simplicity in which hunger leads directly to eating, and the identified self is no longer in charge of organizing the behavior." (Bateson 1972, p. 306).

Finally one can look at the logic of open observation from the perspective of *cultural anthropology*. Although human language – i.e. language operating with symbols –

² The hymns of the Santo Daime rituals time and again tell about the "world of illusion" (mundo de ilusão) and they request that we "investigate the consciousness" (examine a consciência).

unlocks a realm of nearly unlimited possibilities, the price is that human culture provisionally cuts itself from its “natural” roots. Thus, since time immemorial, people have developed certain ritual forms of action such as the mode of open observation, in order to be able to correct and “heal” the aberrations resulting from this separation.

The classical Greek term „mimesis“, meaning “imitation”, fits this purpose, and is understood in terms of a reunion of the human being with the biological-natural foundation of existence. What nowadays is discussed under the somewhat enigmatic and diffuse term “shamanism” could be interpreted as one of the oldest systems of “mimesis”. There is a lot to be said in favour of the thesis that the elaborate neopaleolithic cave art should be seen within the framework of such a ritual mimesis (see Lewis-Williams 2002).

Such mimesis works with the help of what Berman (1984, p. 298) calls “*participating consciousness*” (see above). Berman says that with its abstract subject-object division, the Western thinking tradition - starting with Plato and Aristotle and going on to Descartes and Newton - has veered far away from this “mimetic” knowledge production. With his predominantly *instrumental*, control-oriented thinking; “Western man”³ has increasingly transformed the veil that language unfurles across reality into an impenetrable wall. The initial point of this thinking is the separation of the subject in “*here*” from the world “*outside*” – or of the observer from the observed. Since this initial point remains unquestioned, it becomes a blind spot, which causes Western man with his controlling habits to blunder into a vicious circle and cuts him off more and more from his inner and outer resources. The citizens of Western culture “deutero-learn”⁴ the art of manipulating everything around them, and it is difficult for them to believe that reality might be arranged on any other basis (Berman 1981, p. 216). The point is certainly not to rewind progress or to demonize science and technology, quite the opposite. But perhaps urban Western man can learn to “mimetically” qualify the subject-object separation. In this sense working with Ayahuasca can potentially serve as a method for creating awareness.

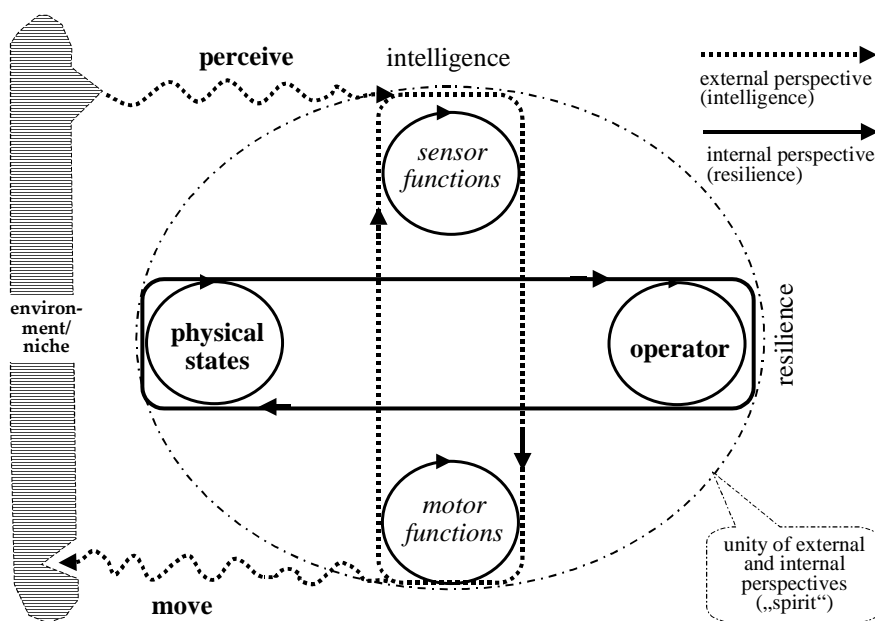
³ This identification should not longer to be seen as geographic as the basic forms of “Western-occidental” thinking have spread over the world for centuries.

⁴ “Deutero-learning” is a term used by Bateson for „Learning II“

5. Salutogenesis and the Paradox of Life

The term “salutogenesis“ was coined by Antonovsky (1997). Literally translated it means the formation (genesis) of health (Lat.: salus). It refers to the insight, that health is more than the mere absence of sickness. Rather it is a condition which each living system has to actively reconstitute again and again *spontaneously* (= without any external source, i.e. out of itself). Thus, „Salutogenesis“ reveals something about how and to what extent an organism – even under difficult conditions – is able to keep itself alive. But what kind of mysterious, “spontaneous“ power is this? We can approach an answer to this question through a *systemic* description of the term Salutogenesis – something that Antonovsky intended to do (ibd., chapter 7), but did not carry out.

Fig. 3: „Spirit“ as Paradox, Processing Unity of Inner and Outer
from Franz Friczewski



Seen systemically-ecologically, one can regard living creatures as being „*autopoietic*“ systems (Maturana et al., 1987) that is: as self-creating units. More precisely, an autopoietic system is a closed and self-referentially operating network of components (i.e. molecules, cells); it separates itself from his environment as an entity and sustains itself over time because the interaction of its components produces exactly the same network which generates them. This is a paradox, because in order to act like this, the system has to adjust itself outwards *and* inwards at the same time (cp. fig. 3). From the perspective of classical Physics this is as if two cogwheels are supposed to mutually power each other – when actually they will block each other.

- Seen from the *inside*, the system separates itself from the dynamics or perturbations of its environment. Without having to know anything from an “outside world”, it maintains the alterations of its inner conditions (such as body temperature, heart beat) – simply by means of operators in a narrow range. In biology and psychology this is referred to as “*resilience*” or robustness of a system, i.e. of its ability to compensate for perturbations.
- At the same time, however, seen from the *outside*, from the perspective of an observer, it maintains its inner conditions in sensitive correspondance with precisely these “perturbations” from which it separates itself when seen from the inside. More specifically: in the mutual inter-“play” of perception and motion (or sensor and motor function) each living system, as long as it exists, acts appropriately within its environment (niche). One might as well speak of the „*intelligence*” of the system – an intelligence that in this form can be credited to all living systems, even unicellular organisms and plants.

Thus, two control loops can be described: an “internal” one (body conditions → operators → body conditions) and an “external” one (sensor functions → motor functions → environment → sensor functions). Each *individual* control loop can be described by means of reason and classical logic, or with what could be called the “mind”. But with that the riddle of how their *unity* is possible is not yet solved. Both loops stand „orthogonally“ to each other, i.e. they are independent from each other – and yet one is unthinkable without the other. This means that each creature, as long as it lives, forms an inseparable *unity from inside and outside* – *but* which is not describable in language and therefore presents a logical paradox. I assert that this abstract-sounding conclusion is the modern, system-theoretical version of the ancient riddle of humankind: the question of what exactly represents the animating principle in an organism. To denominate this paradoxical unity of inside and outside, in English I view the terms “spirit” or “soul” as most suitable.

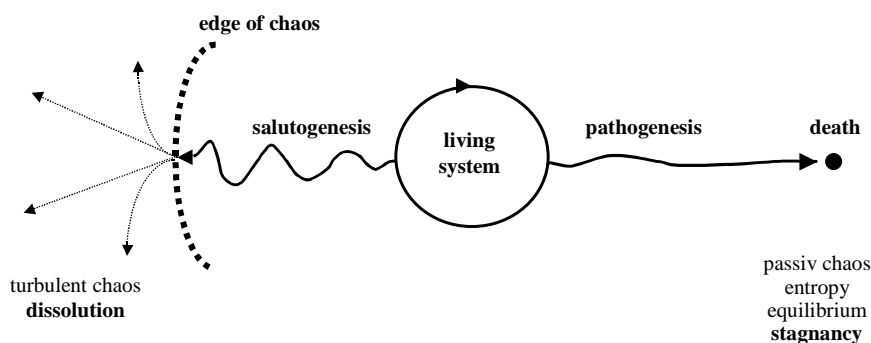
From the ecological point of view the unity of inside and outside actualizes itself through the *time-dimension* in the form of a permanent oscillation (or processing) between the outside and the inside. Physically, living systems can be described as dynamic equilibriums “snaking” forward *from moment to moment* on a narrow path. In this process they master the butterfly effect, the fact that diminutive changes in the boundary conditions of the system can build up uncontrollably, leading inevitably to either *stagnancy* (passive chaos, entropy) or *dissolution* (turbulent chaos). Living

creatures are not robots. Time and again they retrace their path in an oscillating balance between order on the one hand and (passive or turbulent) chaos on the other hand (cp. *fig. 4*).

How can the system sustain itself within this balance, i.e. in concordance with an environment that – from its own perspective – is uncontrollable? It is crucial that it becomes more sensitive to differences, the closer it comes to the turbulent chaos (cp. Prigogine et al., 1989). Therefore, approaching the edge of the (turbulent) chaos provides the chance to reorganize (this is what can be called salutogenesis); but at the same time the risk of collapse increases. Thus the path is highly vulnerable, i.e. the system reacts to the finest differences, and yet it is – as long as it stays alive – utterly robust. Perhaps the whole evolution of life – specially of the nervous system, the brain and consciousness – can be seen as an attempt to find ever more “elegant” solutions for this contradiction. How do living systems find this path?

Fig. 4: Living Systems need the edge of Chaos for to Survive

from Franz Friczewski



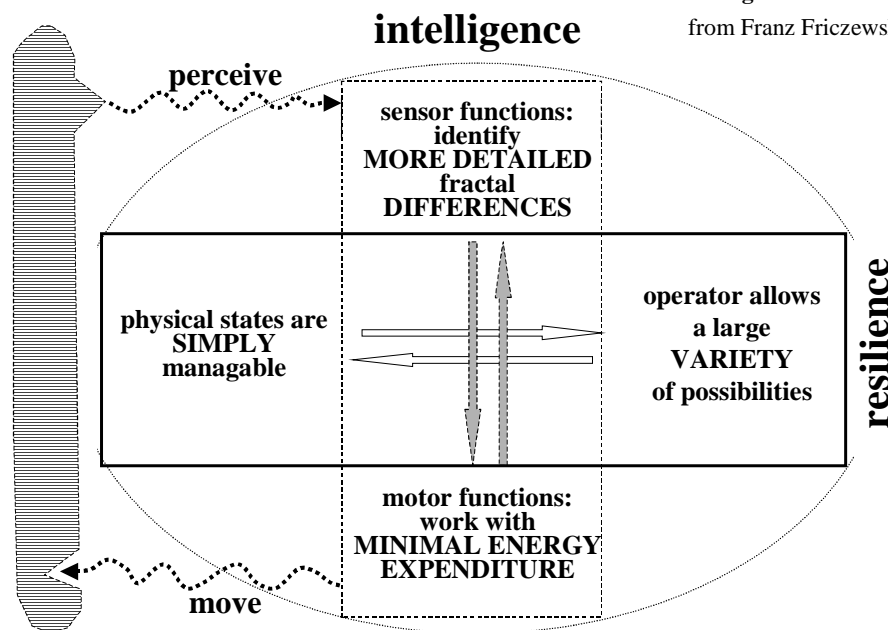
Seen from the outside it looks as if an “attractor” (in terms of chaos theory) pulled the system onto this path. It would be wrong from the angle of ecological epistemology for one to imagine the attractor as a “something” that “pulls” (e.g. the genes or a separate “mind”, living in the body). But one can understand it instead as a spontaneous process, as being in contact both with oneself and the environment following precisely *the* path that generates “more choice” (see above).

It is a path (cp. *fig. 5*)

- that makes a large *VARIETY* of possibilities (complexity) *SIMPLY managable*; i.e. it synchronizes the internal operations of the system in ever more detailed fractal dimensions by rhythmically bundling them: rhythm saves power and therefore is *more efficient* (resilience). For example, a healthy, robust heartbeat always contains a great deal of chaos; this way it masters the different and unpredictable requirements for the organism in an economic, power-conserving way.
- which at the same time, enables *MORE DETAILED* fractal *DIFFERENTIATION* (“perception”) with *MINIMAL ENERGY EXPENDITURE*, i.e. casually and with playful ease. This allows *effective* operation within the environment (“intelligence”). An example is the 8-shaped searching movements of the tip of a plant sprig, the result of which is that “the new sprout impeccably finds its ideal ambience regarding light and humidity” (Jantsch 1979, p. 333).

fig. 5

Salutogenesis-Attractor
from Franz Friczewski



This „salutogenesis-attractor“, as I will call it in the following paragraphs, combines *COMPLEXITY* (or variety) with *SIMPLICITY* and *CONCISENESS* with *EFFORTLESS LIGHTNESS*. This combination can be found in all levels of a system: in very simple forms of life (see above figure 1) as well as in the expressions of participating consciousness (see chapter 4). It is certainly no accident that the simple life forms mapped by Haeckel bear an unmistakable resemblance to the typical fractal patterns of Ayahuasca visions. How can this be explained?

As the examples of heart rate and plant sprigs vividly demonstrate, there are probably fractally oscillating, spiral shaped search movements with which living systems identify their respective optimal conditions, thus converging towards the salutogenesis-attractor. In doing so, the closer a system comes to the edge of the turbulent chaos, the more sensitive it is to perturbations. As a result it must sensorially identify and process increasingly fine-grained differences. The supporting "framework" – the crash barriers for the search movements – is provided by the ecological niche within which each living system evolved into its current state. In simple organisms, these can include a variety of media (from sunlight, via temperature- and humidity-fluctuations, to the rushing of the wind). This is because their oscillations underlie a *deterministic* chaos, that is, in randomness order is to be found. Also, "music", as it is produced by animals (birds or whales being the best-known examples), is well-ordered sound which probably serves the coordination of behaviour "on the edge of chaos". Similarly, one can look at animal rituals as the "key" that unlocks the door to coordinated behaviour. In addition some human rituals can be interpreted as an attempt to mimetically-intuitively discover the processes of internal as well as of external nature, and to coordinate and "reconcile" both. And finally, ayahuasca seems to be able to support this process of oscillation between inside and outside.

6. Sense of Coherence: Ayahuasca and Mental Health

This last section concerns the question of how mental health can succeed, and what role can be played by the cultivation of methods such as meditation or Ayahuasca rituals.

Helpful here is Antonovskys term "sense of coherence". What is meant is an inner attitude that enables people not to break internally, even when confronting major difficulties ("stress"), and helps them to successfully subsist in their environment. Therefore, according to Antonovsky, the sense of coherence is a key salutogenic resource that has been empirically analyzed for thirty years in various cases (Schüffel et al., 1998). From an ecological point of view, the sense of coherence and therefore mental health in general amounts to the precarious and, by no means obvious balance between inside and outside (cf. *Fig. 6*).

- Viewed from the inside psychological systems must be robust, i.e. they must differentiate and protect themselves against the dynamics of their environment ("stress"): they need to develop resilience and ego-strength (4.1).

- At the same time they must be able to flow sensitively within this very dynamic, i.e. they must develop what I earlier characterized as *intelligence* (4.2).

6.1 Ego Strength: in Resonance with the Un-conscious

Translated into Antonovsky's theory of health, resilience or ego strength means that the world remains "manageable" even in times of crisis. One does not become a victim of circumstances, but so to speak rests "deep within oneself" and can buffer heavy turbulences, thereby remaining capable of action. Viewed ecologically-systemically, this means that it is possible to regulate one's own complex states *efficiently* (see the "Salutogenesis attractor": a *SIMPLY* manageable *DIVERSITY* of opportunities). This is possible in so far as the "I" opens up his inner resources – the "unconscious" – and so to speak, joins them in a subtle resonance. Then the "I" can operate *spontaneously*, in the sense of "in the moment", instead of like a robot on the basis of a previously stored program. To understand this resonance between the self and the unconscious, one must, however, let go of the rigid guiderail of instrumental thinking and de-objectify these concepts-terms:

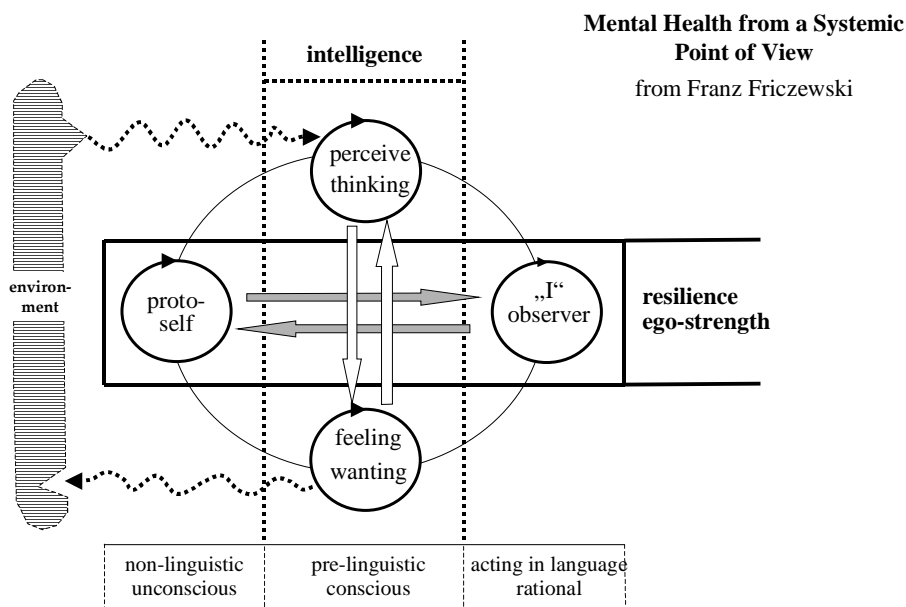
- "I" refers to the observer, permanently producing thoughts, who creates himself by identifying himself with his very thoughts, and thus all along is blindly circling around himself. The "I" is understood here as an expression and result of an inevitable, but useful illusion for the observer: that he can distinguish between himself and objects. However, above we have differentiated between an *instrumental* mode of observation on the one hand, where the observer sees himself as separated from the universe, and *participating consciousness* on the other hand, the *open mode* in which the observer recognizes himself as part of the universe.
- The "Unconscious", however, is the biological root of the ego, the ground upon which it grows. Below I join Damasio (1999) in speaking also of the "*proto-self*."⁵ One can see it as a memory in which successful patterns of behaviour have been deposited in the past – embodying themselves in such a way that they can be recalled any time again. The proto-self serves the naked, instinctive survival and provides a kind of sleep-walking-security. We find this level of "spirit" even in very simple animals (such as insects)

⁵ The proto-self results from the spontaneous mutual coordination of different physical states on the level of the brain. The proto-self is also an operational mode of the nervous system..

In humans however the proto-self is much more complex. Moreover, due to the phenomenon of language, it acquires a special quality that is worth taking a closer look at. To live in language means to operate in the medium of MEANING, that is: to recognize in the real given ("reality") other (connecting) possibilities. We can thus consciously plan and pursue goals, but at the same time the possibility of *failure*, not least the consciousness of one's own end – death – is always potentially present. *Existential anxiety* is therefore from the outset a companion of human "existence in language".

The invention and perfection of language "was the work of countless lifetimes" (Mumford 1967, p. 79). It has always demanded a disciplining of the emotions, which we as adults are usually barely aware of anymore. "Language not merely opened the doors of the mind to consciousness, but partly closed the cellar door to the unconscious and restricted the access of the ghosts and demons of that underworld to the increasingly well-ventilated and lighted chambers of the upper stories." (Mumford 1967, p. 75) The "demons" - our existential fears - are vivid as ever. People can, even independent of their cultural environments, deal inventively and "creatively" with such "primal fears", or they can encapsulate or "freeze" them.

fig. 6



The crucial factor is that beside the primal fears, a primal resource can also be described. As Maturana has shown, language, human sociality (family, culture) and self-awareness mutually determine each other - they occur simultaneously or not at all (Maturana et al. 1987). Human culture and human consciousness have a source

which is easily overlooked, but without which in the long run there can be no social process (Maturana et al. 1987, p. 266). This is the recognition of oneself in others, in other words love and cooperation, mutual unconditional acceptance. Although this experience is often lost, in the state of participating consciousness (e.g. being in love) it always flashes up again and again. Therefore one can say that *participating consciousness belongs as necessarily to human existence as does language*.

But human self-consciousness is rooted in *biology*, too, namely in certain states of the body and thus in the proto-self. Our most basic biographical learning patterns are those that we made in the uterus (the mother's rhythms of movement, her voice, her heartbeat, etc.). Here we experience a physical *primal trust*: the security, the oneness and *absence of fear*. For all people who survived birth, this original coherent experience pattern forms *the basic resource per se*. We can in principle always be in contact with this pattern. We just really need to "remember". Even if it often seems different, human self-awareness is based on habitualized, "embodied" trust, the "biology of love", as Maturana (Maturana et al., 2001) calls it. *People can not separate themselves arbitrarily from this resource without harming themselves*.

One can imagine the I and the proto-self as two "coupled oscillators" whose interaction generates a stable state of order - *an attractor*. The attractor is more robust and more salutogenic the finer the resonance between the "I" and the proto-self becomes, i.e. the more the proto-self and the "I" dissolve into detailed fractal dimensions.

In the *instrumental* mode, the mode of being-separated, the ego is only roughly or not at all in resonance with its original resource, i.e. it operates from its blind spots.

The fear of the destruction of one's life can-not then be incorporated into the form of sublimated and transformed action. Rather, it is relegated to the unconscious and thus to mere physical presence. Mental injuries then do not only "get under the skin", they get stuck in the flow of body states, blocking vitality and possibly becoming a source of physical illness. Addiction (to drugs, money, power etc.) or depression are the possible consequences.

Participating consciousness, however, can be thought of as the result of a fine-grained fractal resonance of an observer (the I) on the one hand and states of the body on the other, in which the limits of manageable chaos are increasingly expanded. Much like a windsurfer the I can then use the fundamental uncontrollability

of the world and turn it into a salutogenic, "beneficial" direction, i.e. regulate it so that "*more choices*" (in the sense of Foerster's maxim of action) result.

This is made possible by various methods - meditation, responsible work with psychoactive plants or the "participating consciousness" of an artist. Common to these examples is that the I not only comes in contact with its own mortality, or death, but at the same time with the primal-resource, the connectedness. Judging from the numerous reports of the Ayahuasca experience, we can note the special potential of this plant preparation to enable such participating consciousness. The demons banished to the basement of the subconscious can with the help of such an instrument penetrate the world of the I or ego, which of course is not always pleasant.

At the same time the "I", under the helpful influence of Ayahuasca, can join in resonance with its primal resource, the biology of love, the state of the absence of fear and connectedness. Thus, the I can safely "de-focus", i.e. cease to constantly identify with its own thoughts. Ultimately it becomes possible to look its own mortal fear – death – in the eye. Within the context of a well-organized ritual the trained observer thereby stays concentrated but without focusing on anything in *particular*. In other words, he is open to subtle changes but does not steer the stream of consciousness into certain directions ("this I want - this I do not want"). So he increasingly becomes a white, blank projection screen (or an empty vessel), on which (or in which) all sorts of ideas and images, beautiful and / or frightening, can emerge and occupy space - intuitive ideas, whose richness and fullness the rational mind can never exhaust.⁶ In light of the above-developed distinctions, one can say that the limits of the manageable chaos expand while the observer "lets go", i.e. he becomes neutral and has "no idea" where "it" takes him. The emptier of thoughts he becomes, the finer the resonance field he makes available to the unconscious.⁷ Through tiny choices he can direct the flow of internal images and ideas in a more wholesome, nourishing direction, i.e. in the direction of "more choices".

6.2 In Resonance with the Environment: Intelligence and the Power of Internal Images

⁶ In his „Critique of Judgement“ Kant dealt in detail with comparable states of mind. He calls them *aesthetic* ideas in contrast to *rational* ideas. (Kant 1790/1952, § 49)

⁷ Participants in Ayahuasca-rituals as well as meditators sometimes report the experience of a soft rustle amidst a great silence.

As mentioned above, mental health requires not only ego strength, a powerful "oneness with itself", but also *intelligence*, the ability to deal with the turbulence of the social environment (stress, conflicts) effectively and efficiently. This means an ability to still find order even in the worst confusion (see Antonovsky: the world is *comprehensible* - the cognitive aspect of intelligence). However, this also includes the fact that one can not be demotivated by setbacks (see Antonovsky: the world is *meaningful*; affective aspect). Ecologically speaking, intelligence is not primarily about the ability to solve problems, but "the ability to *enter into* a world shared with others" (Varela, 1990, p. 111, emphasis in original). Intelligence means, to be in resonance with the fundamental social resources, i.e. with an unconditional mutual recognition, at least within one's own family or culture, but ultimately regarding all of humanity (see above 4.1). Thinking and feeling, the cognitive and affective components, now work hand in hand. Intelligence is thus always also emotional intelligence. But even here it is all about abandoning the usual, reifying notions of instrumental thinking:

- *Thinking* is seen ecologically to be a creative recognition and processing of sensory distinctions transported via felt body states ("somatic markers" according to Damasio) in the form of internal images or "wordless stories" (Damasio 1999). This refers to those ideas which the rational mind can never exhaust, as we saw above: that is, the fantasy, "the rapid and transient play of the imagination" (Kant, Critique of Judgment § 49). "Although we live in language, we think neither with words nor with symbols" (Maturana 2001, p. 90). Intuitive, pre-linguistic *thinking* is to be distinguished from *thoughts*, the thinking of thinking. Ideas are the form in which the ego (the observer) has access to thinking and can control it (within limits).
- *Feeling* means to realize emotions (and thereby physical states) consciously; it helps us in a flash, i.e. without thinking about it, to decide whether to evaluate a situation as pleasant or unpleasant. Feeling thus exerts a crucial operating effect on thinking, i.e., it mobilizes, focuses, and puts it in order (Ciompi 1997).

One can also therefore imagine thinking and feeling as coupled oscillators, whose interaction creates a stable state of order - a "salutogenic attractor": ideas and mental images that with playful ease or a *MINIMUM OF ENERGY* enable the highest level of *CONCISENESS* and therefore appropriate ("intelligent") behaviour in the environment. The key operator is thereby the feeling of pleasure and pain - accompanied by the

secretion of dopamine and serotonin: "Harmonious ways of thinking are pleasurable" (Ciompi 1997, p. 107).

Intuitive thinking, i.e. thinking controlled through pleasure and pain on the basis of physical feelings and imagination, is therefore a key for unlocking realms of potential; it opens up resources, or choices. That something feels good and harmonious is still no guarantee that it actually leads to a wholesome, salutogenic end. An ego caught in instrumental thinking will find only those ideas which confirm his unquestioned certainties, his personal preferences and antipathies to be harmonious and therefore pleasurable. Under certain conditions, the pleasure-pain-operator, can even pull a person into the vortex of addiction or depression. Laboratory rats given the possibility to stimulate their reward centre by pressing a button do often precisely that to the point of starvation. Conversely, the pleasure-pain operator can be a reliable guide for a defocused ego which confronts itself with its own shadow, while at the same time coming into contact with its source, the biology of love. This process can be supported, for example, by a suitable ritual-setting: that which feels good *is* good, and one can trust one's intuition.

6.3 What is "spirit"?

Emotional intelligence without ego strength can ultimately lead to dependence, addiction and depression - many artists have experienced this. Ego strength without emotional intelligence, however, easily shrivels to what W. Reich calls "character armor". Modern man, with few roots in tradition, is especially vulnerable to this precarious balancing act. A simple recipe for success does not exist. Even Ayahuasca rituals or meditation cannot offer it, but under certain circumstances may enable one to master the balancing act.

Earlier I said that for the fragile and paradoxical unity of inside and outside, the English word "spirit" would be appropriate. So what does spirit mean here? The above has hopefully made clear that quite sensible statements can be made in response to this question, in non-divisive, non-reifying language. In 1790, when the first steam engine was installed into an English factory as mentioned above, Kant's "Critique of Judgment" was published, at just the right time. In the first ("aesthetic") part of this work (§ 49), Kant asks what we mean when we speak of a man or a woman of "soul" or "spirit". By that we mean, according to Kant, a man or a woman who can in a few *pithy* utterances bring a *rich wealth of meanings* into the here and now. Soul (Geist)

signifies “the animating principle in the mind”, brought “into a play which is self-maintaining and which strengthens those powers for such activity.” For Kant, soul expresses itself in the “genius” of the artist. In the terminology developed above, we can use the term “participating consciousness” for the same phenomena. It is the “faculty for laying hold of the rapid and transient play of the imagination”, making it generally communicable “without any constraint of rules”; that is, the faculty to express oneself in word image or music so that MEANING can be brought to the surface in an unconstrained way, where it was not previously or only vaguely recognizable. One could also say that through participating consciousness, more comprehensive system-coherences become visible, which are not accessible to the ego because of its focus on thoughts. Developing such a consciousness means setting free the (in principle) unlimited potential of the human spirit. How exactly can one conceive of this?

6.4 About the Power of Rituals and Music

In the terminology presented here the term “the human mind” denotes “to operate in the medium of MEANING”, that is, to always see in reality a horizon of additional options to connect. The horizon can be conceived as in principle *limited*, whether wide or narrow, or in principle *open*. Therefore, from an ecological point of view — from the perspective of open observation — the narrower, limiting mode is appropriate whenever the task requires getting certain well-defined problems under control. One can ignore with good conscience the in principle infinite horizon of possibilities, the “web of life”, as long as one remains aware of one’s blind spots and of the consequences of his actions. Open observation means that one is, whatever happens, considered to be a part of the universe. Although this is “only” a point of view, it is one that makes a real difference. As in a reversible figure, the same situation can either be observed as open or as limited, and each time a different reality appears. In the case of open observation, a comprehensive “spiritual” connection becomes visible. This gives one the possibility, in principle, to expand the limit of the manageable chaos to infinity. One develops a basic feeling for the coherences of life, for being one with oneself, and at the same time also a feeling of being supported.

Precisely at this point the social organization of this experience in the form of rituals becomes important. Rituals have always helped people either to give MEANING or to stabilize it: they define order and a shared reality, determine what is right and important, and readjust the self-understanding of individuals or groups. Decisive for the

"spirit" in which they are performed, is whether they ignore or consciously reflect the vulnerability and finite nature of all existence. Depending on this they can confirm, "fossilize" (e.g. fascist demonstrations of power) or animate relationships. In the latter case, they provide a scaffolding upon which a (psychological or social) system can fearlessly navigate the edge of chaos and thus rearrange itself at a higher level (in order to regenerate itself or to learn). It can come to have, if one may say so, a nourishing, nurturing character. That which has been separated can be re-integrated.

Music has always played an important role here. As mentioned above, even simple, natural sounds – from the rustling of the wind to the whale song – can offer such a regulating structure, because they are based on deterministic (i.e. orderly) chaos. This is generally true also for human music (Frankhauser, 1994). However, human music also involves a *conscious*, albeit intuitive distinction between rhythm and melody.

This is generally true also for human music (Frankhauser, 1994). However, human music is also a *conscious*, albeit intuitive distinction between rhythm and melody. In an entirely felt *rhythm* people resonate with their inner resources: with the primal experience of security (e.g., the "memory" of the heartbeat of the mother), or with what was called above the "Biology of Love" with Maturana. *Melody* in turn connects the listener primarily with his outer resources, i.e., with the possibilities which lie in the unconditional acceptance of others. In this respect one can say that music creates "spirit" or "soul" because it helps to master the balancing act between inside and outside.

6.5 The Rituals of the Santo Daime Community

This will be lastly illustrated by an example of particular kinds of Ayahuasca rituals, namely the rituals of the Santo Daime community. The setting of these rituals consists mainly of singing and dancing, and demands a high degree of concentration and watchfulness. For "stressed out" people even this is a challenge, even more so when the Ayahuasca exerts its effect and begins to confront the participants with their unresolved biographical histories. At the same time, however, usually something emerges which the participants call an "energy field" or a "current", in other words, a kind of collective "intelligence" or regulating force, which many participants claim they could even detect sensually and aesthetically, and even benefit from as a "framework" in which to align themselves internally. In this context the "I" can increasingly

defocus and deal with the unfinished from a more comprehensive perspective without fear, thereby becoming permeable for "mirações", for "messages".

The music plays a special role here, too, i.e. in particular the buzzing sounds of maracas (shamanic rattles), and the singing of "hymns" (hinos), both of which are, in the ideal case, characterized by a high-frequency sound. Then many people have the impression that they no longer sing themselves but are being sung by "it". It is in this moment when the deeper meaning of the hymns is often revealed to the participants of the ritual, and in which they experience the connection with the "web of life" as a certainty.

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