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This is a major development since the publication of [our book](#), the culmination of 4 years of research.

Cognitive Behavioral Construct

3C

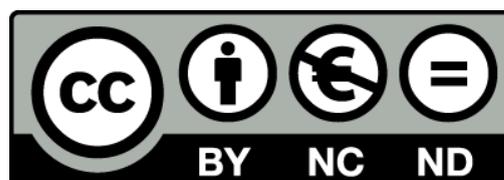
MANUAL



Groupe AULT3C

Cognitive Behavioral Construct
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Introduction

A global approach

Should we study our behaviors by cutting them in small pieces, dissecting them in every way, for every situation that we are given to experience ?

Or starting from the postulate that psychology can explain them all, or neurosciences, or even biochemistry?

It is analytical logic, Cartesian reason. It seeks an answer in observation, the cause that leads to a consequence, what is the mechanism at work. It looks to the past to understand the present.

Each specialist explores his field very finely, rationally, with increasing possibilities, often starting from the simplest units towards the most complex.

However, since the second half of the 20th century, another method, resulting from another way of thinking, has developed : the systemic approach.

Of course all the different disciplines are useful, interesting and necessary, however they are limiting in the face of the complexity of life.

Einstein, for example, would never have understood general relativity if he had remained in linear thought.

It is certain that in France we want to be "Cartesian"! But this so-called quality does not allow you to get out of the frame, or even to think without a frame.

It is curious to see how Descartes thus occulted Pascal or even long before him, Aristotle had occulted Heraclitus who was already developing a global vision.

The Systemic

The contribution of the United States in this approach is decisive and precursor, with since 1948, the joint work of Norbert Wiener (professor of mathematics, specialist in cybernetics), Warren McCulloch (neurophysiologist, founder of bionics), Ludwig von Bertalanffy (biologist) and Joy Forrester (electronics engineer, professor of management). In this regard, it is remarkable to note here how the diversity of training, sensitivities and areas of expertise has been fruitful : the principle of feedback is developed, initially for machine's operations, then it is applied to all complex systems, down to the human system.

In France, it was in 1975 that Joël de Rosnay explained in "Le microscope" the functioning of systems and their properties through the study of different systems (ecological, economic, city, company, organism and cell). He developed the need for such an approach, the

dynamics of these systems, their components and the notion of information, evolution and the importance of taking time into account. He even mentioned the need to “modernize” traditional education... Which, fifty years later, still remains to be done...

Since then, the book “Que sais-je” on the systemic has been written in 1979, “Systemic ” by Daniel Durand, then many other books have developed this concept and the notion of system has been established in many areas : the system of the atom, the earth, the universe, meteorology, the ecology ... The economic, social, political systems are the result of it. It is the same for the living : the system of the cell, of the brain, hormonal system, lymphatic, blood ...

The object of this text is not to take again these works on the systemic, but to approach the behaviors of the living from that angle. It is from the systemic study that simulations and models are carried out to address the complexity, in all areas, with all the interdependencies of factors that may exist : these models allow hypotheses to be made on possible behaviors. and thus, not only to understand how it works, but also to predict future responses or reactions.

Human behavior can be approached as a highly complex system since the variables as well as the interactions with the environment are innumerable ; Boris Cyrulnik explores this theme by speaking of psychoecology. Without falling into reductionism, or conversely into generalization, the systemic study is approached as a starting point. We are talking about an *operational systemic approach*, as Joël de Rosnay describes it in “Le macroscope” : that is to say “*which leads to the transmission of knowledge, action and creation ... Everything that decompartmentalizes knowledge and unblocks the imagination is welcome : the systemic approach is intended to be open, like the systems it studies.*”

The Palo Alto school, which started out with a psychotherapeutic approach, is also developing a systemic behavioral approach.

A system

A system is a set of organized, coordinated elements in dynamic interaction which cannot be reduced to the simple sum of its parts : for example, an ecosystem is more than a set of animal and plant species...

A system is characterized by flows (here informations, via a communication network) between well-defined elements and reservoirs ; these flows are regulated by positive or negative feedback loops : they are feedbacks to decision centers, or valves. The system therefore changes irreversibly over time by interaction with the environment.

Because we are talking here about an open system, that is to say where exchanges with the environment are numerous : these open systems thus adapt to the changing conditions of their environment and evolve.

3C is designed that way.

Evolution, time

The notion of evolution is inseparable from that of time : the creation of informations, where information is the support of the creative action (reduction of entropy by human behavior : the evolution of the system) allows to balance it dynamically.

“ It is the individual creative action which allows to compensate the passage of time. Because any original work is analogous to a reserve of time : to potential time... We can guess what such a notion means : potential time is information.” Joël de Rosnay, “Le microscope”.

The evolution of species was described by Charles Darwin (1809 - 1882) in 1859 in his book “On the origin of species by natural selection”. He explains it by spontaneous variations, accidental genetic mutations which offer many possibilities and allow an increase in variety (random fluctuations can be considered as information, the increase in variety is essential for the survival of a open system), through a struggle for life : reproduction on the one hand (autocatalysis), and adaptation to new environmental conditions (the best adapted survive), and on the other hand through a process of natural selective elimination (reinforcement of the best adapted species by transmission of acquired traits from one generation to another). All this is obviously a historical process, requiring a duration in time.

Note *“that there is no incompatibility between the concept of conservation-regulation and that of evolution-change : evolution must take place when certain thresholds for variables or constraints coming from the environment are exceeded and the previous system of regulation cannot cope with the new situation.”* - (“Systemic”, Daniel Durand)

Dialectics

It is also a dialectical approach which is proposed here, which encompasses two ways of thinking : that of reason, of scientific knowledge and that of meaning, as meaning but also as goal, future vision, transformation.

You have to understand in order to transform, so the “how” and the “why” are intertwined. The why as an explanation sought in the past or for what ? Towards what objective, what finality ? And here we approach the philosophical thinkings, even if we will not go into the history and the development of these, nor in the description of the major currents of thought, we evoke them to connect understandings since our behaviors are not only a series of meaningless accidents, nor a blind routine : determinism (causality and fatality where chance - God ? - can possibly appear) or finalism (necessity towards a goal where unexpected accidents can happen) ?

The how ? By what mechanisms, with what logic, what are the present forces (Cartesian analysis) or what system or model can help us to understand, what are the links, interactions, information flows? (systemic approach)

By objectively exploring “reality”, or subjectively, by taking into account the vision that leads us to action ? What if these two approaches were, not exclusive, but two complementary sides of the same reality ? By accepting the complementarity of the causes and the goal ? Materialism (only matter is real and every phenomenon results from material interactions) and idealism (all reality boils down to determinations of the mind) are intertwined. In ancient China, this dialectical perception underlies the principles of *yin* and *yang*.

Contradictions, movement

Advances in physics, astronomy, cosmology or biology have not been made in isolation, outside of a historical or social context ; they have favored changes in thought and vice versa. Philosophy has thus been enriched to try to answer, as since its beginnings, to the vast question of the meaning of our life, of life in general and even of the universe. It is the dialectical character of the evolution of human thought in general which does not develop in a straight line, but through contradictions : a theory is put forward, which is first called into question by an opposing theory, until that this is in turn overthrown by a new theory, each time based on experiments, new facts, which allows us to deepen our understanding and to evolve. The notion of movement necessarily implies a contradiction.

The paradox of Zeno (c. 490 - 430 BC) explains well how the notion of movement can be approached, between continuous and discontinuous. If we observe Zeno's arrow for example, from one point to another : when it begins its movement, it is no longer at point A. At the same time, it is not yet at point B. Where is it then? To say that it is "in the middle" means nothing, because then it would still be at a point, and therefore at rest. But, says Hegel, “ *to move means : to be in this place, and at the same time not to be there ; this is the continuity of space and time, and it is this which firstly makes movement possible* ”. On the one hand we see here the meeting of science and philosophy and on the other hand the importance of the time factor, linked to movement in the understanding of a system.

The inability of formal logic to grasp movement is brought to light by Zeno's paradoxes. Dialectical thought does not contradict formal logic, it completes it.

Already Heraclitus (c. 544-484 BC, founder of Greek dialectical philosophy) wrote : “ *Everything flows* ”, “ *you can't enter the same river twice* » Since the water is constantly renewed. This was a dynamic conception of the universe : the universe was not created, it has always existed, in a process of continual flow and change. The objective world exists with certainty, but it is in a constant process of movement, development and change, in which nothing remains as it was before.

The change is uncomfortable for everyone. Human thought is generally conservative. The desire to cling to something solid, concrete and on which one can count is comforting and would correspond to a desire to protect oneself, the permanence of things is reassuring. Buddhist philosophy on this subject approaches the notion of detachment, with the same idea that there is nothing fixed or permanent, except movement and change itself, it can also be called *let go*.

Bertrand Russell (1872 - 1970, British mathematician, logician, philosopher, epistemologist, politician and moralist), is considered one of the most important philosophers of the twentieth century :

"Science, like philosophy, sought to escape the doctrine of perpetual flow by finding a permanent substrate to the changing phenomena. Chemistry seemed to satisfy this desire ... This idea prevailed until the discovery of radioactivity, when it was discovered that every atom could disintegrate ... Going from the smallest to the largest, astronomy no longer allows us to regard the celestial bodies as eternal. (History of western philosophy).

Evolution is sometimes still interpreted as a slow and gradual movement, incompatible with sudden leaps. But contradictions abound at all levels of nature, and they are the basis of all movement and all change in a dialectical relationship. Darwin's theory of evolution is a perfect example of a dynamic process between necessity and randomness. The unpredictable nature of uncertainties brings us again to questions of causality and determinism or necessity and finalism.

More recently quantum mechanics, with all the philosophical questions it has raised again, has definitely taken us a step forward in our physical conceptions, without denying Newtonian mechanics. Rather, it means a deeper understanding of how causality actually works.

Einstein, Heisenberg, Schrödinger ... And all the great scientists, in constant search of an understanding of nature , man or the universe, have all been confronted with philosophical questions, because of their research. David Joseph Bohm (physicist 1917-1992) made important contributions in quantum physics :

" We do not know of any case of a set of perfect and exclusive causal relationships which would, in principle, make it possible to make predictions of absolute precision, without the need to take into account new sets of causal factors existing outside the system in question or at other levels.

"Bohm proposed a radical reformulation of quantum mechanics and a new way of thinking about the relationship between the whole and the parts.

" Through these studies [...] It became clear that even a one-body system has a non-mechanical character. In this meaning, this and its environment must be seen as an indivisible whole, for which classical analysis - which radically distinguishes the system from the environment - can no longer be used. The relationship between the parts " depends crucially on the state of the whole, in a way that cannot be expressed in terms of the properties of the parts alone. Indeed, the parts are organized in a way that flows from the whole.

"Hence the systemic approach to study our behaviors, with support on the laws of thermodynamics to describe an open system, that is to say, interaction with the environment and the resulting imbalance.

Homeostasis

Here comes the notion of dynamic equilibrium, the equilibrium in movement : these are the imbalances brought in from the outside, as far as we are concerned the environment (others or the environment), which will generate informations-in our case behaviors, to restore homeostasis and allow the system to evolve, its sustainability. Movement, change, evolution are characteristics of our universe, they are essential for the survival of the system. To maintain and last, the system controls the divergences by positive feedback loops, it regulates itself, it readjusts the balances permanently. The notion of movement, of change is at the heart of our behaviors : by a fundamental characteristic of any system, natural homeostasis tends to prevent any change and we better understand why it is so difficult for people to accept changes ...

We must quote here Claude Bernard, doctor, physiologist (1813-1878) : he created “ from 1850, the fundamental concept of modern biology of the interior environment. The constancy of the latter, later called homeostasis, is the condition for the liberation of evolved organisms from the external environment. This concept of homeostasis, studied in the twentieth century by the American physiologist Walter Bradford Cannon, is at the origin of the development of cybernetics. ” (Wikipedia)

The Concept of homeostasis where the organism seeks to fight against variations in the external environment by adapting and inducing feedback loops is the basis of any system, and therefore also of living behaviors.

Since the human system is an open system, hazards, by nature unpredictable, from the environment arise. Man is faced with two options. He will choose one or the other according to his initial postulates : either destroy the constraint, or adapt to it, that is to say accept them and use them, that is to say still evolve. We have seen it, Darwin was already saying about evolution, that it is not the strongest which survives but the one which is the best adapted !

Here again we fall back on a philosophical question (yes, philosophy is omnipresent since it is a question of seeking a global understanding of our world, and more precisely here of our behaviors) : thus Man would seek to keep himself alive and to exist by behaving in such a way as to respond to external uncertainties (hazards, random phenomena, constraints, etc.), often by seeking to control them, to standardize. So Man would not be “good” or “bad” by nature, nor entirely “good” or entirely “bad”, which is still a dichotomous view, the innate (his genetic material for example) and the acquired (his postulates, his experiences, his learning...) are here again closely intertwined, in a dynamic, dialectical process.

Free will ?

Ineluctably, taking causality and determinism into account leads to the question of free will. Fatalism and fatality, where Man would be one puppet of fate, his behaviors the result of a decisive birth because of the place, education, social environment, his history (personal, family and more broadly global), because of the postulates that he will forge for himself , and

thus establish his beliefs, because of his capacities, acquired according to such or such structure...? Where "necessity rules", we have no other choice but to eat in order to live ?

Indeed, freedom is not located at that level. People cannot determine their behaviors out of context, as mentioned above. Consciously or not, each person acts according to conditions, their choices will be established accordingly.

However, as we have seen, the "accidents" in our environment take us out of our routines : each one will certainly respond to them according to his experience, but does he have the choice to behave differently? No, if he is not aware of this situation, he is satisfied with it because he believes that he is making the "right decision", which meets his criteria, his beliefs, without seeing that his desires, his impediments and even its values, in short everything that forms its individuality, is determined. We would only have the illusion of choice...

Unconscious, perceptions, individuality

Since Sigmund Freud, at the beginning of the 20th century, everyone has been the plaything of their own unconscious : forgotten memories and repressed desires would manipulate his actions and gestures without being aware of it. Socrates, with his famous "Know thyself", already brought us to the concept of an individuality which is proper to us , even if it remains unknown to us.

However, a new global theory of the mind, the "theory of the flat mind", presented in a book published at the end of 2018, is developed by the English psychologist, professor of behavioral sciences at the University of Warwick, Nick Chater:

" The mind is not deep, it does not exist. you have no 'inner self', no subconscious or unconscious as we understand them ; on the contrary, the mind is flat, it works out each of our thoughts in real time, but it does it with such rapidity, such power that we have the impression that they have always been there . "

[Une théorie de la bêtise aux multiples répercussions](#)

Our perception would only be " *a mirage* ", according to Ronald Rensink, professor in visual cognition (University of British Columbia, Canada), our power of imagination : " *A deceptive construction* " for Stephen Kosslyn, professor emeritus in cognitive psychology at Harvard. Our knowledge, our reason, our free will : " *To many approximations , interpretations and stories that we tell ourselves* ", for Albert Moukheiber, doctor in cognitive neuroscience (University of Paris 13).

In fact, the speed of the human brain is phenomenal with 100 billion neurons, 1 million billion neuronal connections ... : at every moment, our mind appeals to what it already knows, to autobiographical memory to interpret and evaluate the object of his attention, according to what it foresees. Our thoughts therefore have no depth : they are elaborated on the moment and it creates an illusion thanks to his speed of execution and attention plays a central role : it interprets, according to memories, at high speed.

" Our sense of identity only works on memories and the present moment", argues Giuliana Mazzoni, professor of psychology at Sapienza University, Rome. "At all times, we are using our past to make sense of present experience. And anything that allows us to simplify and accelerate this instantaneous and continuous process of interpretation or decision is repeated. These past experiences commonly used in behavior are then perceived as beliefs.

But the exchange also takes place in the other direction, in an infinite cycle : *" At the same time, the present experience also modifies our memory. But it is this flexible communication between our memory and the current situation that creates this feeling of coherence of the Self "*, continues Giuliana Mazzoni.

And it is this feeling of coherence that gives us the impression that the identity has always been there, constant, unalterable, unique. While in fact it is only a super-rapid reinterpretation of oneself. It does not exist in depth, but it is developing every moment, like all our thoughts. (Sciences et Vie, July 2019)

" I do not believe either that there is an unconscious in the Freudian or Jungian sense of the term ", adds Giuliana Mazzoni.

On the other hand, neurosciences have well proven the existence of the "cognitive" unconscious : the autonomic nervous system regulates digestion and sweating, for example, all motor reflexes take place without our being aware of it.

The instantaneous interpretation (perception or introspection) of each situation is also the domain of the unconscious, it acts in the moment, it is not made of deep desires and lasting representations.

Identity is only built on memory, which is unique for each of us, it is not stable, immutable or buried : it reinvents itself at every moment.

Let us not be worried about this observation which calls into question many of our ideas that we have of ourselves : it explains why nothing is enough to manipulate us and make us change our minds, but in this way we become aware of the danger , this is already a big step. And especially since we are extremely malleable beings, we can improve ourselves much more easily than we think.

Freedom

This therefore allows us to approach free will in another way, our freedom to act, to think... : no longer entirely conditioned by our past, but by constant attention. Our willingness to take charge of our destiny already depends on understanding this.

Hegel explained that real freedom is the knowledge of necessity.

Living in ignorance, without the awareness of what determines us, does not allow us the freedom of choice, the freedom of change.

Thus, if we only make instantaneous choices, our decisions are certainly imposed according to our objectives, our projection of ourselves, but also of our values and our ethics. However, knowing this, the freedom to understand and reinterpret certain thoughts and beliefs acquired that are engraved in our autobiographical memory to change a problematic behavior, is ours. These are cognitive behavioral aids, you don't have to be sick to use them !

Likewise, knowing that all behavior begins with an emotional reaction which, on the one hand induces an affect - this leads to a feeling and an activity whose consequences are imprinted in our memory, and which on the other hand influences our thoughts and beliefs, the freedom not to let yourself be overwhelmed by your emotions, calm down the mental, to have a clear mind in order to be more present at the moment, to be more focused, attentive, belongs to us. Yoga classes and meditation allow this well-being, there is something for everyone.

Likewise, knowing that we cannot do anything without good health, the freedom to do a minimum of physical activity, to get fresh air regularly, not to eat anything, belongs to us.

It is indisputable that if we keep our beliefs "it is not for us," that we are "not able", "it's difficult" or "it's a question of resources," we won't be free, we won't even want to be !

Free will goes through knowledge from which stems the will to take charge of oneself in order to achieve one's goals, one's dream.

Let's go !

In this description of 3C, we will not go into the details of the biochemical reactions necessary for the functioning of what we have called the Cognitive Behavioral Cycle, this is not our field, but it goes without saying that each relation between the different elements are biochemical reactions, fabrications, evolutions or even destruction of enzymes, hormones, neurotransmitters, etc., which correspond to a circulation of energy, to an exchange of information.

Similarly, we rely on research in neuroscience, psychology, anthropology, sociology, cosmology and quantum physics ... to support this behavioral theory, but we do not detail the physical mechanisms.

3C, at the crossroads of these different disciplines, is a systemic approach to living behaviors, with homeostasis as its operating principle. After having approached the living as a whole, we focus on human behaviors, from the survival instinct : it is the contradictions between

our current behaviors and the objective to be achieved that are the driving force behind our development. The gaps between what is acquired and what we learn and understand generate imbalances. These imbalances will generate a rebalancing through our behaviors. Hence the multiplicity of our behaviors ; a range of 7 notes is the basis of all the music we play, a DNA of 4 proteins is the basis of the living, a Cognitive-Behavioral Cycle is the basis of our behaviors ...

Understanding the functioning of the system “ behaviors ”opens the way to freedom.

If everyone takes ownership of 3C and calms their mind, it is possible for them to act responsibly. Women and men on a mission for Mars, for example, would no longer need a psychologist to supervise them, with all the difficulties that this entails ...

We are stardust, according to the expression of Hubert Reeves, stardust who have evolved, but also who have an interest in taking charge quickly, to modify their behaviors, if they don't want to be just stardust again ...

In the beginning, there is the Universe and Life !

The characteristics of Life

Since 3C is a systemic construct, and therefore a descriptive and predictive of the living behaviors, from the unicellular organism to the human, let us look at the definition of life, of what is proper to it and what the simple fact of living implies as a behavioral basis.

It is important to enter into a few definitions that are more or less easy to summarize so as not to start from accepted Postulates, but rather from the result of current research.

However if these scientific aspects put you off, skip this chapter by remembering that the survival instinct is inherent in all living beings and therefore it is the starting point of 3C.

Thus, according to NASA, is alive any system delimited in its space by a semipermeable membrane of its own manufacture and capable of self-sustaining, as well as of reproducing itself by making its own constituents from energy and / or from external elements.

NASA asked the question of defining life to the chemist James Lovelock ; this is what he replies :

"To find life, you have to look for reductions in entropy."

Entropy is a fundamental law of thermodynamics, which has the advantage of being very generic and which applies to multiple situations. It's a good lead to define life in the broadest sense.

Why thermodynamics?

The other laws of physics do not depend on the direction of time. They make it possible to understand only reversible phenomena. However, if all phenomena were reversible, there would be no evolution.

Only thermodynamics makes it possible to understand irreversible phenomena, that is to say evolution ; it is the key to evolution.

These laws, all already demonstrated, apply to :

- the evolution of the universe.
- the evolution of species.
- the evolution of mankind.

This thermodynamic approach to life is also made by astrobiologist Stuart Bartlett of CalTech.

Its definition is based on four pillars : life in the broad sense of the term is defined by a dissipative structure capable of self-catalysis, homeostasis and learning.

So let's tackle some notions of thermodynamics to understand what a dissipative structure is, then explain and briefly illustrate these different terms.

What does thermodynamics say ?

The two fundamental laws of thermodynamics are :

- Energy is conserved : because it is conserved, energy is the breadcrumb trail that allows evolution to be followed.
- The energy dissipates : energy dissipation indicates the direction of this evolution.

From the 19th century, thermodynamic equilibrium has been described, in a closed system : (Principles of thermodynamics [Thermodynamique — Wikipédia](#))

This one becomes disorganized : any structure (difference) tends to vanish.

This tends to rest : all movement stops, there is a loss of information.

Disorder is a loss of information : it is the increase in entropy.

[\(PDF\) Beyond the Second Law: An Overview](#)

Entropy

Entropy is a measure of disorder in a system ; the more disorder there is, the greater the entropy ; things have a natural tendency to get messy, for example a house deteriorates when not taken care of.

A closed system tends towards thermodynamic equilibrium, it is the death of the system.

Then in the 20th century, thermodynamics was studied out of equilibrium on open systems, in interaction with the Environment, with creation of energy :

It self-organizes, ordered structures appear ; There is the appearance of movements because there is a thermodynamic imbalance.

An open system is in thermodynamic imbalance : There is an appearance of information (unpredictability) : a deviation from thermodynamic equilibrium is equivalent to information.

The appearance of order or information corresponds to a decrease in entropy.

We, human beings, are open systems (on the Environment) very complex and very well organized, with very low entropy.

Life is the opposite of disorder ; all living beings are open systems of low entropy : the system will seek energy in its environment and dissipate it to maintain an internal state of low entropy.

To sum up, from a physical point of view, in thermodynamics, life takes energy from the outside to stay organized on the inside while messing up the outside.

We take in food and we give off heat : this is called a dissipative structure.

From thermodynamics to life

Dissipative structure

This term was introduced by Ilya Prigogine who received the Nobel Prize in Chemistry in 1972 : he gave the name of dissipative structures to structures that appear in open systems. These only exist if they are crossed by a permanent flow of matter or energy.

Examples of dissipative structures : a cyclone, the earth's atmosphere, a living organism, an animal or plant species, humans, a human society...

All of them produce mechanical work.

Small diversion to explain the principles of thermodynamics in evolution :

The evolution of the universe

We are here facing a paradox :

- Cosmological radiation shows that originally the universe was very close to thermodynamic equilibrium : the universe is expected to be a closed system.
- The formation of stars and the appearance of life shows that he has never ceased to deviate from them.

Solution of the paradox :

Riess, Perlmutter, Schmidt (1998, Nobel Prize 2011) : the expansion of the universe is accelerating. The rate of recession of galaxies is increasing. They cross the cosmic horizon : the observable universe is open.

The evolution of species

Charles Darwin (1859) : natural selection maximizes the chances of survival and reproduction of species.

Alfred Lotka (1922) : natural selection maximizes the flow of energy that passes through a living organism.

Natural selection is a consequence of the laws of thermodynamics.

Neodarwinism

Richard Dawkins (1976): natural selection does not act on individuals but on genes (neodarwinism or the selfish gene theory).

Thermodynamic aspect : energy dissipation is linked to the information stored and therefore to the genes. In biology, natural selection favors genes that maximize energy dissipation.

Evolution is accelerating

- A living species maximizes energy dissipation by adapting to its environment.
- It memorizes information in its genes about this Environment.
- The more information its genes store, the more energy it dissipates.
- The more energy it dissipates, the faster it changes its environment.
- The faster it changes its environment, the faster its genes must readjust.

The extinction of species

A species modifies its environment by

- exhausting its natural resources.
- degrading its environment.
- competing with other species.

When its genes no longer adapt quickly enough, a species disappears : this is the phenomenon of species extinction.

But let's come back to the definition of dissipative structures :

There are many inanimate dissipative structures : for example a radiator, or convection cells (rayleigh - Benard) which form on the surface of a soup that is heated ; this phenomenon is not limited to the pot of soup : it is also at the origin of tornadoes, hurricanes and even of the great red spot of Jupiter ; they are non-living dissipative structures.

Obviously all this is incomplete to define life, life is a dissipative structure, certainly, but it is not just that, let's study the other pillars of life mentioned above.

Self-catalysis

It is to maintain and grow.

Self-catalysis is an essential property of life and it manifests itself in cell division and reproduction.

This is a second important criterion, however the non-living also has this property, it is therefore not sufficient : the flame of a candle is an organized dissipative structure, it consumes wax and converts it into heat and light.

As long as there is fuel, the flame is maintained and if there is fuel within reach, the flame spreads, it grows while maintaining itself, like a forest fire. However, the flame is not alive.

So let's move on to the third criterion to qualify life : homeostasis.

Homeostasis

As we have seen in the introduction, Claude Bernard (1813-1878), from the middle of the 19th century, described the regulatory principles of living systems. In the human body, a great diversity of regulatory mechanisms makes it possible to maintain the stability of many biological functions such as internal temperature, pH, mineral concentration... These mechanisms compensate for environmental disturbances, they readjust variations. Cannon, nearly a century later, describes homeostasis as "*the set of organic processes which act to maintain the stationary state of the organism, in its morphology and in its internal conditions, despite external disturbances.*"

As we have seen, it is by a dynamic imbalance that the stationary state of an open system is maintained unlike closed systems, inert objects, these systems are only maintained through action and change, attributable to the flows passing through them.

Homeostasis can be described as resistance to change ... We will talk about it again by describing our behaviors.

However, maintaining the temperature of a room thanks to a thermostat is also a phenomenon of homeostasis : it is an essential element of the living but again, it is not sufficient.

There remains one last criterion to qualify life, according to the cited definition: learning.

Learning

Learning is defined as the retention of information for later use.

It would seem that learning is a characteristic of the living, since it could not be detected in any other system (in the current state of research).

Hypotheses have tried to prove that water could have a "memory", they have all been ended in failure, despite the great media noise that may have been made.

On the other hand, what we do know is that all living beings, from unicellular organisms to homo sapiens, are capable of learning.

Wouldn't learning be reserved for the living, to become better, to develop self-catalysis, homeostasis and entropy?

From a system perspective, it's storing information first in neural form and then in DNA form, so that information is passed on to the next generation.

Could this be the manifestation of evolution ?

So what could be more natural than taking the smallest living organism to test the properties of the living : a unicellular organism.

The BLOB

Imagine an organism made up of a single gigantic cell, capable of covering 10 m² or more, raving about oatmeal and egg whites. Now imagine that this crawling, almost immortal single-celled being with the powers of regeneration and fusion is able to solve mathematical problems, learn new behaviors and even pass these teachings on to his fellows; and that without a brain.

This is the *Physarum polycephalum* or Blob, it has existed on Earth for at least 500 million years and currently thrives in dark and humid places like the undergrowth.

He is neither an animal, nor a plant, nor a mushroom.

And yet, *Physarum polycephalum* represents 75% of organisms that have nucleus cells like us ! Baptized protists, these beings with extraordinary capacities constitute a branch apart from the living of which biologists are just beginning to take the measure.

This cell is traversed by a network of "veins" supplying the whole of its organism with nourishing cytoplasm. This network is optimized and serves as a communication channel when the Blob comes into contact with another Blob. The blob transmits its knowledge through this medium.

The blob manifests preferences for certain types of food and aversion for others such as coffee. It is possible by habituation to teach the Blob to overcome an aversion.

Habituation is the simplest form of learning.

This behavior must satisfy nine criteria, including the decrease in response time to stimulation and the specific reaction to a very specific stimulus.

The Blob behaviors are amazing. It is a cell that feeds by phagocytosis, by swallowing its food. As soon as a signal, that is most certainly olfactory, of food is picked up, it moves to that food source. The Blob secretes a repellent mucus that allows it to avoid going through the same places twice.

A Blob on a surface covered with repellent mucus is unable to move and remains prostrate.

We are in the presence of a giant cell which exhibits a behavior of disgust for its own secretion, remains prostrate in a behavior similar to sadness when it is unable to move, crawls towards its food following an olfactory signal and learns by habituation.

Physarum Polycephalum would testify to one of the original forms of intelligence, which appeared long before the first beginnings of nervous systems.

Here we find the four pillars of life :

A dissipative structure : it absorbs food and rejects mucus,

Self-catalysis : it maintains and grows,

Homeostasis : it regulates and controls its nutritional needs,

Learning through habituation.

It is inevitable to make the connection between the of the Blob behaviors and the first behaviors of a newborn homo sapiens, they are similar : to feed the olfactory signal allows the Blob to crawl towards its source of food and the smell allows the newborn to crawl to the nursing breast ; both of them need to absorb food in order to grow, and they both show their food preferences : the Blob is reluctant to pass over its mucus or else rushes when the smell suits it and the new-born already shows expressions of disgust or joy ; in a situation of helplessness, they both show sadness.

If the Blob does not express anger, surprise or fear behavior, it is simply because with its extraordinary power of regeneration, no aggression can reach its physical integrity : it doesn't need it.

The Blob teaches us that emotions are automatic behaviors and that they are embedded in the heart of each cell, which is supported by current research.

A Blob, that is to say a cell, engraves in its structure the emotional behaviors and biological necessities representing the survival instinct, just like every living being.

Survival Instinct

Instinct would be the sum of all innate behaviors.

[Instinct — Wikipédia](#)

The Survival Instinct is therefore manifested from birth, outside of any conscious will, automatically.

By taking up this definition as the hereditary and innate part of behaviors and by relating it to the human condition, the Survival Instinct is broken down into two aspects : on the one hand the Necessities, the Activities which ensure life, which are sources of energy for the system : as for any system, if the energy source dries up, the system disappears, and on the other hand the danger preservation behaviors ; these make it possible to maintain the system in the face of external dangers.



EXCERPT FROM 3C : structure of the Survival Instinct

The Necessities

These are the behaviors necessary to maintain the system, the life, since we consider the human as a dissipative structure, an absorption of energy, a flow of informations, a transformation and a release of waste.

These Necessities which arise from the Survival Instinct motivate the Will to Live and subsequently, the Will to Exist.

Danger preservation behaviors

Every living organism develops specific behaviors to preserve its metabolism as long as possible, to protect itself from dangers. In the environment, everything is not good for survival, there are dangers, threats, environmental circumstances that must be responded to, either by fighting, escaping, or asking for help. These instinctive survival behaviors are emotions.

Emotions

Emotional behaviors appear in reaction to environmental Events, they are necessary for survival and are activated as soon as survival or the Will to Exist is "brought into play".

The brain triggers the emotion according to the Environment, however it is not in control : these are the cells that coordinate emotional behavior, we had a glimpse of this with the Blob which never moves twice at the same place thanks to the repulsion (disgust) he has of these own secretions that he leaves behind. The first evaluation of the Event is emotional, inevitably emotional behavior follows.

The first perception : the alert (I)

This (I) is the first stage of the Cognitive Behavioral Cycle that we will detail ; it has six stages ; these Roman numerals make it possible to locate the explanations in the cycle.

The Environment provides the sensory system (Visual, Auditory, Kinesthetic, Gustatory and Olfactory) with information which varies constantly.

These perceived environmental variations must be quickly assessed as dangerous or harmless.

Abrupt variations such as a flash of light, a detonation or a sudden change in temperature alert of a potential danger and trigger the alert : the first danger preservation behavior is the emotion of surprise.

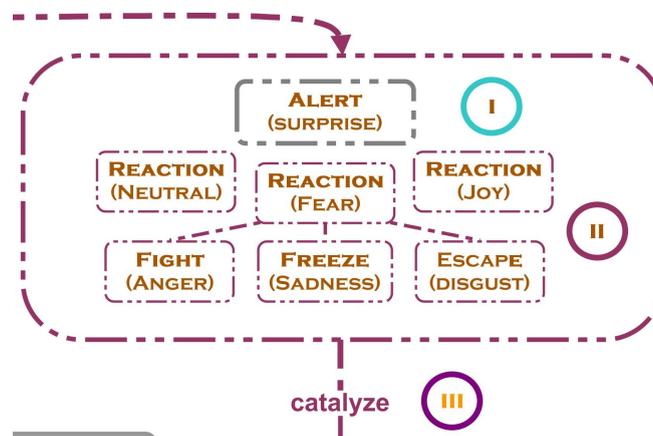
The amygdala mainly acts as a danger detector. This alert system operates automatically and unconsciously. If we present a frightened face very briefly, in a subliminal way, without the subject having time to realize it, we observe an activation of the amygdala.

- Surprise : the first emotion triggered, it is the alert that automatically leads to another emotion : neutral, fear, joy.

It is an emotion caused by an unexpected Event. It is always short-lived.

The startle of surprise is considered as a Survival Instinct. The startle reflex is generated much lower down in the brainstem. This "reflex" activates a whole series of muscles by ways which are different from those used to generate voluntary movements.

There is then an adrenaline rush generated by the foreign stimuli. This discharge catalyzes emotional behavior (II) and at the same time creates a stem affect which will evolve : this stem affect acquires its characteristics during the different stages of the Cognitive Behavioral Cycle.



EXCERPT FROM 3C : Structure of emotions

Emotional behaviors (II)

Emotional behaviors are expressed to protect against danger : these are the emotions, they are catalyzed by the surprise.

- Fear : it is triggered in the presence or from the perspective of a danger or from a threat ; fear is a consequence of the analysis of danger and leads to a response, either fight, freeze, or escape.
This analysis can be distorted by the anticipation of an imagined threat.
From this emotion flow three emotions : anger, disgust and sadness.

Following fear :

- Anger : it is triggered when it is necessary to face danger or overcome an obstacle also it prepares for the fight.
According to the Larousse dictionary, anger is defined as "a violent and transient emotional state, resulting from aggression or inconvenience, expressing strong discontent and accompanied by brutal reactions".

The different types of anger :

According to Gonzague Masquelier, educational psychotherapist and director of the Parisian Gestalt school, the state of anger in human beings can develop in four different ways:

- "Stifled anger": undeclared, it manifests itself in a person who defines himself as unable to get angry.
- The "withdrawn anger" or retro-reflected : unexpressed, the person locks his anger inside.
- "Reflected anger": linked to personal reflection, it is deflected by the person onto an object other than the one related to his anger.
- "Hypertrophied anger (fury)": expressed in excess and disproportionate to its reason, it can lead the person to commit violent acts.

Anger and rage

In psychiatric medicine, rage is the most extreme mental condition on the anger spectrum.

When an individual is prone to rage, it ends when the threat is no longer oppressive or the subject with rage is physically immobilized.

Psychopathological problems such as depression increase the probabilities of rage triggering .

- Disgust : disgust is an emotion experienced by a person confronted with what he rejects or what he avoids with a certain violence, instinctively to protect himself.
It is the rejection behavior of internal or external toxicity that avoids harm to the organism. The disgust protects against the ingestion of toxic material, but also motivates the evacuation of waste from the body to avoid self-poisoning.
The most obvious behavior is to flee from danger.

- **Sadness** : Sadness is an emotion characterized by powerlessness in the face of a problem, loss, hopelessness or grief.
A sad individual withdraws from others. Sadness can manifest as crying. When anger has not brought about the expected changes, sadness often appears.
A sudden state of helplessness can lead to a freeze state.

A word on the freeze which is an extreme reaction of impossibility to act and which therefore does not allow to preserve from the danger, it does not allow to maintain the Survival Instinct :

A psychological trauma for example, or an Event which, by its violence and suddenness provokes an influx of excitement and defeats the usually effective defense mechanisms, leads to more or less long term psychic disorganization ; this acts like a stop of time which freezes the person in a traumatic psychological injury, to the point that the emotions seem practically absent : it is the cat which is caught in front of the car's headlights, or because its too scared, the goat which falls stiff.

It is a deep stupor experienced during a violence suffered ; it causes mental dissociation which prevents all understanding, thought, action and causes post-traumatic stress disorder. A fear due to intimidation causes the same state of freeze, to a lesser extent.

- **Joy** : It is not a question here of the sentiment, neither the feeling of joy, but of the emotion as behavior resulting from the surprise which is by réaction, the first step in preserving from danger.
Joy appears when there is no need to be afraid. It is a relief which translates into a laugh or a smile and which relieves the tensions : all is well, there is no or there is no longer any problem or danger.

Not to be confused with the sentiment of joy which is about feeling, of affect, which also results in a smile, or a burst of laughter, a pleasant feeling of peace, unity and elevation, intense and selfless, feeling of fullness and deep satisfaction.

These are the basic emotions described by Paul Ekman (1977) : the emotions, well differentiated, are phylogenetically adapted to allow the organism to face various fundamental problems of everyday life which require rapid and temporary reactions. These emotions would be of universal expression.

In addition, emotions are important markers, along with affects, for memory, because they impact physiology : there was an adrenaline rush, we remember the surprise or fear experienced, even joy (because it is associated with surprise).

The affects felt are sensations that come after, as a consequence of the emotion felt after the surprise. They last and they color the Event with a "flavor" which will index the memory or memory field of it.

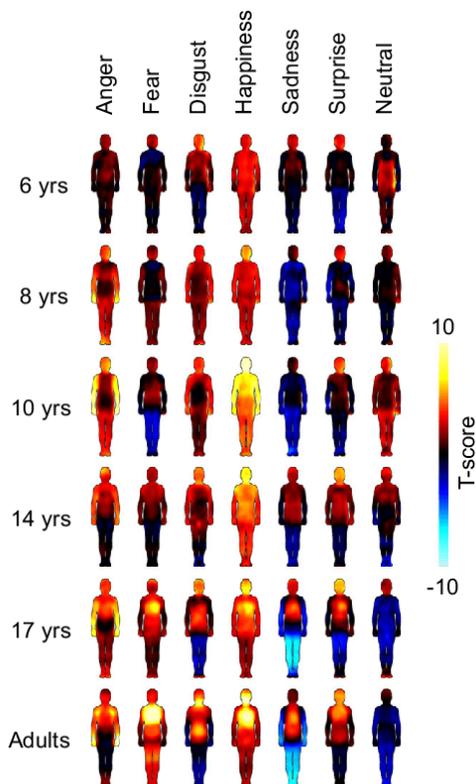
Fear generates anxiety, stress, anguish ; anger generates revolt, irritation, resentment, even misanthropy ; disgust generates aversion, contempt, repulsion ; sadness generates lassitude, nostalgia, indifference and joy generates pleasure, happiness, satisfaction ...

The feeling of joy also corresponds to the homeostatic equilibrium of the Wills.

All the emotional behaviors in direct link with the Survival Instinct are carried out unconsciously : no time to think, it is automatic, and that since birth !

An emotion never lasts more than 48 hours. Also, different emotions have different durations. For example, Belgian researchers in a study undertaken in 2014 measured that irritation lasts 1.5 hours and anger 24 hours, while sadness can take two full days to pass. The researchers also highlighted the factors that prolong the emotion longer than expected. The more important an Event is to a person, the more the emotion it induces will last. So the emotion of losing a loved one who died in a car accident will last much longer than that of losing a particularly popular sweater.

The emotional behaviors are demonstrative : the volume of voice increases, the bodily manifestations are violent and the environment is affected. Emotions are triggered as an immediate response following a sudden change in the Will to Exist state : For example, a sudden noise changes the Will of Stimulation state, itself directly linked to the Will to Exist.



Different parts of our body do not all experience emotions in the same way. A Finnish study has just made it possible to establish a body map of our bodily reactions according to the feeling felt.

Emotions will participate in the elaboration of Postulates : they are the first informations basis upon which Beliefs are built.

The Postulates and Beliefs that we develop impact our behavior automatically, without thinking, before any structuring of a behavioral response.

They alone deserve a chapter, we will come back to them.

The Wills

The Fundamental Wills



EXTRACT FROM 3C : fundamental Wills

The Will to Live

These are the functions necessary for sustaining life, it is a fundamental Will .

It can be related, by taking the definition of life given previously, to the following two characteristics :

On the one hand to entropy (humans are a dissipative structure of low entropy which takes energy from the outside to stay organized inside while creating disorder on the outside) : for example, it feeds and then it ejects (it dissipates energy).

On the other hand to homeostasis (regulatory mechanisms that ensure better chances of survival, they compensate for environmental disturbances , they readjust variations) : the body is constantly in search of multiple balances in order to live.

By taking again the definition of the Life system, the contribution of energy, of information, is done by food, rest and protection ; they are functional Wills, conscious , which allow the Will to Live to last and therefore essential to the functioning of the body, to life :

Before going any further, we mean here by conscious : everything, from the moment we pay attention to it : heartbeat is unconscious until you pay attention to it, then it becomes conscious.

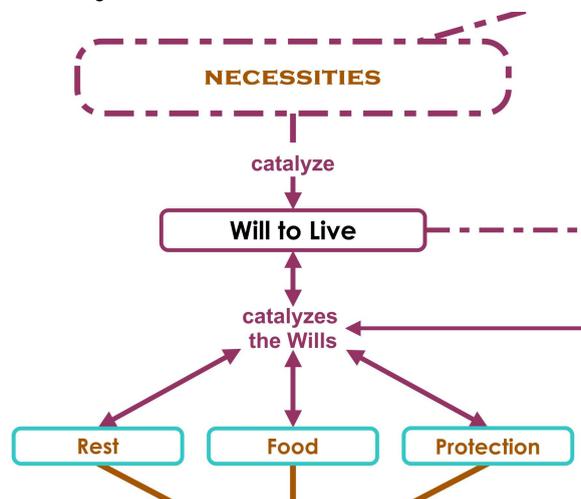
When I pay attention to what I am doing, I am acting consciously.
Likewise for what I think, I feel, I say...

A dream we don't pay attention remains in the unconscious, but if we wake up at that moment and pay attention to it, it becomes conscious.

If we take wikipedia as a source, the definition here relates more precisely to the phrase "state of consciousness". Consciousness is "this capacity to subjectively relate to us our own mental states " source: [Conscience — Wikipédia](#)

The functional Wills of the Will to Live

- The Will of Protection : to protect oneself from hazards (cold, hot, animals...) : the Environment is fluctuating, the temperature, the movements and the atmospheric quality, the humidity rate, etc... So much informations which are essential, to be taken into account. The Life system must ensure its maintenance despite all these factors of imbalance : the rebalancing strategies are numerous and varied according to the species, the tardigrade dries up in the space vacuum, the bear hibernates in winter, Man takes shelter, gets dressed, gets fat etc ...
- The Will of Food : to eat, drink and eject (information management). The energy supply, thanks to the cycle of food degradation by Adenosine Triphosphate (ATP), must remain regular and provide for the various functions of the body. This implies a balanced, healthy diet, meeting the specificities of the species.
- The Will of Rest : to sleep and wake up. "*The process of alternating wakefulness-rest probably dates back to the appearance of the first unicellular organisms, nearly 3.5 billion years ago,*" explains Yves Dauvilliers, neurologist and sleep specialist at the University Hospital of Montpellier. Thus, even bacteria and yeasts experience periods of rest characterized by a decrease in activity.
As proof : a bacterium does not activate the cilia of its membrane permanently ...
The functioning of the Life system doesn't stop during this phase : it regenerates itself in energy, this is the phase of memorizing, storing information and important things experienced during the day for future advance.



EXCERPT FROM 3C : functional Wills of the Will to Live

The Will to Live is specific to each person and can therefore fluctuate, it can even be measured using a questionnaire : "the will-to-live scale" makes it possible to quantify the will to live.

In old age, the Will to Live (WTL) is one of the most important indicators of subjective well-being.

However, few studies to date have focused on the Will to Live (WTL). In these studies, the Will to Live was primarily assessed through indirect questions about factors that may influence a person's Will to Live, or through measures aimed at patients with specific illnesses.

Here is an excerpt from the questionnaire

1. In your current state, would you like to continue living for many years?
2. Compared to people your age, how would you rate your will to live?
3. How would you rate your will to live today, compared to when you were younger?
4. If you value your will to live on a scale of 0 to 5, would you say it is ...
5. During the past year, would you say that your will to live ...

The Will to Exist

This one flows from the Will to Live : life is there, we must maintain these Activities as long as possible and therefore develop ; we have seen the living is also characterized by self-catalysis (or reproduction for Man) and learning.

At the beginning, at birth and until around nine months, the newborn realizes that his body is distinct from his Environment and that he can act on the world : for example when he cries, he is fed... It is the basis of the Will to Exist.

cerveauetpsycho.fr - [Quand bébé prend conscience de lui](#)

Then it manifests itself by the will to leave a trace of oneself that lasts, even after death. The first expression of this will is manifested by cell division and reproduction : transmitting life makes it possible to prolong its existence in the future ; in a very radical way, salmon, for example, allow themselves to die after having fertilized their eggs : since they have ensured the rest of their existence, they have accomplished their mission.

We too, humans, reproduce for the future and in addition, a human characteristic as we have seen, we seek to exist through what we do and for that we learn what we need : the Will to Exist is also manifested by learning.

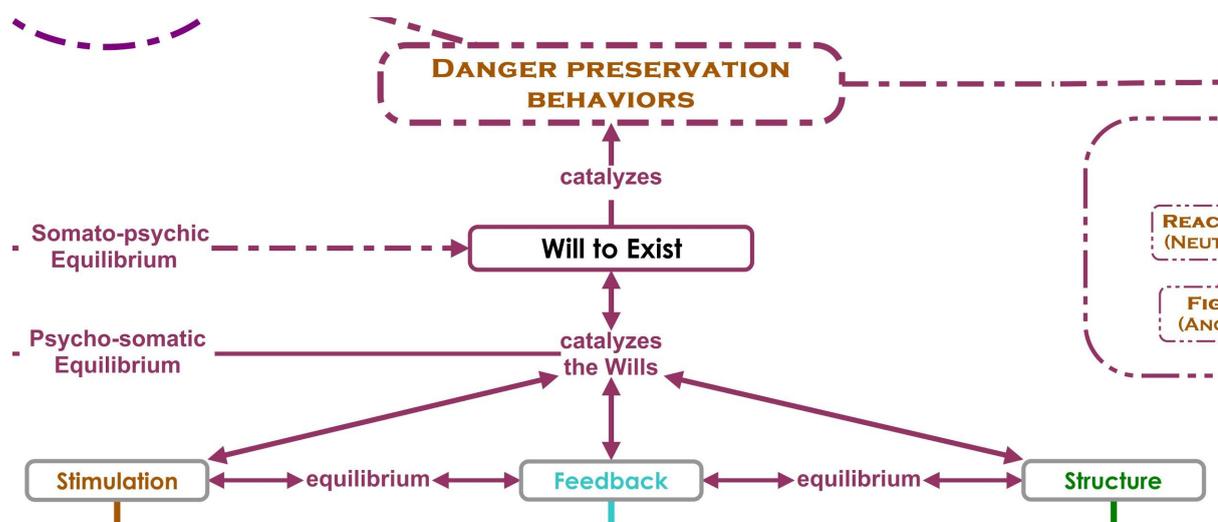
The functional Wills of the Will to Exist

The Will to Exist is also declined in three conscious Wills, essential to catalyze an Activity in this Environment :

- The Will of Structure (IV): it is to act in autonomy and according to its own rules, or in obedience by following someone else's. The Will of Structure comes from oneself, from what one implements to structure his Activity. Here, the entry of information comes from genetics (innate) and experience, Postulates and Beliefs (acquired).
- The Will of Feedback (V): it is a "feedback" to obtain a type of expected feedback on a behavior or on oneself. The Will of Feedback is a motivation to give or receive

qualitative feedback. There is interaction with the other, acquisition of information for the system. We need the other to become ourselves.

- The Will of Stimulation (VI): through our sensory system (visual, auditory, kinesthetic, olfactory and gustatory), our brain is in contact with its environment. The Will of Stimulation determines the level of sensory acquisition following an Activity that catalyzes an Event. A brain alone atrophies, it needs stimulation : the cerebral stimulus promotes hormonal production. The Will of Stimulation receives information from the outside, there is interaction with the Environment, acquisition of information for the system.



EXCERPT FROM 3C : Functional Wills of the Will to Exist

There is a relationship between the two fundamental Wills, the Will to Live and the Will to Exist. The first determines the behaviors that ensure life and the second gives the resources to maintain it as long as possible.

The living organism must adapt to its environment, its behaviors must correspond to its requirements . It can thus seize the opportunities and obtain a variety of information for its functioning. The constraints of this Environment are, likewise, as much information that determines as many other behaviors.

A system cannot refuse external hazards, it is these which ensure the renewal and variety essential to its continuation.

The behaviors related to the Will to Live depend on the Environment : if we don't have food at home, we'll go get some, for example.

The behaviors related to the Will to Exist depend on the responses of this Environment, we perform an Activity to generate an Event ; the behavior is the consequence of this Event.

The Will to Live and the Will to Exist are the meta-motivators of all living behaviors.

The Wills dynamics

The Wills states and Behaviors

Functional Wills are defined as feedback loops. They are activated by interactions of neurotransmitters and hormones. These loops are self-regulating and tend to return to homeostasis, either between Wills of the same type (under the Will to Live or to Exist), or by a psychosomatic balance, or by a somato-psychic balance.



EXCERPT FROM 3C : psychosomatic balance and somato-psychic balance.

These interactions determine the excited or inhibited state which influences the different components of the Environment.

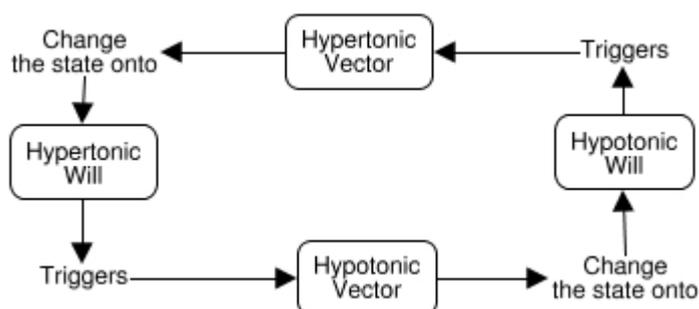
The Wills can be in a hypertonic , hypotonic or isotonic state.

Hypertonic : excited or stressed state.

Hypotonic : inhibited or relaxed state.

Isotonic : balanced, stable state.

A hypotonic state triggers a hypertonic vector as a hypertonic state triggers a hypotonic vector.



It is our Evaluation Systems which will “evaluate” the state of the Will and induce an excitation, an inhibition or leave the Will as it is.

Evaluation systems

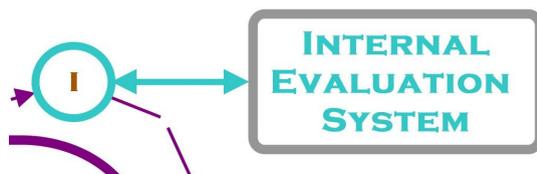
The Internal Evaluation System (IES)

Our experience, our knowledge, our Beliefs are embedded in different memories of our brain. The emotions felt during previous experiences, as well as the affects (feelings, sensations) experienced first intervene in the retained memory ; they will serve as a reference for our brain to assess the appropriate response to the new Event. It will also evaluate according to our Values and everything that makes up our Ethics.

The IES is constantly updating itself, evaluating and memorizing each new Event, it allows the evolution of personal Ethics.

It has an exciting or inhibiting role on the Will of Feedback. It is triggered during the perception phase (I). The anticipated affect in (V) will only be felt at the sensory acquisition phase (VI) and the evaluation will only be done at the beginning of the following cycle : comparison between the anticipated affect and the felt affect.

Interestingly, IES is responsible for cognitive dissonance when a person's Activities are not aligned with their personal Ethics . In this case, the anticipated affect in (V) is neutral at best, however the affect felt in (VI) will certainly be disgust which reflects an escape from the situation since it goes against personal Ethics . Cognitive dissonance affects self-esteem.



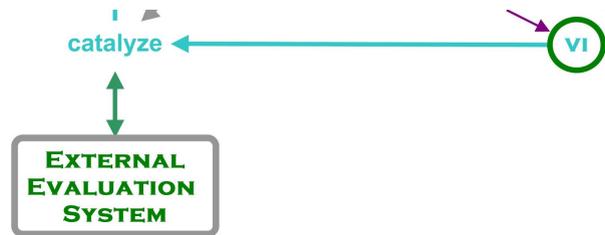
EXCERPT FROM 3C : the IES

The External Evaluation System (EES)

Our brain also has a system for gauging our external reality : the External Evaluation system (EES) constantly evaluates our Environment in the same way as the Internal Evaluation System (IES) does it for our internal reality : it makes the distinction between what is good and what is bad for us, the opportunities and the constraints of the Environment, according to what was written in our memories .

The EES compares the Environment with the Events already experienced, stored in the Autobiographical memory, and with the Events that it anticipates, as a result of the Activity. It has an exciting or inhibiting role upon the Will of Structure.

The EES is triggered during the sensory acquisition phase (VI).



EXCERPT FROM 3C : the EES

Chronology, EES and IES : memory formation.

Following the assessment of the EES, the IES assesses the nature and intensity of the affects generated.

The EES and the IES are essential for the functioning of the circadian body clock. This biological clock is made up of the central clock in the External Evaluation System (EES) and the peripheral clock in the Internal Evaluation System (IES).

In mammals, the central clock acts like a pacemaker. Following the reception of an external signal, the EES regulates the Activity of the peripheral organs, these have their own peripheral clock.

The peripheral clock plays a specific role, for eating at a fixed time for example, or for the contraction of cardiac tissues, the regularity of ovulation, the regulation of the endocrine and immune systems ...

The Events chronology estimated by the assessment systems is essential for building the Autobiographical memory. Indeed, without this temporal datum, there can be no memory embedding.

The geologist Michel Siffre during his experiments with extreme confinement and the cosmonaut Yuri Gagarin during his stay in space both suffered memory loss.

The Russian cosmonaut has also said : "I read Siffre very carefully. What he said about memory loss, I also felt exactly the same".

As for any system, the temporal data is important, it is necessary to respect the response times (feedback loops, input and flow of information ...)

The information processing rate by the External Evaluation System is constant and this leads to perception that time passes more slowly when we receive a lot of sensory information : the researchers' hypothesis is that during the activity phase, visual acquisition accelerates, increasing the amount of information received.

"It's a phenomenon that we know well among sprinters, who often have the impression of running in slow motion during a 100 m race", explains Pierre-Jean Vazel, Christine Arron's trainer and race biomechanics specialist.

The fundamental Wills state.

Let us continue first of all with an understanding of how the Wills work.

The Will to Live and the Will to Exist break down therefore into functional Wills : these, depending on their states, determine the most suitable behaviors.

According to their states, the functional Wills are excited or inhibited and they thus actualize the state of the fundamental Wills.

The Will to Live state

When a Necessity is expressed, it does so by catalyzing an Event as a result of the organism metabolic activity.

This Event is manifested by a specific affect (I):

This affect is taken into account by the Internal Evaluation System which will excite the functional Will linked to the Will to Live ; this then goes into hypertonicity.

This change of state occasioned by the event provokes a change of Environment appropriate to the resolution of this affect.

Take food for example ; Following the metabolic activity, the need for food is felt by a tension in the abdomen. This internal tension is the event that the Internal Evaluation System echoes through an excitement of the Will of Food : its status changes to hypertonicity and causes the search for food (the right environment to absorb food).

This process works the same for the Will of Protection with a change in temperature for example which causes discomfort stress. This leads the person to act accordingly, to shelter from the sun for example : excitation of the Will of Protection.

And the same for the Will of Rest, an effort causes fatigue, weariness that causes the person to go to rest : excitement of the Will of Rest.

Likewise, the Will to Live passes in a hypertonic state because its functional Wills have remained too long in a hypotonic state.

Indeed, a person goes into an awake state (hypotonia of the Will of Rest) every 24 hours and maintains this state for 16 hours. At the end of this time, the Will of Rest then goes into hypertonicity : it becomes necessary to sleep for good cognitive functioning, otherwise dying of exhaustion becomes possible.

Likewise, if one remains too exposed to climatic elements (hypotonia of the Will of Protection) survival is put into play.

And if one evacuates too much (hypotonia of the Will of Food), for example because of a virus that would cause diarrhea and dehydration, one can also die. The prolonged hypotonia of the Will to Live leads to the death of the organism.

The Will to Exist state

The Will to Exist organizes the autonomy, the understanding and regulation of the course of Events and the nature of actions on a person's Environment. This Will brings into play the Beliefs, Capacities and Activities of the person. These are the criteria that define his individuality.

The state of this Will changes according to the Environment and the somato-psychic equilibrium.

Somato-psychic equilibrium

There is an equilibrium between the Will to Live and the Will to Exist - This is the somato-psychic equilibrium.

Because of this homeostatic equilibrium, when the Will to Live is excited by the Necessities, it triggers an inhibition on the Will to Exist. It is the process of homeostatic equilibrium which brings with it the changes of states of the Wills of Stimulation, feedback and structure.

For example, the Will of Food is excited when it is necessary to absorb food : we want to eat ; the Will to Live is thus excited, then by the somato-psychic equilibrium the Will to Exist is inhibited ; this inhibition is transferred to the Will of Stimulation which itself therefore goes into hypotonia and triggers a wish for tasty, stimulating food : it is the wish to acquire more sensory information. The more hypotonic the Will of Stimulation is, the more stimulating the food should be.

When the Will to Live is hypotonic for too long, action is needed for life to endure. The somato-psychic equilibrium serves as a catalyst for an Activity which will allow an Event to be triggered.

This Event catalyzes the functional Wills of the Will to Live to bring about a healthy change of Environment.

For example, when the Will to Live is hypotonic because the Will of Food remains in hypotonia following infection with a virus, the Will to Exist becomes hypertonic due to somato-psychic equilibrium. This catalyzes the preservation behaviors from danger thus causing the Activity of moving to the doctor or the pharmacy.

And if this hypotonic Will of Food is caused because there is nothing left to eat, the travel Activity will rather be done to the market or to the restaurant !

There is a correlation between the states of the functional Wills and the states of the fundamental Wills from which they arise. Indeed, the more hypertonic a functional Will is , the more it reflects the fundamental state of the Wills to Exist or to Live which is characterized by : whatever the Environment, it is absolutely, imperatively necessary to live and exist.

On the contrary, the more hypotonic a functional Will is, the less it reflects the fundamental state of the Wills to Exist or to Live : depending on the Environment, to live or to exist becomes less imperative, more relative. Watch TV or sleep ? The person has a choice.

The Wills initial status sets the behavioral tendencies.

Let us detail the functional Wills states.

The functional Wills hypotonic and hypertonic state

Will to Live

hypotonic state Inhibition	functional Wills	hypertonic state Excitement
To expose	Protection	To secure
To eject	Food	To absorb
To wake up	Rest	To sleep

Will to Exist

Hypotonic state Inhibition	Functional Wills	Hypertonic state Excitement
Sensibility	stimulation	Indolence
Behavioral	Feedback	Existential
Conformity	Structure	Autonomy

Psychosomatic equilibrium

There is also a homeostatic equilibrium between the three Wills of Stimulation, Feedback and Structure.

This equilibrium depends on the current state of these Wills, but also on their initial status.

A Will in a hypertonic state causes another Will to pass into hypotonia through the process of homeostasis.

Of course, when all the Wills are in the same state, hypotonic, isotonic or hypertonic, they are in homeostatic equilibrium.

When the homeostasis of the three Wills of Stimulation, Feedback and Structure can't or can no longer be maintained, the imbalance shifts to the Wills that result from the Will to Live : this is the psycho-somatic equilibrium.

Thus, for example, a Will of Feedback hypotonic state maintained triggers by psychosomatic equilibrium, a Will of Food hypertonic state leading to bulimic behavior. A Will of Structure hypertonic state will cause a Will to Feed hypotonic state triggering (leading to) anorexic behavior.

Wills initial status

“What's bred the bones comes out in the flesh”

The Will initial status is determined by habituation.

In psychology, habituation is a form of learning. It consists of the gradual (and relatively prolonged) decrease in the intensity or appearance frequency of a response following the repeated or prolonged stimulus presentation that triggered it. ([Habituation — Wikipédia](#)).

In other words, the Wills initial status depends on the repeated circumstances to which the person has been exposed.

(For example, for a child who has suffered violence from his parents, the Will of Protection initial status becomes hypertonic. He will be more attentive to warning signs of danger from the Environment, he will develop his ability to read facial expressions on his parents face in order to anticipate and protect himself from violent acts. As an adult, he will probably be subject to anxiety).

Another example : a person who has been told that he is great all his childhood, will have a hypertonic Will of Feedback initial status.

Initial status is important because it determines the “natural” behavioral tendencies.

Is it possible to change the Will initial status ?

Yes, in the case where a trauma has set up the initial status : by amplifying or inhibiting the current hyper or hypotonic status, by appropriate behaviors or exposure, we reach or we exceed the initial status.

The exaggerated exceeding of this limit makes the initial status disappear, the Will returns by itself to homeostasis, that is to say, to natural isotony.

The most well-known application is the treatment of post-traumatic stress disorder by overexposure to the situation that caused the trauma.

Activities - Events - Behaviors

Activities

All the “Activities” of the Environment (examples : cold, heat, rain ...) catalyze predictable Events according to the laws of physics - the Will to Live constantly adapts to it.

For example, climate Events (cold, heat, rain ...) excite the Will of Protection which itself excites the Will to Live. Likewise the circadian cycle and / or metabolic activity excites the Will of Rest or a low level of carbohydrates due to metabolic activity excites the Will of Food.

The human being constituted as he is, his functioning, his life, involves involuntary physiological behaviors such as heart beats or breath for example, with homeostatic biological regulations to maintain global functioning.

All the metabolic functions of a living organism or its actions in its environment are Activities which also catalyze Events.

Events

The Activity of a living organism on the Environment aims to catalyze a predictable Event, following the evaluation he makes of it.

Action ⇒ Consequence ⇒ Reaction or
Activity ⇒ Event ⇒ behavior (response activity)

As a result of the activity, if the generated Event is expected, the functional Wills state remains invariable. No imbalance is created, no disturbance.

On the contrary, if the generated Event is unforeseen, (what happens is different from what was expected), the Wills state is then modified by excitation or inhibition of these according to the Wills initial state.

For example, if a person undertakes an action with a hypotonic Will of Structure- she acts in compliance with the procedure, she does not seek autonomy in the action but seeks to obediently follow a procedure : she will stop the Activity if the procedure is not detailed enough. Or else her Will of Structure goes into hypertonicity (thanks to the EES), she then becomes autonomous and completes the Activity by filling in the gaps.

The Event predictability is determined by the External and Internal Evaluation Systems (EES and IES) by comparing the Event nature with the expected one (which is determined by the functional Wills state) : thus a new behavior is triggered, if the Event doesn't correspond to what is expected.

For example, if following the action, the Will of Feedback received is hypertonic, existential (“you're stupid”, “you're cool”) while the operator's Will of Feedback state is hypotonic, behavioral, (he expects “your work sucks”), this creates an exciting gap on the Will to Exist which will push the operator's Will of Feedback to hypertonia. Someone to whom we say

“you're good” instead of “your work is good”, his Will for Feedback goes hypertonic and he will tend to do things to qualify what he is, in a demonstrative way and not for his skills.

The repetition of these Wills state changes affects self-esteem : the more these deviations appear, the more self-esteem falls ; if we don't have the expected return, we are destabilized each time.

Thus, an unexpected excitatory or inhibitory response may temporarily revert to the isotonic state the hypo or hypertonic Will status ; after a certain time, the Will returns to its initial status.

Behaviors

The Events catalyze behaviors determined by the updated status of functional Wills.

The behavior is a reaction to one Event.

The behaviors chosen will push the functional Wills to a natural isotony by excitation or inhibition. As soon as natural isotony is reached, the feeling of well-being manifests itself, it corresponds to the result of the chosen behavior : this is in accordance with our Ethics, it is in line with our future vision and fills us with a great calm : it is the natural isotony of our Wills that manifests itself.

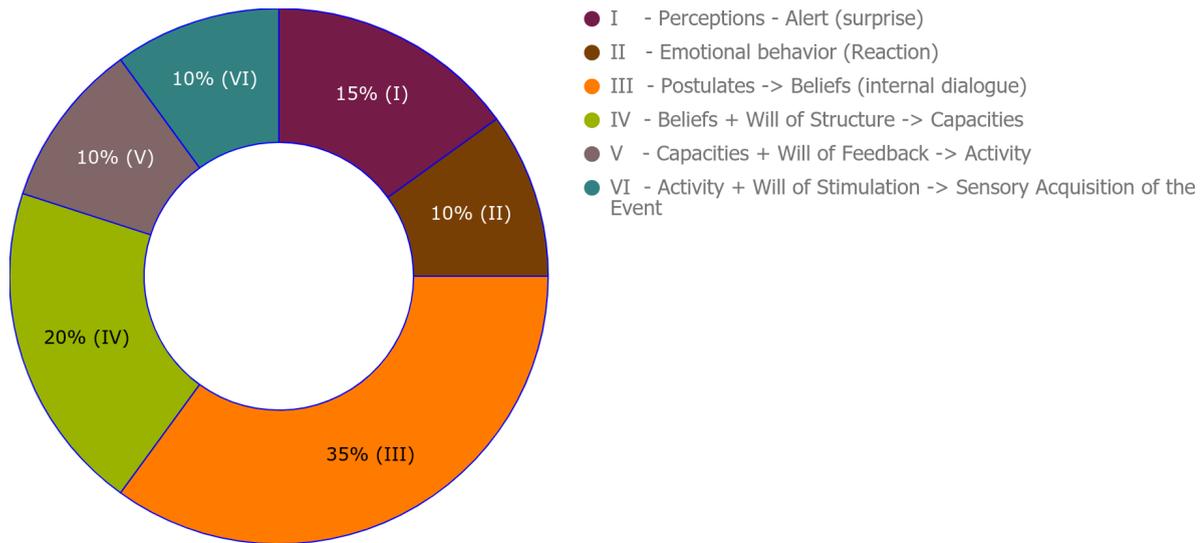
However, the isotonic status of a Will will tend to drift towards his initial status. Depending on the initial status set by habituation, the Wills states will determine the types of behavior. (After satiety, hunger returns after a certain time, initial status of the Will of Food).

How behavior unfolds ? It is an autocatalytic Cognitive Behavioral Cycle : it maintains itself, it always unfolds in the same way.

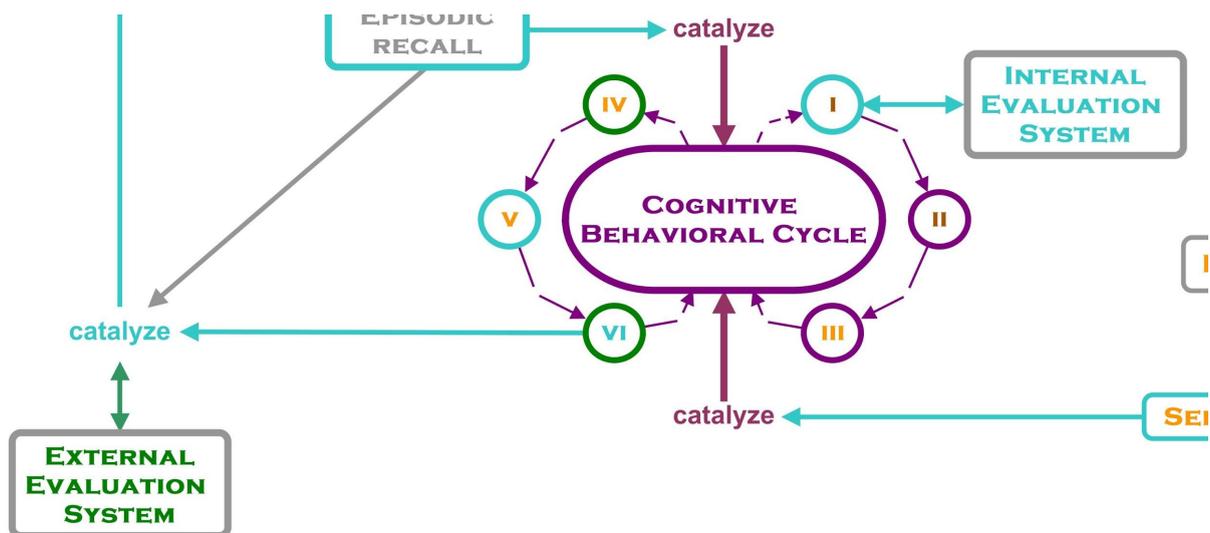
The Cognitive Behavioral Cycle

This cycle represents the different constituent elements of the Activity which catalyze an Event in a living organism Environment.

It is the unexpected Event that catalyzes one or more behaviors, beginning with the emotion of surprise, the alert (I), then following the cycle **I → II → III → IV → V → VI**



In this chapter we describe the chronology of the different stages of the cycle ; steps (I) and (II) have been detailed previously.



EXCERPT FROM 3C : the Cognitive Behavioral Cycle

Perceptions- Alert (I)

The environment is constantly changing, evolving. It is the scene of Events of all kinds that excite our senses. Whether the Event is predictable or not, its mere perception triggers an alert. This can also be triggered by a circumstances memory which brings into play the individual existence and / or which have caused an emotion.

From there the Internal Evaluation System is triggered : a “stem affect” is created , somatization is more or less an intense aburst. This “stem affect” acquires its characteristics during the cycle development. The affects will be perceived during sensory acquisition (VI).

Indeed, dangerous situations are part of an emotional memory through a process of habituation or through repeated trauma (which is the case for Post Traumatic Syndrome).

Emotional behaviors (II)

The perception (I) of the new Event with first of all the surprise, triggers the danger preservation behaviors : the emotions (II), Joy, Fear, or quite simply Neutral, detailed above.

Emotional behavior is the first characteristic given to “stem affect”.

The etymology of the word emotion is ex-movere : there is the notion of movement, it is the starting point for our behaviors, it is putting the cycle in motion.

Postulates (III)

After being subject to the emotion, the person will refer to his Postulates:

These are specific thoughts that arise in the cycle after an emotion.

From the beginning of childhood, we seek to understand our environment through the members of our entourage relationships ; we receive injunctions, these are indisputable orders which must be executed under penalty of punishment.

Here are some examples of injunctions :

“If you don't have anything good to say, don't say anything”, “Don't get noticed” ...
This is how to interact with other people.

"Never show your nervousness", "Don't cry in front of others" ...
It's all about the situations in which it is okay to express emotions.

"If you can't do something perfectly, don't bother trying ”,“ I should be good at everything I do ”,“ Be strong ”,“ Be nice ”,“ don't exist ”,“ hurry up”
It's all about the attitude to adopt.

These accepted injunctions form the Postulates basis.

The Postulates are structured reasonings “a priori” irrefutable and irrevocable about oneself, others and the Environment. They are acquired in childhood and are imprinted in the memory, but out of context, as being valid in all cases : for example “be strong, do not cry, this is not a big sore” will remain as “I must be strong ... in sport, at work (always working more ...)”.

The injunctions are imperative and irrational and the Postulates are their justifications (themselves irrational).

The Postulate structure is characterized by:

- A self-evaluation of the person : *“I am ... <Qualifier>...”*, following the emotion,
- An irrefutable observation on the Environment : *“Because the world is ... <qualifiers>...”*
- An irrevocable and definitive personal future in the form of a fatality which locks the Postulate *“it will always be like this...”*.

Postulates are the Beliefs basis and validate the affects. If the affect with its emotional characteristic is not validated by a Postulate, the development of the Activity and therefore of the affect, stops.

If there is a Postulate validating the affect, the cycle continues.

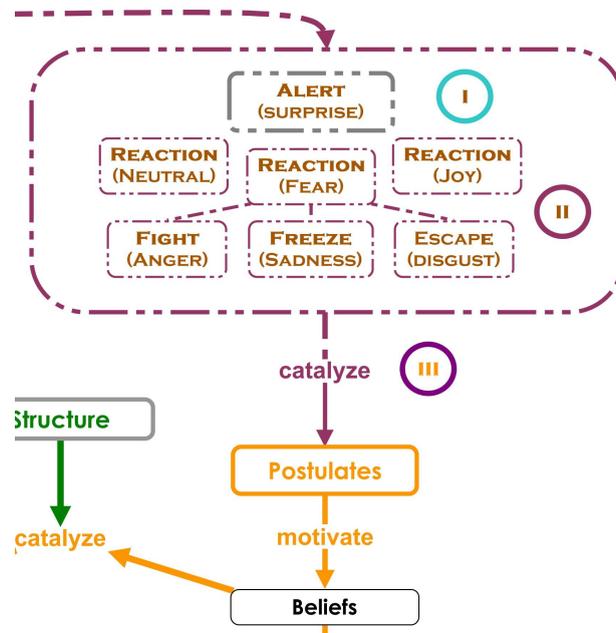
For example:

The Postulate “I am strong, because in the world weak people end up under bridges and weakness will always be a fault” justifies the fear (emotional affect) of being weak. This Postulate originates from the injunction “be strong”.

This Postulate leads, in a professional environment, to overinvestment in work where demonstrations of contempt for weaknesses are common, leading to burnout, depression or suicide in some people.

It is enough for the person to become aware of “... ending up under bridges ...” is not linked to being weak for the Postulate to cease to justify the fear “of being weak.” As a result, the professional overinvestment stops.

This is how if we invalidate the postulate, although emotional behavior has appeared, the feeling doesn't appear, the cycle is broken: the CBT (Cognitive behavioral Therapy) acts in that regard.



EXCERPT FROM 3C : Emotions-Postulates-Beliefs

Beliefs and Will of Structure (IV)

Beliefs flow from the Postulates :

For example : from the Postulate “the world is hard”, the Belief “one must not be weak” develops. It joins the injunction "be strong" and strengthens.

A Belief defines the circumstances which justify the Postulate from which it arises.

Usually, Beliefs are learned early in life. They are based on rigid and absolute notions of self, others and the world :

They are classified into two areas

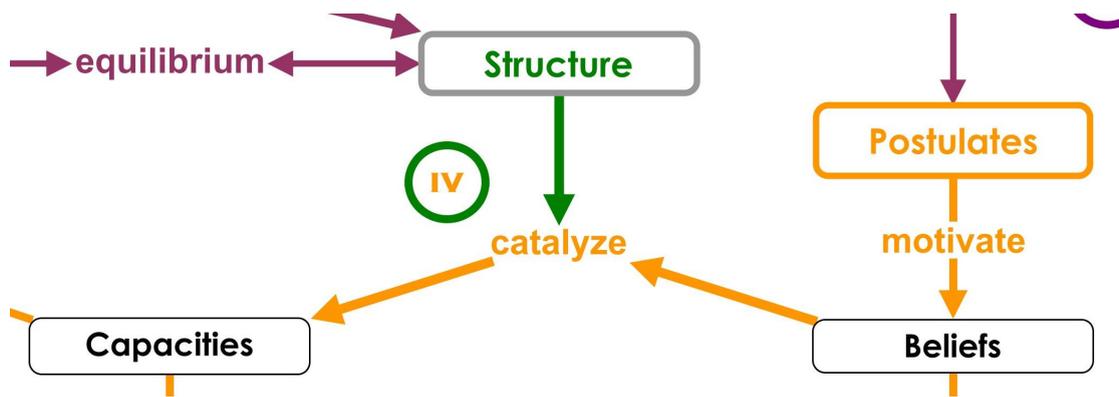
- Values
 1. Values describe desired attitudes to adopt.
 2. Values transcend specific actions and situations.
 3. The Values are listed in order of importance.
 4. The relative importance of multiple Values frames the Activity.
- Permissions-Limitations

These are the restrictions or emancipation criteria of the individual relative to the Activity

The Will of Structure state determines the level of autonomy (hypertonia) or compliance (hypotonia) with which the Activity will be carried out. The Beliefs and Will of Structure establish an answer to the complex question :

“Do I believe that I am capable of acting on my own or do I need someone to accompany me to act?”

This step amplifies or reduces the stem affect created in (I) and characterized by emotional behavior in (II).



EXCERPT FROM 3C : Structure-Beliefs-Capacities

Capacities and Will of Feedback (V)

Capacities are the means to perform an action.

These means can be the available resources such as objects, places or even knowledge, and intrinsic qualities ; but they can also take the form of stratagems intended to create an artifice on the resources state or even powerlessness declarations such as fatalistic reasoning.

The Will of Feedback determines the type of feedback expected from the Environment following the use of the Capacities during the Activity.

A hypertonic state of this Will defines an existential return, centered on the subject ("You are...*qualifier*...") while a hypotonic state defines a behavioral return, centered on the quality of the Activity (" What you did is ...*qualifier*... ").

An example of hypertonic feedback :

"You are wonderful" without any Activity to support this feedback.

It also determines the type of feedback that the person gives on the Event : a hypertonic state defines a qualitative type of feedback, ("It is... *qualifier* ...") while a hypotonic state is behavioral, centered on the quality of the Activity ("What happens is...*qualifier*...").

An example:

"The Covid is dangerous" is a hypertonic feedback. It does not concern me if I do not cross it, it is its existence which is dangerous.

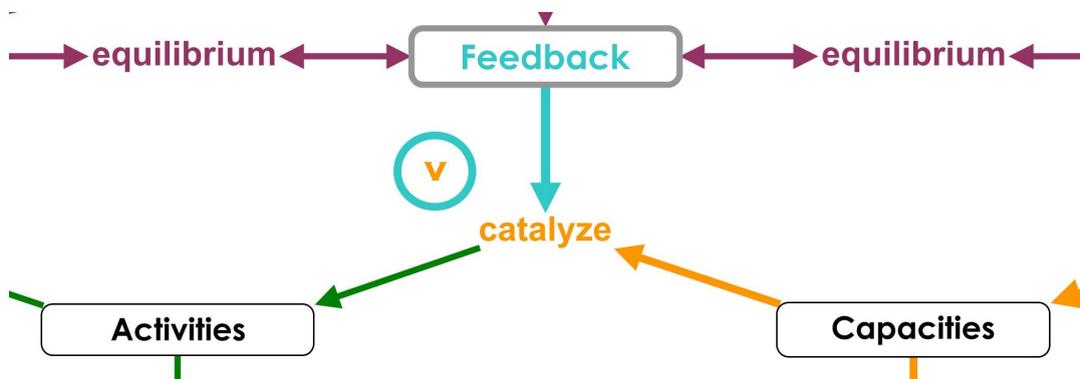
At the opposite, "to be infected with the Covid is dangerous" is a hypotonic feedback : it is its action which is dangerous, and therefore I can protect myself.

The combination of Capacities and Will of Feedback shape decisions and determine how the Activity is conducted : how do we do things? by putting yourself forward or by working effectively ?

This step creates an anticipation of the Feedback and therefore of the emotional state felt that could be generated during the Event. This anticipation is used by the IES to evaluate and compare the emotional state felt with that anticipated.

Obviously, the more the IES ratings are wrong, more self esteem weakens.

This completes the build-up of affect before it is felt in step (VI).



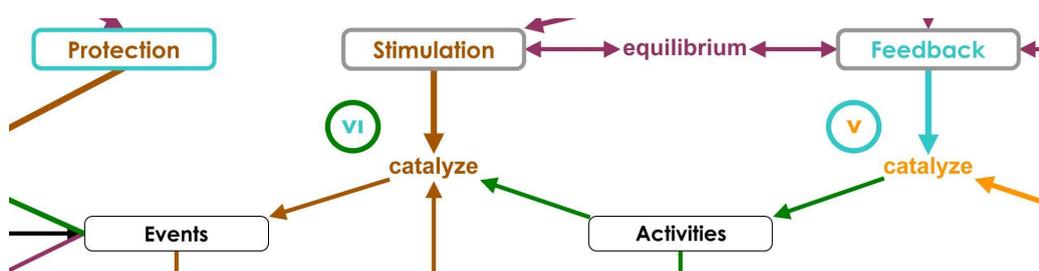
EXCERPT FROM 3C : Will of Structure-Capacities-Will of Feedback

Activity and Will of Stimulation (VI)

While the person is performing the Activity, she receives visual, auditory, taste, olfactory and kinesthetic information from changes in the environment : this is sensory acquisition.

Environment changes as a result of the Activity represent the Event.

It is this Event that catalyzes behavior.



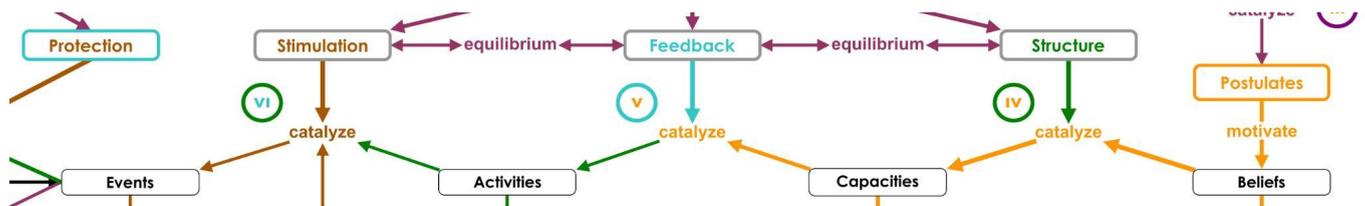
EXCERPT FROM 3C : Will of Feedback-Activity-Will of Stimulation-Events

The Will of Stimulation determines the amount of information received during sensory acquisition.

This quantity is defined by the intensity of emotional behavior (II) and by the Will state. Indeed, the more the state is hypertonic, the more the Stimulation potential will be reduced to indolence and the more the Activity will be demonstrative.

For example :The Will of Stimulation is hypertonic when while driving, if we answer the phone, we no longer pay attention to the environment or if someone is angry, we amplify the volume, we no longer pay attention to its environment, moreover we hear nothing.

For example, someone with a hypotonic Will of stimulation walks calmly, it will be open to changes in his environment.



EXCERPT FROM 3C : sequence of functional Wills

Types of cognitions

Cognition is the set of mental processes relating to knowledge such as perception, memorization, reasoning, problem solving and thought processes.

Cognition is distinguished from emotion, motivation and activity.

Stages of Cognitive Behavioral Cycle are connected by emotional, informational and identity cognition.

Emotional cognition

A person's thinking is influenced by its emotional state. In simple terms, this cognition is characterized by the emotional behaviors expression.

Because it is fast paced and emotionally driven, emotional cognition can therefore lead to biased and poor quality decision making.

This cognition can arise, with varying degrees of force, in politics, religion, and other socio-political contexts due to moral issues, which are inevitably linked with emotion.

Informational cognition

Informational cognition involves cognitive processing of information independent of emotional involvement.

Therefore, when an individual engages in a task with informational cognition, the emotion is neutral.

Decision making with this cognition is a logical and critical analysis.

An example of a decision using informational cognition would be to focus on the evidence before reaching a conclusion.

Identity cognition

It is the set of the cognitive processes involved in the relationships between oneself and the environment.

Identity cognition builds and conveys cognitive schemas from interactions with the physical and social environment in order to :

- know reality in order to plan action
- facilitate communication.

Stimuli and data that are collected through the senses are analyzed and integrated into cognitive schemas, abstract mental representations that summarize in a structured way Events, objects, affects, situations or similar experiences.

Cognitive schema

A cognitive schema is defined by the habituation of a same triplet - Postulate, Belief, Capacity - It is a reasoned conviction about oneself, others or the Environment and structured as such : "I am convinced that... , because I have the Capacity to.... "

For example : "I am convinced that the world is safe, secure (Belief) because I have the Capacity to defend myself (Capacity)", or "I am convinced that people abandon me (Belief) because I have the Capacity not to hold them back (Capacity) "or" I am convinced that I am intelligent (Belief) because I have the Capacity to obtain a lot of diplomas (Capacity)".

Cognitive schemas define our identity and allow us to analyze, select, structure and interpret new information. They serve as a model, a framework for processing information and directing behavior.

Cognitive schemas appear during the Postulates catalysis (III) in justification of emotional behavior (II).

Identity cognition motivates Routines via the schemas. They are executed automatically on the basis of internal or environmental indices.

These schemas, once formed, are stored in the Autobiographical memory via Routines and Values and are very difficult to change (which also explains resistance to change).

Cognitive schemas are used in Cognitive Behavioral Therapy (schemas therapy) to reveal Postulates in order to invalidate them.

Emotional cognition is crucial for making a first impression, informational cognition intervenes to develop a more efficient and reality-adjusted identity cognition.

Catalysts of the Cognitive Behavioral Cycle

A catalyst is an element which causes a reaction by its mere presence or by its intervention.

The Cognitive Behavioral Cycle triggers :

- in the presence of an Event itself catalyzed by an activity
- on the intervention of autobiographical memory, catalyzed by an Event of the past
- on the intervention of a self projection , to catalyze a possible Event in the future

Catalysts of 3C have a temporal dimension, the present Event depends on the Wills state. The Autobiographical memory is made up of Environment elements and of past Events, the Events temporality is given by the EES and IES clocks . Through narrative identity, self projections represent hypothetical scenarios to be achieved through the Cognitive Behavioral Cycle.

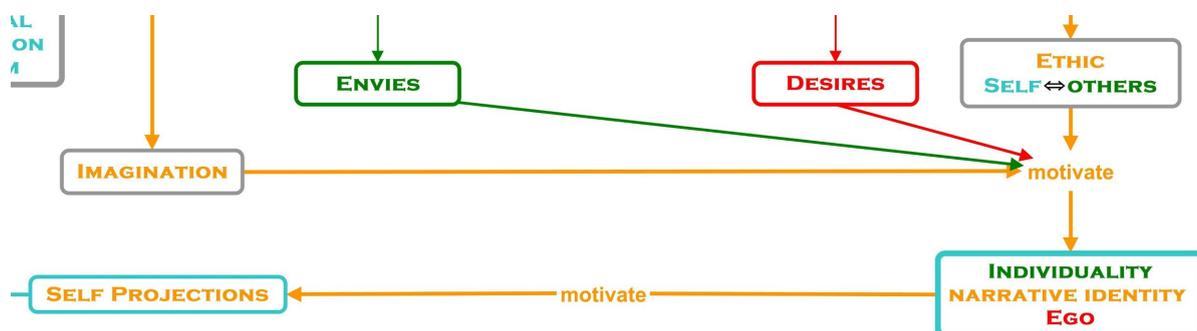
Self projections

According to the Larousse definition, individuality is the being characteristic which makes him such that he cannot be confused with another being.

The ego designates the representation and the awareness that one has of oneself.

Narrative Identity represents the capacity to put oneself in a story in accordance with the Events. Language, creativity, internal vocalization are narrative Identity manifestations.

Individuality / Narrative Identity / Ego is made up of Envy, Desires, Ethics and Imagination. These components flow from the person's beliefs, Capacities and Activities. All of these elements are integrated into the Self Projections.



EXCERPT FROM 3C : Envy-Desire-Ethics-Individuality-Self Projection

Ethics

This first Individuality component depends on Beliefs.

Values refer to attributes and perceptions that a person shares with their social or cultural group members.

They can guide the individuals actions in a society by setting goals and ideals.

They constitute a "morality" which gives individuals the means to judge their actions and to build themselves, with permissions and limitations, a personal Ethics .

Ethics is the way of regulating behavior that comes first from the individual personal judgment. It leaves room for autonomy and responsibility. The willingness of individuals to self-regulate prompts them to think on their ways of acting and upon the responsibility they have towards others.

Ethics derives from identity cognition and is linked to deliberation and decision-making.

Desires

The Ego component is based on Beliefs and Capacities.

Desire is the intention that leads to wanting to obtain a known or imagined object.

Like Ethics, Desire is made up of restrictions or personal emancipations from Beliefs.

Capacities play a role in justification : on the one hand by using stratagems which are artifices used to serve a personal interest and on the other hand by using fatalities which represent an inevitability, a constrained determination.

It means that a person is ready to make use of reprehensible means for obtaining the object of desire.

The absence of scruples is characterized by the permission that the person grants himself.

Desire arises from the emotional cognition resulting from the Postulates which define pretexts, alibis and manipulative transformations.

The most common demonstration of Desire is the buying impulse.

Envies

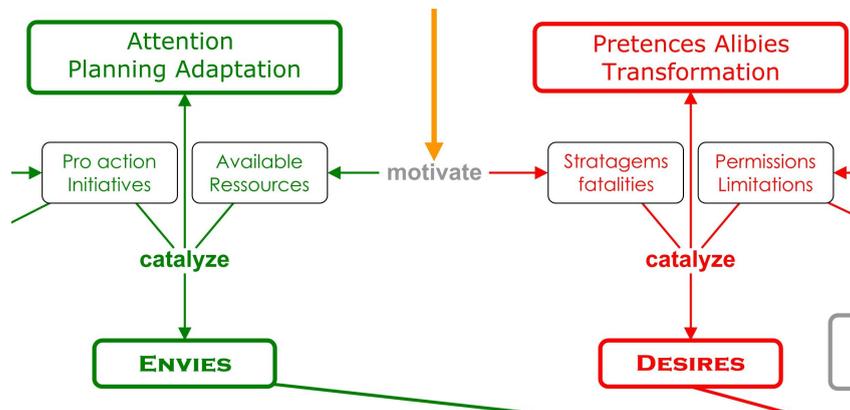
It is the Individuality component, it is defined by Capacities and Activity.

In current definitions, desire and envy focus on the intention to obtain an object. What differs are the means implemented to achieve it.

Envy focuses on the resources available to the person in the form of material means and knowledge.

Initiatives or proactivity define how to use these resources in order to acquire the object of Envy.

Envy arises from the informational cognition from which attention, planning and adaptation originate.



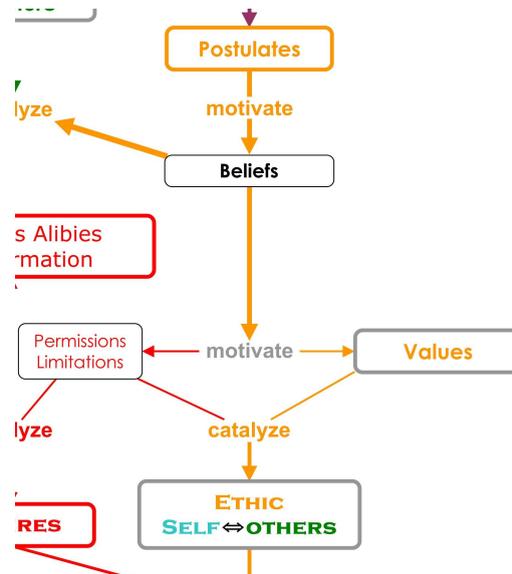
EXCERPT FROM 3C : Envies and Desires

Object of Desire or Envy

The object is, for a person, a new resource to be acquired from the Environment for future provision. This resource is unavailable to the person.

Desire or Envy represents the intention to make the object available.

As the object is a resource, it can be material like a thing or physical like a person or immaterial like a knowledge or a feeling attributed by another person.



EXCERPT FROM 3C : Ethics

Imagination

What Catalyzes the Imagination?

Paradoxically, this is based on usual behaviors, which no longer require questioning, thinking or attention : these are the Routines.

A Routine is a series of Activities that catalyze predictable Events towards the achievement of a goal that represents the final Event.

These Activities are ordered in a strict sequence although some Activities are permutable in their sequence provided that the catalyzed Events remain predictable and the goal is achieved.

The Routine stops if an Event planned in the initial sequence becomes unpredictable. There is then Cognitive-Behavioral Cycle catalysis.

Routines represent about 40% of all behaviors.

A person can spend its day in Routine from waking to bedtime. Sedentary lifestyle, working, commuting, audiovisual entertainment are, among a multitude, factors favoring Routines.

Cognitive schemas catalyze Routines. For example : "It was always like that ..." is characteristic of a schema..

Because Routines catalyze predictable events, they secure the person because danger preservation behaviors are either not associated.

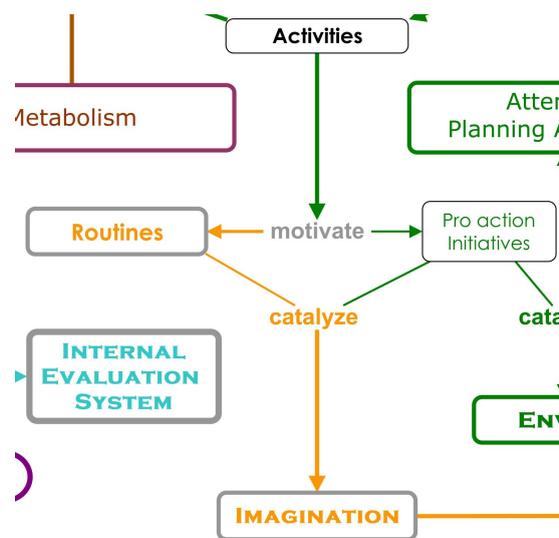
Obviously, if the Routines are the basis, they are only the Imagination support, like a musician who tirelessly repeats his scales before being able to create his work.

On the other hand, initiative and proactive activity are by nature generating unpredictable Events.

This is how Routines associated with proactive Activities catalyze the Imagination.

The imagination is catalyzed by introducing disorder into order, by making Routines evolve with actions whose consequences are unpredictable. Imagination is entropic.

The Imagination with the Ethics constitute the narrative identity, this one flows from the identity cognition.



EXCERPT FROM 3C : Imagination

Individuality - Narrative identity - Ego

The Ethics, Desires, Envy and Imagination that constitute - Individuality-Narrative Identity-Ego - have in common the anticipation of a dissatisfaction affect. Indeed, interrupting a Routine, or not respecting its code of ethics or even lacking, generates dissatisfaction.

This affect of dissatisfaction will motivate a Self Projection, a narrative Identity representation satisfied in the future.

Self-Projections catalyze the Cognitive Behavioral Cycle, which results in an Event that Triggers a feeling of satisfaction.

Episodic recall

The Episodic recall is the reminiscent of a set of facts that one keeps in mind, and which remind us of a past situation or memories resurgence.

The Internal and External Evaluation Systems relate to Autobiographical memory and compare current situations with situations of the past.

Autobiographical memory

Memory is the ability to preserve and restore past things. It is an individual past representation of Events and Environments, in mental form.

This information is stored in the form of semantic traits or actions and is grouped together in the form of memory fields that describe actions, Events and Environments.

This memory field is made up of procedural fields and semantic fields:

The procedural fields correspond to automatisms, Routines, skills, know-how and language structures. They are involved in the execution of the usual gestures and do not require any particular mental effort.

And the semantic fields, themselves, used to store causal rules, movements, physical reality components and language elements.

The memory fields are structured according to the usual mode of communication.

The Episodic recall description occurs through language.

When integrating memory fields into Autobiographical memory, the Internal and External Evaluation Systems provide the features chronology and the temporal dimension of memory fields.

The specific feelings on the one hand, and the functional Wills to Exist states on the other hand, serve as a memory index to access memory fields.

The IES, by referring to the current feeling, gives access to memory fields which correspond to the equivalent feeling. Then the EES reduces the extent of memory fields selected by the IES to those corresponding to the Wills current states.

As soon as one or more memory fields are found in the Autobiographical memory by correspondence with the Internal and External Evaluation systems, an Episodic Recall is motivated. The unfolding of the memory fields in the Episodic recall depends on the chronology of the fields embedded in the Autobiographical memory.

Memory catalysis

The resurgence of an Episodic recall catalyzes the Cognitive Behavioral Cycle by the current specific semantic fields similarities with those embedded in the memory field.

The Episodic recall can also catalyze autobiographical Memory when several fields memory are associated with the same memory index, this is the "Proust's madeleine effect".

The procedural fields motivate an Episodic recall which catalyzes a Routine. However, the Routine is triggered only because the present circumstances lend themselves to it.

When the memory field engages in Autobiographical memory in association with a "unique" trauma in its intensity or its nature, Episodic Recall is only possible by placing itself in the unique circumstances of the trauma or by encouraging the chronology of memory fields preceding the trauma .

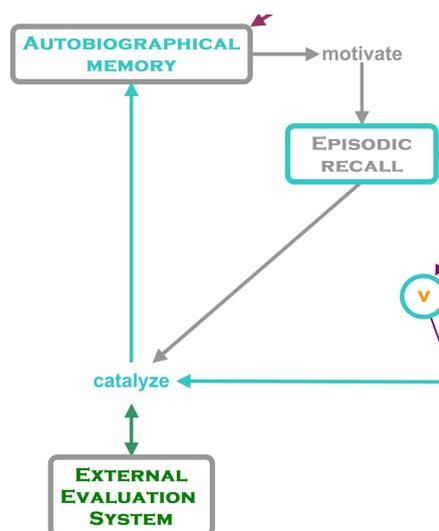
The field memory overexposure of the emotional injury by the Episodic Recall desensitizes to the feeling of the trauma.

It is a proven therapy technique for the treatment, among other things, of Post Traumatic Syndrome.

Taste and smell play a special role in the resurgence of Episodic Recall since these are the only senses that are directly associated with danger preservation behavior : disgust. The smell and taste information mingles with the feeling of disgust. In fact, the less disgusted we are, the more we love.

To create a positive feeling about unhappiness, it is enough to smell a very good smell at the same time as a disgusting act. The memory is biased.

The study of Alzheimer's disease shows the link between the loss of taste and smell, emotions that are attenuated, and the loss of access to their fresh memory.



EXCERPT FROM 3C : Memory-Episodic recall-EES- (VI)

Sleep

The urge to sleep is an Event catalyzed by metabolism. The Will of Rest changes its state and becomes hypertonic.

Sleep is a special Activity which doesn't require Capacity or Belief.

We are cut off from the Environment, it no longer influences the Wills state : functional Wills no longer change its states.

Memories which store the Wills state changes, Events and Environments are embedded (VI) then in the Autobiographical memory via the Cognitive Behavioral Cycle. Depending on the order of occurrence, the Internal and External Evaluation Systems discriminate and temporize the important memory fields which will be stored in Autobiographical memory.

The Cycle no longer reacts according to the Environment neither to Activities but only reacts according to memories.

Alternating with the engraving of the memory fields and as a consequence of the pouring out of the Wills memories into the Autobiographical memory, the Individuality / Ego is constituted only of Desires and Envy. Indeed, Autobiographical memory no longer communicates with ethics and imagination.

As Desire and Envy are linked to an anticipated acquisition, this link will motivate Self Projections which will catalyze the Cognitive Behavioral Cycle : these are the dreams.

There is no memory field for dreams, we don't usually remember them, except for the last one because the Autobiographical memory engrammage is finished ; the day doesn't start when you wake up but at the last dream of the sleep phase.

Quantum principles

Excerpt from an article from Science & Vie n ° 1234:

"Like particles that can be simultaneously in two quantum states , our brain would be in equilibrium at the time of choice, straddling two possibilities. Quantum cognition is supported by brain imaging experiments.

Its description at the cerebral level came in early 2020 : an international team led with brain imaging ... showed that the brain seems to work well as is. "Our study is the first to support the idea of quantum cognition at the neuronal level," said Xiaochu Zhang, head of this research.

They observed, for example, that the brain simultaneously activates several zones representing the alternatives, before the act of choice reduces the Activity, with a part of indeterminate that does not necessarily justify a preexisting hidden desire - which also explains the part of the irrational in human choices, that classical models fail to describe..."

The Cognitive Behavioral Construct can "stack" different cognitive states through the Cognitive Behavioral Cycle catalysts.

Indeed, Self Projections and Episodic recalls will catalyze the cycle defining the different possibilities. These cognitive probabilities will be superimposed until the triggering of a choice of Activity. This choice reduces the superposition to a single state of the cycle which catalyzes an Event which will be stored in the Autobiographical memory.

Autobiographical memory and quantum entanglement

"Quantum entanglement, is a phenomenon in which two particles (or groups of particles) form a linked system, and exhibit quantum states dependent on each other regardless of the distance between them."

[Quantum entanglement](#)- Wikipedia

For there to be superposition, the cycle must be triggered simultaneously according to the different catalysts. This implies an instantaneous communication of the memory fields to the different elements of the cycle : the alert, the functional Wills, Values, Ethics, Internal and External Evaluation Systems and the Episodic recall.

At this stage, the brain uses quantum superposition and entanglement at the same time. Is it possible ? In 2020, a Sino-American team proved by experience that it is possible to "marry" quantum superposition and entanglement.

[Ils intriquent un atome et une molécule, avec leurs états superposés !](#)

The Cognitive Behavioral Construct works according to quantum interoperability. The brain is able to simultaneously use quantum entanglement and superposition . The brain piles up all possible behaviors with a single memory that communicates simultaneously ; the behavior adopted will be that judged by our feelings the most advantageous ; it is a probabilistic choice - a Bayesian inference - Indeed, according to the factors predominance which constitute the quantum states and from the Environment observations , a probability is constructed of what causes the Event. The reduction of all quantum states to a single state determines the choice of Activity which results in the most beneficial event.

[Inférence bayésienne — Wikipédia](#)

3C is a model that can describe even irrational behavior, due to this quantum dimension.

Conclusion

Our behavior therefore does not escape the physical properties of the universe.

Stephen Hawking demonstrated that even black holes interact with their environment : there would be no exception to the fact that all systems in the universe interact with their environment.

This talk required the exploration of several areas, but it ultimately brings us back to our questioning of the introduction : How can we exercise our free will with such conditioning?

This recent contribution, May 2020, of quantum physics (the simultaneous use of quantum entanglement and superposition by our brain) is essential to attempt a response.

At the same time, we are taking up the theory, just as recent (end of 2018), of the flat mind : our thoughts are worked out on the moment, with great speed, by appealing to the Autobiographical memory, according to what it foresees. .

Then we take 3C with these different looks, and we are allowed to suggest that our brain is making its choice of behavior at every moment, every behavioral cycle, instantly comparing all the options and referring first to the feelings embedded in the Autobiographical memory. If many of the choices to be evaluated involve fears, limitations and other obstacles, the probability of choosing a behavior free of these Beliefs is obviously more limited.

Freedom therefore consists in knowing these processes in order to be able to act on them, that is to say to revisit our fears, our limiting Beliefs, our thought patterns and at the same time soothe our mind and our affects. And, as much as possible, taking care of our body through a healthy, balanced diet ; a little fresh air and exercise allows the brain to be able to function.

3C is easy to understand and easy to use, for ourselves of course, but also for helping other people.

3C can be used as a working basis to tackle all the behaviors of everyday life, from the most trivial to the most disturbing, from the most "normal" to the pathological...

There is still work to be done to decipher them all ! We are getting down to it, and we are putting our research here so that everyone can appropriate it and also get started ...

Legends

Cognitive Behavioral Construct Color Codes	
	Metabolic structure (I - II - III)
	Metabolic activity (I - II - VI)
	Emotional cognition (III - IV)
	Informational cognition (IV - V - VI - S.E.E)
	Identity cognition (III - IV - V)
	Affect - feeling (I - S.E.I - V - VI)
	Episodic memory (I - IV - V - VI)

Metabolic structure

The biological support of Vital Activities (**I - II - III**)

Metabolic activity

- Vital functions:
blood, heart, lungs, kidneys and digestive tract
- Metabolism :
Molecules are made and others are degraded. These chemical reactions allow the reproduction and growth of living beings. All of these biochemical reactions are called metabolism. (**VI**)
- Danger preservation behaviors : (see p.22)
Emotions (**I - II**)

Emotional cognition (see p.47)

Processing of emotions, social perception, attribution of false beliefs (**III - IV**)

Informational cognition (see p.48)

Memory, attention, processing speed.

Executive functions are required to perform Activities such as planning, organizing, strategizing, paying attention and remembering details, and managing time and space. (**IV - V**)

Identity cognition (see p.48)

Cognitive capacity that allows to represent the mental states of other individuals and to use these representations to explain or predict the behavior of others.

It can be applied to oneself (Postulates, Routines). **(III - IV - V)**

Affect - Feeling (see p.42, 45, 46)

An affect is a sensation, a feeling, a mood (commonly called depression, optimism, anxiety...). Any state of this type has a good or bad aspect (judgment) and thus influences us, motivates us. They also vary in intensity. Affects have an impact on our motivation to act or react, and therefore on our willingness to act. **(V - VI)**

Episodic memory (see p. 54)

Episodic memory embed characteristics that are important because they help to build an individual's personal history.

The memory fields of Episodic memory are necessarily autobiographical, since the Event is recalled from the perspective of the person to whom the memory belongs.

They are created automatically, no deliberate decision is needed to create a memory field even though it can be changed by reasoning, for example, repetition changes the amount and the quality of informations stored.

In addition, the existence of the memory field doesn't have a fixed duration and is potentially infinite. **(I - IV - V - VI)**