

How to Make Restricted Social Systems Self-Perpetual

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Abstract How to structured and organized small social systems in order to give them, the same time, homeostatic and autopoietic capabilities to be able to self-organizing, self-orienting, and self-surviving in a more or less hostile environment. What is to be self perpetual for a social system restricted.

Keyword: *autopoiesis, enaction, homeostasis, multi-agent systems, self-organization, self-orientation, artificial life, conscious, collective intentionality.*

I. INTRODUCTION

Self-perpetuation of a system is rooted in its homeostatic and autopoietic capacities. However, autopoietic systems are closed systems whose understanding and description are not easy to any non-member. Depicting them functioning no longer as self-organized systems but rather as composed of a set of separated concomitant processes, each requiring specific expertise, leads the implementation we selected. So, the scientist must articulate his speech describing the system activity and using the third person, with a speech describing his own experience that uses the first person. The following text exposes in a systemic way why and how self-perpetuation of a small social system can be developed and maintained by engineering homeostasis and autopoiesis.

II. RESTRICTED SOCIAL SYSTEMS

A. The birth certificate

Small social systems arise out of a period of gestation, whose length varies, and whose outcome can be summarized by a kind of birth certificate assessing the system's identity. This allows the system to have a "self" identified, an identity which makes them to be recognized in their environment. That birth certificate is a triptych: a founding text, virtues and values, rules. The founding text expresses the "why" of the system, that is to say, its origin, its project, its purpose, goals and methods to achieve them. In addition to the intentions of the creators, there are also the first statutes. Virtues and values are those that give each to its components the human qualities of individual and collective life, dignity and respect for oneself, each other and the environment. The rules, the Rule (with a great R as for a traditional order) expresses the "how to live" of the system, and the "how" to

work inside. It also establishes the relationship between the system and its components.

The Rule is a set of basic rules that, together, provide operational and functional processes and regulations (regulations, administrative and judicial). These processes are responsible for keeping the system organized and for ruling aspects of its everyday life.

B. A dynamic homeostatic

In a system where the interactions are irreducible, if no process acting in a heterogeneous manner, contrary to the activity of process acting homogeneously, the agents tend to gather themselves and to merge together into a single entity. The system loses its dynamic and dies through excess of homogeneity and negentropy. On the other hand, if no homogeneous process faces existing heterogeneous processes, dynamics of dispersal tend to pull apart the agents, to push them away and, even, exclude them: the system in the same way loses its dynamic nature and dies through excess of heterogeneity and entropy.

This steady state is said homeostatic if, after any internal or external disturbance, regardless of existing antagonist trends, it can reach back its equilibrium state. When a disturbance throws the center of the homeostatic system out of its area of sustainability, the system's evolution turns hieratic and the systems becomes the result of its environment's dynamics rather than its own [15].

C. A dynamic autopoietic

A system autopoietic, from the Greek "poien" (produce) and "auto" (self), produces itself its identity, "self" being understood in terms of individuality, autonomy, and self-organization and self-reference [25]. Francesco Varela has repeatedly stated that autopoietic dynamics exhibit three interrelated processes: (i) the first one is that which produces the components of the system. Instead of a new element, it is rather a relationship between the system and an element that was standing outside that is created: the topology of the system's organization, and therefore its physical boundaries, are modified through this process.

(ii) The second is that which produces relations of specification, thus determining the identity, properties and qualities of the constituents of the organization. This process contributes to the internal dynamics of the system. (iii) The third is that which produces the ordering relations. It determines the dynamics of autopoietic organization and consequently its structure. The order relations are responsible for the assembling and the synergistic operating of processes which produce relations of constitution, specification and of order. This process is recursive and reflexive [17].

D. From expertise to self-perpetuation

The implementation of the dynamics processes of homeostasis and of autopoiesis requires a specific expertise from the agents constituting the system. In a social system, the life of the elements being limited, ensure self-perpetuation requires that the system be able to integrate new members and lead them to the required level of expertise. To be autonomous the system must have in its midst the means to raise them up at the highest level of expertise and to maintain them there. If this expertise is, at the same time, the result the processes activity, the agents are able to transmit the expertise in question. Regarding homeostasis and autopoiesis, the system is reflexive and recursive. If the means to acquire le highest level of expertise are self-referring, the system is sovereign and able of self-perpetuation

Examples of small self-perpetuate social systems are to be found among those whose lifespan greatly exceeds the one of their founders. The most significant example seems to be that of the Masonic Lodges: thirty of them were created in France before the French Revolution, who has outlasted all of their founders through the troubled times of wars and changes of political regimes. A rich bibliographic material, free access to Masonic archives, direct contacts with Free masons, scientists and philosophers, having been part of the same Lodge for over than 40 years, allowed us to analyze the concept of the Masonic Lodge as a multi-agent system capable of producing itself in its within, the individual and collective expertise leading to homeostasis and autopoiesis, and by this way to self-perpetuation.

III. THE LODGE, A MULTI-AGENT SYSTEM AT WORK

A. A restricted social system

A lodge is a restricted social system that includes 20 to 60 persons (there are, of course, exceptions). The lodge is both in the world and out of the world. It is in the world because its members are elements of the world, it is out of the world because its activities are restricted to only agents that the

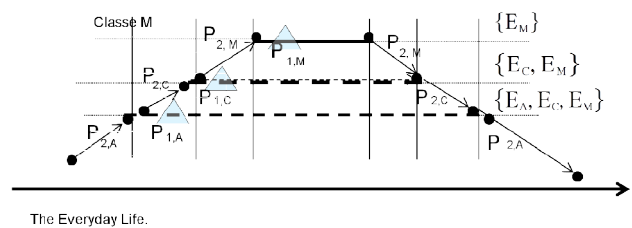
system decides to accept in its midst as a member or visitor-known member of another lodge.

Each lodge has its own work program that it determines itself. This program must be the way to apply the specific method of work, the one that, precisely, allows each member to progress by himself up in the expertise and whose we will talk about.

Expertise isn't able to be taught, it' not possible to form an expert: each one builds himself by him even through practices and experiences. Before becoming an expert, a Free Mason must learn and know the craft. Thus, there are three levels of activity, each following the other: (i) to learn and also to learn the method for learning, (ii) to learn to use the method to acquire knowledge and use the acquired knowledge as a specialist, (iii) to learn how to develop meta-knowledge for managing and optimizing the use of his knowledge and meta-knowledge. Only through the last of these steps is expertise being built. The real challenge for the lodge is to make available to its members a method and a suitable and efficient working environment in which he will be able to carry this evolution [9].

B. A three-tiers system

The lodge is therefore composed of three classes: E_A , E_C , E_M : A for Apprentice, C for Fellowcraft (standing for the French word *Compagnon*), M for Master. The lodge can open and close a working session on each of them. The working sessions fit together into each other: an M-level session can be opened only within a C-level session, which, in its turn, can be opened only within an A-level session. At level A, all agents are present; for cons, only E_C s and E_M s are allowed working on the C-level; and only E_M s are admitted to level M. When E_A s or E_C s are not allowed to work, they come out of the lodge.



C. Three processes to sustain the living dynamic

The work in the lodge is governed by three processes, P_1 , P_2 , and P_3 . Process P_1 introduces an agent from the outside world to the inside of the lodge and then, by following his progresses, makes him climb up the lodge's classes. P_1 ensures the operational closure of the A level and therefore of the lodge. At each level, P_2 is the process which

opens the working session and specifies the work for each class, and that, after their execution, closes the working session. At each level and in each class, the P_3 process ensures the maintenance of order and respect for the work method by monitoring and controlling the efficiency of processes P_1 , P_2 , P_3 . The P_3 process is therefore recursive and reflexive. So, what methodology for that these three processes ensure to the lodge, the homeostasis and autopoiesis capacities that lead to its auto-sustainability?

D. The working method

The working method requires us to consider the agents as bipolar, consisting in a "physical" pole and a "mind" one. Immersed in the consciousness, they will behave like two poles of sensory-motor type interacting within the agent as well as with its environment. The events of the mind are not similar in nature to physical events. Events that affect the world of the mind are neither observable nor measurable like are the events of the physical world.

The working method is directed both at the mind and physical poles of the agent; however, the mind pole shall not be here considered as a center of information processing, as it is in studies of cognitive sciences. We consider that the mind pole exists only in consciousness and as a lived experience.

E. Consciousness

Beyond the premise of the philosophical practice and without refusing to borrow from cognitive neuroscience, we here consider that, conceptually, consciousness is the faculty for the living being to seize and understand his inside world and his surrounding world. Consciousness emerges out of the constant interactive dynamics between neuronal activity, sensory-motor activity and the environment: consciousness totally depends on those interactions, in terms of energy and frequency, as much as it is essential for keeping both active [7]. In order to speak about consciousness, we shall to consider that it shows itself in the world and inside the human agent under three major aspects that we appoint as immediate consciousness, phenomenal consciousness, and reflective consciousness [2]. Self-awareness and moral conscience are only some aspects of reflective consciousness.

1) Immediate consciousness

Immediate consciousness reflects the continued presence of our "self" in the world (external and internal to our "self") with which it interacts. It potentiates all ephemeral and evolutionary information it receives from its sources in the dynamics of interactions it has with them. Current information is stored and superimposed on a synthesis of previous information modified. This information shall be

kept available for phenomenal consciousness in which they will actualize.

2) Phenomenal consciousness

Events that occur in phenomenal consciousness (and which allow to conceptualize it), are twofold. The first concerns the phenomena that emerge by congruence of data and that form a stable representation separate from the others because unique and seen as a whole. The second concerns the phenomena that emerge from the resonance of this representation with our intrinsic acquired (knowledge, skills, beliefs, values, virtues ...). The phenomena of this kind are superimposed and give subjective properties at the representation. In this manner our personal experience of the world is engraved in our consciousness, and as such may not be shared with anyone.

3) Reflexive consciousness

Reflexive consciousness refers to the ability of consciousness to take the phenomenal consciousness and pre-reflective as an object of consciousness. By this reversal of consciousness on itself we can objectify the world we have subjectivated. This allows an introspective feedback on our thoughts and behaviors, our experiences and our actions. Reflexive is saying of a moment of consciousness in which consciousness is fully aware of itself by it even, and pre-reflexive is saying of fully aware of itself in it even.

Reflexive consciousness encompasses all cognitive phenomena and all the objectified phenomena on which they exercise their talents. Cognition will not be considered here as a set of processes with inputs and outputs, but only as sets of interactions from where emerge the skills and talents that define them.

To perceive and act effectively we must have a pre-reflexive representation of our body in terms of image and body scheme. Critics and judgments in reflective awareness allow us to change the objective meaning of these representations and, therefore, the sense we have of the world (and one we want to give it) and of what we are (or that we want to be) as a living being, observer and actor in the world.

F. Intentionality

In our interactive approach, intentionality is not regarded as an act but such as the objective and subjective qualification of representations emerging in interactive resonance with our acquired.

Intentionality occurs in phenomenal consciousness through two complementary and simultaneous modality [24]. An interactive resonance with shared and shareable acquired (knowledge, beliefs, beliefs ...) concerning objects or concepts. An interactive resonance with personal and

private acquired such as values, virtues, skills, making the representation qualified and subjective.

In the first mode, on the representation as a result of personal experience, intentionality specifies aspects "what is like" making by so the representation objectivated and suitable to understanding, what allows to situate it as an object within a set of other objects that constitute our world representation. In the second mode, intentionality dynamically assigns to the representation, some subjectiving properties in terms of values, virtues and acquired knowledge from past experiences. This axiological intentionality stabilizes the retention of the representation or makes it evolving under the pressure of feelings, desires or frustrations [14], and of the respect of our personal objectives and more generally of our own sense of life [14]].

It is in and by this intentional change that the perception of a temporal object is possible (Querintentionalität) and that consciousness appears to itself (Längstintentionalität) [21]. For Husserl [11], retention is a modification of a previous state of the stream of consciousness, which means that the state of consciousness in which the object is registered, is preserved in the actual state of consciousness.

G. Subjectivity and development of self by self even.

Phenomenal consciousness, and in particular the pre-reflexive aspects of intentionality, can be experienced (under certain conditions and after some personal training) as an experience of consciousness by and in itself. This interior experience is not an awakening but well the living, direct and subjective, in and by our conscience of its own state of consciousness what privatizes the stream of experiences which feed it and have their source in the body (physical) and in the consciousness seen as perceptive organs. The "self" can be considered self manifestation in this inner conscious experience [21].

The body, movable and situate, is subjectively experienced as a set of means of action and perception. To perceive and act effectively we must have a pre-reflexive representation of our body in terms of image and body schema. Development of oneself by oneself involves consciousness both as being conscious of his own consciousness and of his own body, that is to say a self pre-reflexive manifestation of bodily sensations [24].

Relation between body and consciousness is not causal but interactive. The internal and subjective experience of intentionality in its two modes, affective and effective, engraves itself in both in conscious and body of in terms of knowledge retention thus constituting an ontological step of enaction [24][25].

H. The goals of the method

1) The purpose of the method

Purpose of the method brings the human being to awareness of what is the method, as well as what he can make of it for himself, in order to bring to the lodge and to the world. This method postulates (i) human is perfectible and (ii) that anyone can become aware of his own capacity for change and development. This method, that cannot be reduced to privileged instants or simple and elementary acts, involves all the actors in a personal and ontological way. [1].

2) The means of the method

The means of the method are the phenomenological reduction and enaction. We experience the world through a succession of sensory-motor living experiences which are springs of knowledge: our knowledge of the world doesn't come from the objective expression of a unilateral experience, but rather in the inscription of subjectivities in a consciousness that only retains the mark of a interactive and bilateral experience. An object exists only by and for a subject who makes a conscious experience of it. Knowledge is not an object in itself: it lies in action. This is the fundamental mainspring of enaction.

On each level of the lodge is proposed a specific corpus on which the method should be applied. At level A, the C_A corpus consists of rules (R_A), of the values and virtues (V_A), of explicit knowledge (S_A) and of objectives (O_A). On the C Level, the C_A corpus is enriched of the rules (R_C), of values and virtues (V_C), of explicit knowledge (S_C) and of goals (O_C). On the level M, the C_C corpus is enriched of the rules (R_M), of the values and virtues (V_M), of the explicit knowledge (S_M) and of the goals (O_M), which are neither more nor less than the recognition of an expert qualification.

$$C_A = \{ R_A, V_A, S_A, O_A \}$$

$$C_C = \{ C_A, R_C, V_C, S_C, O_C \}$$

$$C_M = \{ C_C, R_M, V_M, S_M, O_M \}$$

On each level, each agent is situated in a position such that he must be able to understand the meaning and purpose of rules that specify the environment, and to understand the qualities, the values and the virtues which must mark his actions and with which he has to become soaked in order that his actions be qualified and in order that the objectives proposed by this corpus can be reached.

3) The success of the method

The success of the method depends on two factors: personal involvement in the work that is requested to everyone, and the capacity of the lodge to trigger processes P_1, P_2, P_3 , and to keep them operational for the duration of the work session

IV. ENGINEERING OF THE METHOD

A. Process P_1 1) P_{1A} : to discover the method

a) Operational closure of the system

P_1 is the process that implements and realizes the co-optation of an agent in each class. It consists of three elementary processes available in written form named P_{1A} for co-optation of an agent into Class A, P_{1C} for giving him access to class C, P_{1M} that upgrades him into class M. At each level and for each agent, the process P_1 is "one-shot". The rules that compose P_1 , address simultaneously the behavior and the mind of the relevant agent. In each class, between the new and the elders co-opted, P_1 weaves membership relations (in the *autopoietic sense* of Varela) and gives to the new co-opted the means to be recognized by the elders. Thus are filtered the entries in each class and in the whole system. P_1 ensures the global closure of the system and its immunization. From this distancing emerges a "self" which must be understood, at the organization level, as the product of a separation with a non-self well identifiable [23].

Class A being peripheral to the system, between outside and inside, there is a radical change of the environment. Immersed, by P_{1A} , in an environment he discovers, and where everything is symbolic (space, time, objects, scenery), the agent is both in mind and behavior, without landmarks or references. Destabilized and disoriented he instinctively tends to seek all he has in him previously acquired in order to reorient himself and recover being in safety.

In class A, the stake is not both the acquisition of new knowledge than the method and the means to acquire them and by there even the possibility to improve himself by him even, in a way which leads to the expertise. The objectives of P_{1A} are to prevent these trends to become obstacles to the practice of the method, and more in order to appropriate the method. To do that, P_{1A} places the agent in specific situations allowing him to access a conscious state stable in purity and clearness to discover, understand and know the specificities and originality of the environment with a method specifically based on enaction and phenomenal reduction.

b) Knowledge as embodied experience

Knowings, as explicit knowledge are cognitive representations independent of conditions in which they have been established. Knowings are, and they are to be learned. They are everywhere; they are available on the media and internet where they are sharable. By cons, and it is the major idea of enaction proposed by Varela, knowledge is rooted in experience, and is inseparable of it. That which is enacted is directly referring: "Knowledge

does not pre-exist in one place or in a singular form, whenever it is enacted in particular situations" [25]

Knowledge is not to be considered as an intellectual act but as an embodied action resulting of the subject's experience. Thus, knowledge of the environment passes by the ability to fit into a dynamic interactive: getting to know is to accept and experience the immersion, the involvement, the interaction, and the risk of being affected, and transformed by any dynamic interaction with a "not-yet-known".

Cognition, as assert Varela [25] depends on the types of experience where body and mind are immersed and sensitized more through consciousness than by the five senses. Body (and the five senses) may be asleep while consciousness remains awake and, free of body disturbance, it can expand in sensitivity [16].

a) P_{1A} , bootstrap of enaction

Action is not separable from intention, or from desire, or from the impulses that give birth to it. Enaction cannot be dissociated from consciousness in which it finds its source and its goals; nor can it be dissociated from the awareness of the environment in which it is displayed, and from the consequences which will arrive. Enaction has to be understood as a set of chained interactions one end in the world the other in phenomenal consciousness. There they give birth to sensory-motor schemes as representations that reflexive consciousness stabilizes by giving sense, and as feelings which give emotions.

Awareness is turned on in a sensitive disposition only by a rupture. To solicit awareness for the environment perception it has to be created ruptures in this environment. To do that, like any traditional initiatory process, P_{1A} provokes a serial of environmental ruptures both material and paradigmatic. These ruptures are "initiatory ordeals", realistic enough to make to live situations out his usual equilibriums while keeping in a clear and attentive awareness. They imply his consciousness in sensory-motor experience and in a new way of being: to be in direct and free access with a world whose he is aware it has a sense, but that he ignores. The embodiment of knowledge so is favored and, in this way, P_1 process acts as the bootstrap of enaction.

b) P_{1A} , bootstrap of phenomenological reduction

To give enaction the best efficiency to elaborate pertinent knowledge in an unknown environment, P_{1A} implies also the new E_A in the practice of the phenomenal reduction. After having put in brackets the everyday world, P_{1A} imposes to each E_A to do the same rupture in his mind and behavior. P_{1A} imposes him to put in brackets all representations relative to his everyday world, that Finch

calls "human immanence", the world that each accepts to usually live.

Practicing such epoche allows discovering a true freedom of thinking, being and acting, and in a consciousness free to welcome intuition emergence, all his potential to create, innovate and imagine actions that may spring out from new knowledge, but as says G. Jean [12] "*You cannot learn to practice reducing, that to understand the reduction you must already have understood it, thus the reduction is always presupposes itself*", to what Bouveresse [3] adds "*Phenomenology as a practice, presupposes experience characteristics, who are to be made, but we cannot really learn to*". To overcome this difficulty, in most ruptures of "initiatory ordeals", P_{1A} imposes to each new E_A to reduce all that is relative to his everyday life in one phenomenal unit that he has to leave out of the lodge. "Leave metals out the door of the temple" is the symbolic precept that is explicitly given by P_{1A} . In this manner P_{1A} acts as the bootstrap of the phenomenological reduction and gives the possibility to come to the world without preconceptions and to experience in new states of consciousness [16] [20] favorable to enaction.

2) P_{1C} travelling for to interact with others

P_{1C} is not an initiate process like P_{1A} . It is a passage process; no rupture, no destabilization. For each new E_C , the environment of Class A was become increasingly familiar but nevertheless it was still limited, so in Class C, P_{1C} allows him to travel. For that, P_{1C} gives him the right to speak, a new corpus and the good tools to full experience of discovering a new environment and the others agents, E_C and E_M . P_{1C} teaches him that if the everyday world seems him to be already filled of objectivities in Class C he has to keep his consciousness free of all presuppositions and prejudgments on the world and on the others. He has to pursue the R.P. practice and the δ epoche procedure.

P_{1C} confirms to new E_C that he has discovered in class A: Knowledge is not a schematic acquired like the δ knowing δ , or the result of an intellectual and objective access to some data. P_{1C} precises explicitly that his work now is to build knowledge through the experiential life of the world. So, P_{1C} open the way to experience through interactions specified by language and empathy of which he was frustrated in class A. He has to pay his attention only on what emerges in his consciousness in a lucid and serene experience, carefully putting out of that he currently accepts.

That which is prime is neither the subject nor the object, neither the perception nor the action, but the dynamic interactive relationship in which object and subject build and specify mutually [22]. That is at stake is not a kind of unveiling of the world that would the fact of science or philosophy but, the experiential continuously lived of a permanent set of actions sensory-motor whose result is to

build the world. P_{1C} gives the opportunity to live in the same time, perceiving, creating and understanding the world, so that P_{1C} opens for the new E_C , the way to a new mode of access to existence allowing him to access a new mode of existence.

3) P_{1M} , be a rupture to reach a meta level

P_{1M} process, as P_{1A} , comes from the tradition. The agent is involved in a breakdown situation, more even, he becomes himself the rupture, that of one symbolic death. Death is part of our "knowings" or explicit knowledge. At one time or another, all, we have objectified death. Death is certainly the deepest objectivation that a human being can do during his life. As in ancestral tradition, P_{1M} implies the agent in his own death [20].

Even transposed into a world where everything is symbolic, but where any symbol is also a reality, experience of his own death, at the physical and emotional levels, allows to subjective it. Beyond this rupture, just as the symbolic birth that follows, P_{1M} provides access to a level of consciousness where subjectivities can be objectified.

The two objectified representations (before and after experience), are different and not situated at the same level. The second one is situated at a meta level compared to that P_{1M} allows to discover. P_{1M} is the process that, by subjectivities, opens the conscious awareness on how to move from knowledge to meta-knowledge. By this enacted experience, an event is subjectified and becomes an embodied meta knowledge [23].

B. Process P_2 : implementation of the method

In each class, P_2 opens the work session by specifying the environment, and the method at the required level. P_2 gives also the corpus to which this method applies. In this environment, it keeps operational efficiency of P_1 , P_2 , and P_3 : P_2 is reflexive and recursive. By specifying the environment, the working method and the corpus on which it applies, P_2 specifies the members of the lodge and of their interrelationships that are enriched.

1) P_{2A} : I am a conscious and enclose a whole world

P_{2A} guides and incites the E_A first to engage in a work of intimate introspection. It is the "know thyself" of Socrates, which places the subject in the position of an object of its own reflexive consciousness. From this process emerge representations of internal world which are generally dissatisfying, due to the gap that exists between i) the interiority determined, fixed, limited and independent of experience, and ii) the intuition of the opportunity of perfection and the potential of the experience of oneself by one even. But this gap gives motivation and will to apply the working method to progress in knowledge and more all the aspects of mind and behavior.

With P_{2A} , all begins by this major message which comes from tradition: carve your stone. Carving his stone is to live sensory-motor actions as a prototype experience in terms of quality and quantity, in terms of will, determination and precision. The stake is not the stone, the chisel or the mallet, which are artifacts. These words are used to keep out of philosophic and scientific references and place myself in the epoche. The true stake is to take consciousness of the method and discover there is no perception without action and vice versa. There is no passive perception; every act of perception is a cognitive act [22]. The stone is an artifact both for the internal world and the external world. Like the stone under the action of the chisel and the mallet, in circular interactions coupled the world and the "stone carver" change simultaneously. Perception of the world is not a causal relationship between world and representation that we have of it, but rather in a complex interactive interface. Sensory-motor structure, which emerges from the action, specifies both the world and the subject [22]

Having neither the possibility to speak or to move, E_A are compelled in their mind and behavioral to an attitude of active listening of self. Nevertheless, immersed in a lodge peopled of interactive others agents the E_A are attentive to the topics discussed and how others contribute to the debate. P_{2A} lead the E_A to listen to hear, to hear for to perceive what mean their words, deeds and behaviors, and more, what they are wearers of intentionality. Taking conscious he cannot act on the outside world, that he only can that to perceive, each E_A , gradually and in the same time that he lives his inside world, he listen the others and the outside world without judgment, without criticism and without projection. His reflexive consciousness sensitive to the emergence of phenomena he becomes conscious that the outside world is inside him. He becomes also conscious that by introspection and intro-actions he builds it by himself making evolve representations and, because he is the only owner, correcting them according to his criticism, his discernment and his judgments in coherence with values and virtues of the corpus. Experiencing in himself feedback of the external world and simultaneously introspection of the internal world he becomes conscious of δI am a consciousness and enclose a whole worldö. He must then feel and understand the equilibriums of the environment, how he disturbs them, and how to come into their harmonies. The E_M are there to help him and that's the same mission of one of them.

By living such experiences, the Apprentice E_A is led by P_{2A} , to move from the implicit of the phenomenal consciousness, to the explicit of the reflective consciousness. This awareness is imperative prior to boot and then to establish and maintain a progressive development of knowledge on the mode of phenomenological reduction and enaction.

2) P_{2C} : *I am a conscious, the world is surrounding me*

So, in Class C the method focuses on the relationship to the other in its inter subjective aspects. P_{2C} gives access to an epistemic community sharing a specific corpus, where the work is both individual and collaborative, and in which each member is in travel respecting the rules of the process. Each new E_C has to shift from passive listening lived in Class A to a proactive listening, with emphatic postures qualifying behavior and mind levels both.

Travel means possibilities to interact with the other, to live the confrontation in consciousness, discovering his importance for me and, conversely and simultaneously, what importance myself has for him. Awareness of the perception that others have of me allows me to see myself "like from outside" and send me back to the limits of my personal knowledge. The other becomes for me a mirror and I discover his intents such like a mine of opportunities and affordances.

In these interactions lived in my subjective experience, my self-perception and the perception of the world merge in my phenomenal consciousness. I have learn to build the world such as my personal world, I am experiencing learning to learn in the practice of enaction, I am learning also how specify or not my actions with values and virtues by the combined practices of PR and intentionality. Enaction and P.R. become my tools to build by myself, my myself, my world and my life in consciousness of a world surrounding me.

3) *Collective intentionality*

In the interactions with others, implicitly or explicitly, each one puts the best of him even in intentionality according to the triptych of fundamental ethical values of the C corpus (altruism, solidarity, fraternity, prudence, justice, equity...). Virtues and values implicitly shared in the interactions are transmitted from one to the other, and they become for the community a collective intentionality stabilized in modality by the rules of P_{2C} during the working session. So, through these permanent interactions a collective intentionality is built, stored and continuously enriched as a dynamic and collective memory. This memory is therefore rich of the intentionality of the founders and of those who succeeded them [14]. The collective intentionality is a memory that brings together the living and the dead, a memory that is explicit and obvious in the funeral rituals ceremonies. The collective intentionality is also a memory of the specific epistemic culture of the lodge and of a much more universal tradition.

The first sign of emergence of collective intentionality is the use of the pronoun "we" to talk about the work done in the community. A "we" that is not a simple assembly of

multiple "I" but which reveals itself as a whole which cannot be reduced to its parts. This collective intentionality is only accessible to agents properly prepared and engaged in the practice of the method. The work in the lodge, executed on the basis of the corpus and the practice of the method, by the interactions and discussions, leads to sharing individual experiences. Thus, the collective intentionality is shared, enriched and transmitted as a system of relationships, of values and virtues, of enacted knowledge. Here is the source of individual and collective ontological project that motivates commitment in the working method. Thus is stabilized the epistemic community of the Fellowcrafts (E_C).

4) P_{2M} , to built himself in expertise

In Class M, all the members are E_M agents. All are at the same level, with the same rights and duties: the right to speak (but still only once on the same subject), the right to vote and the right and duty to hold a chair of experts in the "College" which is the direction structure. Each E_M continues to progress in the elaboration of enacted knowledge and enacted meta knowledge. He must engage in the life of the lodge by inscribing his personal work (corpus study and practice) in the collective work. He has to help, if necessary, E_A and E_C . He must contribute to maintain the equilibrium of the lodge and its homeostatic capabilities and commit in the implementation of processes P_1 and P_2 . This is the way to perfect his own expertise.

In class M, the new M_S are neither accompanied nor supported: they are expected by the ancients! They have to commit the duty to improve themselves, and to become experts at the level required to ensure sustainability for the lodge, that is to say for to maintain at the highest efficiency level, the method, the homeostasis and autopoiesis processes, and collective intentionality.

C. Process P_3

P_3 is not an explicitly written ritual, such as are P_1 and P_2 . The P_3 -process certainly is a set of rules but, as knowledge and meta knowledge, these rules are implicit and embodied. They are rich of values and virtues embodied by the lived of experiences, personal and collective.

Meta-knowledge are not acquired a priori. They cannot be didactic teaching. They are personal and intimate. They are built by each self - even in the rigorous practice of the phenomenological reduction, in the awareness of the collective intentionality, and in the awareness of the sense and the practice of meta-knowledge for to elaborate strategies and set in perspective. But there is no need to "meta meta knowledge" to treat meta-knowledge.

Processes P_1 and P_2 are efficient only if the P_3 is itself efficient, and P_3 cannot be efficient that if P_1 and P_2 are efficient. The set is recursive and reflexive. This is the

fundamental requirement of autopoiesis that say the importance of P_3 in the auto-perpetuation of the lodge. The dynamics of P_3 is implemented and maintained by meta knowledge of P_1 and P_2 which must be, themselves, managed by the meta knowledge of P_3 . It is important to note here that if P_3 interacts with P_2 and P_1 , P_3 is not of the same nature and acts from a meta plan.

V. ÆMIDDLE CHAMBERÆ AND SELF-PERPETUATION

The main objective of the lodge is to perpetuate the method, and for that to perpetuate the lodge itself, that is to say the ÆselfÆ of the lodge as does a living system. The "self" of the lodge must be protected and maintained perpetually efficient. This can only be made that at the center of the epistemic community of masters: the "Middle Chamber".

In the "Middle Chamber", the masters live the lodge and watch it living. In their conscience, they see, at the same time, inside and outside the lodge. They are between them, with equal rights and equal duties. They have nothing to ask anyone from outside. This is only in the "Middle Chamber" they take all resolutions and decisions concerning the life of the lodge, and they are the only one, at to be authorized to implement their decisions. They report to nobody but to themselves, "in their soul and conscious".

The "middle room" is the consciousness, the heart (mind-cognitive) and the motor (enaction-behavior) of the machine that works like an order with a founder text, values, and rules.

A. A generic sstructure

The lodge works on the basis of a generic pattern, stable and unchanged for centuries, which allows it to access to self-perpetuation. This generic pattern is called a "College". The College of the Lodge is composed of ten officers. By group of three they manage all aspects of the life of the lodge.

Those are:

- Direction and supervision of works: the President and two Vice Presidents;
- Resource management: the President and two officers;
- Maintaining and monitoring active processes: the President and two officers;
- Memory and collective intentionality: the President and two officers; (secretary-archivist, and Law Keeper)
- Operational closure during the course of work: the President and two officers, one of these is named ÆKeeper of the GateÆ.

The President articulates the functions between them. He is the center of everything. He must have the expertise and the confidence of all. College members are elected each

year from among the Masters the most experts, proof of the self organization of the lodge. To access to self-perpetuation, the college gathers all the actions which are to be implemented to implement homeostasis and autopoiesis. [13].

B. A living *ōselfö* to protect and perpetuate

P_3 convenes their meta-knowledge personal and collective, in order for to elaborate resolutions and decisions.

1) Resolutions and decisions

Resolutions are aimed at maintaining order in the ethical values consistent to the founder texts. They also aim to maintain, at the highest level of efficiency, the method of work and the processes which implement it.

Decisions concern the annual reorganization of the College, the annual theme work, the meaning and direction to give to this work, and for each level, allocation of subjects to be treated by each to progress in the enactive practice of the method. These decisions concerns the co-option of outsiders agents and the passages from one class to another, and, if it is necessary, the launch of the internal process of justice for failure to comply with the order. These self-referential decisions are the true expression of the autonomy of the lodge, its sovereignty and its ability of self-orientation.

2) Commitments

The decisions having been elaborated and voted, they must have then to be applied. This is done by the Masters E_M of the "College" who are elected in function to their expertise. At each level, P_1 asked them to commit. In the *ōMiddle Chamber*, they have to commit. These commitments must conform to the oath, taken at each level, with respect to one self. This oath is the duty for everyone to get involved, with honor and will, in working in the best manner and contributing to the establishment of the better working conditions for each and all, and this in compliance with the founder texts, the virtues and values, and the rules of the triptych. These commitments have the only objective to awareness of responsibilities facing one self and the others, what that impose to be the most exemplary [27].

It has to be noted that when the president completed his term he becomes *ōKeeper of the Gateö* and passes of the most complex functions to the simplest, as an exemplar manifestation of humility.

C. Equilibrium to protect and perpetuate

The lodge is an equilibrium system which is living as an order. These equilibriums and this order may be disturbed from inside or from outside. To maintain and perpetuate

them, two type of actions: the one which concerns homeostasis and the one which concerns autopoiesis.

1) To lock homeostasis

The lodge is an equilibrium system that any new co-opted (at each level) comes to disturb. The second vice-president is responsible for raising awareness of the new apprentices of the harmonies and equilibriums that are maintained by the life of the lodge, which make its "self" and its identity. It must guide them in their development so they become actors of it when they will be Fellow, and responsible when they will be masters. The first president continues this work by guiding each "Fellow Craft" in his travels that are major disturbances. So, the lodge has, and gives itself, the means to conserve and sustain its life balances, its "self" and its identity, by the awareness and development of each individual, in any class where he is working and by the commitment of the two vice presidents, maintained efficient, at best level, by P_3 .

The Law Keeper is responsible for enforcing the order and the rules of functioning. It can make a recall to order or can propose the implementation of the disciplinary proceedings and judicial, specific and internal to the lodge.

The lodge has, and gives itself, the means to restore balance at the price of consensual reconciliations and sometimes of exclusion. Thus homeostasis is ensured by the respect of the method, and the maintenance of order. Homeostasis is maintained, and locked, as long as the duties are performed by experts, that is to say, as long as P_3 is implemented to its highest level.

2) To lock autopoiesis

The limited social system "Masonic" cannot work, effectively, only with written texts, that are to say without P_3 . P_1 and P_2 are efficient only if P_3 is itself efficient, and P_3 cannot be efficient if P_1 and P_2 are not themselves efficient. The lodge is a set recursive and reflexive. Its dynamics is implemented, and maintained, by the expertise of officers, each in his place and in his duty.

The only way to lock autopoiesis is to maintain at the highest level the practice of the method to have Masters embodied of virtues, values, and all the qualities supported by the corpus at each level. This is the only guaranty to have also ethics minds and behaviors in the lodge. That allows P_3 to control efficiently the processes P_1 and P_2 and P_3 itself.

3) Reprocreation by swarming

To keep the efficiency of all the processes activated the Masonic lodge must stay a small system. So, when a lodge estimate to be too crowded and no longer being able easily to maintain its equilibriums, it can replicate itself by swarming. The founders of the new lodge are to be only Masters who have to have the knowledge and the meta

knowledge, at the level required by the exigencies of autopoiesis and the homeostasis. The self-reproduction is not a scission from the "middle room", it is the fact of a new epistemic community whose project is to create a new Lodge with a new birth certificate.

VI. CONCLUSION

Masonic Lodges are examples of small self-perpetuating social system, as is evidenced by the steady functioning of number lodges that have been continuously operating in France for 250 years.

Interactions between processes involve elements of different natures, such as the mind and behavioral aspects that in addition may not belong to the same person. While P_1 and P_2 are explicit processes, the P_3 -process is implicit. As developed by S. Lupasco, everything lies in interactions and forces, as upheld by the logic of Empedocles (in opposition to Aristotelian logic).

The implementation of these three processes is only to be driven by experts that the lodge has formed with its specific working method. This method a priori assumes that every man is perfectible and strives giving to each the means to improve himself. Their expertise will be necessary for to implement the processes and maintain them at the highest level of effectiveness.

This method based on enaction and phenomenal reduction holds the means to transmit itself, through passages from explicit knowledge to implicit knowledge managed at a meta level.

To be implemented, this method requires three hermetically separated levels, each one being an operational closure. The most important is that this method addresses on intellect and cognition only through consciousness which encompasses them, what opens to new dimensions for enaction to acquire knowledge, expert knowledge and meta knowledge giving to the social group self perpetual capacities.

This analysis has led to computer work, directed towards implementing, methods and tools for developing the study of artificial life, particularly the homeostatic and autopoietic aspects.

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