

From information metabolism to Competitive Intelligence

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Abstract : In this work, the author revisits the concept of the metabolism of information developed by Timothy Powell and explores how the psychoanalytic theories of Antoni Kepinski, Carl Jung, Gilbert Simondon and the epigenetics described by Joel de Rosnay allow to better understand the role of the information function in an economic intelligence system. It develops the fact that the "information function" if it is endogenous will act both on the men and women actors of the development of the organization, but also on the organization itself, favoring the passage of the old archetypes to new archetypes and thus allowing the organization to make a transfer

Keywords: competitive intelligence, metabolism, information function, individuation, epigenetics, archetype, mutation

The concept of a living being's metabolism of food compared to the metabolism of information in an institution was first described by Timothy Powell in 1995 (Powell 1995). Since then, the environment of the "information function" has changed considerably. This change is of two kinds:

- on the one hand, the technological advances that are currently causing profound changes in this area
- The emergence of new governance systems, supported by methods and tools, such as Competitive Intelligence

In this context, it is interesting to revisit the concept of information metabolism by taking into account the latest advances in the field of biology and genetics, but also by referring to older works rooted in psychiatry.

1 - Timothy Powell's Information Metabolism

In the analogy between food metabolism and information metabolism, Timothy Powell presents the following comparison:

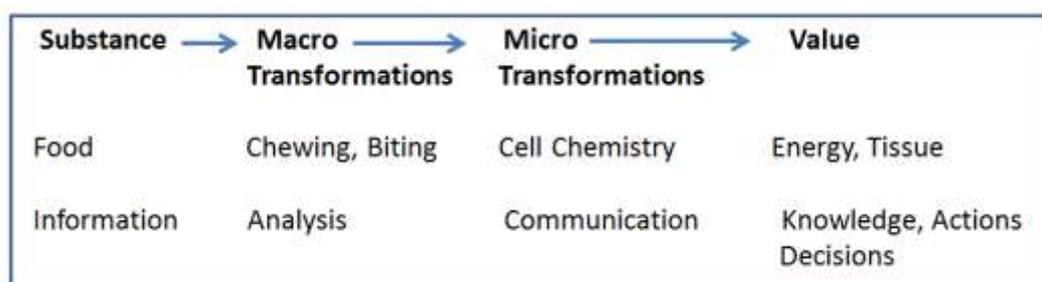


Figure 1 - Information metabolism according Timothy Powell

We thus find in this presentation the main stages of the information cycle as it is generally described in Competitive Intelligence. This analogy reveals two aspects that will be important in the following parts of this work: cellular chemistry as well as the decision and action aspect, resting in Competitive Intelligence on a "maturation" of strategic information by experts, therefore humans, followed by decision. Macro and Micro functions being analogous to anabolism and catabolism (Wikipedia 2018a). The information function to describe this process globally is not a mere recourse to documentation, but it involves complex processes, based inter alia on expertise, experience, a certain prehension of the world around us. It should also be noted, referring to the work of Timothy Powell, that this one in a short bibliography refers to works relating to the strategy (Toffler 1993, Tyson 1995) to the post-capitalist society (Drucker 1993), the value of information (Powell 1994, Peters 1992) but does not deal with information relations with biology and psyche.

2 - Let's deepen the concept

In a remarkable and sometimes disputed work, Kepinsky, in his book *Melancholy* (Gradzik 1975)¹, develops the concept of information metabolism at the cellular level. He develops a psychological theory of the interaction of living organisms with their environment based on the processing of information. (Bielecki 2015). He also considers that living beings are characterized by their capacity to increase and maintain their own negentropy (Wikipedia 2018b), which induces the notion of balance, in fact harmony in the sense of Chinese philosophy (Choukroune 2007), the intervention of the entropy of the system is also emphasized in the work of Germinie (Germinie 1993). But the living being, as Bielecki points out (Bielecki 2015) implies a number of conditions:

- "1 - reproduce and evolve
- 2 - are built of organic chemical components, based on organic chemical synthesis
- 3 - interact dynamically with the environment
- 4 - are open, dissipative structures significantly displaced from thermodynamic equilibrium
- 5 - electrical circuits on cellular and molecular level
- 6 - are hierarchical, open systems
- 7 - are self-organized systems
- 8 - are systems processing information, matter, and energy in a specific way"

We find in these 8 conditions a considerable analogy with the conditions that will influence the evolution of organizations (in the sense of companies, institutions, etc.) and which are largely taken into account in the process of Competitive Intelligence. These must evolve, interact with their environment. They can include hierarchical or open organizations and they can self-organize, such as institutions or autopoietic networks (Mingers 2002, Zeleny 2001, Zeleny 1992) that change according to the constraints of their environment. This analogy, which goes beyond that proposed by Timothy Powell, reinforces the comparison between living organisms and information which, in the sense of Kepinsky, includes the anabolic and catabolic processes (Diffen 2018). These processes are equivalent to the process of seeking strategic information and accumulating it, and then analyzing it to produce knowledge for action. This process can also, by analogy, be compared to the camel, the lion and the child (Weiskopf 2010), a step described by Nietzsche in the "thus spoke Zarathustra" (Dou 18, Nietzsche 2015).

3 - Organization and human beings

An organization, whatever it may be, consists of human beings whose sum of actions will constitute the movement of the institution, its way of being, of evolving. It is therefore important, always remaining in the analogy with the living and its psychological interactions to address individuation (Ortolang 2018). Various definitions are possible according to the field in which we will use this concept:

- 1 - General definition: Distinction of an individual from others of the same species or group, of the society of which he is a member, of existing as an individual
- 2 - Embryology: induction process which results in the constitution of complete organic structures
- 3 - Linguistics: process by which a group is characterized by another group thanks to constants of language activity
- 4 - Philosophy: realization of a general idea, of a type of species in an individual
- 5 - Psychoanalysis: process of becoming aware of the profound individuality described by C Jung (Ducretot 2018)

¹ Melancholia of Kepinski being accessible only in Polish, we use a reference describing all of the theory presented in his book

3.1 Individuation according to C. Jung

In the following, we will focus on the individuation process described by Jung for two main reasons:

- Jung, in his work of analysis, takes into account the collective unconscious which liberates in the individual a vital energy that Jung names archetypes, this by analogy with the impact of the lived, the history, both on individuals but also on organizations in the sense of enterprises and institutions.
- Because, the process of individuation in Jung can be amplified when the "balance" of the relationship between the non-human world (the environment, for example the Internet, connected objects, etc.) and the human world evolves erratically. Joining thus the notion of stability exposed previously. We thus find dysfunctions that "arise" in an organization that does not know or cannot control the "non-human" environment it faces.

In the process of individuation, "the individual identifies more with the orientations that come from the "Self" - vulgarly defined by the archetype of the Self, ie the totality of the individual personality - that with the behaviors, orientations and values that emanate from the surrounding social environment "(Neves 2011) It is also necessary to mention, but on another level, the work of John McGonagle who in a book entitled "A new Archetype for Competitive Intelligence" (McGonagle 1996) highlights the important role of information and its treatment in the evolution of organizations. But the "archetypal" meaning used in the title of the book cannot be compared to that of C. Jung. For the author, what he refers to as Archetype is the fact that organizations under the effect of the evolution of information technology, the nascent globalization (the book was published in 1996) must "mutate" that is to say, to go into a new state that is not necessarily desired, but imposed by the environment. The metaphor used by the author presents a dinosaur that with a small brain cannot control its whole body, however it is suggested (as for some organizations) to reduce its total volume to better control, without thinking that to make it more smart would be the best solution. The author presents in the book a set of "stimuli" all based on the treatment of various information, which will induce the company to change. Shadow benchmarking, factual management analysis, and other techniques based on the mathematical analysis of information can be noted as the central points around which change will develop, all of these stimuli being named by the author "cyber intelligence"

3.2 Individualization according Simondon

Simondon (France 18), while adhering to the analysis of C. Jung, differs however from this one in the fact that he considers that the external environment, and among others the technological environment, will play a more important role than Jung's in the process of individuation.

One can then consider individuation: "According to Simondon, the perspective is more philosophical, built on a principle of ontological basic analysis insofar as the internal processes between the self and the "I" can be applied to the connections between humans and technical objects, especially those with a high degree of complexity or concretization (see the new links with digital support) "as described by José Pinheiro Neves (Neves 2011)

To better illustrate this point let us take again the example cited by Neves (Neves 2011) which allows through the concept of individuation to better understand the post-modern society and its technical and social environment which characterize it. A patient is teaching at a private university, but he does not have a fixed employment contract and therefore cannot envision a clear and stable future. His wife is in the same situation. They do not have children. This unstable financial situation affects his relationship with his wife. Thus previously stable relations become tense in a system where flexible contract gradually replaces stability.

"In this context there is an epidemic that infects and affects the whole imagination, the spirit of the time ... The previous individuation based on a link between security and the regular and daily occupation of space and time (the material labor time of the Taylorian world) is gradually disappearing. In this context, the Internet and its decontextualized links and without face-to-face interaction, as in digital social networks, have a decisive role in the postmodern imagination and in the transformation of the notion of the individual of people " Neves points out, "there is an image with neoliberal capitalism and the emergence of post-modern society that acts as an epidemic that encompasses all of us and that can increase with the new chaotic and anomic forms of living life in the post-modern society "(Maffesoli 2000).

We find in this approach the "fears" generated by the uncertainty of employment, by the mutation of certain cities (smart cities) to the detriment of interstitial space, by "deserts" of all kinds affecting rural areas, etc. Taking into account the erasure of old archetypes is not without serious problems because modifying the archetypes in the processes of organizational change has not been studied in depth and seems difficult (Carr 2002). Indeed, Greenwood (Greenwood 93) points out that organizations are structured in terms of archetypes (considered as organizational templates) that are derived from their institutional practices, but that change that requires moving from an archetype to another is highly problematic. In the work of analyzing different case studies, Ploesser (Ploesser 09) distinguishes 4 types of archetypes to be introduced into organizations, according to external circumstances to prepare them for change. He defines the following archetypes: "elements of synergy, change of tendency, oscillation, incremental learning". In his conclusion he emphasizes the need to develop meta-models that would allow characterizing archetypes with different levels of abstraction: immediate, internal, external, in the environment.

4 - Le changement dans les organisations via la fonction information et une approche épigénétique

L'épigénétique (Berger 2009) est une science nouvelle qui connaît depuis une dizaine d'années un intérêt constant (Schübeler 2015). Elle a été popularisée entre autres par Joël de Rosnay dans son livre «La symphonie du vivant». (Rosnay 18). L'épigénétique met en évidence que nous ne sommes pas le seul produit de nos gènes, mais que nous possédons un réel pouvoir d'action sur ces derniers. En ce qui concerne ce travail nous nous bornerons à indiquer qu'une partie «non utilisée» de notre ADN peut être «motivée» pour induire des changements transmissibles et réversibles à la fois sur notre corps (la santé), mais aussi sur notre comportement mental. Comme le souligne Joël de Rosnay, la manière dont nous nous nourrissons, notre façon de pratiquer une activité physique, notre équilibre sentimental, familial sont des actions qui vont orienter notre santé, notre personnalité. C'est ainsi qu'une très grande activité de recherche s'est développée au niveau de l'utilisation de l'épigénétique pour agir sur un certain nombre de maladies entre autre non transmissibles (Farh 2015, Kim 2017). Ce qui est particulièrement important au niveau de l'épigénétique et de ses actions sur nous-mêmes, c'est que ces actions sont transmissibles, mais aussi réversibles, en ce sens, qu'un changement de comportement peut avoir des effets inverses et que la transmission (partielle) d'une génération à une autre n'est pas figée et que les «traits» transmis peuvent être perdus.

4 - Change in organizations via the information function and an epigenetic approach

Epigenetics (Berger 2009) is a new science that has enjoyed a steady interest over the past decade (Schübeler 2015). It was popularized among others by Joel de Rosnay in his book² "The Symphony of the Living". (Rosnay 18). Epigenetics shows that we are not the only product of our genes, but that we have real power over them. With regard to this work we will limit ourselves to indicating that an "unused" part of our DNA can be "motivated" to induce transmissible and reversible changes to the faith on our body (health), but also on our mental behavior. As Joël de Rosnay points out, the way we feed ourselves, the way we practice physical activity, our emotional and family balance are actions that will guide our health and our personality. Thus, a very large research activity has developed in the use of epigenetics to act on a certain number of diseases, among them non-communicable diseases (Farh 2015, Kim 2017). What is particularly important in terms of epigenetics and its actions on ourselves is that these actions are transmissible, but also reversible, in that a change in behavior can have opposite effects and that the (partial) transmission from one generation to another is not fixed and the transmitted "traits" can be lost.

But, we can go beyond biology and since "epigenetics acts on a system as complex as living organisms, can we not apply it to complex systems such as the society in which we live, work and act?" As Joël de Rosnay points out. This latter explains in the work cited above, how the principles of epigenetics can act on the DNA of our societies and change their expression. Among other things, it proposes to establish a relationship between epigenetics and epimemetics to induce changes at the level of society, businesses and all forms of human organization. Social networks guiding our behavior and creating "participatory citizen co-regulation".

This then leads us back to the subject of this work, the role of the "information function" within an organization and among others companies. Indeed, it is from this one that will be organized the creation of an actionable knowledge, from the analyzes and recommendations applied to the strategic objectives of the company. But in our opinion there are two ways to proceed. The first, which we think is the worst, is to acquire information in a totally external way (exogeneous), without us being able to intervene on its content, its coverage, the successive iterations during which one learns to better inform oneself, formulate, and create a serendipity that in many cases will create the difference. The second is what we call the endogenous information function, which creates a

² Le symphonie du vivant

climate of curiosity and astonishment that can permanently and endogenously reinforce decision-making. Of course, not all information can be available in the organization because of the very large variety of sources (first and second information sources), but if a constant effort is done by the entire institution to fill this gap, we will create the "critical memes" to favor its mutation. In addition, fed by a collective effort of access to information, analysis, the archetypes acquired during the past existence of the company will be modified, the world "non-human" that is to say stand for the company's interface with the outside world will become more understandable and will generate new behaviors. Indeed, the creation of an epigenetic dynamics in the organizations was underlined by the works of Gomez Uranga (Gomez 2014) within the framework of multinationals of the Internet. The meme, or cultural equivalent of the gene, is described as "an element of a culture (taken here in the sense of civilization) that can be considered as transmitted by non-genetic means, in particular by imitation" (Jouxte 2005). This is why access to information and its endogenous processing in a company or organization will create, in addition to the evolution of archetypes, habits transferable by imitation.

5 - Conclusion

In the context of this study, there was no question of going into the details of the relationship between the information function and its involvement in the behavioral changes of institutions and companies. Much remains to be done to understand how one could in terms of the theory of information metabolism, individuation and epigenetics, understand the drivers of change. However, these different orientations are starting to be the subject of research, still rare, but which underline the possibilities offered by such an approach. The information function, by its complexity and its direct relation with the strategy and the action is the "Gordian knot" of the Competitive Intelligence. Therefore, understanding the implication of this function in the evolution of organizations, among other things in the context of an ever faster technological evolution becomes an issue. We also wanted to emphasize that the traditional presentations of the information cycle or its usefulness in Competitive Intelligence were at least reductive and deserve a more in-depth analysis. Putting into play both the practices of the institution based on archetypes acquired throughout its history and the intervention of the personnel in charge of this function (we prefer to this reducing notion the collective Japanese way (Nonaka 2000) to address the problem by making all the actors of the company accountable for this function), it seems that the understanding of the sources of change involves the interaction between these two aspects, hence the use of psychology and psychology epigenetics. If, as Simondon points out, the individual is in constant tension because of the relationship between the "non-human and other technological world" and his deep-seated aspirations, change management must necessarily resort to in-depth analyzes and different methods of those conventionally applied today.

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