

Ontopsychology clinics: The pathogenetic process within organismic unity, with special reference to the coccygeal zone

Prof. Antonio Meneghetti¹, Dr. Marina Capasso (*editorial collaboration*)²

[**Abstract**] This article puts into perspective current evidence on how the four fundamental systems of the organism (central nervous system, visceral nervous system, endocrine system, and immune system) work, based on the logic of the psychosomatic process defined by the Ontopsychology School. In over ten years of clinical activity performed between 1971 and 1981, Meneghetti's *in vivo* direct and repeated experience, on human patients, constantly yielded results confirming, without exception, the pathogenesis model which we will present in these pages. This model, which was intuited more than forty years ago and has always been confirmed in practice, can be described more clearly in light of recent medical and scientific discoveries that, like the pieces of a puzzle, are slowly coming together to shape that image conceived originally by Ontopsychology. This article shows the cerebral-somatic course followed by the symptom and where, therefore, there is the possibility of intercepting it. In particular, the passage of the coccygeal zone, which interacts between the visceral nervous system and the immune system, in the constant of the central nervous system.

[**Key words**] ontopsychology ; coccygeal zone ; intentionality

INTRODUCTION

This article puts into perspective current evidence on how the four fundamental systems of the organism work, based on the logic of the psychosomatic process defined by the Ontopsychology School. In over ten years of clinical activity performed between 1971 and 1981, Meneghetti's *in vivo* direct and repeated experience, on human patients, constantly yielded results confirming, without exception, the pathogenesis model which we will present in these pages. This model, which was intuited more than forty years ago and has always been confirmed in practice, can be described more clearly in light of recent medical and scientific discoveries that, like the pieces of a puzzle, are slowly coming together to shape that image conceived originally by Ontopsychology. To

use a metaphor, suffice to think that back when it formalized its three key discoveries, Ontopsychology was in a position to communicate something new without there being the "words" to express those concepts. The progressive emergence of evidence in the scientific field is making it possible to build the path to a destination already seen and known by Ontopsychology's intuitions.

It should be specified that the psychosomatic process, as defined by the ontopsychological approach, is based on the specific characterization of the perceptive-cognitive process, which was made possible by the discovery of the ontic In-itself^[1] and the way it manifests itself through the biology of the body. In fact, as it regards it as a unitary process, the ontopsychological school divides perception into 3 "functional" phases,

¹ Honorary Chairman of the International Association of Ontopsychology (NGO with Special Consultative Status with the ECOSOC of the United Nations). Doctorate in Social Sciences and Doctorate in Philosophy (Pontifical University of Saint Thomas Aquinas, Rome); Doctorate in Theology (Pontifical Lateran University, Rome); Degree in Philosophy with a psychology major (Catholic University of the Sacred Heart, Milan); Honorary Degree in Physics (Pro Deo University, New York, 1994); Doktor Nauk in Psychology (Supreme Commission of Inter-academic Evaluation of the Russian Federation, 1998/4/27, protocol 0104).

² Surgeon.

Correspondence to Psicologica Editrice, Via San Sebastiano 130, Fiano Romano (RM), 00065, Italy

E-mail: books@psicoedit.com, Website: www.psicoedit.com

that is 3 different facets of a single information flow : exteroceptivity, proprioceptivity and egoceptivity. This marks a sharp departure from the descriptions provided in all the anatomy and physiology textbooks which , traditionally, classify sensorial processes on the basis of the type of receptor involved. Within the context of somatic sensitivity, tactile, pain and thermal processes have the best characterization ,also thanks to their ease of access in terms of scientific analysis. The most researched model is nociception ,which explains the activation of sensory receptors with the gate control theory , which is based on the interaction and mutual modulation existing between nociceptive and non-nociceptive nerve fibres. In other words we continue to remain at a descriptive structural level which shows a lack of understanding of the functional dynamic of such process . Thus, it is clear that certain terms utilized in ontopsychological clinics are taken from traditional science . However, these terms take on a completely different meaning, precisely because they signify parts of a different logic and vision. Words are inevitably linked to a certain mental architecture and if there is a change in the architecture, in the classification, in the framework, there is also a change in the meaning of the words .

More generally, all the terminology and the classification method within neuro-anatomy and neurophysiology set “a priori” limits to the possibility of grasping the information processing rationale specified by the ontopsychological school. Neurosciences are making it easier to study information processes on people in vivo , thanks to the use of markers which trace the path of biological information. There are countless data related to the pathways and connections of specific information (painful, tactile, thermal, pressure, etc.) on specific organs (e. g. the colon in the spastic colon) or functions (e. g. hunger and fullness, sleeping-waking) ; however, each such process is extrapolated from the biological information context. Thus, while the individual letters or words are seen, the sense of the biological dialogue as a whole is lost.

Thanks to the overarching ontopsychological approach, it is possible to overcome the fragmentariness and dispersion of current scientific research and to provide a holistic view of the pathogenetic process. A hier-

oglyph is not a mystery in itself, but it is mysterious to the extent that the wrong key is used to interpret it. Thus, every biological step constitutes a letter or a word of a broader discourse from which it cannot be extrapolated. To understand the meaning of the single word it is necessary first of all to understand the meaning of the entire reasoning, which can be grasped only in the intention of the speaker. This can be achieved, for the first time in the history of science, thanks to the ontopsychological school.

The concept of Self in Ontopsychology is very strong because it has been identified through specific phenomenologies. It is called ontic In-itself and is a project built in the molecular structure of our mind-body complex. It is the achieving and winning component of our personal individuation. It is also biological and it is the form that anticipates the architecture of the chemical compound in our DNA. This project is specified as ontic In-itself and is the individual's unity of action and evolution. Even though, in and of itself, it is immanent and transcendent, it is the unitary order of the four systems, the chemical order of our body and the order that selects the optimal choices of the individual in a given context and reflects the contemporaneity of the individual's right or wrong choice. In fact, it transcends its own sensory material phenomenology. Moreover, the ontic In-itself formalizes the relationships and contacts of elementary physical energy as it interacts with its own principle of determination, leveraging the undetermined environment to achieve its utilitarian purposes.

It is the first per itself from which and through which being individuates itself in existence as a person here and now, as a unique aecceic unity.

In simpler words, it is the basic principle that implements all physical and biological, emotional, instinctual, and rational spiritual (because it is transcendent) operations. It is born and belongs to the eternal dimension of being simple and universal. It constitutes the unfailing criterion (in fifty years of research and comparisons among individuals from different cultures, Ontopsychology has never found any error in the vectoriality or intentionality of that ontic In-itself that it identified and individuated). This

definitely applies to humans and, one surmises, it might apply to temporary social systems, though this latter aspect has not been verified.

METHODS

The connection within PNEI according to ontopsychologic clinic: the four systems in unity of action

Psychoneuroendocrinology (PNEI) originated from the study of somatic modifications associated with emotional processes and the identification of the relevant biological mediators; these are two crucial aspects in questioning the traditional medical and scientific model, founded on such cornerstones as:

- the separation of the nervous, endocrine and immune system;
- the hierarchical view of the relationship between the central nervous system and peripheral nervous system;
- the distinction between somatic or voluntary system (related to skeletal muscles, skin and articulations) and neurovegetative or autonomous system (because traditionally it was considered as “beyond” voluntary and conscious control, as with everything that is related to visceral life).

In 1981, R. Ader's *Psychoneuroimmunology* marks the birth of the homonymous discipline. According to certain authors, the constantly growing discoveries on another fundamental system for the human body - the connective system - drove the expansion of psychoneuroendocrinology to psychoneuroendocrinology (PNEI). The ontopsychological approach differs from this position in light of the centrality of the unity-of-action concept: the connection between organs exists before any fascicular connective structure, as it exists within a functional unity that, originally, mirrors the order of nature and which the individual is called upon to administer through the CNS - whether in accordance with such order of nature or not.

Ontopsychology's clinical approach has always been centred around the vision of the individual as a *unity-action*. From a biological standpoint, this means that all (molecular, cell, apparatus or system) information is interconnected and interdependent and it is nec-

essary to adopt an overarching view to understand the individual event or process. To understand pathogenesis from the point of view of Ontopsychology, reference should be made, within the medical context, to the concept of *intentionality*, which relates to the individual's psychic activity. Ontopsychology defines psychic intentionality as “the beam of organismic vectorialities”, a “phantom wave” that has to be explained through “non-visible, non-objectifiable causality, yet present in the constitution of events.”^[2]

Compared to what has been defined in the paradigm of Psychoneuroimmunology, the pioneer contribution of the ontopsychological approach makes it possible to take a further and final step: the identification of the specific connection that turns the multitude of biological events into a gestaltic whole. This connection is made by the project developed by the individual; thus, the key information is the individual's will. That is why studies conducted on animals, dead tissues or organs rule out from the beginning the possibility to see this connection acting *in vivo*.

In essence this means that the central nervous system, the neurovegetative, endocrine and immune system are only different data transmission systems whose control resides in the architecture, the individual's psychic planning. This is why our organism does not have a specific or exclusive organ that centralizes all the others: it is the individual's project that transmits functional unity to the different parts, which come together to achieve a single purpose. Neuropeptides^[3], the carriers of information within this interdependent network that is in reality a single global network, should be placed within this context. Thanks to the specificity of their receptors located throughout the organism, neuropeptides are the common language utilized by all the biological systems of the organism which, ultimately, structure the project designed by the individual's will and sent in execution by the central nervous system.

No organ or connection (for instance the hypothalamus or the brain-gut axis) can by itself be the final reference. It is the transmission/reception function that binds together the different functions, which then act in synergy to achieve the unity of action intended by the individual. It is the combination of organs in a particu-

lar place that are the centre of an information function , as long as all the perceptions of the organism relate to that locus , just like parliament passes laws as long as the people vote for it.

Redefinition of the peripheral nervous network : the priority of the Visceral Nervous System (VNS) and the dialogue with the Central Nervous System (CNS)

Awareness of the complexity of the peripheral nervous network revealed the need to redesign the borders of the nervous system and to modify the anatomic and physiologic concepts that have been prevalent to this date , such as the historical rigid contrast between the sympathetic and the parasympathetic nervous system and , most of all , the hierarchical dependence of the neurovegetative system on the central nervous system .

In the early 1990s , the existence of a third component of the vegetative system came to be known . This was the large nervous network contained in the walls of the enteric system (Auerbach's myoenteric plexus and Meissner's submucous plexus) , which is also known as "neurogastroenterologic brain" , "abdominal brain" or "enteric brain" . This network , with more than 100 million neurons , is in a bidirectional connection with the central brain through the fibres of the sympathetic and the parasympathetic nervous system but its working can be independent from these and the cranial brain . Moreover , this enteric nervous network has a widely spread endocrine system thanks to cells interspersed in the intestinal mucosa , as well as an immune system proper that takes on the shape of a large lymphatic network . The neuromediators that it uses are at least equal in number to those processed in the brain and a good part of them is the same ; in other words both brains use a common language . Thus , the " gut " is *a powerful integrated neuroendocrinoimmune complex , the only one in the entire body to perform functions in total autonomy* , in constant interaction between the external and the internal world . Even though traditional science regards it still as a "second" brain , this evidence confirms the original intuition of the Ontopsychology clinics , which placed the abdominal brain above the cranial one as early as the 1970s . Moreover , the

growing body of research on the sensory functions of the neurovegetative system made it possible to show that the vagus nerve is the most important efferent pathway of the body , as 90% of it is made up of ascending fibres which transmit sensory information from the intestine to the cranial brain^[4] .

The *neurogastroenterologic brain* is the first significant instrument of the organism's sensory knowledge , which only subsequently is reflected on the CNS . In fact , Ontopsychology defines the neurovegetative system as exteroceptive and proprioceptive process , identifying it with everything that is called visceral perception^[5] ; how the organism is impacted from the outside by emotions , how it receives and reprocesses them , thus whether it accepts or rejects them . In other words , the neurovegetative system is the first " knower " , the first informed and informer on the individual's daily impacts . This is in keeping also with the embryonic development of nervous structures : the visceral system represents the first nucleus of foetal perception . Eventually , this nucleus spawns the CNS - through a process of extension and extroversion - but it will remain throughout the individual's life a radar for the reception and transmission of information that impacts the individual .

All this happens and is true also if it is not part of our consciousness . The logic of individuals has simply lost the habit of paying attention to visceral life which - "irresponsibly" defined as *vegetative* and *unaware* - represents the first mover of perception processes and , therefore , of the possibility to acquire the type of knowledge which Ontopsychology calls *organismic* . However , the Ontopsychological school has given a new meaning to the term . In Ontopsychology , organismic indicates that unity between psyche and body that allows a unitary and full perception of self and which becomes a criterion for an exact and precise knowledge of reality . Goldstein , instead , talks about "organismic self-regulation" to indicate an ability of patients with head traumas to self-regulate , to compensate and to restore their balance . He made this self-regulation of living matter universal and made it the basis of a tendency to self-fulfilment .

Ontopsychology found that the neurogastroenterologic brain has preserved that integrity of nature and

ability to know reality that the cranial brain has lost, due to the distortions introduced by social and family stereotypes that have stabilized through habits that have become so ingrained as to become automatisms. In light of the above considerations, the neurovegetative system should be redefined and called Visceral Nervous System (VNS). The acronym VNS will be used throughout the remainder of this article.

Thus, the Ontopsychology school shed light on how the different systems of this complex PNEI network interact and what they communicate. The VNS informs the CNS about the selection performed on the basis of the individual's identity (in fact the 4 systems are linked with the unity of the person's basic project.); thus what is perceived by one's VNS is subsequently reflected on the CNS. Thus, as it is regarded as a cerebral organ, the CNS acts-within the central network organized around the hypothalamus, the limbic system and the cerebral cortex-as a mere processor, a coordinator of the data received through the exteroceptive and proprioceptive system, that is through the VNS's visceral perception. "The manners of any type of perception and metabolization, which takes place throughout the organism, are identified and processed and *once they are understood*-a meeting or clash reaction is triggered, depending on the interest of the entire organism."^[6]

Thus the CNS is the final coordinator and executes the project decided by the individual's psychic intentionality; the VNS complies with this order as, while the Ego thinks, the VNS acts through chemical reactions.

Interaction among the 4 systems with reference to the pathogenetic process from the ontopsychological standpoint

Ontopsychology discovered that the pathological factor is always the architecture of the individual's Self, whether consciously or unconsciously, though mostly unconsciously. This Self has been isolated only by the ontopsychological school which, by making it readable and identifiable, differentiated itself from Jung, Freud and most of all Groddeck. In fact, these authors never established inside the Self the difference between In-itself and deflection monitor^[7]. The ontopsychological school is the only one that makes it possible to isolate

and distinguish the different dynamics of the two principles, one of which is natural while the other is an artificial intruder.

According to Ontopsychology, the cause of the pathogenic process is always the same; the project of the individual's psychic activity and its multiple effects. The primary purpose of this project structures the disease in four different phases^[8]. Obviously the action of the single system cannot be identified inside the single phase; however, the functional aspects of specific anatomic and topographic aspects can be grasped as events take place. Their subdivision is mainly logical-rational. The key point is that shown by Ontopsychology: *systems are the effects of an identity*.

1) The individual sees the purpose (a vendetta, a fixation, a childish competition, any attitude contrary to the order of nature) and structures it emotionally. In this phase, the individual creates empathic resonance for the CNS (it doesn't matter whether the hypothalamus or the cortex is involved) through repetitive and obsessive thoughts.

2) As the CNS receives this information, the VNS is synchronized in a game of organic sympathy, with visceral changes that amplify and distribute the information.

3) Everything reverts to the CNS, to be fixed and stabilized in the limbic apparatus.

4) The processor that sends the information to the immune cells is activated. The immune cells, in turn, will fulfil the purpose in the selected organic locus; the immune system metabolizes the new order in the organ that, by memory or emotional resonance, is most sympathetic.

According to Ontopsychology, information is either "own" or "foreign", depending on the individual's elementary identity (selection of the VNS); however, the individual may choose (CNS's project) whether to approve this selection. Thus, all the mechanisms investigated so far in self-immune processes (neoplasia, chronic pathologies, rejection of transplants) are nothing but "weapons" that the mind uses when the individual makes plans against her/himself. The CNS is an operating system, a technical intelligence placed in the organism and which can have information different from that

available to the organism that contains such information. Thus, the CNS may select logical paths and self-defence systems completely foreign to itself. In other words, the CNS cannot see that the self-immune system is attacking its own organism; all it can see is that it is attacking a different, external entity.

On the basis of the definition of this pathogenetic model, Ontopsychology's clinical approach interprets the role of stress in light of the immunity and the neoplastic development. Contrary to research that considers the stress system the "crossroad" of all neuroendocrine circuits and the successive pathological effects, ontopsychological practice has shown that the symptom has another inductor, another manipulator, so that the stress aspect is not paramount; a tumour can occur in any case, whether there is stress or not. In a tumour information may proceed smoothly, without an emphasis that sets off alarms, thus without any notice, without touching the emotional in the organic. That is the reason why a tumour may appear suddenly -within the space of a week-and quite widespread too. On the other hand, when stress is present-for instance as an inflammatory process or a depression-it can manifest itself as a neurosis, but only as a temporary alteration of the function, not the organic. What counts, instead, is the molecular alteration and the tumour still develops from within. The patient's complaint is never related to the true cause. In fact, in principle, the patient introduces error in the process.

The passage of pathological information to the immune system (IS): the caudal-cranial progression

Ontopsychology regards the immune system as the safeguard of nature's project; thus, for all intents and purposes, the IS objectivizes the organic identity. To this date, the ontopsychological school is the only one that has defined a method to identify and isolate the individual's natural identity (the authentic self) and the movement of the psychic activity, thus that project that the CNS writes and which sets the pace for the other systems, including the immune system. How does the IS operate to bring to the fore the project designed by the CNS? Available research shows that the cells of the immune system can be activated by the substances released by the

nervous system, thus independently of the antigen^[9], through the specific synapses (neuroimmune junctions) among nervous fibres that innervate the lymphoid organs (thymus, bone marrow, spleen, lymph nodes, intestinal lymphoid tissue) and the immune cells.

In traditional science, only recently has the central role of self been given recognition; the focus shifts from the outside-dispelling the classical dogma whereby the immune response can be activated only by antigenic recognition in its defence function-to the inside. Thus, recognition of the external stimulus by the immune system would be possible only recognizing itself first, that is why certain scholars talk about the "immunologic ego".

The immune cell acts like a receiving/transmitting station, capable of receiving and sending signals from/to the nervous and endocrine system^[10]. Not only lymphocytes, macrophages and the other immune cells are equipped with the main neurotransmitters (acetylcholine, catecholamines) and neuropeptides (hypothalamic and hypophysis hormones, somatostatin, VIP, P substance, etc.) but they can also produce neurohormones and, more generally, substances that act on the nervous system (encephalin, endorphin, catecholamines, hypophysis hormones, etc.).

However, the synchronization of the IS with the CNS must take place during the immune cell's differentiation process, that is when it can be "upgraded" to a new software program before it moves into the lymphatic and blood circulation. Thus, the information must reach the progenitor cells of the white line present in the tissues of the bone marrow. Recent research showed precisely *the regulation of the hematopoietic system by the nervous system and the neuroendocrine systems*. In particular, it appears that catecholamines, together with melatonin, have a hitherto unsuspected influence on hematopoiesis, so that researchers define the phenomenon like the tip of an iceberg, where the iceberg is *a mechanism of hematopoietic regulation capable of transducing environmental information to the system originating blood cells*^[11].

Here it is necessary to make some topographic clarifications. As events take place, the ontopsychological pathogenetic process can be distinguished thanks to

a specific topography that follows pathological information, whose pivotal organs are in the cortex/hypothalamus complex (CNS), in the enteric brain (VNS). Where is located the pivot for the IS? The point where this can take place is a structure of approximately 2 mm located in front of the tip of the coccyx, which has the double sympathetic/parasympathetic innervation and which is known as *glomus coccygeum* or *Luschka gland*. It is worthy of note that in cats and mice this structure is located in the tail ventral face; also in humans this is in the corresponding area, if we consider the terminal thread of the spinal marrow-which is part of the cauda equina-like the remnant of a tail. The study that showed for the first time the possible hemato-poietic function and the immunomodulatory activity of this structure, exercised through the action of the fibres of the sympathetic system related to the coccygeal ganglion, was published as early as 2000^[12]. In particular, *the glomus coccygeum seems to be involved in lymphocyte differentiation* (further research will be devoted to the role of this “gland” within the sphere of sexuality, to study possible correlations between neuroimmunity regulation and sexual life). According to the ontopsychological model, this aspect constitutes *a visceral form of the immune system*. The peculiar location of this small body is related to an important biological regulation function. Located on the termination of the median sacral artery and the beginning of the median sacral vein-which can be considered the origin of the aorta and the lower hollow vein-the *glomus coccygeum*, otherwise known as paraganglion, is made up of cells grouped around a complex system of arteriovenous anastomoses and which are interpreted as smooth muscle elements, crossed by nervous fibres and surrounded by mast cells. Traditional anatomy textbooks consider the function of this structure similar to that of a chemoreceptor (like the carotid ganglion).

In the topography of the pathogenetic process, the information consolidated by the CNS (whether cortex or hypothalamus) is sent to the VNS; hence it moves along the fibres of the hypogastric plexus, which is related to the coccygeal complex, whose sympathetic fibres ultimately spread to the *glomus coccygeum*. It should be pointed out that the coccygeal plexus consists of a small

branch of the IV sacral nerve and the anterior branches of the V sacral nerve and the I coccygeal nerve, which all together form a small trunk around the lateral edge of the coccyx. This represents the terminal part, that is the pelvic section, of the sympathetic chain; the two right and left trunks right in front of the coccyx are joined in a small odd ganglion.

Once it starts the lymphocyte precursors present in the bone marrow, the information runs along the spine through the nervous trunks of the sympathetic nerve, until it reaches the central structure, thus completing the loop of the information process. It is worthy of note that the sympathetic nerve forms two chains of ganglions at the right and left paraspinal level, configuring an interconnected network of “small brains”, each of which responsible for managing the sensitivity and activity of the organ that it innervates. Overall, from a posterior standpoint, there are three nervous longitudinal “channels”: a central channel (spinal proper) and the two paraspinal channels of the sympathetic system.

To recapitulate (see fig. 1): the patient has an image that starts the pathology. There is an idea, a thought, which triggers the patient's emotions; the brain is used consciously, projects are reviewed repeatedly until the VNS is synchronized within the CNS. The VNS is then informed; it receives the news, gets worked up, magnifies and right away it intercepts and starts the coccyx and then the IS. The *glomus coccygeum* begins immediately if the consciousness of the Ego consolidates a certain idea or image. Tumor comes when the patient thinks about the same image over and over again. The pathogenetic process, which always summons the immune function, constitutes a continuum at the ends of which one can see the typically chronic forms of self-immunity, on one side, and the fulminating forms, such as the most aggressive neoplasms, on the other. The neoplastic process is chronic or fulminating, depending on the amount of energy invested by the subject in that project (that thought, that rage to kill, to do away with, to annihilate the person responsible-according to the patient-of his or her “ruin”) and on the extent to which emotions involve the biology of the body, whether consciously or unconsciously.

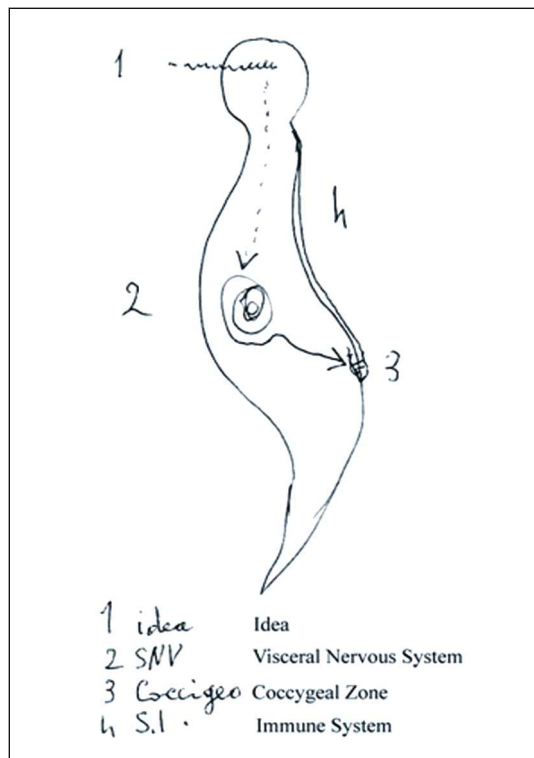


Figure 1 The sketch was drawn by Prof. Meneghetti during one of his lectures and subsequently included in this article to facilitate, through visual aid, the representation of the pathogenetic dynamic

At the macroscopic level, this path makes it possible to define two main and functionally distinct pathways through which the VNS retransmits to the CNS: there is not only the imposing system of the vagus nerve but also *the spinal sympathetic pathway that, in particular, should mediate this visceral aspect of the immune system in the pathogenetic process.* It should also be noted that while the glomus coccygeum is the lower end of the sympathetic system, the pineal gland is the upper end of the sympathetic system but are functionally related by the nervous pathways in the immune control via a special action on the lymphocytes. It is worthy of note that, contrary to what happens in the remaining sections, the pelvic fibres of the sympathetic system do not have a ganglion of their own, distinct from the sacral parasympathetic efferents, but converge into the same sacral spinal ganglion. The spinal efferents of the *sacral parasympathetic* “mixed” with the spinal efferents of the sympathetic sacral, which in fact insert themselves in the thick of the cauda equina, define the coc-

cyx as a specific receiving/transmitting functional unit between VNS and CNS within the pathogenetic process. Anatomy textbooks describe cauda equina as a structural peculiarity, which is taken into consideration in the presence of the syndrome characterized by a compression or a lesion of the nerve fibres that make it up. In fact, this “tail” arises for the oblique/vertical course of the lumbar (from second-third), sacral and coccygeal spinal nerves. As can be seen from the deficits resulting in case of lesion, this structure carries information related to sensitivity, thus to the activities reflected of the anorectal, urogenital area and the descending/sigma colon.

RESULTS

IS and DNA, self-immunity and neoplastic transformation: two sides of the same coin. The evidence from ontopsychologic clinics

The synchronization of the IS with the CNS implies the involvement of the DNA factor: there is an actual cell re-programming of the immune cell during the maturation and differentiation phase. The ontopsychologic pathogenetic process reiterates that *when the IS is triggered, we are faced with cell determinism of any form of DNA. DNA governs the control and defence of the unity of the individual's biological action and it is modulated solely on a project established in advance by the CNS*^[13].

The illness requires a project written in the DNA codes. According to Ontopsychology, DNA is a chemical compound which is a phenomenology of a psychic project and, as such, it should be regarded as a “plastic” and “malleable” structure in response to environmental information, and it is not as fixed as it is traditionally considered by scientists. Suffice to think, for instance, of the fact that inside the IS there is a natural, innate component and an adaptive, acquired component that takes shape in individuals as a result of interaction with the surrounding environment. This proves the existence of part of DNA that adapts itself and is characterized after the individual's birth, based on the individual's historical situation. This “adaptability” of the immune system and DNA is supported by evidence on the *immune tolerance* process, which has been found

not to be as rigidly defined as previously thought. Immune tolerance means the physiological state in which the immune system does not react destructively against the structures of its own organism or against introduced antigens. This state is achieved through different regulation mechanisms which act both in the development phase of the system and during every immune response, when the system is mature. In fact, today we know that thymic selection, which until recently was considered the only key process in the induction of tolerance, is actually part of other mechanisms, such as the bone marrow's selection of B lymphocytes and the thymus's production of special T lymphocytes.

The great initial "screening" by the immune system, which leads to the elimination of B and T lymphocytes potentially reactive against their own organism (self), is only the first step toward the construction of tolerance. This is a long process, which has also other favourite places, such as the mucosal system (MALT-Mucosal-Associated Lymphoreticular Tissue), which in turn consists of two main sections: NALT (Nasopharyngeal-Associated Lymphoreticular Tissue) and GALT (Gut-Associated Lymphoreticular Tissue). The entire mucosal system, from mouth to anus, is a single, big circuit of the immune system that manages the interface between external and internal environment, with a high selectivity, in line with the key role of the first enteric brain in metabolic selection and impact management. In addition, there are "stations" of the immune system fixed in every organ-tissue of the body governed by special cells: Langerhans cells at skin level, microglial cells in the nervous system, Kupfer's cells in the liver, M cells in the mucosa, etc.

Ultimately, also immune tolerance is a constantly changing process, which can be shaped by the subject's lifestyle, by his/her interaction with the environment, much as it happens with acquired or adaptive immunity.

In trying to understand the dynamic with which DNA is "shaped", an input comes from recent evidence originated by epigenetics. It is a well-known fact that the early experiences of the individual, which begin in the mother's uterus, leave marks on these systems which can last a lifetime, with all their functional and structural effects. Thus, it appears that in the

mother's uterus there might be a sort of *precocious programming* of the main physiological regulation systems of the organism, based on sophisticated epigenetic molecular mechanisms (changes in the state of methylation and/or acetylation of the genes for the receptors of the stress hormones)^[14,15]. Epigenetics might be able to provide rational instruments to open new vistas on genetic inheritance, which shift the focus from the genes to the behaviours that are capable of modulating gene expression.

Ontopsychology has always maintained that inheritance goes through psychic information within the family, responsible for that DNA factor that can foster disease, thus revisiting, from an original standpoint, Lamarck's evolutionary principles on the inheritance of acquired characteristics (soft inheritance). Today, epigenetics makes it possible to state that what is passed on from one generation to the other is the environmental programming of the gene's expression, that is the epigenome, linked to the methylation of DNA and, more generally, chromatin's variations of state. Ontopsychology has always linked the individual's neurophysiological activity with the cancerogenous process. And while information is acquired within the family, it is also understandable that one cannot expect to find the genetic structure related to the various types of neoplasm, as DNA can be specific to an individual and may even act creatively to achieve its purpose. The epigenesis of organs can change constantly.

The scientific intuitions set out in the ontopsychological model can explain what today appear as contradictions to the role of immunity in neoplastic transformation, for instance the failure of immunotherapy. We are still discussing about an external treatment, which cannot solve the problem of the psychic planning of neoplasia. To solve the problem it is necessary to erase, to pull the plug of the image that starts the pathology.

What today looks like the scientific challenge of the millennium—understanding the relationship among epigenetic changes, disease and possibility to return to a state of health^[16]—has been clear to Ontopsychology for the past forty years, thanks to clear evidence obtained from clinical practice always consistent with the psychosomatic model.

CONCLUSIONS

Currently, the “intelligent” dialogue among PNEI, neurogastroenterology and epigenetics is perhaps one of the most promising grounds for scientific research to reach a rational understanding of Ontopsychology’s intuition applied in successful clinical practice: how information-corresponding or not corresponding to the individual’s identity-can shape the biology of processes in a physiological or pathological sense. Over time, it will be possible to achieve an interdisciplinarity that, hopefully, can improve research so as to arrive at a more accurate description of energy and how it is activated in the organic field. To do that, it is necessary to draw upon the knowledge of the semantic field^[17], which gives the image of the organ and the process. In other words, the semantic field reveals to the analyst dealing with the patient: 1) the information driving the intentionality (process activity); 2) the organ involved; 3) and the reason. By sharing this information with the patient, the latter is in a position to cooperate (= fast and assured healing) or to resist change (terminal process)^[18]. *This is how the relations present in the transition between psychic intentionality and bodily matter acquire progressive visibility.*

CONFLICT OF INTEREST

The author does not have conflicts of interest related to this work. This study was unfunded.

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