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Body experience and identity

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The present supplement is the result of the project of Tomás Ortiz, María Inés López-Ibor and myself to publish a second edition of the book "El Cuerpo y la Corporalidad" ("Body and Corporality"), which written by Juan José López Ibor, my father, and myself appeared in 1974.[1] However, soon after undertakings the task we became aware that our efforts were leading us to a different aim, namely, a totally different book. Not in vain, forty years had gone by since the original publication, and therefore we decided to start anew, leaving "El Cuerpo y la Corporalidad", which undoubtedly preserves its freshness and originality, untouched and making the book more accessible in electronic format through the web of the Fundación Juan José López-Ibor.[2]

"El Cuerpo y la Corporalidad" was a successful publication, but nevertheless, we, the authors, never decided to make a second edition, even though there was a beautiful reprinting in Salamanca thanks to Ginés Llorca,[3] who always considered that it was an important text, especially in his work field, that is, psychooncology and in the psychological aspects of medicine in general. Meanwhile, Tomás Ortiz, María Inés and myself had engaged in delving into the subject of body experience in several chapters of the textbook "Lecciones de Psicología Médica"[4] ("Lessons of Medical Psychology") and in several lectures.

"El Cuerpo y la Corporalidad" collected on one hand several papers and lectures of Juan José López Ibor published or delivered along several years and a new text by myself. The latter was a result of an exam during a process of selection to become Chairman of Medical Psychology and Psychiatry which I went through that were summoned in 1972, were I had, among other tests to give a lecture on a free topic. I chose the subject "Body experience", after having considered others such as Perception guided by the idea of incorporating contributions of the phenomenology, especially of the masterly piece of Merleau-Ponty "The Phenomenology of Perception"[5] with contributions of the then emerging neuroscience. However, after some time, I realized realize that the task could not have a happy end. It has to be taken into account that fundamental aspects as the contributions of Zeki[6] and others did not begin to appear until many years later and the research on the nervous system were headed in other directions.

Forty years are many years and therefore this text has great differences compared to the previous one. The first and basic difference is the title. Right away, the original seemed to me inadequate because it would induce the perpetuation of a dualism that we have energetically fought against and that has already been interpreted in such a way that body and corporality are two different realities and not a view from two different perspectives. In fact, I often found myself replacing the word corporality for body experience. Another reason, is that the dichotomy of the title might give rise to the degradation of the body, leaving it at the level of an inanimate object, when not a corpse, when the idea was precisely the opposite.

The second and great difference is the research progress in the realm of neuroscience, which on the one hand substantiates concepts put forward by phenomenology, along many decades and on the other opens new ways of knowledge. In the study of body experience, of the human body, we find that nowadays philosophy and empirical research strikingly harmonize each other and that the clinical activity finds responses in neuroscience while serving as an incentive for new research.

The task that we undertook some months ago was not easy. On the one side we had in mind delving in the sources both of the most philosophical and the neurobiological aspects, going through the original publicatios, something which has not always been done and we encountered some surprises. As a consequence we increased the number of original quotes at the expense of increasing the number of pages. The reader will judge the goodness of our choices and mistakes and, more important, he or she may become motivated to engage in investigations that are essential for the knowledge of the human being in its totality, both in health and disease.

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Perception, experience and body identity

"Whatever is received is received according to the mode of the receiver."
Tomás de Aquino[1]

"You and I do not see things as they are. We see things as we are."
Herb Cohen[2]

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SUMMARY

The physician has to know the patient in the disease and not only the disease in the patient, from the dual perspective of the **body as object** and the **body as subject**. This also affects the patient who has to cope with the reality of **having a body** that bursts into the subject's consciousness as a vital threat, as source of discomfort and inability and **being a body** (Marcel).

The human body in its dual aspect has been and is a great unknown, if not a great outrage in spite of the fact that we are our body and our body is each of us. We sometimes do not feel as we are and thus a confrontation arises, sometimes more normal, others more morbid. This forces the physician to face complex ethics considerations and the scientist to accept a personal identity disorder.

Dualism considers that there are two substances in us, one that distinguishes us from other beings and from the rest of the individuals of the human species, the soul, the psychic life, mind or consciousness, and another more **insubstancial** one, the body. The aim of the first substance is to dominate the body, to survive it after death when it is, already a corpse is meant to become putrefied, is buried, incinerated or thrown to the depth of the sea. This dualism aims to explain the origin of the evil and the attitude to defeat it and it does so efficiently. This anthropology has very ancient roots (the Upvanishads, in the orphic texts, in Plato), it is the core of Gnostic thought and the foundation of the modern science since Descartes.

Some monist perspectives are a masked dualism or a mereologic fallacy, according to which, the brain is conscious, when that what is conscious is the subject, although the subject, with the brain could not be conscious. Therefore, a new perspective is proposed, chiasmatic or janicular monism, that considers the adaptive value of focusing on the reality from two perspectives, as physical universe and the world of interpersonal relationships.

In the agnosias and in the phantom limb there is a confrontation between the body object and the body subject that has made it possible to investigate how the perception of the own body is and how the brain generates the schema and the body image.

The study of the body experience, from the phenomenology and the anthropological psychiatry perspective, has made it possible to go greater in-depth into the knowledge of the alterations of the experience of the own body in different mental diseases, especially in those in which a confrontation between the body and the personal identity arises makes it necessary to consider the process of individual identification and a category of personal identity disorders that would include body dysmorphic disorder, erythrophobia, anorexia nervosa, body integrity identity as well as the gender-type disorders (transsexualism, non-fetishistic transvestism, gender identity disorder during childhood).

Key words:
Dualism, Monism, Agnosia, Phantom limb, Cenesthesia, Body schema, Body image, Body experience, Personal identity disorders, Body dysmorphic disorder, Anorexia nervosa, Personal integrity identity disorder

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PERCEPCIÓN, VIVENCIA E IDENTIDAD CORPORALES

El médico ha de conocer al enfermo en la enfermedad y no sólo a la enfermedad en el enfermo, desde la doble perspectiva del **cuerpo como objeto** y el **cuerpo como sujeto**. Esto también afecta al enfermo que ha de enfrentarse a la

realidad de **tener un cuerpo** que irrumpe en su conciencia como amenaza vital, como fuente de malestar y discapacidad y el **ser un cuerpo**. (Marcel).

El cuerpo humano en su doble vertiente ha sido y es un gran desconocido, cuando no un gran ultrajado a pesar del hecho somos nuestro cuerpo y nuestro cuerpo es cada uno de nosotros. A veces no nos sentimos como somos y surgen así confrontaciones, unas veces más normales, otras más morbosas, que obligan al clínico a consideraciones éticas complejas y al científico a aceptar una patología de la identidad personal.

El dualismo considera que hay en nosotros dos sustancias una que nos distingue de los demás seres y del resto de los individuos de la especie humana, el alma, vida psíquica, mente o conciencia, y otra más insustancial, el cuerpo. La primera está destinada a dominar a éste, a sobrevivirle tras la muerte cuando éste, ya cadáver destinado a la putrefacción, es sepultado, incinerado o arrojado a la profundidad del mar. Este dualismo pretende, explicar el origen del mal y la actitud para derrotarlo, y lo hace con eficacia. Esta antropología tiene raíces muy antiguas (los Upvanisvads, en los textos órficos, en Platón), es el núcleo del pensamiento gnóstico y la base de la ciencia moderna desde Descartes.

Algunas perspectivas monistas son un dualismo enmascarado o una falacia mereológica, según la cual, el cerebro es consciente, cuando el que es consciente es el sujeto, aunque sin su cerebro no podría serlo, y por eso se propone una nueva perspectiva, monismo quiasmótico o janicular que considera el valor adaptativo de enfocar la realidad desde dos perspectivas, como universo físico y mundo de relaciones interpersonales.

En las agnosias y en el miembro fantasma existe una confrontación entre el cuerpo objeto y el cuerpo sujeto que ha permitido investigar cómo es la percepción del propio cuerpo y cómo genera el cerebro el esquema y la imagen corporal.

El estudio de la vivencia corporal desde la perspectiva de la fenomenología y de la psiquiatría antropológica permite profundizar en el conocimiento de alteraciones de la experiencia del propio cuerpo en diferentes enfermedades mentales, en especial en aquellas en las que se presenta una confrontación entre cuerpo e identidad personal obliga a considerar el proceso de la identificación individual y una categoría de trastornos de la identidad personal en la que se incluirían el trastorno dismórfico corporal, la eritrofobia, la anorexia nerviosa, el trastorno de identidad de integridad corporal y los de naturaleza sexual (transexualismo, transvestismo no fetichista, trastorno de identidad sexual en la infancia).

Palabras clave:
Dualismo, Monismo, Agnosia, Miembro fantasma, Cenestesia, Esquema corporal, Imagen corporal, Vivencia corporal, Trastornos de la identidad personal, Trastorno dismórfico corporal, Anorexia nerviosa, Trastorno de la identidad de la integridad personal

FIRST PART: PERSPECTIVES ON THE HUMAN BODY

THE HUMAN BODY

The properties of the body can be described by considering different dimensions (conscious–unconscious, conceptual–non-conceptual, dynamic–static, innate–acquired, etc.). The use of these different dimendions have given rise to great terminological confusion.[3] In spite of this, we find useful to accept that all the dimensions and the aspects that have been considered actually belong to the body. Sometimes, an incomplete view is proposed, others a reductionism one and others a distorted view. However, there is always a real event underlying each of them. The challenge is to shape and harmonize the thousand of faces of the human body.

Ainsenson Kogan A.[4] considers the human body as "*an organizing center of the whole human experience*" and Marcel,[5] Merleau-Ponty[6] and Montagu[7] among others, have enumerated this characteristics of the human body:

1. The body is framework of behaviour, which allows each person to get new habits, outspread their own skills, capacities and abilities,[8] exert a control on the behaviour and impose a discipline.[9]
2. Self-interpretation, taking into account that the perception of the body differs according to culture, sex, gender, age, education, socio-political status, activity and context (the context is not the same as when one is sitting at a table of an office or when one is on the sand of a beach). The body is a carrier of symbols that characterize each culture.[10]
3. The symbol of existence and vehicle of the being in the world, which makes it ossible to interact with the surrounding world, and of being the ground for the verbal and non-verbal communication. According to Marías, my body is the way of being installed in the world, in the circumstance:[11]
   I do not know any other way of being either than corporeal; to be is to be corporeally.[12]
4. The pilar of the self-knowledge, of the fact of accepting oneself and liking oneself. The body is the core of one´s own personal identity[13] and that is why one dresses it, adorns it, disguises it and even transforms it through cosmetic surgery.[14] The human body is different from the rest of the animals or beings as it is more than just a simple structure or "fabric."[15] The human body is the person per se of each human being, the self-consciousness or in the words of Zubiri,[16] "*the live*

experience of doing, feeling, thinking and loving." The human body is the human being, and therefore, the human being is and lives only through his/her body, the human being is *installed*[17] in it.

5. The carrier of the signs that make it possible for us to capture and generate meanings. The body has a meaning build up of social, cultural and political experiences.[18, 19] Therefore, the image of the body shapes society, culture and politics and is a source of opportunities and expectations. [20] In other words, the body is also a social event.[21]

On the other hand, from his perspective as a neuroscientist, Ramachandran,[22] writes: "*we have a stable mental construct of a unitary corporeal self that endures in space an time at least until its eventual annihilation in death."*

But there is more, in post-modern societies, the human body has become an object of cult, of consumption, a commodity. This is the basis of the prevailing narcissism, which has been considered a reaction to the overwhelming replica of the technique in all the domains which forces the individual to look for alternatives to feelingsof oppression and asphyxia. Helas, very often the alternative is an appeal to the self-image, even if it is no more than a expansion on the surface of quiet waters.[23]

THE BODY AS OBJECT AND THE BODY AS SUBJECT

The interest regarding the study of the human body as a comprehensive personal experience is a relatively recent phenomenon[24] and that the first book entitled *"Le corps"* (The Body) was published in 1963.[25] However, anthropology teaches us that since ancient times the appearance of the body, its attires and ornaments, tattoos and make-ups, the way it is used to differentiate friends from foes, to establish a hierarchy among mates, the manner in which the small body of a newborn is received and integrated in the family and the social group and how the corpse is seen off after death, are the basis of every culture.

What indeed seems certain is that the interest for the body has grown during the last decades. That is fact usually attributed to a desire to be freed from cliches and servitudes, from penitential garnments and other discriminations and the aspiration of transforming the body into a tool that makes it possible to reach, defend and recover one´s own identity.

The body can be considered from very different perspectives (spatial, motor, visual, tactile, proprioceptive, emotional, semantic, etc.).[3] As far as we, the physicians are concerned, the study of the human body has been the axis of our professional activity ever since the art of healing has existed.

In medicine, the body can be studied in different ways. First of all, there is the **body as objective reality**, which is of interest to anatomy, physiology and to a great degree, the work of the physicians are interested in. The roots of the modern medicine are anatomical and consequently the main objective of the scientific medicine is to visualize the inmost of the human body. Until the 18th century, the fundamentals of the medical knowledge were the pathology of the humors. However, since then, the diseases have been linked to the organs,[26, 27] (e.g., the heart) and consequently, most of the medical specialties are assigned to them (e.g., cardiology). This is how the anatomic-clinical method began, with the purpose of deducing from the current symptoms and signs, the nature and location of the underlying medical conditions more and more with the help of complementary techniques that try to convert the invisible into visible. This can sometimes be achieved by dissecting, other times by means of autopsies and others by developing tools to make sights surpass their limits, tools whose name is constructed with the Greek desinence -*scopio* that is derived from σκοπέω (*scopeo*), `to look.´ The modern imaging techniques makes it possible to go one step more, which is to see the body in action. The body as objective reality is what Ortega y Gasset described as extracuerpo (outer-body), the body that can be measured, examined with equipment, operated under anesthesia (i.e. far away from consciousness) and even to turn it into donor or receptor of an organ in the event of a transplant.[28]

The **body as subject,** the personal experience of the body, the intracuerpo (inner-body), that is to say, the experience that the disease, and not only the disease, alters in different ways is of concern to the physician, and also the patient.

As in many other occasions, the study of the manifestations of the diseases allows the physician to go deeper into the knowledge of human nature. Throughout this book, more than once, we will observe how the physician starts from an advantage position over the philosophers and basic investigators of the neuroscience field.

BODY, CORPORALITY AND CORPOREALITY

There are two words in German, *Körper* and *Leib* that are translated into English as *body*, into Spanish as *cuerpo*, into French as *corps* and into Italian as *corpo.*

Körper is the anatomic body, the body as object. *Leib* is a word that is derived from the verb *leben* "to live." Thus, it is related to the living, animated body.

The words *Körper,cuerpo, corps and corpo* derive from the Latin *corpus* whose Indo-European origin is *kwrpes, which appears in Greek as καρπός (*karpós*) `fruit´, `skin´ (of a fruit) and in Sanskrit *garbkas* `embryon´.[29] The Latin *corpus*

designated the human figure, especially the trunk, the body of a person and also a collection of facts or things (e.g., *Corpus hippocraticum).* The Greek *karpós* referred to ´fruit´ or to ´shell´ (of a fruit) and also to wrist (from where carpal, metacarpal are derived) and perhaps part of the body in general. Carpel is derived from *karpós.* This is the female sex organ of the phanerogram plants that supports and protects the ovules and that in the angiosperms forms the ovary and its apical portion are extended, giving rise to the style and stigma.

The Indo-European krep-1, kr•p- `body´ `figure´ appears in some languages as `beauty´ and is present in Sanskrit *krp-* `form,´ `body,´ in the Avistan language *kerefsh* with the same sense, in old English (O.E.) *hrf* 'belly´ `low part of the abdomen´ and in the old high German (O.H.G.) *hrf* `belly,´ `uterus´ and even `diaphragm´ (which is in the centre of the body).[29] The proto-Indo-European *\*kwrpes,* is formed from the root *\*kwerp-* `body,´ `form,´ `appearance´ and at the same time from a verbal root that means to become visible.

Therefore, from the etymological perspective, the word Körper is the form and appearance of the living being, considering its bulkness (the body mass of a man, for example), as opposed to the face which is a communication vehicle and carrier of meanings. As we have mentioned above, the most likely is that there is an etymological bias by means of which the word body has incorporated, due to a Gnostic influence, the meaning of the Greek *karpós* `shell,´ in order to assimilate the image *soma* `body´ and *sême* `sepulcher´ through the metaphor of the skin, which is wrapping and prison.

Another word that concerns us is corpse that comes from the Latin *cadaver,* `fallen,´ `mortal´ and from the verb *cadere*, `to fall.´ In Spanish, it usually refers to the body of a person while its homonyms in other languages, for example in German, *Kadaver*, usually indicates the body of a dead animal. The translation from Spanish of the word corpse into German is *Leiche,* that is derived from the root proto-Indo-European lŒ¢ig-2, l–g- 'body,' `similar´ from which, among others, the German *gleich,* `similar´ is derived.[29]

The concept of a living body *(Leib)* as different from a body object (*Körper)* was introduced into phenomenology by Husserl[30] and almost simultaneously by Scheler.[31-33] Until then, in the Western thinking, the own body and therefore the body of the other human beings, were considered almost as an saidobject, as the body of animals or other beings of the external world. Confronted to the own body and to that of the others a body strange nature was attributed to the person per se. Phenomenology has made it possible to overcome a standpointthat delegated the body to a secondary place, and consequently, to the underlying somatophobia.

In 1974,[34] we inclined to, as did López Ibor, distinguish between **cuerpo** *(Körper),* body as objective reality and **corporalidad** (*corporality) (Leib)* as living, animated body.[35] The word corporality means body quality, in case of human beings, living body quality, and animated body quality.

In those times Marías[12, 35] introduced another neologism, **corporeidad** (corporeality). At that time, we did not make any distinction between the phenomenon and its experience. No sooner wasthe book "El Cuerpo y la Corporalidad" published than did we realize that such a distinction could induce to error, that of considering cuerpo (body) and corporality as two different entities, the corpse body and the daily corporality when that is not at all true. We have already seen how corpse in German is *Leiche* and therefore *Körper* and *Leib* are the same reality considered in two different ways, one *more* anatomy and physiology and the other *more* personal.

Therefore, the corporality in its old sense is not something added to the body, the German *Leib* is not the *Körper* plus life as the traditional vitalism considered. If this were not true, the own body would become an objective reality, although psychological, and consequently, a subject body would be added to the alleged body-object, which in reality would be a mere psychological object. This would only be a refined dualism, another fruit of a categorical mistake: the error in the interpretation of the class to which something belongs.[36] We will come back to this issue latter on.

THE BODY IN EVERYDAY MEDICAL PRACTICE

There is growing interest in recent decades on the study of the human body. Everything regarding the experience has acquired great importance in the field of social and human sciences in recent decades,[37] after having been underestimated and disbelieved for centuries, especially in the Western world. This *somatophobic* attitude is a consequence considering the body as an obstacle, perhaps the greatest one, for the development of the human being, of each one of us and of humanity in general, associated a unilateral and biased perspective in spite of being considered as rational, objectifying and scientific.

This perspective is not acceptable for medicine whose action space is precisely the human body, the *somatophilia*. The struggle of medicine in favor of health and against diseases and their consequences, suffering, disability and death and precisely define the characteristic and greatness of medicine its both in scientific-natural perspective, and it the personal doctor-patient relationship.

The human body is the object of most of the clinical interventions. Thus, the art of medicine consists in transferring the symptoms of the patients to an objective reality. It has been said that this endows the physician, with a privileged position granted by its scientific nature of his or her activity,[38] because this approach is objective, neutral and rightful. The approach of the patient is, on the contrary, subjective, distorted, biased and unreliable.

In clinical practice, the body is observed and studied as object with the traditional methods and techniques, that go beyond the mere dissection of the cadaver and which make it possible to visualize and represent all of its functions in an amazing way. On the other hand, the other, the personal body experience, is studied through language, evoking and analyzing the experience of the body (and sometimes the body of others) of the patient. The important contribution of psychopathology to the medical practice is precisely that of simultaneously approaching the objective study and the understanding of the verbal and non-verbal expression of the experiences of the patient, their epiphany.

Thus, everything concerning the realm of the patient's values must be dealt with in the same way as that of the objective clinical information.[39] However, this does not mean that the clinician does not need to analyze the expressions of the patients as an additional source of relevant data, but the contrary. The physician should investigate on the one side,the objective reality of the body of the patient, following the methods of the sciences of the nature, looking for generality of the law and on the other side,considering the personal nature of the body experience from the perspective of historical sciences, seeking the uniqueness of the person. To paraphrase Marañon, this means learning to see the patient in the disease and not only the disease in the patient or, as Lopez Ibor stated *the physician should not forget that what is ill is the man.*[40]

When the physician makes the rounds in the hospital or in the office, he asks the patient "*What is wrong? How do you feel?"* The first question is asking about the disease as an event or incident: the disease is something that occurs or happens. In the second question, the subject of the disease appears as suffering, as distress. The limits of the disease are very difficult to define objectively and a gradual transition between health and disease. The subjective aspects of the disease undoubtedly contribute to set the limits between health and disease. The disease has some subjective symptoms, through which it is revealed as such to the patient and whose elaborate study should be performed by the physician because that is how personal structure of the patient is discovered.

Ludwig Krehl, the founder of the medical school of Heidelberg published, in 1929, his retirement lesson with the title *Morbid form and personality.*[41] At a certain moment, already in the middle of his life, Krehl realized that the research carried out in his clinic was insufficient to understand the human being as a patient, that medicine as natural science had a physical-chemical components, absolutely essential and unavoidable physiological background, but that it will be a serious mistake to reduce medicine to only this, since many aspects of the disease, and above all, many aspect of the patients,would remain overlooked. Thus, he proposed that it is necessary to introduce a new principle in the art of medicine, that would come from the cultural and historic sciences, the study of the personality.

DUALIMS AND MONISMS

The dualist perspective is naïve in its daily life. It is sufficient to just look around to see that, on the one hand, the world is populated by beings like ourselves, rational, free, who moved, laugh and cry, who help us or attack us. Next to these human beings there is a huge amount of inanimate objects, which are simply there, which we use or not, inaccessible to a mutual personal relationship. What first comes to mind is the thought that they are of a two different established natures, some related to birth, to reproduce themselves and to die, and others perennial, subject to erosion and final destruction over time.

Sôma and sême

Plato is considered to have introduced and established dualism in philosophy. For him, the union of the rational soul with the body is not a necessary union, but an **accidental union,** as that of the pilot with his vessel or the rider with his horse.

In Cratylus, in Gorgias[42] and in Fedón,[43] Plato considers the body as the soul grave, fact that is expressed with the words *sôma* and *sême*, respectively, body and sepulcher. The following paragraphs correspond to the first of the mentioned Dialogues:

> Socrates: You mean soma (the body).
>
> Hermogenes: Yes.
>
> Socrates: That may be variously interpreted; and yet more variously if a little permutation is allowed. For some say that the body is the grave (sêma) of the soul which may be thought to be buried in our present life; or again the index of the soul, because the soul gives indications to (sêmainei) the body; probably the Orphic poets were the inventors of the name, and they were under the impression that the soul is suffering the punishment of sin, and that the body is an enclosure or prison in which the soul is incarcerated, kept safe (soma, *sōizētai*), as the name soma implies, until the penalty is paid; according to this view, not even a letter of the word need be changed.
>
> Therefore, the body as a grave is the prison of the soul that has to carry out a punishment for a fault in the intelligible world where comes from and where it belongs to by nature. The soul, on being united to the body, is as if it were drunk,[44] insane. Thus the soul desperately tries to separate itself from the body in order to reach the good and the truth. That is why ascetiscism is needed to ensure that the body abide to the courses indicated by the soul, which at the same time has to purify itself in order to free itself from the stigmas of such a heavy burden, from the body from which it is a prisoner, in order to live in the new

intelligible world.[45, 46] Purification is achieved by relearning the ideas that have been forgotten when the soul joined the body. Should the soul not be able to purify itself before the body's death, it would be obliged to wander without course or reincarnate itself in other bodies (this is the transmigration of the souls or metempsychosis) so often as necessary. Only the goddess Persephone (literally `the one who leads to death´) is in condition of admitting an expiation that would make it possible to relieve the soul from being reincarnated once and again. In reaching that moment, the soul would be in conditions of living a happy life in the Hades, participating in the permanent feast of the righteous people.

The classic Greek σῶμα (sôma) is the whole body of an animal. The word derives from the indo-european word **twōmn*, `something compact´, `solid´ and from the word **tēu-* or *teuə- `swell`, `thick´. Also derived from these words are the Greek words σορός (*sōros*) derived from, `pile´, `urn´, `coffin´ and the Latin *tumor* or the English *thigh.*[29]

Sême (or sêma) is derived from the Indo-European dor. sa~ma[47] that means besides grave, `sign,´ `symbol, ´ `signal´ or `mark.´ Derived from the word *sêma* are *sēmainein,* `to mean´ and the noun *sēmeion,* `sign´, `signal´ from which, among many other terms, semiology and semiotic are derived. These are words related to the proto-Indo-European root * dhy*ā*, which appears in the Sanscrit *dhyāti, `he thinks´* that its basic sense is probably "mental activity." The suffix *–ma*_refers to what is a consequence of this activity and therefore sêma has several meanings: signal, sign, funerary monument and graphic character.[48, 49]

However, the phonetic and etymologic parallelism stated by Plato is mistaken. Σῶμα (*sôma*), genitive σώματος (*sómatos*), `corpse´ σῆμα (*sêma*), genitive σήματος (*sématos*) have different roots because it is quite unlikely that the first are derived from σῆμα (*sêma*) `sign,´ as it would be related to the Canaanite *sém*, `name,´ `sign.´[50]

As regards to *sōizētai* `to be saved,´ it is a word related to the verb σῴζω (*sōizō* or *sozo*) `to save´, `to keep in a safe and prudent manner,´ `to rescue from a danger or destruction,´ `to save somebody from a danger,´ `to restore health´[51] `corpse,´ at the same time σωῆ (*swñ*) `safe,´ `out of danger.´[29] In some texts it appears with the meaning of everything that is recovered after the battle and in the Bible appears with the meaning of being rescued from a danger or disaster, of being saved.

The etymology of *psyché* is simpler. It is derived from the Greek ψυχή (*psychē*), `soul´, `spirit´, and `vital blow´, the invisible principle that encourages, occupies and leads our body. The word is related to *psykhein,*`blow´, from proto-Indo-European *bhes- 'blow', ud-, 'up' and key-3 `to put into movement´[29] and is related to the pharaonical Egyptian *ps* `he´ and *šw(t)* `shadow, `dark side of a human being,`divine spirit.´[50]

Apuleyo writes in his *Metamorphosis* or *The Golden Ass*,[52] that Psyche was the youngest and the most beautiful of three sisters, daughters of a king of Anatolia, so beautiful that Aphrodite became jealous. The goddess devised a stratagem to cancel the risks of the beauty of Psyche. She sent her son Eros to shoot Psyche with a rusty golden arrow, which would make her fall in love with the ugliest and meanest man existing. However, Eros could not escape from the charms of Psyche, he fell in love with her, and shot the arrow into the sea. When she fell asleep, he took her flying to the palace.

Eros, rightfully afraid of the anger of his mother Aphrodite, did the best he could to keep his anonymity with Psyche. He always visited her at night and forbade her to ask about his identity. One night, Psyche told her beloved that she missed her sisters and wanted to see them, and Eros found himself unable to deny her wish. Her sisters, full of envy, asked about the identity of the lover and convinced Psyche to put the lamp on at midnight in order to be able to see her beloved. She did so, with such bad luck that a drop of hot oil fell on Eros waking him up. The god had no other choice than to leave his beloved. From that time on, there were a series of episodes during which Aphrodite imposed impossible tasks to Psyche, among others to descend to Hades and make Persephone recover a bit of her beauty to provide it to Eros who had lost part of his as consequence of the sorrow due to the behaviour of his beloved. In other versions, Psyche appears as the winged being who abandons the body at the moment of her death, the personification of the last breath; therefore, *psyché* in Greek means soul as well as butterfly.

All this tour through the etymology leads to the consideration that the soul is manifested through a sign, the body. Therefore, the notion of Cratylus as regards the body as an equivalent of grave is enriched in the later texts in which the body is also a safe place, rescue vehicle and manifestation of the soul. In other words, the body has three meanings in the texts of Plato: 1) prison or grave of the soul; 2) the enclosure that allows the soul to be kept safe and sound and 3) sign or manifestation of the soul.[53] The version of the *sême* as Plato considers the body as the soul grave is the one that took root in Gnosticism given its phonetic similitude with *sôma,* in spite of not being correct from the etymology point of view.

The notion of a soul, prisoner of the body, was taken by Plato from the Orpheus myth,[54] which tell the story of the Titans who murdered and devoured Dionysus, reason why they were fulminated by Zeus. The human beings were born from the ashes of the Titans, so we have a positive part inside us, that is Dionysian, which comes from the ingested god and a malignant, arrogant and violent part, the Titanic one. The purification and different orphic rites allow the soul to disembarrass from the perverse part in order to be integrated itself into the divinity.

These notions of Plato are the support of an anthropology itself incorporated Gnosticism and some distortions of the

Christianity and which it still persists today. However, of Plato's notions have older roots. Specifically and for example, the central idea of the Upanishads in ancient India is that there is a hierarchy of worlds (*loka):* 1) the *bhûr-loka,* which is the sensitive world, to which the body belongs to; 2) the *bhuvar-loka,* which is the world of the intermediaries, spirits, geniuses or angels that have more abilities than the body (they are long-lived, they move at great speed, etc.); 3) the *svar-loka* or *svarga-loka*, the world of the gods, of light and beatitude, the sky or *Para-deça `the other country´,* from where the Hebrew words *pardes,* are derived, as well as the Greek word *paradeison* and the English paradise; 4) the *Brahma-loka* or world of Brahma, beyond any definition, of time and space, of being or not–being, which lacks limits and, on the contrary to the three other ones, is permanent. It is the ideal world that the initiates have to reach and it is the world to which the soul belongs to, prisoner in a cage, the *sême.*

In the same way, gnosis conceived the human being as consisting of two natures, and through this philosophic and theological school of thought, dualism has penetrated Western thinking and in fact, it is in the depth of the concept of psychoanalysis and modern science of the human nature.[55]

The last purpose of the dualism is to explain the subsequent destination of the soul, and therefore, of ourselves. The future of the body is evident, to be buried, while the destination of the immortal soul may to be wandering in other new grounds to recover its position in the world of essences, to end up in Hades where there is an eternal feast, or to return to the hell of Tartarus.

The dualism is associated to somatophobia and stigmatization of the human body. Thus, in Plato we find: *"The soul is man"*[56, 57] or *"of all the things which a man has, next to the Gods, his soul is the most divine and most truly his own."*[58] In the words of The Vulgate: *in sudore vultus tui vesceris pane donec revertaris in terram de qua sumptus es quia pulvis es et in pulverem reverteris (*by the sweat of your brow you will eat your food until you return to the ground; for dust you are and to dust you will return).[59] From this dualist and somatophobic perspective, the body has been condemned, "fairly condemned" to become a simple corpse, to be one thing among other things.[60]

The body has been ignored, when not denigrated or subjected to humiliating punishments because it has no space in an anthropology built up from the perspective rationality, for not playing any role in the human reason.[61] This attitude is clearly present in Plato.

But at the same time, the force and validity of the dualism arise from an efficient interpretation ofwhich has been called the nuclear problem of the social sciences, and not only from them: the existence of evil,[62] considering that a nature, which is the evil, should not prevail over the other, the good. The following Gnostic text explains this clearly:

> *The Christ came to redeem the human soul buried in the matter, communicated the gnosis (´the knowledge´) to the soul of its real origin, and taught and showed the manner and the way to free itself from the prison of the matter, to return to the Light, to Father´s House, to its purely spiritual origin.*

THE DUALISM OF RENÉ DECARTES

Dualism is in the root of the Cartesian conception of the human condition.[63]

Descartes considered that all of the knowledge that he had acquired had been imposed on him throughout his education and decided to replace it with a new one based on reason. Therefore, he had to look for a method, which should philosophical, logical and mathematical, approaches simultaneously. Descartes found the method in the systematic doubt. This would make it possible for him to reach an initial postulate which cannot be called into question and from there reach all the truths whose knowledge is possible. This initial postulate that resists all doubts is "I think, therefore I exist" (or better "I think, therefore I am"):

> *But immediately upon this I observed that, whilst I thus wished to think that all was false, it was absolutely necessary that I, who thus thought, should be somewhat; and as I observed that this truth, I think, therefore I am (COGITO ERGO SUM), was so certain and of such evidence that no ground of doubt, however extravagant, could be alleged by the sceptics capable of shaking it, I concluded that I might, without scruple, accept it as the first principle of the philosophy of which I was in search.*[63]

As from this postulate, Descartes considers three substances, which are those that do not need any other to exist.

> *But this could not be the case with-the idea of a nature more perfect than myself; for to receive it from nothing was a thing manifestly impossible; and, because it is not less repugnant that the more perfect should be an effect of, and dependence on the less perfect, than that something should proceed from nothing, it was equally impossible that I could hold it from myself: accordingly, it but remained that it had been placed in me by a nature which was in reality more perfect than mine, and which even possessed within itself all the perfections of which I could form any idea; that is to say, in a single word, which was God.*[64]

The first one is a real substance, the res infinita, the perfect substance, which is God. The other two are imperfect as they need from God, and only from Him, to exist, the res cogitans and the res extensa.

The *res cogitans* is the rational substance, the spiritual substance, the soul, whose essential attribute is thought. The

res extensa is the corporeal substance, it comes from external feelings to the body. Its essential attribute is the extension.

The first concerns of Descartes are extremely dualists. In them the soul reserves the powers of the nutrition, movement, sensitivity and thought:

> *In the first place, then, I considered myself as having a face, hands, arms, and all that system of members composed on bones and flesh as seen in a corpse which I designated by the name of body. In addition to this I considered that I was nourished, that I walked, that I felt, and that I thought, and I referred all these actions to the soul. (...). As to body I had no manner of doubt about its nature, but thought I had a very clear knowledge of it; and if I had desired to explain it according to the notions that I had then formed of it, I should have described it thus: By the body I understand all that which can be defined by a certain figure: something which can be confined in a certain place, and which can fill a given space in such a way that every other body will be excluded from it; which can be perceived either by touch, or by sight, or by hearing, or by taste, or by smell.*[64]

And, using this point, he radically establishes a dualism:

> *On the one hand, I have a clear and distinct idea of myself, in as far as I am only a thinking and unextended thing, and as, on the other hand, I possess a distinct idea of body, in as far as it is only an extended and unthinking thing, it is certain that I, my soul, by virtue of which I am what I am, is entirely and truly distinct from my body, and may exist without it.*[64]

There are three main problems in the Cartesian dualism:

1. When conceiving a **res extensa** (measurable nature) separated from a **res cogitans** (rational nature) it is impossible to consider the most measurable aspects of the mental activity and the psychological aspects of the body. In fact, the philosopher Dilthey established the difference between the experimental sciences of the nature and historical or cultural sciences of the spirit.[65] Bunge[66] is another critic of the dualism who asserts that it is a mistake to speak about the problem form-body or the problem movement-body or the problem metabolism-body: dichotomies outside reality are assumed in all these cases.
2. When priority is given to the **cogito** in the **cogito ergo sum** one runs the risk of expelling children who do not reason from the human nature, the demented who have lost this capacity and the delusional whose reason is outside the reason is distorted.
3. The *je pense, donc je suis* of Descartes was translated into Latin as *cogito ergo sum*, which is a thought that has already been anticipated by San Agustin: *ego cogito, ergo sum*.[67] The methodological doubt of cartesianism leads to the conclusion that if I think it is because I doubt and if I exist it is because I think. The question about the self who doubts, thinks and exists and about what the self doubts and thinks has many times be interpreted from the perspective of its dualism. There is an ego that exists and a thought that has also an existence, regardless from the ego. Therefore, the Cartesian ego remains hidden behind the doubt and the thought. If we say that it has to do with my thought in the same way that some things of the world are mine, we will immediately realize that the relation is not the same. The things exist in themselves even before being possessed by me, but my thoughts do not exist without me. The same line of argument can be made as regards to the own body, precisely because it is own, it belongs to me.

For Descartes, this was a methodological problem, as the original title of this book reads:[63] *Le Discours de la méthode. Pour bien conduire sa raison, et chercher la vérité dans les sciences*, and the fact that in the first editions of the book, it is used as an introduction for three scientific treatises: *La Dioptrique, Les Météores* and *La Géométrie*. That is why Descartes is less radical than he was considered to be afterwards and also more contradictory. For example, the fifth part of his *Discours* finishes with a paragraph that on one hand denies the metaphor of the pilot and the ship but on the other hand asserts the immortality of the human soul, different from the one of the flies and the ants, to be able to support the existence of God. Therefore, for the scientific Descartes, the soul is closely linked to the human body in order to have feelings and appetites in order to make up a real man and also, for Descartes, a son of the long dualist tradition, who had also infiltrated into Christian thought, the existence of God makes an immortal soul necessary and thus capable of living independent from the human body and surviving the corpse. Gnostic dualism penetrated into the Christian doctrine on more than one occasion, especially in reference to the "education of the souls."

It is possible that the education Descartes received from the Jesuits had something to do with that. After all, the Spiritual Exercises of St, Ignatius of Loyola were considered as follows by its author: "*... is meant every way of examining one's conscience, of meditating, of contemplating; so every way of preparing and disposing the soul to rid itself of all the disordered tendencies, to seek and find the Divine Will".* The words of the Creed are against this perspective in its different versions (Nicea-Constantinopla,[68, 69] of the Apostles, etc.). They do not speak about the immortality of the soul, but "*Expectamus resurreccionem mortuoruom, et vitam venturi saeculi"* and that the *"resurrection of the flesh"* is collected in the Epistle to the Romans (8, 11) "*Christ Jesus from the dead shall give life also to your mortal bodies"* All this is involved in the long process recounted throughout the Old Testament and which takes on its full meaning in the New Testament according to which the divine *Logos* is embodied at one moment of the history in the "son of the father."[68] The mentioned text of Descartes is the following:

> *After that, I described the reasonable soul and revealed*

that it cannot be inferred in any way from the power of matter, like the other things I have spoken about, but that it must be expressly created, and I described how it is not sufficient that it is lodged in the human body like a pilot in his ship, except perhaps to move its limbs, but that it is necessary that the soul is joined and united more closely with the body, so that it has, in addition, feelings and appetites similar to ours and thus makes up a true human being. As for the rest, here I went on at some length on the subject of the soul, because it is among the most important. For, apart from the error of those who deny God, which I believe I have adequately refuted above, there is nothing which distances feeble minds from the right road of virtue more readily than to imagine that the soul of animals is the same nature as our own and that thus we have nothing either to fear or to hope for after this life, any more than flies and ants do; whereas, once one knows how different they are, one understands much better the reasons which prove that the nature of our souls is totally independent of the body, and thus it is not at all subject to dying along with the body. Then, to the extent that one cannot see other causes which destroy the soul, one is naturally led to judge from that that the soul is immortal.

The decay of dualism

According to Runge,[70] Cartesian dualism began to decline with Rousseau, and body became no longer neutralized and reduced to an object among others (materialism) and the thinking mind was not indepent of necessary corporal and material substrate (spiritualism).[60] The philosophy of Rousseau is anchored in his own certainly distressing personal experience and in his ability to cope with the uneasiness of his situation and his human condition, which anticipated texts of Kierkegaard,[71] Nietzsche,[72] Heidegger,[73] or Sartre,[74] for example.

Runge coincides with Starobinski[75] in not falling in the temptation of so many others of analyzing the complex personality of Rousseau and of considering his points of view on the body as a consequence of his homosexuality and his alleged masochism and narcissism. Nor want they to focus on alleged regression mechanisms or neurotic conversion reactions. The desire to identify himself with his corporal reality appears clearly in Rousseau, as well as the assuption his personal experience as a single nature, in order to overcome the dominant dualism. Rousseau want to avoid the pitfall and the alibi of considering two normally opposed entities in him, a rational soul, which is a source of good and a mortal body origin of evil. Nietzche[76] referred to the same subject as follows:

People like Rousseau know how to use their weaknesses, deficiencies, or vices as if they were the fertilizer of their talent. When Rousseau laments the depravity and degeneration of society as the unpleasant consequence of culture, this is based on his personal experience, whose bitterness makes his general condemnation so sharp, and poisons the arrows he shoots. He is relieving himself first as an individual, and thinks that he is seeking a cure that will directly benefit society, but that will also indirectly, and by means of society, benefit him too.

The fact that the *"je pense donc je suis"* of Descartes is transformed by Rousseau into a *"je pense donc j´existe"* should not go unnoticed. This distinction anticipates the key postulates of Heidegger's philosophy, who stresses the primacy, of an embodied, actual, being-in-the world and sensitive existence, beyond the paridm of an ethereal reason and a body that will end up buried is observed. On the other hand, the *cogito ergo sum,* the postulate of the Cartesian dualism leaves outside its walls what is not stated as *cogitans.* On many occasions, we have stated that those who do not "think," for example, children and insane people, may be considered, from the Cartesian point of view, as less human and the same can be said for those who think in another way. As regards the *res extensa,* measurable but not rational, it is Rousseau who givesthe body dignity as being it the human, and opens the way towards the conception of a sentient body, developed among others by Merleau-Ponty.[77]

The traditional dualism does not fit into the current philosophy of the mind, although it has been replaced on occasions by other forms of dualism, such as attribute or methodological dualism.[78] The works on artificial intelligence brought along a **dualism** named **functional** due to its relation with the functionalism of Putnam,[79] who considers the inner mental processes as functional conditions of the brain. Thus, for example, pain is not a physical-chemical condition of the brain or of the nervous system, but a functional condition of the body considered as a whole. In this way, the mental phenomena are functional conditions of the organism and it is not possible to know them by studying the partial processes such as the activity of the brain in which they are involved. Thus, the mind would be the *software* and the brain the *hardware* and the hypothesis that the mental conditions arise from a biological substrate in an precise moment of the evolution has given rise to the dualism of physical properties or **biological dualism**[80] according to which the property of the mind arises only in the biological beings, as the human beings and other superior animals and not, for example, from machines, no matter how sophisticated they are.

Monist perspectives

Oposed to dualism is the assumption of monism. However, as monism has to explain something that goes against common sense, how is it possible for two so different realities to only be one and because that question has different answers, it is possible to speak about several monisms, in plural.

There are two extreme positions, which deny one of the two realities to become lost in the other: the idealism and

the materialism. According to them, the human body is reduced to an object among others and the thinking spirit is no longer outside of a necessary corporal and material substrate, *naturalizing* and *spiritualizing* tendencies, respectively.[60] However, the mutual rejection does not solve the problem of why they appear as separate and as different ways.

The idealism denies the matter and considers the reality as an illusion, as a dream as in the monologue of Segismund:[81]

> *What is life? A frenzy. /What is life? An illusion,/A shadow, a fiction,/And the greatest profit is small;/For all of life is a dream,/And dreams, are nothing but dreams.*

There are a series of authors who justify the monist theories as the only way to understand the mental functions. These theories basically deny the existence of the mind as a different reality than the brain. They try to explain the mental phenomena in physical and biological terms. They justify the difficulty of a scientific explanation based on the current insufficiency of our knowledge on the brain processes and consider that the future scientific development will make it possible to reduce the mental phenomena to purely physical or biological cerebral. Most of the scientific efforts to study the human mind are brought together within this school of monist thinking.

For the materialism, research progress and the enrichment of the knowledge will end up demonstrating with empirical methods what we still consider as a mental activity or psychological processes. The great advance of the sciences of nature, that increasingly invade the sphere of humanism seems to support this perspective which is anuciated to the conviction of an indefinite progress. Modern science has developed efficient techniques for the study of material objects and the great discussion is to know if these empirical methods are enough to provide answers about the most human phenomena.

In this context, the current trend in philosophy and in neuroscience tends towards a methodological reductionism that aims, among other things, to replace the traditional psychological language for another are more in accordance with biology and, above all, with evolutionism. The continuity of inert matter and human reality is an essential postulate of the evolutionism in which the human mind is one more stage, arising at a given moment of the evolution of the living beings, already anticipated in the dialogue between Diderot and d´Alembert,[82] in which the first one says:

> *Do you want a statue to be endowed with sensations? It is very easy: you grind it in small pieces, then you mix the result with the earth on which you will make plants grow that you will eat later. In this way, the statue becomes part of your body and you are endowed with all that the "inert matter" has not, sensations, thoughts, etc.*

Churchland[83] is among the great advocates of reductionism. He begins with the idea that the cognitive activities are, in the end, activities of the nervous system and in his monist radical theory eliminates the mental conditions and leaves only the biological ones. That I swhy thextreme form of the reductionism has been called **eliminativism**.[83-85] Referring to the language of the psychology, Churchland writes:[83] *"In the long run in the science, in the laboratories, we will not use this vocabulary of beliefs and wishes any more. We can still use it in the market and at the dining room table."*

This is the radical posture of Crick, which has been thus expressed:

> *Science has shown to you that "you", your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will are, in fact, no more than the behaviour of a vast assembly of nerve cells and their associated molecules. As Lewis Carroll´s Alice might have phrase it: "You are nothing but a pack of neurons; and the mechanism is what matters: the rest is nothing else than a game of words.*[86]

However, there are many who do not resign themselves to the idea that, for example, thought is nothing but an emanation from the brain,[87] and the brain processing machine. Without going further, one can consider how substances within our reach modify the emotional state and the sensory-perception of individuals, substances which we call psychotropic or psychoactive. However, in order to accept a materialistic perspective in such sense, it is necessary, above all, to define what the matter is and what an emanation is[88] and how it is formed or if the emanation is something passive, as the steam of a geyser, or active as the silk of a worm.

Fundamental physics is not able to define the matter. It only describes abstract notions such as instantaneous forces that act at distance (in the gravitation theory of Newton), fields that spread in the vacuum (in the electromagnetism), a space-time curve (in the general relativity) and other analogues that though they are well defined mathematically, they collide with the reality that we experience daily.[88]

The monist discussion about the consciousness seems to have no end and different theories or models have been proposed:

1. Consciousness is an emerging property of the increasing complexity of the brain, but as there are brain injuries that reduce said complexity and do not alter the conscience. Therefore, it cannot be deduced that the fact of increasing the complexity must generate the consciousness.[89]
2. There is a particular region, not yet identified, which acts as "the consciousness center," something like the "bottleneck" or a "hub" all conscious behaviour must cross over. Thus, consciousness has been associated to the frontal lobe,[90] but other investigations give great importance to the thalamic reticular nuclei, responsible for attention[91] and to the apical dendrites of the thalamos-cortical circuits.[92] However, we are still far away of being able to locate the consciousness in one or

the other hemisphere, or in both, to determine the role of the inter-hemispheric connection pathways, to identify specific centers or on the contrary of distributed neuronal networks.[93] In spite of all, recent studies of neuronal connectivity have identified cerebral areas that would act as communication center *(hub*) for the neuronal information.[94, 95]

3. There would be some sort of binding that would be useful to bind the necessary cerebral regions to create a conscious perceptive experience, which would place the consciousness in a temporal process than in the cerebral space.[96, 97]

Though it can be accepted that the reality is indivisible in substances or different natures, mind and brain for example, it is not possible to assign all of it to mere material phenomena, among other things because, as we have already seen above, the physics is not able to provide an acceptable definition of what matter is.

It can be stated too often that way to often that some neuroscientists full of audacity,have surpassed the limits of their science to literally state their opinion on the divine and the human. The consequence is that the human being has an infinite number of "brains": emotional, social, ethics, moral, loving, pink or blue,[98] religious, predator, etc, capable of deciding, loving, attacking, or simply being moved. Anyone understands that it is not possible to assert that the stomach is an organ that when it is hungry, it feeds itself. He who feels hungry and feeds himself is an individual who, by doing this, is also providing nutrients to the gastric walls and undoubtedly, without them, would be worse nourished. In the same way, we can assert that the brain neither thinks nor reasons, nor does it have a conscience, nor does it feel or suffer. It is not moved and has no feelings, it does not love or pray, it does not see or listen, it is mute, it lacks homosexual or heterosexual inclinations, it has no an own life style and identity and it does not take part in a social group. None of these expressions can be applied to the brain. They belong to the subject who, we stress, cannot perform neither them nor any other action, without one's own body, from which the brain, cells, and connections form a part and which are maintained alive by the remaining organs. Consequently, expressions as that such neuronal group decides, remembers, sees or listens must be ruled out forever. He who makes decisions, remembers and contemplates is the subject, the person. The quoted expressions have always seemed to us as abuses or the confusion of metaphor with reality. We think that one has to be strict in this point and that one should not be carried away by the small ambition of explaining to the world as from the neuroscience field what is the range of the human condition characteristics.

Along the same line of not mixing up *pars pro toto*, Bennett and Hacker[99] have questioned the attempt of appropriation of psychological aspects by the brain, called a mereological fallacy. The mereology, from ancient Greek μερος (*meros*) 'part,' is the study of the relationships among parts and with the whole; a discipline that was introduced in Polish by Leśniewski and especially made known by Goodman,[100, 101] although, there are traces of it throughout the history of the philosophy, from Aristotle, and especially in von Brentano and Husserl.

A memorable example of mereological fallacy is the one of the physicians who carried out the autopsy of the great dancer Nijinsky, who engaged in a thorough dissection of the feet and ankles in order to discover the secret of his dancing, a fact that Bridget Lowe mentioned in his poem *At the Autopsy of Vaslav Nijinsky,* whose initial and final verses we quote below:

> *They sliced the soles of his feet / open, lengthwise then crosswise / to see if there was some trick, an explanation / for the man who saw the godhead / with his naked-eye.*
>
> *....*
>
> *But the foot was that / of a normal man / after all, after all that / and they sewed his foot together again.*[102]

Therefore, the mereology fallacy is due to the believe that the brain, which is a part of the human body, is responsible for the mental activity, when it results that the psychological predicates can only be applicable to the human beings (or other animals) as a whole, and therefore, they cannot be applied intelligibly to any of its parts, not even the brain. The alternative, according to Bennett and Hacker, is that the attribution of the psychological predicates to the brain is in first place a philosophic and not a neurological issue, since it is a conceptual question. Therefore, the brain is not the appropriate subject for the psychological predicates.

Several solutions have been proposed to overcome the dilemma. The first one is the **neutral monism**[103] that maintains that the last reality is only one but that its nature is neither physical nor mental. It is neutral between both. However, this position does not solve anything as it does not explain the nature of this third reality and how it is related with the other two, the daily ones.

For the **anomalous monism**[104] every mental event is identical to a specific physical event, although its manifestations, its type in terms of Davidson,[105] the creator of the concept, do not necessarily have to be so. Thus, the perception of pain may be identical to a physical event and however, it may not correspond with any general type event of physical facts. The hypothesis is monist, but if denies the identity between the physical, the mental, as proposed by materialism and idealism, in such a way that there are no rules (thus, the adjective "anomalous") that allow a mental event to foresee a physical one or vice versa.

The attractiveness of the anomalous monism is that it does not expect to find laws of physics to explain the mental aspect (and vice versa), or to rely on scientific progress to lead us some day to discover them. The anomalous monism has been criticized and even considered as a form of masked dualism or epiphenomenalism and Davidson has not always been capable of coping with the arguments against it,

among other things because some of them contradict each other. Thus, for example he mentions:[106]

1. Mental events interact causally with physical events; one can be the cause of the others.
2. The events that cause other events fell under a strict natural law that does not admit exceptions.
3. There is no strict natural law about the mental events.

Anyway, Davidson's point of views open the way towards other very interesting perspectives from our point of view.

The most important objection to these monist theories are the **qualia** (qualitative characters of the sensations). They consider that a psychological condition is identical to a functional condition. But it can happen that a same functional condition may cause the experience of different qualities (of blue, but also red or green); in this case there would not be a strict correspondence among mental and functional conditions.

TWO FACES OF THE SAME COIN

The double aspect monism and the methodological dualism

In the philosophy of the mind, there is a theory, which is for us, that which best helps to understand and investigate the body-mind relations. It is the double-aspect monism theory, double attribute or better the double appearance, which maintains that the mental and physical aspect are two different aspects of the same reality.[103] The theory was put forward by Spinoza for whom the divine unitary substance is expressed in two different ways, mental and physical. There are different contributions as the ones by Fechner, Schopenhauer and Nagel.[107] For the particle physicist Polkinghorne there is only one substance in the world, in a space in which two contrasting states are presen and which lead us to perceive mind and matter as two different entities.[108]

The confrontation between objectivity and subjectivity is at the core of modern thinking, which on the other hand, has given rise to the modern science. In this context, the principle of science is to objectify the subject of research. Therefore psychological functions, recluding consciousness, have to the condemned to ostracism until the case be rescued and objectified. Thus, for Searle[109] to speak about objectivity and subjectivity as excluding categories closes *a priori* the possibility of studying the consciousness based on the brain functioning. Consciousness is, by definition, subjective, in the sense that for a conscious condition to exist, it has to be experienced by some conscious subject, it is a first person ontology that exists only for the human point of view, an "ego" able to undergo the said experience. For Searle[109] the mental states are not identical to physical states of the brain nor can they be reduced to them, but they are also not independent from them. They are phenomena or autonomous properties that emerge from the neurophysiological systems throughout the long evolution process of the species. There are emerging properties of neurological systems, however, they cannot be explained by simply analyzing the components of these systems because they are different from them, as digestion is something different than the digestive system.

Solms and Turnbull[110] explain this in the following manner:

When I perceive myself externally (in the mirror, for example) and internally (through introspection) I am perceiving the same thing in two different ways (as a body and a mind, respectively). This distinction between body and mind is therefore an artifact of perception. My external perceptual apparatus sees me (my body) as a physical entity, and my internal perceptual apparatus feels me (my self) as a mental entity. These two things are one and the same thing... I perceive myself from two different viewpoints simultaneously. This problem does not arise when we observe other things

Another form of monism is the **methodological dualism,** which recognizes the uny of reality but postulates that there are different methods when approaching it. Sometimes it speaks about different levels that are accessible by different ways. Thus, there are two aspects in any human activity, one its sense (to look for food in order to satisfy the hunger) and the other the displacement in the surrounding space (going to the refrigerator) in order to satisfy the purpose of the action.

Of course, feeling hungry can be understood as the consequence of a hypoglycemia and the activation of a pack of neurons in the hypothalamus, and that it is easy to build a robot that when on perceiving low glucose concentration goes to a container with sugared water. However, no device would be able to feel what hunger, the sensation of hunger, is. Even more, if I am able to understand the sensation of hunger of another person it is because I had already experienced said sensation. It is knowledge in first person unlike knowledge in third person that others have of me.[111]

Two approaches to knowledge

Kant[112] introduced the difference between two ways of knowledge: the experience (*Erfahrung)* which is the procedural knowledge (how to do something), versus the empiric knowledge (what are the things). The Kantian experience is the principle of the human sciences, the empiric knowledge of the natural sciences, empiric in it narrow meaning.

In a similar way, de Vignemont[113] suggests two pragmatic levels of the body representation, based on the concepts of Milner and Goodale[114] and of Jacon and Jeannerod[115] who distinguish two kinds of visual representations of one object: pragmatic and visual. According to the first ones, the object is seen as the goal of an action, for which it is necessary to consider its perceptive characteristics (direction, distance, size, texture, etc.). In the case of the semantic representations

it has to do with the functions of the object (the fact that it is a tool, for example). When this is applied to the body, first-order representations (pragmatic) are necessary in order to move or simply to adopt the adequate posture to be in the space. The second-order representations (semantic) are necessary to use the body. They represent a functional and not only spatial map of the body. Thus, a limb may be missing from the body image because it is paralyzed and remain the body schema.[116]

In the deafferentation the first order corporal schema is affected, but the second one is preserved, because although the affected persons cannot recognize their posture with their eyes closed, they know their kinetic limitations and, on the contrary, in the cases of apraxia the capacity to recognize the body is lost when carrying out actions but the capacity of being informed about the posture or the dimensions of the limbs is preserved.

Natural sciences and human sciences

The philosopher Dilthey[65] during a period of full domain of the empiric and objective natural sciences (*Naturwissenschaften)* defended the existence of another kind of sciences, the spiritual sciences (*Geisteswissenschaften*). The latter include, among many others, philosophy, history, philology, psychology, sociology, law, art, sciences that should focus on a historic, social and human reality. Thus, these sciences received the name of historical or human sciences or simply humanities.

In the natural sciences, the task of the investigator consists of applying the experimental method to explain the events in terms of cause and effect. There is a direct relation between the cause and the effect, "when the causes are known, the effects are known." The prototype of these sciences is the classical mechanics that can predict the final situation of billard balls if the mass of these balls is known, the friction coefficient on the table, the angle of incidence and the impact speed, etc. The goal of these sciences is to find general laws.

What its important in human sciences is the personal interaction, the reflexive understanding of the experience. The intention is to understand the meaning of the facts. Its prototype is the history, in which events that are alike can result in different outcomes; therefore the aim is to find which meaning they have. All understanding is apprehension of a meaning and all knowledge of the sciences of the spirit is a historical understanding and knowledge. The goal of these sciences is the singularity of the person as opposed to the generality of the law.

The important aspect of Dilthey´s contribution is not the distinction of two kinds of sciences but two types of methods that can be applied in a same science, as Max Weber stated for the case of the sociology.[117]

Dualism in psychiatry

The dualism is in the basis of the modern psychopathology, this is why we lack among others things, a good definition of "mental" disease and its boundaries with the rest of the diseases.

The term **mental** is problematic. López Ibor[118] refers to mental diseases to the body diseases ("*diseases of the soul can only be spoken about in a metaphorical, mental diseases are as all the rest, diseases of the body")* and above all, to the specificity of the human nature. And the non-mental diseases, we could ask about? In analogy, they would be the ones specific to the somatic condition of the human being. This perspective achieves its highest scope, if, following Jores[119] we consider psychosomatic diseases as specifically being human diseases and if we consider psychosomatic medicine not as a specialty but rather as a dimension of the entire pathology.[120, 121]

The ICD-10 refers in the section about Organic Mental Disorders as follows:[122]

> Use of the term "organic" does not imply that conditions elsewhere in the classification are "nonorganic" in the sense of having no cerebral substrate. In this context the term "organic" means no more no less than the syndrome qualified as such attributed to an organic or diagnosable systemic cerebral disorder or disease in itself. The term "symptomatic" is used for those organic mental disorders in which cerebral involvement is secondary to a systemic extra cerebral disease of disorder.
>
> From what has been stated up to now it can be considered that the diagnosis of any of the disorders of this section require in most of the cases the use two codes: one for the psychopathologic syndrome and another for the underlying disorder. The etiologic code should be chosen from the respective chapter of the ICD-10.

The concept of mental disorder is specified in detail in DSM-IV as follows:[123]

> Although this volume is titled the *DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS*, the term "mental disorder" unfortunately implies a distinction between "mental" disorders and "physical" disorders that is a reductionist anachronism of mind/body dualism. A compelling literature documents that there is much "physical" in "mental" disorders and much "mental" in "physical" disorders. The problem raised by the term "mental" disorders has been much clearer than its solution, and, unfortunately, the term persists in the title of DSM-IV because we have not found an appropriate substitute.

Moreover, although this manual provides a classification of mental disorders, it must be admitted that no definition adequately specifies precise boundaries for the concept of "mental disorder."

From the historical point of view, in the case of mental diseases, the leap to the scientific medicine based on the "anatomic research" proposed and defined by Morgagni,[26] had its peculiarities. In a first stage, from the vague social concept of insanity, the concept of mental disease emerged. As described by Foucault,[124] the general hospitals in central Europe during a long period of the modern era admitted outcasts and socially rejected, among them a great part of mental patients. The director of the Hospital de Châlenton in Paris, at the beginning of the French Revolution, discharged Marquis de Sade, who had been hospitalized for years by a Royal order (*lettre de cachêt)* obtained by his mother in law leaving on record that he had taken such decision because "he is not sick, his only insanity is the vice".

In a second stage, the mental disease was attributed to an organ, logically, the brain. In 1834, Esquirol[125] wrote as follows:

> *Insanity is normally a chronic brain disorder without fever, characterized by a perturbation and exaltation of sensitivity, reasoning and being. I say normally because sometimes the disease is not long and because at the beginning or during its evolution febrile symptoms may appear.*

During the entire first half of the 19th century, this fact was questioned, especifically in the case of the non-psychotic disorders. *La manie sans délire,* the *folie raisonnante* or *folie lucide raisonnate* of Pinel[126] is conceived as a mental disease without affectation of the intellectual faculties, but of the affective ones that cause the patient to be carried by a furious instinct (*instincte fureur).*[127] Prichard,[128] who follows Pinel closely, writes about the moral insanity:

> *Madness consisting in a morbid perversion of the natural feelings, affections, inclinations, temper, habits, moral dispositions, and natural impulses, without any remarkable disorder or defect of the interest or knowing and reasoning faculties, and particularly without any insane illusion or hallucinations.*[129]

It is worth pointing out the cases described with such diagnosis, are considered as suffering a mental disorder of behaviour, not a problem of ethics or personal decency and that the concept would comprise what we currently consider also non-psychotic disorders, not only the personality disorders.[130]

Along the same line, Rush defines the moral insanity as an *innate preternatural mood depravation*, due to the lack of adaptation of the moral and ethics values of the patient to the values of the society in which he lived.

Even for Freud, who came from the pathophysiological school of Johannes Müller, gave the character of a function to psychic life.

Griesinger was the first one to propose the double nature of psychiatry:[131]

> *The mental medicine, should, increasingly more, come out from the close circle in which it was previously locked up: it is time for it to be developed as a branch of the brain pathology and of the nervous system in general, and to apply the serious methods of diagnosis that are used in all the branches of medicine. In order to become a good alienist, one has to know in depth, first of all, the whole of general medicine, and especially the diseases of the nervous system. Besides this purely medical element, mental medicine has another, indispensable one, which gives a special and characteristic nature to this part of the art of curing; it is the psychological study of the intelligence aberrations that is observed in the mental diseases. Psychology, not in the sense of a purely theoretical psychology, abstract, metaphysical to say it in some way, but in the sense of a physiological psychology, pure science of observation, that makes us recognize in the healthy and morbid psychic functions, the same orders of facts (...), these two elements that, I repeat, have the same importance in psychiatry.*

With these words Griesinger is more than one and half century ahead of his time to a lucid approach of psychiatry and to an innovative perspective about the nature of mental diseases. On the one hand, he identifies the two components of the speciality, the knowledge of the pathology of the brain and the nervous system in general and on the other hand, a physiological psychology. With that, Griesinger intercedes to overcome the great schism of 21th century medicine existing between the anatomopathological school, lead by Rudolf Virchow and the physiological one, by Johannes Müller. As proof of the fierce clash, it is worth to remember the anecdote refered by Ellenberger[132] in the oath he made his pupils to proclaim, in order reject any anatomic thougths in their minds, specially if they came Virchow himself.

Griesinger considers that scientific psychology is founded on physiology, following Lotze's approach, who called his work, the first one of a scientific psychology, " Physiology of the Soul".[133] This work remembers us that Freud´s thought is heir to Müller, through his pupil, Dubois-Reymond, who was also teacher of Brücke, with whom the creator of psychoanalysis was trained.

The other main aspect is to consider a continuity among healthy and morbid phenomena to which the terms psycho(patho)logy deserves to be applied.[134] However, in Griesinger´s approach one member is missing, what is becoming clearer in the current approaches in neuroscience: the continuity between funcional alterations of the brain and of the nervous system in general and their morbid manifestations.

Unfortunately, Griesinger´s approach was not taken into account, we think that due to methodological reasons and the psychopathological research followed in Germany Dilthey´s two categories as sciences approach. This gave rise not to a continuity among the brain mechanisms and the psychological

functions in normal conditions and in the disease but rather to the description of two kinds of mental diseases, brain diseases and other deviations of the way of being.

Therefore we think that, unfortunately, in the case of the psychopathology, the matter has been applied in a biased manner, considering that there are two classes of mental disorders, variations of the mode of being psychic and psychosis in the case of Kurt Schneider,[135] instead of applying two different methods to any sort of mental disorder, the understanding and the explanation (table 1). This perspective makes that the concept of endogenous psychosis or the distinction of Jaspers[136] between process and development become corsets that are too tight to cover the psychopathological reality. That is why Kurt Schneider had to turn to the obscure concept of methagenesis (primary degeneration of the psychic life) and Jaspers to the psychic process applied to certain paranoid condition, which does not fit in the nosologic dichotomy of both:

However, in addition to the somatogenic and psychogenic, there is the third possibility, that of the metagenic, a "derailment" of the psychic life, that has to remain here and possibly in other places, open.

Schenider uses the word *verirren* (`derail´), written *`verirr' en* because *irren* means to become crazy, to go mad, something that clarifies his porposed.

Two opposed and irresoluble views

The God Janus is one of the most important divinities of Roman mythology, in spite of lacking of a predecessor or equivalent in the Greek mythology. In its origin it was an Etruscan divinity.

Janus had three names: one priestly: Janus (*Ianus*), another profane: Quirinus (*Quirinus*) and a third one, secret and of initiation nature: The Hidden or Arkahanus (Arkhanus, from Greek *arkhé*, `beginning´, the god of gods (*Principium Deorum*).

According to the myth, when Jupiter expelled Saturn from the Olympus, his father, Janus sheltered him and integrated him into his reign. In gratitude, the god granted him the exceptional power of seeing the past and the future clearly and simultaneously in order to act wisely under any circumstance. Therefore Janus is represented with two faces

Table 1 **Comprehension and explanation (modified by Ivanovic-Zuvic[949])**

COMPREHENSION	EXPLANATION
By reasons	By causes
Understandable	Incomprehensible
From internal observation (the experiences arose from other experiences)	From external observation
Relations between psychic elements	Connections of objective events
Empathic comprehension of the relations	Rational theories on causes
Speculations	Precise predictions
The relations are clear by themselves, they do not lead to theories	The objective connections lead to theories
Qualitative study, comparisons and conditions in which the psychic is manifested	Qualitative study. Exact results
Updates of mood states, as the reasons, situations or experiences arise	Experimental method
Direct relation with the phenomena	Relation measured by instruments
Descriptions of the patient and comparisons with the observer	Separation between subject and object, priority of object
Defining and ordering of the psychic relations	The subject is evaded and therefore is an unknown
Observe the phenomena, without prejudices or theories a priori Repetition and re-examination of the results continually	Based on hypothesis that can be tested. Verification of experimental hypothesis. Repetition of the experiment to verify the hypothesis
Significant contents of the psychic	Lack of these
The unnoticed as part of the unconscious	The extra-consciousness as part of the unconsciousness.
Its limits are the casual interrogation or physical clarification of the existence	It is unlimited since the reason for the causes can always be asked about.

looking in opposite directions. One does not see the other and also cannot see the world that the other is seeing.

The two faces of the representations of Janus that were placed in the middle of his temples received the name of Janus Patulsius (*patet* `the opener´) as the one who looks outside and Janus Clusivius (*clauditort*,`close´), inside. Janus was the God of the entrance doors, of the beginnings and the endings. The first month of the year was dedicated to him and has its name: *Ianuarius* from where January derives.

In Rome, the holidays of the two solstices are celebrated in honor of Janus. The solstices are the moments of the annual cycle when the sun reaches its utmost points of its movement, when, stopping for one instant, it jumps from one hemisphere to the other. Solstice (*sol-stitium*) means precisely that, a stop in the sun route. For the Romans, the annual cycle is the representation in miniature of the cosmic cycle and is divided into two annual halves: one ascendant (winter to summer) and the other descendant (summer to winter), each one opens with its corresponding solstice, the celestial (*Janua Coeli)* and the infernal (*Janual Inferni).*

Janus, alone, protects the universe (*me penes est unum vasti custodia mundi),*[137] keeps the harmony, especially in the critical transition moments. Definitively, Janus is the god of the transitions, of the critical moments of the steps that cannot arise without its divine, powerful and wise protection. Thus, he was invoked at the beginning of a war and given and that as was a permanent crisis, during it the doors of Janus's temples remained opened.

The Chiastic Resolution

The two main mistakes of psychology, and in general of the modern science sharing a dualist paradigm, when considering that the body image is the inner representation of the own external appearance[138] are: 1) there is an image and a differentiated subject that contemplates it and 2) there is an outside, where the image is projected and an inside where the subject dwells.

The opposite perspective, which is achieving great protagonism in this post-modern era, is the one of alived fungient body,[70] which sometimes plays such a tyrannizing role as did reason in ancient times, body that controls instead of being controled, that cries out for its rights, in *the body asks for it* that has become a behaviour rule and that achieves morbid levels in the impulse control disorders and which is a manifestation of a radical contradiction: the body cannot ask me for anything, because I am my body. My body is not something strange that can address me with requirements, reproaches, joy and sorrows, because my body is *sentient*, that is to say, it is me as a being that feels.

There is a third way, an only way, the one that we try to discuss in these lines and that has led us, among other things, to relinquish to the original title of the "El Cuerpo y la Corporalidad" (The Body and Corporality), not because it is incorrect, but because it has been wrongly understood on several occasions as two realities, realities that on the other hand are well-differentiated by the Germans, as *Körper* and the other as *Leib.* The particular aspect of the human body is that it takes part in these different dimensions (object, subject, individual in the society) without reducing itself to any of them. In this sense Merleau-Ponty turns to the concept of chiasmus: *Its world is precisely the "chiasmus" and its way of being the "between".*[70]

The chiasmus is a rhetoric figure that consists of presenting the members of two sequences in inverse orders, interchanging two parallel and opposed ideas, generally as follows: A, B, C, C', B', A' or A, B, C, **D**, C', B', A', in this last case **D,** it is the central idea that the chiasmus is supposed to transmit.

The word comes from the Greek *χιασμός* (*quiasmós*), `crossed disposition,´ (the letter) `chi´ that corresponds to the x, because it is as if the elements of the chiasmus were represented by the extreme points of an Andrew´s cross.

Chiasm derives from the same Greek word, which is used in medicine and biology in general with an intertwining sense (chiasm of the chromatids of a couple of chromosomes; optical chiasm).

The crossed-form presentation of two parallel and inverted ideas allows contemplating a same situation from two different perspectives. A central idea is introduced and reinforced strongly in this way, acquiring the value of a new, and many times transcendental one, message. The chiasmus solves the dilemma between the deduction, that is to say the logical order of the speech that goes from the general and the induction that inverts its order and goes from the particular to the general, in a dynamic manner, coming and going from one to the other in a tension that does not find a stable equilibrium point, therefore its creativity.

Thus, the chiasmus is a figure of frequent language in the religious texts, especially in the Semitic ones, in the political discourse and in poetry:

- *Mankind must put an end to war, or war will put an end to mankind* (John F. Kennedy).
- *What I do not want to do, that is what I do and what I want to do I do not do it, blessed be the Lord* (St. Paul, Epistle to the Romans).
- *Eyes, I do not know what I am waiting for, seeing how you treat me, because if you see me, you kill me; and if I look at you, I die* (Quevedo).

The important aspect of the chiasmus are not the words, but the underlying concept, as in the beginning of the sonnet XIII of Garcilaso de la Vega in which the language figure is stated in the contraposition between man and nature:

> *Daphne´s arms were growing, now they were seen taking on the appearance of slim branches, those tresses, which discountenanced gold´s brightness, were as I watched turning to leaves of green.*

For us, the most extraordinary chiasmus is the first fourteen verses of the John´s Gospel, which gave rise to deeply-rooted theological reflections.[139]

Grothe dealt with the force of the chiasmus in his book that has a very chiasmatic title: *Never Let a Fool Kiss You or a Kiss Fool You.*[140]

The chiasmus is used by Merleau-Ponty to designate the "*unitary dualism in itself*", which means that it is the structure of the thought that compels to consider the phenomenon of the human body, the body itself, from two perspectives and not two realities.

> *The chiasmus is a thought schema that allows us to conceive the relations of a duality in terms of reciprocity, intertwining, complementarity, superimposing, reversibility, mutual reference [...] All the contrary of the dichotomy, dualist schemas, that conceive the relations in terms of exclusion, exteriority, mechanical and lineal causality, hierarchy and priority. The chiasm schema is what allows us to consider duality as a unit in process, in evolution.*[141]

Consequently, the presence of revealing chiasmi in Merleau-Ponty is not surprising:[142]

- The double prolongation of the things in my body and of my body in the things, the relationship and the mutual usurpation between the sighted and the visible.
- My body model of the things and the things model of my body: the body tied by all the parts of the world, stuck to; all this means: the world, the flesh, not as a fact a sum of facts, but as a place of a truth registration.

Therefore, there are two different ways of the own body itself, objective, bond to the external perception, according to which, my body is given to me as something in a determined space and moment. The other one is subjective, bond to my own consciousness, thanks to which I have a direct experience from it.[143] Both ways are inseparable and closely supportive while it cannot give itself without the other, they are chiasmatic.[5]

Radical monism and adaptive value of the dualism

Until now, we have seen, on one hand the power of the dualistic approaches, which, from the beginning of the history, have been enforced of their power to explain the existence of evil and the behaviour to follow in order to save the human soul or the conscience, and eventually, to redeem the body. We have also seen how another monist perspectives have emerged, whose historical origin we have not investigated in depth, because we thought it was not necessary, but anyway, they were present in works of some researchers in the field of neuroscience,[144-148] because dualism is, deep down, a mirage that leads to a merealogic fallacy, confusing the part to the whole, or to an elimivativism[149] that leads to reject all that is not material.[50]

Now we have two tasks in front of us. The first one is that we have to ask ourselves if dualism has a reason to be and what is its adaptive value over the rational explanation of evil´s nature, that is what are we going to do below. The second one, we have to analyze if the experience that we have from ourselves is dualist or not, what we are going to do further by considering the body experience according to the contributions of phenomenology. Clearly monist likewise the experience of some mystics (for example, Hildegard von Bingen) and philosophers (like Rousseau) who have gone further into knowlege from their experience in themselves.

Exactly, it is this need of knowledge,of knowing in order to be ableto live and to survive, what carries to consider that there are two facets of the world reality, that has been explained through the limitations of human knowledge. At the end, this leads us to a methodological dualism, for what, independently of the reality of the world, the only way of raising from a different approach is to use two different and irreconcilable methods.

The theory and philosophy of the knowledge are based on the acceptance of the limitations of human posibilities. For rationalism, the reason has a series, and only said series, of innate principles from which, through the rational deduction, and only through them, the reality is known in its whole. Therefore, reason and rational deduction impose a corset and some safe but limited rules of the game, in order to achieve the knowledge of the real, which is therefore only partial, sometimes biased and of limited scope as much reality which does not need to be rational remains outside it.

The opposite point of view, the empiricism, considers that the whole knowledge comes from the experience, and said experience is limited by the role that the senses play, open windows to the world. The empiricism leads to skepticism as it is the case of Hume,[151] for whom if the reason is not the basis of knowledge, the absolute certainty is

unattainable and one has to resign oneself with a moral certainty in order to guide the human behaviour.

Kant[112] on his part considers that both, rationalists and empiricists, are partially right and that two conditions are given in all type of knowledge: some of them are external or material, associated to the senses, and the others are intrinsic or formal to the individual, which are the ones that the human mind imposes on the information that comes from the exterior. The intention is to endow sense to the sensations from the exterior. In both cases it has to do with a matrix that imposes a way of knowing:

Without the sensible faculty no object would be given to us, and without the understanding no object would be though (...). The knowledge may arise only from the union of both.

There can be no doubt that all our knowledge begins with experience...But though all our knowledge begins with experience it does not follow that it all arises out of experience.

Neuroscience follows this perspective, specially around the theory of double aspect, according to which the brain carries out the two ways of knowledge, rational and empirical, and consequently creates two realities, the physical and the mental one. However, the text quoted of Solms and Turnbull[147] state the limitation of the theory of the double aspect, because the authors refer only to how I perceive myself exterior and interiorly.

Unicellular living beings only need information about the characteristics and physical variations of the environment in which they are in order to survive, nourish and reproduce themselves. In the same way, the more evolved animals, our species among others, need said knowledge in order to move or sit down, avoid dangers, nourish or reproduce themselves. Should I not perceive the warmth of a candle as in the engraving with which Descartes depicts his dualism, I would burn myself, or I would fall down a staircase if I could not measure the distances. But the more evolved animals are animals with a high level of socialization and here the knowledge has another nature that of recognizing friends from foes, identify oneself with one or others, cooperating for the aims of the group, being part of the hierarchy, looking for opportunities to reproduce oneself and raising offspring's demands, requires to know something more than just physical dimensions, the *res extensa*. The pre-reflexive awareness and the representation of the ego evolved throughout time and have an adaptive value[152, 153] arisen from the most rudimentary somatosensory and autonomic functions.[154-156] Independently of all the information that reaches the brain through the senses and of the fact that there is not anything in the intellect that was not in the serials before, the brain is that which builds a reality which is not physical, but mental, in which the parameters are not the measurement units, but the feelings and affections, the impulses and tendencies, the sensations and perceptions[157] and the memories, the focused attention, in definitive the intentionality of von Brentano who characterizes the psychic and mental facts.

Therefore, we can state that a **radical monism** it is possible, compatible with one more essential aspect, which is the adaptative value of a double cognitive, empirical and personal value. It is a **janicular monism** because the god Janus has two faces, one that looks to the past, another to the future, one to the interior (*Janus Clusivus*), another to the exterior (*Janus Paltusius),*one to the beginning and one to the end,which is beginning and end, entrance and exit door. It is also a **chiasmatic monism** because, according to Merlau-Ponty,[158] as we have quoted before, this concepts*:"allows us to conceive the relations of a duality in terms of reciprocity, intertwining, complementarity, superimposing, reversibility, mutual reference."*

SECOND PART: CONFRONTATIONS BETWEEN THE BODY OBJECT AND THE BODY SUBJECT

AGNOSIAS AND DYSGNOSIAS

There are a series of agnosias and dysgnosias in which the perception that a person has of his body is distorted and does not coincide with the reality. Agnosia are a natural experiment that makes it possible to study, in greater depth, the discrepancies between the objective reality of the body and the experience of subjective experience that a person may have, who perceives it in a different manner compared to how the physician or other persons perceive it. Sometimes it is experienced as something extra (i.e., in phantom limb), in others as something less (i.e., in anosognosia) and in others the perception is distorted. In a wide sense, the phantom limb is one of the many kinds dysgnosia.

PHANTOM LIMB

A total of 75% of the persons in whom a limb has been amputated at least temporarily the presence of the absent limb.[159] In those case the patient recognizes that these feelings are not true and therefore it is more an illusion than a delusion.[160]

There are remarkable descriptions of phantom limbs in the literature. Among them is that of Admiral Nelson, who suffered phantom sensations of the right hand fingers,this was due to the amputation of this following the wounds inflicted by a shot received at the level of the elbow while he was leading the assault against Santa Cruz de Tenerife in 1797 obliged him to have his right arm amputated. Nelson deduced the existence of the soul from the presence of these

sensations, since if he could manage to experience those sensations of his last fingers, he would also experience those of the entire body.[161] The quotation is possibly apocrypha though it is repeated throughout the biographies of the great Admiral, who suffered one of his most important defeats in the battle of Tenerife.The line of argument is so striking that Herman Melville[162] evokes it again in Moby Dick when he describes how Captain Ahab asks a carpenter to make him a false leg to replace the one removed by a white whale. In chapter 108, the captain tells the carpenter how he still feels the invisible presence of his amputated leg which is like a type of impostor. Ahab says: "Look, put thy live leg here in the place where mine was; so, now, here is only one distinct leg to the eye, yet two to the soul." Then he added: "And if I still feel the smart of my crushed leg, though it be now so long dissolved; then, why may not thou, carpenter, feel the fiery pains of hell for ever, and without a body."

The term phantom limb is also applied to experiences that appear even when no limb has been amputated (pseudopolymelia), to designate the presence of dissociation between the real position of a limb and the one that the subject feels as usually happens in the case of brachial plexus or spinal block.[163] Phantom sensations have also been described in intact but paralytic limbs,[164] accompaning plexus injuries[165] or after cerebral-vascular accidents that affect the right hemisphere[166] especially its deepest parts and also the *corpus callosum* body.[167] There is a case with the description of several supernumerary limbs.[168]

The case of Hansenjäger and Pötzl,[169] deals with an injury in the left brachial plexus that caused flaccid paralysis of the arm with sensitivity changes. Two days after the accident that caused it, the patient had the clear sensation that the injured arm was bent at the elbow, with the fist closed and leaning on the chest. When the patient lifted up the bed linen, he was surprised to feel that his arm was by his body.

The ratio of phantom limb sensations in adults after an amputation reaches 100% of the cases. The incidence is much lower in children, approximately 20% in children under two years old and 75% in children older than eight years.[170] This is generally usually attributed to the fact that the children have not had sufficient time for them to consolidate the body image.

The most of the cases, the phantom limb disappears gradually if it is not accompanied by pain in.[171] The phantom sensation is more intense when limb is painful. This has been attributed to the persistence of "pain memory"[172] and there are cases where the sensation persisted 25 years after the amputation.[173]

Many patients feel the movements of their phantom limb. Other times they experience the limb as if it were blocked, or frozen in a determined position. The sensation decreases when the patient rests or is inattentive and increases in the presence of anxiety or intense emotions.[173, 174] Some patients consider that they can move their limbs, as for example by shaking the fingersor by grabbing objects. Surprisingly, "the memory" of the posture and form of the limb persists in the phantom limb.[172, 175] If the amputated limb was a deformed one, this deformation appears in the phantom limb.[176, 177]

The arm of a patient of Bailey and Moersch,[178, 179] was amputated after an accident that badly injured it. A few days prior to the accident, a splinter had gotten stuck under his nail and the painful sensation caused by it continued for some time in the phantom limb. The patient had given an order to incinerate the limb and while this was occurring, he had the sensations that his phantom limb was vanishing in the ashes.

The phantom limbs do not appear in a certain body segment, or under any circumstance. The cases in which the phantom limbs appear, according to Frederiks[180] are as follows:

1. Amputations of limbs or part of limbs.
2. Amputation of a breast or external genitals.
3. Extraction of a tooth.
4. Mutilating facial surgery or enucleation of an eye.
5. Mutilating diseases of the limbs.
6. Lesions of the nervous system (at the periphery or the spinal cord, brain stem, thalamus and parietal lobe).

The phantom phenomena are most intense and lasting in the distal part of the limbs. That is why the phantom limbs are more frequent in limbs amputated after accidents or war injuries or if there has been pain previously and not so much in cases of a long disease and disability, especially if the peripheral nervous system is affected (gangrene due to arthrosclerosis, leprosy,[181] etc.). The member that has been ill for a long time loses its availability and the sick limb or stump disappears from the body schema.

Attention should be drawn to the fact that there are no cases describing phantom lungs or kidneys, or in general, **visceral phantom**. The only cases described in the literature are phantom ulcer pains[182] that appeared after the vagectomies or gastrectomies, but it is not clear if they are true phantom phenomena. Indeed, there are description of phantom bladders because they are under the control of the will, phantom breasts after mastectomies and phantom penis after surgery in transsexuals.[183]

On the other hand, the sensation of the absent limb is shorter when the amputation of the leg is bilateral than in those in which it is unilateral. This is because the healthy limb influences, with its presence, the size of the phantom limb. In the cases of paraplegia, associated to phantom limb sensations, several authors have made a very interesting

observation. The phantom limb is affixed to the body, in a different way than the real leg is. It is somewhat rigid, mechanical, as the legs of puppets.[184]

All this characteristics are necessary for a phantom limb to be present, the body part that has been lost must have been especially active, and especially important, or to be more precise, especially available. Therefore, phantom experiences can occur in other situations as in the case described by López Ibor of a **phantom visual field**:[185]

> *This is the case of a physician who suffered from convergent strabismus since childhood. Surgical correction was decided after the failure of usual treatments – when he was 18 years old – but the strabismus hyper corrected with the intervention, when leaving a transitory dyplopia, which he tried to eliminate by means of stenoscopic exercises that he practiced during four years.Taking into account the failure of the exercises, he underwent two new surgical interventions. He achieved an evident parallelism of both eyes with the last one. And, however, he could not fuse together the images; therefore, a violent pain appeared which was located in the muscles of the eye. The pain increased up to an extraordinary level, turning him into a useless being. Therefore, an ophthalmology professor advised him to reproduce the strabismus as it was at the beginning ... Nothing profitable was achieved and the pains continued. An iridocyclitis appeared and the eye had to be extirpated.*
>
> *His discomforts did not disappear with the enucleation. He noticed a tension in the zone corresponding to the enucleated eye, with pains of such intensity that he had to lie down. He had the feeling of an absent visual field presence that interfered with the current, blurring the image of the present eye, which was usually clear, when being very tired. The absent visual field overwhelmed the current one, sometimes with shadows, others with lines and bright points. The patient had to do considerable efforts to detach the phantom visual field of the amputated eye from the healthy one. The anesthesia of the eye muscules caused him a temporary relief but it lasted only a couple of days and the effect faded after few sessions. Each new anesthesia came along with a special feeling. A brusque displacement of 30º took place in the visual field. The "phantom vision" became tormenting putting him at the edge of suicide.*

All the characteristics of the phantom limbs are related to intentionality and availability. The enlarging or shrinking, the *telescoping* described for the first time by Gueniot in 1861[180] and the fact of their vanishing by forcing the activity (i.e., drawing circles or imaginary eights in the air with the tip of the absent foot) are realted to intentionality and availabity.

From a psychodynamic perspective, the phantom limb has been considered as consequence of denial mechanisms and the pain, when it is present, would be part of the bereavement process for the lost limb[186] and the unconscious wish to recover it is manifested in daydreams.[187] We think otherwise, that is to say, that the intrusive memory of the beloved deceased person is a phenomenon similar to the phantom limb and not vice versa.

Neurobiology of phantom limbs

The strait for word and traditional explanation is that the phantom limb is produced by the irritation of the axons in the stump. The fact that stimulation of the stump can cause an old phantom limb to reappear seems to support this hypothesis. However, the process is much more complex,[188] as there are cases that describe phantom limbs in subjects born without both limbs.[189-191] Although this is such an uncommon phenomenon that it cannot be considered as a support to the stump hypothesis.[192-193] On the other hand, the anesthesia of the stump does not entail the disappearance of the phenomena.[194, 195] Furthermore, phantom phenomena can be generated in healthy persons with intact limbs under experimental conditions by means of a mirror.[22] All this has led to investigate the participation of other nervous structures and of the involvement of the cortical representation of the body image.

In the case of Head,[196] a lesion in the right parietal cortex lead to the disappearance of a pre-existing phantom limb, due to an injury of the peripheral nervous system. Pötzl[197, 198] considers the intact activity of the post-central gyrus is needed in order of suffering from a phantom limb. Therefore, the latent possibility of a phantom limb is not triggered by the activation of an afferent process, but by an abnormal activation of the cortex. In a case reported about brain injuries, the kinesthetic image of the left half of the body was intact. However, both the perception and all the impulses derived from it were forcibly directed towards the right, towards the half line. Due to this deformation, the image that was perceived was no longer consistent with the motor one.

One possible explanation for all these phenomena would be that the sensation of the phantom limb is a synesthesia that arises because at least one part of the proprioceptive and tactile stimulus of the face and of the areas adjacent to the stump are recolated to other areas of the brain (Brodman area 3B). The result is that the spontaneous input of unaffected areas would be construed as coming from the amputated limb due to a reorganization of the brain mapping.[160]

It is important to recognize that the somatosensory mapping of the cerebral cortex[199] is not established forever. Merzenich et al.[200] were able to demonstrate how the cortical

area devoted to the representation of a finger could become enlarged at the expense of the areas of the other fingers. They considered that was is due to the arborization of thalamus-cortical neurons, which normally do not extend beyond 1 millimeter. This distance was considered to be the maximum limit of sensorial reorganization in adult animals.[201] However, at present, it is considered that it can even reach two to three centimeters.[190, 202, 203] Thus, it has been possible to demonstrate how sensations from an amputated limb are perceived even after several years, by areas corresponding to the face, even when it has to do with thermal sensations.[204] One of the possible mechanisms on the synaptic level that explains this brain reorganization process is if it is mediated by N-methyl-D-aspartate (NMDA).[205-207]

In others words, the experience of the phantom limb appears when the tactile and propioceptive stimuli close to the stump at least partially occupy alien propioceptive brain areas. As a consequence the spontaneous discharges in these tissues are interpreted as being produced by the lost limb, which is felt and experienced as a phantom limb.

To sum up it is worth considering with Ramachandran[208] that the brain generates a stable system to weigh up perceptions from different sources and therefore to make the adequate decisions. This implies inhibition or rejection of the discordant information and therefore the experience of a phantom limb depends on the integration of the information coming from five different sources:

1. From the neurons that innervate the stump, as ha been thought since ancient times.
2. From the reorganization of brain maps.
3. From the monitoring of the motor discharges from the affected limb.
4. From the body image of the subject, that usually comes genetically determined.
5. From the somatic memory of the painful sensations produced by the damaged limb.

THE AGNOSIAS

Several important features of agnosias must be mentionated to begin with: 1) agnosias and apraxias are inseparable, as are perception and movement. This was emphasized by von Weizsäcker, this idea leading him to develop the notion of the circle of the form;[209] 2) in the agnosias, the limitations of the perception of the body are accompanied by difficulties for the perception of the world, be it is only because the perception of the world is got through the body; 3) the different agnosias overlap in a same patient and, 4) in the agnosias the emotional components are essential because the perception of the own body, and even more when this is altered, does not leaving the subject indifferent, even though the latter aspect is rarely mentioned.

The most important agnosias are summarize in table II.

Table 2 Different forms of agnosias

AGNOSIA	AFFECTS or HAD
Asomatognosia	Knowledge of the parts of own body
Misoplegia	Evaluation of the affected by anosognosia, which is hated
Prosopagnosia	Perception of faces
Tactile agnosia and sterognosia	Recognition of objects by touch
Simultagnosia	Recognition of two objects simultaneously
Gerstmann's Syndrome	Finger agnosia Acalculia Right-left agnosia (dyschiria) Agraphia (apraxia of writing)
Balint-Holmes' Syndrome	Optic ataxia Visual attention disorder Apraxia of gaze Simultagnosia Disorders of written language
Alien hand syndrome	Sensation that the limb acts independently and autonomously
Unilateral spatial hemi-neglect syndrome	Neglect and attention deficit - half (right) of the body and of space
Anosognosia	Diseases and discapacities
Somatoparaphrenia	Anosognosia associated to lack of delusional or confabulation identification
Heteropathognosiss	Recognition of parts of the body of another person
Autoscopic hallucinations, heautoscopy and extracorporeal experiences	Sensation of being outside the body, of seeing one's own body at a distance
	Body self disorders
Allochiria	A sensation is perceived on the opposite side of the body or space from where the stimulus has been produced
Allesthesia, allachaesthesia	A sensation is perceived in a different place from where the stimulus has been produced
Visual allesthesia[408,409]	Disorder in which a visual images are transposed from one half of the visual field to the other

Asomatognosia

In asomatognosia, the subject no longer considers one part of his body as his or her own. The subject is not aware that one part of his body belongs to him or her, which is why it is difficult for them to identify and recognize parts of the own body.

The patient is generally aware of the change or of the strange sensations associated to it.[210, 211] The patient can adopt different attitudes regarding the asomatognosia: a denial attitude when an attempt is made for them to look at or observe the affected part; of indifference as if nothing has changed, rationalizing attitudes in order to explain the sudden change or effort in order to explain what happened. The denial or neglect can be passive (the patient does not raise his arms when asked to do so) or active (the patient behaves as if the limb does not exist). The symptoms may last for seconds, hours, days, months or years. The confrontation with the distortion of the perception of the body does not solve the asomatognosia and often this type of anogsia can only be modified by rehabilitation using mirrors.[212, 213]

There are experiences of strangeness and partial estrangement, limited to specific parts, that generally appear in patients with disorders of the central nervous system, for example in epileptic auras. In patients with seizures, those are usually associated to an hemispace.[214] One of our epileptic patients stated: "*The first thing I can feel when I am going to have a fit is that the hand that is doing something, for example, picking up the phone to speak, does not seem mine, but something strange.*"

Neurobiology of the asomatognosias

Asomatognosia is usually associated to parietal or temporal-parietal lesion or after lesions of the medial face of the frontal lobes of the right hemisphere or of injuries of the left hemisphere that produces a right-left disorientation.[215] Hemiasomatognosias are generally associated to dysfunctionsof the right hemisphere.[180]

In left hemiplegia after right cerebro-vascular accidents, the presence of multiple and medial frontal temporal-parietal injuries are associated to the presence of asomatognosia. The additional presence of orbitofrontal dysfunctions lead to the emergence of somatoaraphrenia. As consequently, these frontal areas are thought to be related to the presence of confabulations and of self disorder.[216]

Alien hand syndrome

The alien hand sign is a form of asomatognosia in which the patient feels that his limb acts independently and autonomously, carrying out involuntary movements[217] that seem intentional and that enter into conflict or even compete with the movements of the opposite limb. For example, the left hand does the opposite of what is wanted or what the right hand does and thus a person can be dressing with the right hand and undressing with the left one. The movements are usually exploratory, stereotyped uninhibited or partially inadequate reflex actions.[218] The patients with alien hand syndrome do not lose introspection. They know that the limb is theirs, while they also have the sensation that it does not belong to them, to such a degree that they make an effort to prevent it from performing involuntary actions.[219] The patient has no voluntary control of the hand, and he unsuccessfully attempts to recover control. The patient is unable to explain the origin of the movement and may think that the affected hand might have a mind of its own. There is a predominance of the right hand which occur when there are extensive unilateral disturbances of the medial frontal cortex of the hemisphere contralateral to the affected hand. The alien hand tends to disappear at six to twelve months after the cerebrovascular sttroke.

Van Vleuten described the first case in 1907.[220] Shortly after, Goldstein, in 1908,[221] described a patient with multiple spontaneous movements who complained of having "*a malignant spirit in his hand*".[222] Throughout the years, this phenomenon has received different names such as diagonistic dyspraxia,[223] "*le signe de la main étrangère*" (the sign of foreigner hand)[224] "alien hand" or "intermanual conflict" [225] anarchic hand,[226] just to quote the most important ones.

Hanninen described the case of Eeva, a 37-year old woman who in order to be able to read the newspaper had to sit on her left hand as the hand did what it wanted to, and did not let her go from one page to another. On other occasions, when Eeva went swimming, the left hand pushed her to the deep waters while the right hand swam towards the coast.[227]

Neurobiology of the alien hand syndrome

The affected hand frequently also has a magnetic apraxia type grasp reflex[228] of Denny-Brown,[229] which suggests that there is important frontal affection. In fact, Van Vleuten described the first case in 1907[220] in a patient with a tumor of the left hemisphere of the brain that invaded the corpus callosum and the mentioned case of Eeva dealt with a woman who had suffered right frontal hemorrhage. In the other cases described, there were lesions of the anterior part of the corpus callosum, medial frontal areas or areas that are needed for the movements of both hands,[223] which were a consequence of acute focal brain lesions, stroke, epilepsies, degenerative disorders or neurosurgical interventions.

For some authors[230-232] a lesion in the central zone of the corpus callosum is responsible for the alien hand syndrome, while the lesion in the final posterior part of the corpus callosum is responsible for the diagonistic dyspraxia proposed by Akelaitis. However, for Della Sala et al.,[226] the alien hand signs and the intermanual conflict are simply different aspects of the same motor disorder due to injuries in the

medial-frontal area and in the corpus callosum. Goldberg and Bloom[233] proposed that the injury in the frontal-medial cortex, mainly in the supplementary area, was necessary to cause the onset of the alien hand sign in the hand of the oppositw side of the injury as consequence of the disconnection between the medial premotor system and the lateral premotor system. The involvement of the *corpus callosum* unables left hemisphere to confront the information of the discordant actions that the left hand performed controlled by the right hemisphere.

Neuroimaging studies suggest that the alien hand syndrome is a consequence of the disintegration of a neuronal network in charge of planning and execution of movements in which, the thalamus, the motor and premotor cortex, the precuneous, the right lower frontal gyrus and prefrontal areas participate.[234, 235] The hypothesis on this strange sign indicates a dissociation between two independent but interacting premotor systems, which correspond to the medial and lateral halves of the premotor cortex in such a way that there would be a predominance of the premotor cortex due to the involvement of the other one.[233] However, the most probable is that there are two different phenomena in the illusion of the alien hand (table 3).

Mysoplegia

The mysoplegia, from Greek μισώ (*muso*) `hate´ γ πληγια (*plegia*) and at the same time πλήσσειν (plessein), `affect,´ was described by Critchley[236] in patients who expressed disgust, disdain or rejection of one part of the own body, which they even ill-treated and punished.[211]This is an uncommon disorder. In fact, Loetscher et al.[237] found only six publications with cases of patients suffering this disorder, most of whom, although not all, showed these signs in the weak or paralyzed limbs. For Critchley, premorbid features of the personality, above hypochondria, play an important role in mysoplegia, and they may determine the sudden change in the interpretation and knowledge of the body functioning.[238]

Neurobiology of the mysoplegia

Mysoplegia is produced as a consequence of cerebrovascular accidents although some data suggest that tumors maybe causes of the mysoplegia as soon as there are invovelment of three specific cortical areas such as the right parietal lobe, the right optical thalamus and thalamus parietal radiations.[210, 211]

Prosopagnosia

Prosopagnosia consists of inability to recognize faces directly or in photographs of known or famous people. In extreme cases, the patient may even not recognize him or herself in a mirror. In some cases, the patient with prosopagnosia may recognize faces of unknown people but not familiar faces.

There are two kinds of prosopagnosia. In the first one, **aperceptive prosopagnosia**, the analysis of the face structure is altered, regarding the facial expression and the identification of traits and characteristics (gender, age or race). This hinders the capacity to distinguish the familiarity and the perception of the face. In the second one, **associative prosopagnosia** or **prosopamnesia**, what fails is the recognition of the face in spite of a good structural analysis of it.

Neurobiology of the prosopagnosia

Until some time ago it was considered that only injuries of the right hemisphere affecting occipital, parietal, temporal lobe or different combinations of them was needed for prosopagnosia to occur.[239-242] However, over time, prosopagnosic disorders have been described in lesions in other brain localizations.

For Meadows[243] what is important in the bilateral injuries of right predominance is the bilateral lesion of the lower longitudinal fasciculus that crosses the lingual and fusiform gyri in the medial-basal region of the occipital-temporal junction. The consequence is the disconnection of the visual areas of both occipital lobes from the right temporal lobe and the limbic system. Based on post-mortem and computed tomography findings, Damasio et al.[244] deduced that prosopagnosia is associated to bilateral lesions and functional involvement of the central visual system (mesial occipital-temporal region), this hinders the generation of the specific context of the visual stimulus.

On their part, Rapcsak et al.[245] found false recognitions of faces without prosopagnosia due to lesions in right prefrontal areas. This may be a form of confabulation, in which the familiarity was wrongly attributed to a face perceived without having the normal activation of the corresponding mnesic representation.

Other authors[246, 247] have reported cases of prosopagnosia with visual hypo-emotionality, in which the patient loses the visual aesthetic pleasure due to the disconnection of the temporal lobes and the limbic system because of bilateral lesions of the lower longitudinal fasciculus.

To sum up, recognition of a familiar face is a complex task that requires the participation of a significant number of brain regions. Some are involved in visual perception (parietal-occipital cortex responsible for the visual association, where the image of the face is constructed), others in the evocation of their memories (hippocampus), associated affective processes (frontal-temporal areas) and others in those that make it possible to integrate the face into its context (prefrontal areas). During recent years, *gyrus*

Table 3 Characteristics of the type types of alien hand[950]

	FRONTAL TYPE	CORPUS CALLOSUM TYPE
Hand Involved	Dominant	Not dominant
Associated Grasping Reflex	Frequent	RarE
Localization of the Lesion	Left middle-frontal and *corpus callosum*	*Corpus callosum* with bilateral frontal or without frontal damage
Frequency of movements	Frequent, compulsive	Occasional
Precipitating Stimuli	To visual or tactile stimulation	Activated by the action of the dominant hand
Intermanual Conflict	Occasional	Frequent
Restriction of Actions	Common	Rare
Limb Apraxia	Occasional in both hands	Commonly apraxia of involved limb (left)
Compulsive manipulation of objects	Frequent	Never

fusiformis, which has been called fusiform area of the face, has being given an important role.[248]

Tactile agnosia and asterognosia

Tactile agnosia is affects the sense of touch, especially that of the fingers. Asterognosia is the inability to recognize and identify objects by touch in spite of the integrity of the sensory-tactile pathways. Patients sufferinf from asterognosia find it difficult to recognize objects, numbers, letters, textures, materials or forms when touching them with the fingers or when sliding their fingers over their surface, or their size being is adequate, spinning turning them around between their fingers. This is a typical case of agnosia-apraxia.

A particular case of the tactile agnosia is **simultagnosia,** in which the patient cannot perceive or integrate different objects simultaneously, even though they can recognize them individually. The condition is generally due to parietal-occipital injuries, which seems to suggest that the simultaneous perception of the "spatial-visual field" is necessary for the synchronic perception of several objects, which in order to be perceived need to be located in the visual space.

Neurobiology of the tactile agnosia and asterognosia

Both tactile agnosia and asterognosia have common as well as differential features, especially as regards their neurobiological origins.

Tactile sensitivity compared to the auditory or visual sensitivity does not have the same intensity throughout the entire body. In fact, the face and the fingers have much greater sensitivity than the legs or the back, for example.

Somatosensory information reaches the brain cortex through two main routes, the medial-dorsal lemniscus pathway that carries information on touch and propioception and the antero-ventral lemniscuse pathway that carries information about pain and temperature. In the brain cortex, there are three areas involved in the coding, analysis and interpretation of the tactile information, the third one being divided into two parts:

1. The primary somatosensory cortex (SI) that corresponds to Brodmann's areas 1, 2 and 3, which has connections with the primary motor cortex (Brodmann's area 4) and with the cortex of parietal association (Brodmann's areas 5 and 7). These areas are involved in tactile recognition (area 3), in the elaboration of the sensory information (areas 1 and 2) and in the complex cognitive tactile perceptive processes (areas 5 and 7).
2. The secondary somatosensory cortex (SII), which is located centrally to the SI in the post-central gyrus (part of the Brodmann's areas 40 and 43) that receives much of the SI signals.

3a. The associative somatosensory cortex (SIII), anatomically close to the SII area, that includes Brodmann's areas 5 and 7 of, involved in the complex cognitive tactile processes as well as the integration of multimodal stimulation in connection with parietal-occipital-temporal tertiary areas.

3b. The associative somatosensory cortex (SIV), also anatomically close to the SII area that includes the posterior insular cortex and also involved in the complex

cognitive tactile processes as well as the integration of multimodal stimulation in connection with parietal-occipital-temporal tertiary areas.

The study of two patients with unilateral tactile agnosia in whom there were difficulties in the recognition of subtle differences of geometric properties of objects who had lesions in the post-central gyrus in the secondary somatosensory area and in the posterior parietal cortex, led to the conclusion that there are two parallel neuronal networks for tactile processing.[249] Indeed, there are two somatosensory information processing pathways whose respective lesions could differentiate asterognosia from tactile agnosia. A ventral pathway is related to recognition, learning and tactile memory of the objects and its lesion would give rise to tactile agnosia while the dorsal route is related to the integration and spacial-temporal organization of the somatosensory perception and its lesion would give rise to asterognosia.

Notwithstanding, there are lesions in other localizations that may give rise to tactile agnosias. Thus, a patient with a tactile agnosia of the fingers of the left hand had an injury of the splenius of the corpus callosum.[250] This suggests that disconnection syndromes may be involved beyond the lesions per se of the grey matter in the tactile recognition. Another patient had bilateral tactile agnosia due to a bilateral subcortical lesion of the *gyrus angularis*, from which Nakamura et al.[251] deduced that a tactile agnosia may be the consequence of disconnection between somatosensory cortical and lower temporal areas mediated by the *gyrus angularis*. The existence of another network may have to be accepted, since lesions in the primary somatosensory area of the postcentral gyrus of the right parietal lobe may be sufficient to give rise to a tactile agnosia.[252] This occurred in the case of a 73-year old male subject who after suffering acute ischemia that gave rise to an abrupt onset of left alien hand without any type of hemiparesis and with full integrity of the basic somatosensory functions but with important deficits in the recognition of profiles, size and texture of the objects.

A large study[253] conducted in 84 patients who had lesions on different levels of the nervous system, from the peripheral nerves up to the brain cortex, reached the conclusion that patients with serious damage of the peripheral nervous system had greater deficits in tactile recognition processes of objects than those who had lesions of the brain cortex, that a hemiparesis or a hemianopsia alone would prevent normality in tactile recognition of objects, that unilateral neglect contributes substantially to deterioration in tactile recognition of objects, that deficit in tactile recognition of objects may occur in the absence of a basic somatoesthetic dysfunction, that tactile agnosia is a subtle, non-invalidating disorder that should be distinguished from the severe, non-agnosic and invalidating disorder as is asterognosia and finally that tactile agnosia is the consequence of an unilateral lesion of the parietal-temporal cortex in which the secondary somatosensory cortex of an hemisphere is included.

The **simultagnosia** is generally due to parieto-occipital lesions, which suggests that the simultaneous perception of the "spatial visual field" is necessary for the synchronic perception of several objects, which need to be located in the visual space in order to be perceived.

Gerstmann syndrome

In 1924, Josef Gerstmann[254] described a syndrome that was first characterized by digital agnosia (incapacity to recognize the fingers of the own hand and the fingers of others), after injuries localized in the *gyrus angularis* of the left hemisphere. Latter on, investigations by Gerstmann[255] and other authors added other signs to the digital agnosia such as acalculia, agraphia and right-left disorientation. It is possible that other cases with the same clinical picture may have been known prior to those published by Gerstmann.[256] Thus, in 1888, Badal, a French ophthalmologist, described a patient could not name her fingers, or classify them from 1 to 5, and who also had agraphia and misidentifed right from left.[257]

The syndrome of Gerstmann has been object of controversies. We believe that most of those criticism regarding its existence were due to the difficulty of conceiving the underlying mechanisms to a set of apparently different symptoms.[258]

In its most complete form, this syndrome consists of agnosia of the fingers, acalculia, right-left agnosia (manifested by mistaking which hand is right or left or dyschiria), agraphia (handwriting apraxia). It usually is caused by lesions of *gyrus angularis* of the left hemisphere. Why are there such different symptoms? Zutt proposed the reason:[259] the basic deficiency is the agnosia of the fingers and of the hand. Acalculia occurs because we learn mental calculation as children by counting on our fingers, that is with the mental and brain schema of the fingers. The same mechanism explains the right-left agnosia, as right is wherever my right hand is and left hand where the contralateral hand falls.

Recently Rusconi et al.[260] proposed that the Gerstmann syndrome might be the consequence of disconnections of parietal subcortical structures of the white matter what would allow understanding of alterations in several skills associated to the parietal lobe. A justification for this posture is given by Ardila and Rosselli,[261] who suggest that deep connections among the four neuropsychological deficits of the syndrome of Gerstmann could be explained by the wystem used by children to learn how to write, calculate and

discriminate the brain lateralization using their fingers, as Zutt.[262] has already pointed out.

According to Strauss,[263] the Gerstmann syndrome is characterized by the loss of the ability to organize opposite directions in space in a unitary manner or to divide this unit according to opposed directions. The fingers repeat the right-left schema because the thumb and the little finger point in opposite directions. Handwriting, which is no more than a spatial construction of letters, assumes the existence of an ability to differentiate different directions and establish them beforehand in a schema, as it is the case of the letters b and d. The numbers also follow the same principle. Children know a series of numbers and enumerate their fingers but it takes them longer in learn how to add them up, so that they first know the cardinal numbers and then the ordinal ones and learn how to add when they are capable of distinguishing right and left. Although at the beginning they are capable of knowing a series of numbers and enumerating their fingers, they are not capable of adding them up to form a unit of five. They learn it when they are capable of distinguishing right from the left.

The highest skills depend on the unification of the opposites. For example, a good violinist coordinates the movements of the left hand and the fingers with the shoulder and right arm: clinical experience shows the right parietal lobe (supramarginal and *gyrus angularis*), which is connected with the somataesthetic areas of the ascending parietal gyrus, the optical areas of the occipital lobe and acoustic areas of the temporal lobe.

Neurobiology of the Gerstmann syndrome

Although Gerstmann described the syndrome based on the case of a 52-year old woman who had suffered a stroke in the left angular region, later publications have mentioned other etiologies besides the vascular ones, such as tumoral, cortical atrophy, head trauma, encephalopathies, among others.[260, 264]

The increase of the signs associated to this syndrome has given rise to a larger localization than that first suggested by Gerstmann, including wide areas of the left parietal lobe, with a higher incidence in the left *gyrus angularis*, associated to this syndrome.

The localization and the different symptoms that make up the pure Gerstmann syndrome are currently under debate. For Benton,[265, 266] the neuropsychological deficits associated to the Gerstmann syndrome may be associated with different global deficits such as mental deterioration or aphasia. He suggests that the deterioration of the verbal functions may be the cause of the four symptoms of the Gerstmann syndrome. For others, it is very difficult to defend theoretically the liaison between aphasia and the symptoms of the Gerstmann syndrome that Benton defended.[267, 268]

It has been considered that the Gerstmann syndrome forms a part of a symptomatologic complex associated to lesionsof the different parietal-temporal-occipital connections.[258] On the other hand, neuroimaging techniques have made it possible to show a disconnection between subcortical and cortical areas due to the alteration of the white matter of the parietal lobe. It has been postulated that this disconnection is the basis of the syndrome and could be its neuropathology cause.[269-273]

Recent neuroimaging and neurofunctional studies state quite clearly that the pure Gerstmann syndrome, as he defined it, may be associated to the lesion of the *gyrus angularis* of the left hemisphere. Studies of electrical stimulation of the brain cortex support the hypothesis of Gerstmann, since they could reproduce the four symptoms of the Gerstmann syndrome by stimulating the left *gyrus angularis*.[274]

Balint-Holmes syndrome

In 1909, Balint[275] published the case of a patient who was not capable of seeing more than one object at a time and accurately to reach with the hand an object perceived with the sight. He named the latter *optic ataxia.*

The Balint syndrome is diferent from the spatial unilateral neglect in which agnosia is independent from spatial localization. For Holmes and Horrax, in 1919,[276] this picture was due to a defect in visual-spatial orientation and two more signs were attributed to it, that is, restriction of attention to one single object in space (*simultagnosia)* and spatial disorientation.

The complete clinical picture is uncommon and over time, symptoms and signs have been added to the Balint-Holmes syndrome, so that it is currently considered to be made up of:

1. Optic ataxia.
   Optic ataxia is present when it is difficult for the subject to reach with the hand objects perceived visually, in absence of visual-motor deficits. For example, the patient cannot mark a point on a circumference drawn on a paper with a pencil because the subject cannot simultaneously perceive the figure and the tip of the pencil, and thus looses sight of the figure when looking at the pencil and viceversa. Optic ataxia is an oculomotor disorder secondary to the inability to orient oneself and correctly localize the objects that they have been seen in space.[276]
2. Simultagnosia.
   Simultagnosia is a weakining of the ability to integrate complex visual scenes, which is usually interpreted as the impossibility of paying attention to more than one object at a time. Thus, when sight is fixed on a second

object, the first one is not anymore perceptive. There are two kinds of simultagnosia. The first is the dorsal or the occipital-parietal one, characteristic of the Balint-Holmes syndrome. It is accompanied by optic ataxia and visual-spatial disorientation. The second one is the ventral or occipital-temporal, which is accompanied by pure alexia, prosopagnosia and visual anomia. In the latter, simultagnosia consists of a limitation of the number of objects that can be recognized in a given time, so that the descriptions of the patients are slow and difficult, as if they were reading letter by letter.

3. Spatial disorientation.
   Spatial disorientation is the inability of the subject to correctly orient and localize what they have seen in space. The subject cannot indicate the localization of the objects, either by pointing at them (optical ataxia) or verbally.
4. Decline of the ability to estimate distance and depth.
   Loss of depth vision is due to loss of topographic perception and failure of distance perception. The alteration affects not only the three-dimensional space but also the pictorial space, and the patient is not capable of perceiving the depth created by perspective, by changes of clarity or by overlapping of the objects.
5. Gaze Apraxia.
   Gaze apraxia consists of the inability to shift the point of attention in a scene.
6. Decline of visual attention.
   This deterioration prevents the patient from focusing their attention and although able to maintain normal visual acuity and visual field, the patient can only perceive one object and can hardly change the gaze direction or recognize other objects. It is accompanied by spatial disorientation. This attention disorder is explained by the presence of saccadic, slow and imprecise sight movements of the gaze, unless they are guided by sound or touch.
7. Disorders in the written language.
   The Balint-Holmes syndrome can also be accompanied by other cognitive alterations such as deficits in short term memory, in orientation, representation and visual-spatial recognition and, above all, spatial neglect.

The consequence of all these deficits is a marked inability to carry out voluntary movements in response to visual stimuli, so that in more severe cases the patient behaves as if blind and defenseless, living in a chaotic world of complex scenarios that cannot be understood, incapable of being oriented and of localizing the perceived objects in space.

Neurobiology of the Balint-Holmes syndrome

The Balint-Holmes syndrome appears after the onset of bilateral lesions of the parietal-occipital junction (*gyrus angularis,* dorsal-lateral zone of the occipital lobe, Brodman area 19) and often precuneous (superior parietal lobe), but the supramarginal and the precuneous superior temporal gyri are generally preserved. Moreover, the optic ataxia has been considered to be a consequence of the disconnection between the associative cortex and parietal-occipital visual cortex and the motor and frontal premotor cortex, given that many of the signs of the optic ataxia are similar to those of visual agnosia,[277] whose lesion occurs in the dorsal associative cortex.[114]

Although it is relatively rare, symptoms of the Balint syndrome have been found as consequence of hypoxias or intracranial hemorrhages with lesions in the parietal lobes in children,[278, 279] such as optic ataxia, simultagnosia, oculomotor apraxia, spatial deficits, difficulties to read and write long words in correct order, just to name some of the most frequent at said age. However, the neuronal network that contributes to the development of these neuropsychological functions, attention, short-term memory and spatial representation go beyond the activity of the parietal lobes and include the activity of the right premotor areas.[280]

Unilateral spatial hemi-neglect syndrome

The hemi-neglect or Pötzl[281] syndrome was already been considered by Babinski.[282] It is an agnosia accompanied by an attention deficit in which indifference is shown towards half of the body or surrounding space, generally on the right side, or ignores it. There is sometimes interference with daily life activities such as dressing, reading or writing. The hemi-neglect is manifested when the patient is asked to recognize parts of their body and objects located on the concerned side. For example, the subject cannot point to the objects placed on the right side of a table.[283]

Neurobiology of the unilateral spatial hemi-neglect syndrome

The hemi-neglect syndrome is appears after injuries of the right hemisphere (approximately 50% of right lesions versus 10% of left lesions) especially in the posterior-inferior parietal cortex, which may give rise to deficits of the short-term visual-spatial memory, of the temporal-parietal junction and circuits that include the right premotor cortex.

It is important to take into account that asymmetry exists in the attention process as the right hemisphere selectively attends to both hemifields while the left one only does so to the right hemifield.[284] Thus, after the stimulation of a visual hemifield, desynchronization of the EEG appears in the parietal lobe of the left hemisphere when this is produced in the right hemifield, while the desynchronization in the parietal lobe of the right hemisphere occurs when

there is stimulation of either of the two visual fields.[285] Something similar occurs with the Positron Emission Tomography (PET), since the left hemisphere is activated by contralateral stimuli and the right by bilateral stimuli.[286] In right-handed subjects there is an attentional preference for the left hemifield while this preference is towards the right side for most left handed subject.[287] It can therefore be stated that the right hemisphere is dominant for attention.

For Heilman et al.,[288, 289] there are two kinds of deficits based on the hemi-neglect, one attentional and the other intentional. The latter affects the initiation of a movement towards stimuli in the space contralateral to the lesion. There is a deficit in the left hemifield when the right hemisphere is affected while lesions in the left hemisphere do not produce such deficit because the right hemisphere, dominant for the visual-spatial and visual-constructive type functions and the skills, also exerts bilateral control on both hemifields, that is, the left and right.

For other authors what happens in patients with unilateral neglect, especially when there is right parietal damage, there is an interruption in attention to spatial stimuli. This interruption not only affects tasks that require the detection of a stimulus, but also visual search tasks.[290-292] Consequently, Bisiach and Luzzatti[293] consider that the spatial hemi-neglect is not only a sensory attention deficit but also a deficit of the activation mechanisms of the representations of spatial memory.

Other investigations have focused on mutual competition between both hemispheres,[294] which would be secondary to an imbalance of the hemisphere rivalry[295, 296] or an alteration in the motor processes in charge of programming saccadic movements.[297] Finally, for Mesulam,[298, 299] the hemi-neglect syndrome can be explained by an alteration of a network which includes to the posterior parietal cortex, (involved in the internal sensorial representation), the limbic and cingulated cortex, (related with motivation valence), the frontal cortex, (responsible for the coordination of the motor exploratory programs) and the reticular formation. The lesion of any of these areas or their subcortical connections may give rise to spatial hemi-neglect, whose clinical symptoms reflect the right anatomic specialization responsible for the visual-spatial processes and organization of our body schema.

Anosognosia

Anosognosia is the inability to recognize or integrate a disease, deficit or sudden disability into the body experience. This lack of consciousness is usually permanent and stable throughout time.

The term anosognosia (from Greek, *a* 'without', νοσος (nosos) 'disease' and γνῶσια (gnosia) `knowledge,´ was used for the first time in 1914 by Babinski,[282] in two patients with left hemiplegia who were unaware of "or seemed to be unaware of" their motor deficit, in spite of maintaining a good level of wakefulness and good judgment ability about other activities. One of them was a female patient with left cerebral hemiplegia and blindness who seemed to be unaware of her paralysis and who was also confused, disoriented in space and time and had visual hallucinations. Babinski pointed out that the most important was the spatial localization of the lesion in the left hemisphere and wondered if the same would occur in the case of right cerebral hemiplegia.[300]

The oldest reference regarding lack of recognition of a deficit is from von Monakow in 1885[301] in relation to a patient with cortical blindness who did not perceive his defect. Later Jackson[302] published a case in which the patient did not perceive his left hemiplegia and Anton[303] described several cases of blindness and cortical deafness accompanied with hemiplegia who were not aware of the existence of these sequels. Anosognosia is not limited to the onset associated to a left hemiplegia as in the original description of Babinski, or to the cortical blindness of Anton, since they are already present in patients with hemianopsia, aphasia and other cognitive deficits or with amnesias in a Korsakov syndrome or in basal lesions of the prefrontal lobe. During the last years of his life, Charles Dickens suffered hemiplegia and other symptoms as a probable consequence of a right parietal lesion, among them a hemiparesia and pain in the left foot. Over time, the writer started to deny his disability and wrote:[304, 305]

> "*I never was better in my life doubt if anybody ever was or can be better, and have not had anything the matter with me but that queezed foot, which was an affair of a few days.*"

Anosognosia should not be confused with lack of disease awareness present in many delusional patients. In the first case, it is a body perception disorder in which the subject ignores a sick limb (paretic) or a function (visual perception). In the second case, it affects the conviction of reality of the delusional contents, in spite of the fact that much it can be attributed to a brain origin (functional disorder of the frontal and parietal lobes).[306, 307] The same could be said about the denial present in many neurotic disorders and the anosodiaphoria or the *belle indifference* of hysteria, even though a neurobiological mechanism common to both has been proposed.

In the same work in which he described anosognosia, Babinski introduced the term anosodiaphoria (from Greek *nosos,* `disease' and αδιαφορά (*a-diaphora*) `indifference´ in order to refer to the indifference to the own disease, which Anton[180, 308] had already described and that he considered as a disorder having less severity. The partial lack of conscious on the disease may be due to the call of attention by third

parties about inability, to the consequence of the own experience or to the affective blunting associated to the brain lesion.[309]

The anosognosia has been explained from very different perspectives and it is possible that there is univocal.[310] The most important ones are.

1. Psychological reasons.
   Weinstein and Kahn proposed that the disability attributable to a brain lesion was associated to a denial mechanism, probably related to the copying style of the patient.[311] However, it is necessary to clearly differentiate the denial of an event that is rejected outside of consciousness from the impossibility of recognizing it, which is what characterizes agnosia. On the other hand, this hypothesis does not totally explain the laterality of the phenomenon, of left predominance, or the experiences with the Wada test in patients who are candidates for epilepsy surgery. This test consists of the intracarotid injection of short acting anesthesia (for example, methohexital) in order to identify the dominant hemisphere.[312-314] It is also not consistent with the clinical experience and the literature on stroke,[315, 316] which supports the fact that anosognosia appears mainly when there are alterations of the right hemisphere.[310, 317] The denial may be treatable by psychotherapy, the agnosia requires a rehabilitation, for instance, with the help of mirrors.[318]
2. Confusional syndrome.
   For Hecaen and Albert[319] anosognosia is secondary to a confusional state, which has been attributed to dysfunctions of the right hemisphere.[320] However, it presently seems to be clear that it is more than affective blunting due to lesions of the right hemisphere or an attention deficit,[321] more than a disorder of the consciousness.
3. Alteration of the sensory feedback.
   This hypothesis pretends that anosognosia associated to hemiplegia may be due to an involvement of the sensory feedback[322] that may affect both the somatosensory and the visual stimuli. However, it has been possible to verify that in the studied cases, sensory weakness does not have enough intensity to provoke the clinical picture.[323] On the other hand, there is a series of studies that show that anosognosia is not simply a consequence of a asomatognosia,[310, 323] since the involvement of the parietal lobe may cause anosognosia.[324]
4. Interhemispheric disconnection.
   For Geschwind,[325] anosognosia is due to interhemispheric disconnection, in which the lesions of the left hemisphere destroy the sensory monitoring of both hemispheres, while lesions of the right hemisphere distort the monitoring of the intact left hemisphere. As this hemisphere mediates in speech and language, in the absence of true information from the right hemisphere, the left hemisphere, unhurt, the "eloquent brain" creates responses to the functions that belong to the damaged right hemisphere, responses that can be confabulations.
   Devinsky[167] has called attention on syndromes characterized by poor delusional identification, such as the reduplicative paramnesia or the Capgras syndrome and others such as confabulations or anosognosia. His hypothesis is that in all of them there is a bifrontal dysfunction and a right hemisphere dysfunction[326] caused by vascular lesions or others of different nature, which would affect the monitoring, of the self and of its borders of the self and of the association of emotional valences and feeling of familiarity regards the stimuli. As a consequence an hyperactivity of intact areas of the right hemisphere would be compensate for the give rise to distortions of delusional nature.
5. The expectation theory or *feed forward.*
   Heilman,[327] has proposed and developed a hypothesis to explain that the failure of an action cannot be recognized if there is no previous expectation of it. Consequently, the recognition of a disability is at least partially based on the activation of the motor and premotor systems that trigger the actions and simultaneously activate the body representation at the completation of the action. Consequently, in motor disorders, there is no correspondence between the representation and the result of the action and several deficits appear: 1) of the action-intention system (monitoring failure); 2) failures of the feedback by deafferentation or attentional neglect; 3) dysfunction of the comparison system (personal neglect) and 4) disconnection between the comparator (body representation) and the language areas of the left hemisphere (confabulation).
   Neurobiology of the anosognosia

Anosognosia with hemiplegia is the most common of anosognosias and if often caused by circumscribed vascular bleeding in the right hemisphere, especially of the right posterior parietal cortex.[328] In fact, anosognosia occurs represented in 20-50% of the strokes with left hemiplegia and 5 to 10% of those with right hemiplegia.[329]

However, the anosognosia is also present in bilateral lesions of different cortico-subcortical circuits in which the frontal, parietal and temporal lobes,[330] are involved, such as the anterior part of the insula and the adjacent subcortical structures, premotor cortex, cingulate gyrus, parietal-temporal junction and temporal medial structures such as the hippocampus and amygdala.[331] Neuroimaging techniques have been able to localize many areas associated with anosognosia, among them lesions in the frontal lobe, right posterior parietal cortex or premotor cortex of both hemispheres, parietal, temporal and insular cortical lesions of the right hemisphere and subcortical lesions located in the thalamus and basal nuclei.[332]

Anosognosia may appear in patients with intracranial hemorrhages in the right frontal lobe and in both temporal medial lobes, with extension towards the occipital cortex and part of the calcarine fissure and to the posterior part of the corpus callosum.[333]

The affection of the insular lobe of the right hemisphere and adjacent subcortical structures,[334, 335] involved in body perception, specifically of the sensation of own ownership, of the intentional action or movement awareness, per se,[336] are involved in anosognosia. However, the coherence of the experience of the body itself depends on the integration both of the efferent information processes and the afferent information,[337] which involves cortical-subcortical neuronal networks beyond the involvement of the insula.

Anosognosia can be accompanied by other neurological conditions, as it is the case of the Anton-Babinski syndrome that is observed in hemiparesis or left hemiplegias, Alzheimer's disease and apathy that forms a part of it,[338] mild cognitive impairment[339, 340] and amyotrophic lateral sclerosis with frontotemporal lesions.[341]

Somatoparaphrenia

Somatoparaphrenia is a subtype of anosognosia in which the patients lack identification of a limb, which they consider belongs to somebody else. For example, for the patient his arm is not his, it belongs to the physician or to the patient in the bed next to him. It is a delusional or confabulatory phenomenon.[210, 342]

The term was coined by Gerstmann in 1942,[343] which refering to a patient who stated that a hemibody (or part of it) belonged to another person, although Karl Jaspers, in 1917,[342] had previously reported that a patient of Pötzl, with left hemiplegia, had declared that his paralyzed hand probably belonged to another patient. At other times, he felt that there was a strange person at his left side who wanted to push him aside.

The delusional conviction is related to the hemibody in the somatoparaphrenia and triggered by a focal brain injury, generally vascular. On some occasions, the patient mistreats or even humiliates the part of the body that he does not consider to be his (mysoplegia). Most of the delusions of the somatoparaphrenia only refer to the arm and not to the face, trunk or leg,[344] although cases have been published of other parts of the body, for example a patient who believed that the paralyzed left hemibody belonged to a woman and he had erotic sensations with her. Another believed that his leg belonged to the patient in the bed next to him or the female patient who believed that her left arm belonged to her daughter, to a friend, to a grandson and finally to a cat.[342, 343, 345]

Somatoparaphrenia may or may not be accompanied by anosognosia and motor and somatosensory deficits and a syndrome of unilateral spatial hemi-neglect, all of them with left predominance.

Neurobiology of somatoparaphrenia

Somatoparaphrenia is usually triggered by a focal brain injury, generally of vascular origin. The injuries are usually wide, predominantly frontal and orbito-frontal of the right hemisphere, although there are cases with posterior lesions (parieto-temporal) and of the insula and the most plausible aspect is that both kins of lesions are necessary to produce the clinical picture.[216]

Heteropatognosia

Heteropatognosia is the failure to identify or indicate parts of the body of another person, for example of the physician, even though the language, understanding and touch are not affected. This latter allows to rule out visual or spatial disorders that hinders recognition of form, size, complexity or composition of the body.[346]

Heteropatognosia is associated to left parietal-occipital lesions involved in the denomination processes.[346, 347]

Autoscopic experiences

The autoscopic phenomena are illusions that affect experience and body belonging. The autoscopic term *Heautoskopie,* from ancient Greek ἑαυτόν (*heautós*),`self´and σκοπός (*scopós*) `to look,´ `to observe´ was used for the first time by Menninger-Lerchenthal[348] to refer to patients who described sensations of being outside the body, of seeing the own body from outside or seeing themselves as having a "double" in the surrounding space,[349, 350] and if their body would project itself in the external visual space.[351]

Menninger-Lerchenthal related the phenomenon to the Nordic and German tradition of the *Dopplegänger*, lit, the double walker, who walks by one's side, that is linked to older ones that refer to a double of each one of us, "the evil twin," of bad prediction, whose appearance is a prediction of death.

Jean Paul Richter made famous the character of his novel *Tod und Hochzeit des Armenadvokaten Siebenkäs (Death and Wedding of Poor Men's Lawyer Siebenkäs)* of 1796 in which the character simulates his death and burial in order to end an unhappy marriage. He described the *Dopplelgänger* as "the person that looks at himself." Richter had a great influence on Wilde, Poe, Dostoevsky and Maupassant.

Autoscopy is such an extraordinary phenomenon that it is not surprising that it has been the object of literary narrations since ancient times. Aristotle describes it when he says that Actiferon,[352] while going on a walk, observed that a reflection of himself walking towards him. Oscar Wilde in *The Picture of Dorian Gray,*[353] tells the story of a man, obsessed by his portrait, who ages and is burdened with his sins and excesses while he keeps his youth and beauty. The relationship between Dorian and the portrait is a clear autoscopic hallucination that finally drives the character crazy, who kills himself when he tries to destroy it. Edgar Allan Poe in *William Wilson*[354] describes how the character dialogues with his double and challenges him to a duel, at the end of which he says to his double.

> *You have conquered, and I yield. Yet, henceforward art thou also dead -- dead to the world, and its hopes! In me didst thou exist -- and, in my death, see by this image, which is thine own, how utterly thou hast murdered thyself.*

Guy de Maupassant, in "Le Horla," [355] describes his own double hallucination, in these terms:

> *It is he, the Horla who haunts me, and who makes me think of these foolish things! He is within me, he is becoming my soul; I shall kill him! I shall kill him. I have seen him, he was spying on me, he read over my shoulder, I perceived his breath in my air; I got up and I could not see myself in the mirror; it was empty, clear, full of light, but my figure was not reflected in it.=*

The absence of his image in the mirror is a classical example of the negative autoscopy. Dostoyevsky in *The Brothers Karamazov*,[356] writes about his own hallucination: " *I am delusional, you are myself, myself, only with a different face."* In his tale, "The Double," he tells the torments of Goldyadkin, a character haunted by his double whom, after several encounters, sees him going into his house, sitting down at the edge of the bed and welcomes him. At that moment, he realizes that the strange person is himself. Goethe mentioned how he saw his own image not with the eyes of his body, but with those of his spirit "when he found himself," going away from Drusenheim, dressed in the same clothes he had worn in a previous trip.[357]

It is most likely that the cases described by writers correspond to these experiences, sometimes of oniric nature, with the exceptions of the ones told by Dostoevsky.

Foerster,[358] following Wernicke,[359] considered these cases as the consequence of a dissociation of the somatopsyche. The somatopsyche is made up of two elements, one specific sensory and the other muscular, resulting from the movement necessary for the adaptation of the sensory organ to the stimulus received. The sense of reality comes from this association between the muscular and sensory components. On the contrary, their dissociation and the non-perception or absence in the consciousness of the myogenic components would give rise to the denial syndrome of the own body in any of its forms. Deny and Camus[360] proposed a similar theory. For them, the surprise feeling would arise from "*the agitation of the cortical centers where the images of the internal and organic sensations are established and registered from which we have the notion of our corporal existence"* that is to say the cenesthesia.

During a long time, heautoscopy and autoscopy were considereted like synonyms, the latter form Greek αὐτός (autos) 'own, 'self', but at present they are considered different phenomena in spite of some overlapping.[361]

The current tendency is to distinguish five kinds of clinical profiles, the first four of which would be autoscopic experiences in a strict sense:[362, 363]

1. Autoscopic hallucinations.
   The first description of autostopic hallucinations is the description of Wigan in 1844 on different patients that he published under the title of *The Duality of the Mind.*[364] French psychiatry of the end of the19th century and beginning of the 20th identified this phenomenon as mirror hallucination given that the patients had the exact vision of their image as if they were looking said image in the mirror.[365, 366] Unlike heautoscopy, the patient does not localize himself in the second body. In the autocopic hallucinations only parts of the body are seen as exact mirror images. The most complete modern description about autoscopic hallucination is the one of Coleman[367] who called it double phantom.
   A negative autoscopy has also been described, in which the subject is unable to perceive his/her image in the mirror. The picture was described by Sollier[365] and received the name of **Maartechen Syndrome**, seeming after its appearance in a German video in You Tube (*Verstehen Sie Spass? – Unsichtbar / Invisible¨)* in which the audience was suggestively manipulated to make the public believe that they suffer from this syndrome.
2. Heautoscopy.
   In the heautoscopy, the patient experiences a second ego, an illusory double in the extratemporal space and localizes himself in this second self. In the pure cases of heautoscopy; the subject feels like an astral body displaced outside the body and attention is drawn to the ingenuity and spontaneity with which the affected persons describe the experience. For Sollier,[365] the heautoscopy is a projection outside the body of the kinesthetic sensations which would thus be localized and objectified in the external space. It is not a visual phenomenon, or an hallucination and even less a visual hallucination. It is primarily a consistent and simple experience in which the unit of the experience of the psychological ego does not correspond to the experience of the body ego. Since then, in the complicated cases, the subject would add external attributes to the kinesthetic sensation, having external or simply moral attributes. The autoscopic phenomena are complex. Reduplication is not a simple hallucination as it affects the own ego (self) and can be accompanied by thoughts, voices and delusional actions, depressive disorders and

suicidal ideation, in general accompanied by a feeling of not be able to analyze the particular reality of the phenomenon.

3. Out-of-body-experiences.
The out-of-body-experiences usually occur when the subject is in the supine decubitus. During those experiences, the patients find themselves outside of themselves, in the external space, outside the location of their own body, seeing the world from the distance and the body from above or they find the self outside the own body.[368, 369] Sometimes they use the term "**double**" to describe this psychopathological phenomenon.
4. Presence sensations.
In the presence sensations, the patient feels, but does not perceive, the presence of another body in the extrapersonal space, a body that usually belongs to a known person[214] and is generally accompanied by hemi-neglect.
5. Room tilt illusion.
The room tilt illusion suddenly produces the sensation in the patient that the room where he or she is has tiled upsidedown. The phenomenon may last from seconds to hours and during this period of time the patient localizes his body well.[370] This may be due to injury in the brain stem or the brain vestibular system but also of the occipital or frontal parietal cortex.[371]
This illusion shares the sensation of rising up and floating and the personal and extrapersonal space disorder with autoscopy.[368] However, in it, the sensation is lack of alignment with gravity, even total inversion in the exterior space.[372, 373] This is probably due to the lack of consistency between the visual and the transitory vestibular information on the cortical level.[374] There is vestibular participation in some of these phenomena. Therefore, it is necessary to take the so-called vestibular cortex into account through the temporal-parietal junction projections, especially the right one[375] and the posterior insula.[376]

Neurobiology of the autoscopic experiences

1. Autoscopic hallucinations.
The oldest investigations relate this type of phenomenon to parietal-occipital dysfunction was related.[348] Over time, the autoscopic phenomena have been associated to other regions, among them the prefrontal cortex, to the right temporal-parietal junction,[377-379] interferences in the frontal-parietal connections and also to right occipital striate and extrastriate areas involved in recognition of the faces and body schema[380] and vestibular lesions[378, 381-383] because the vestibular cortex not only receives vestibular information but also propioceptive, visual and tactile information from the whole body.[384] Therefore, the observation made by Lhermitte and Hécaen[385] is not surprising. They detected the presence of a hemorrhagic focus in the spinal-bulb-protuberance region in a patient who for days that his lower limbs were in the air, over the bed plane were they were really resting.
It has recently been proposed that the autoscopic hallucinations and the out of body experiences would be the consequence of lesions in the right parietal-occipital cortex,[386, 387] while distortion and transformations of the own body may be associated to the temporal lobe.[388, 389]
In fact, in studies carried out with healthy subjects, during the performance of tests similar to the symptoms characteristic of autoscopic hallucinations, have demonstrated that the temporal-parental junction and the prefrontal cortex could be involved in knowledge, processing and experience of one self, which would imply a special role to it in the cortical network responsible for self-consciousness.[390-396]
2. Heautoscopy.
The oldest investigations associated heautoscopy to lesions of the angular and supramarginal gyri.[348] The most recent data point out that the heautoscopy may appear in lesions of the left temporal-parietal junction.[382]
3. Extracoporeal experiences.
The first works mentioned that the extracorporeal experiences were associated to lesions in the upper part of the parietal lobe.[348] More recently,[377, 397] extracorporeal experiences have been associated to the right temporal-parietal junction,[368, 397, 398] of the temporal-parietal, frontal-parietal or parietal-occipital cortex.
4. Presence sensation.
This phenomenon usually appears in lesions that affect the right hemisphere, especially the frontal-parietal cortex. On the other hand alterations of the temporal-parietal junctions have also been described in conditions such as schizophrenia,[399-401] or major depression, therefore it should not be surprising that persons with these disorders have presence sensations, of the type described by Jaspers,[136, 402, 403] in schizophrenia and hysteria. This phenomenon has also been described in normal subjects under sensory deprivation or social isolation conditions.[404]

Disorders of the corporeal self

The following disorders are included in the corporeal self:

Allochiria, from Greek αλλός (*allos*) ˋother´ and χείρ (*cheir*) ˋhand.´ It is disorder described by Obersteiner in 1882[405] in which a sensation is perceived on the opposite side of the body or the space from which the stimulus took place (tactile or painful). Allochiria has been considered part of the spatial hemi-neglect.[406]

Allesthesia or allachaesthesia (from Greek αλλαξε (*allaché*) ˋin another place´ and αΐσθησις (*aesthesis*) ˋsensation´, ˋperception´): disorder described by Steward in 1894 in which a sensation is perceived in a different place of where the stimulus took place (tactile or painful), but in the same limb and he differentiated it from the allochiria,

against the unitary hypothesis of Jones, that on the other hand has not been sufficiently ratified. Jones in 1907 reunified both disorders and considered that the allochiria was of hysteric nature taking into account the lack of a better knowledge of the parietal functions.[407]

Visual allesthesia: This is a disorder in which a transposition of visual images of a visual hemifield to the other takes place.[408, 409]

Neurobiology of the disorders of the body self

The visual alterations, including visual allesthesia, can appear transitorily in epileptic fits, migraine, encephalitis, and poisoning and in psychiatric diseases.[410] Although visual illusions due to focal brain injuries are uncommon, there are cases that show that right parietal lobe lesions cause allesthesia.[411] It has also been verified that the cerebrovascular accidents of the posterior cerebral artery and of the middle cerebral artery in their most posterior locations may give rise to neuropsychological alterations, such as palinopsia, hemiachromatopsia, polyopsia, visual and tactile allesthesia, visual illusions and hallucinations.

Halligan et al. published a case of a patient with left spatial hemi-neglect after right frontal-parietal hemorrhage in which the patient had neuropsychological alterations in the tests associated with the left hemifield and sometimes perceived sensations on the right side,[412] that could be the consequence of the lack of mental representation of the spatial coordinates of the elements that make up a scene,[413] of spatial transpositions that alter the mental representation of the global space[414] or own perceptive alterations of the left spatial hemi-neglect caused by injuries of the right posterior association cortex.

A recent study[415] demonstrated the existence of multiple visual-spatial alterations in a 64-year old patient with right occipital intraparenchymatous hemorrhage that showed constant variations in the form of objects and persons or metamorphopsia, seeing them extremely elongated and thin (macropsia), short (micropsia), wide, referred to an alteration in the perception of colors (dyschromatopsia), so the objects changed their color and even the intensity and finally described transposition of the objects from one side to the other (allesthesia).

NEUROLOGICAL SUBSTRATES OF THE AGNOSIAS

We have already mentioned how the cases of agnosia are a natural experiment that makes it possible to study how the perception of the body is established and how it is affected in several diseases and brain lesions. However, most of the publications are based on the study of persons in whom a stroke, localized brain-encephalic trauma, localized tumor or disease, affect body perception, or on the analysis of the differences among involvements of the right or left hemisphere. Thus, the recognition of the fingers and the hands is localized in the region of the *gyrus angularis* of the left hemisphere. However, over time, the studies have incorporated patients with single or extra involvement of different areas into the casuistics and the modern neuroimaging techniques usually corroborate this dispersion. At one point, someone may feel overwhelmed because most of the cortical areas are involved in the perception of the body and the surrounding world, and this is most likely true.

These difficulties begin with a mistaken concept, too localizacionist or even "phrenological," because losing the recognition of the fingers and the hands and everything associated to it does not mean that this recognition is localized or takes place in a set of neurons of *gyrus angularis* but that the integrity of this structure is necessary to reach this knowledge. When we say that even phrenological, we are referring not only to the fact of localizing functions but also to the selection and definition of these "functions" that are often as peculiar as hypothetical. This is the same that Gall did when he took functions such as creativity, sublimity, etc. into consideration.[416]

Table IV depicts a preliminary summary as regards to the participation of the cortical areas in the different forms of agnosia.

THIRD PART: THE PERCEPTION OF THE BODY

THE SEARCH FOR A SIXTH SENSE

The question about how we perceive our body and the discussion about an extra possible sense in addition to the five traditional ones, that are our windows opening onto the world, is as old as that of philosophy itself. Aristotle did not envision more than the five external senses, but he considered that a common sensation (*koinos aisthétérion* or *sensorium commune*)[417] also exists, and that it was not just another sense: *No other sense exists aside from these five, but there is a common sensation* whose function is to unify or better, to harmonize the sensations originating from the external senses. Nonetheless, the question of whether there is a *sixth sense* of one's own body, as opposed to Aristotle's view, has long concerned philosophers and physicians.

Any theory about the perception of the body based on the existence of a specific sense must answer upfront several questions:

1. What are the stimuli that are detected by this sense?
2. What are the receptor organs of the stimuli?
3. Which nerve pathways and centers are involved?

4. What type of information do they provide and what is their adaptive value?
5. How does this sense integrate with the rest of the senses?
6. What are the disorders of this sense and their morbid manifestations?

THE INTERNAL SENSATIONS

The interest in a sixth sense able to perceive bodily sensations owes much to Aristippus of Cyrene (435 b.c. - 350 b.c.) and his disciples of the School of Cyrene that he founded. Through the work of Cicero[418, 419] we know that they had mentioned an **internal sense of touch,** *(tactus intimus* or *tactus interior),* which involves intimate (or internal) tactile sensations. Aristippus is considered the father of hedonism. Although he was a disciple of Socrates, he was strongly influenced by Protagoras, whose philosophy turned on the phrase "man is the measure of all things." For the Cyrenaic philosopher, happiness consisted of pleasure; the more pleasure one experienced, the greater one's happiness was. Finally, since the most intense pleasure is sensual, this is the pleasure that should be pursued. Within sensual pleasure, only present pleasure (*parón pathos*) is of interest, and there is no need to worry about the future. Nevertheless, Aristippus maintained, under the influence of his teacher Socrates, that the fostering of intelligence allowed to distinguish between sensual and intellectual pleasures, between pure and mixed pleasures, and between selfish and disinterested pleasures. Later Diogenes Laërtius[420] further qualified this position when he affirmed that man should not be dominated by pleasure, but should dominate it. The Cyrenaic School had a very skeptical standpoint and supported the idea that "we can only be sure of our senses" and therefore maintained that no object in the outside world can be known directly.

However, pain and enjoyment have not usually been considered an integral part of the sensory processes, but pertain to feelings and instincts, whereas *sensus internus* refers to the conscious activities that the spirit develops by and of itself (reason, memory and imagination) from the information obtained through the external senses (sight, hearing, taste, smell and touch).

Descartes, in *The passions of the soul,*[421] describes the perceptions that the body causes in the soul, i.e., the mental impressions that "*come to the soul through the nerves*", which are of three types: 1) the impressions that "*refer to the external objects that impress our senses*"; 2) those that "*refer to our body or some of its parts*" and 3) those that "*refer to our soul*". The first type of perceptions, those that refer to external objects, correspond to what we usually call sensations or perceptions, which have as their object appearances, realities or characteristics of the external world. The third type is constituted by the perceptions that refer to our soul, and coincide with what we call feelings. We are thus interested in the second meaning, the perceptions that we relate to our own body. According to Descartes,

Table 4 Brain lesions and types of agnosias

RIGHT HEMISPHERE	
Medial frontal cortex	Anosognosia Asomatognosia Somatoparaphrenia
Posterior parietal cortex	Anosognosia Asomatognosia Misoplegia Prosopagnosia Unilateral spatial hemi-neglect Somatoparaphrenia
Temporal cortex	Anosognosia, Asomatognosia Prosopagnosia
Insula	Anosognosia
Thalamus	Misoplegia
Occipital thalamic radiations	Misoplegia
Gyrus fusiformis	Propopagnosia Autoscopic experiences
Occipital cortex	Prosopagnosia
Prefrontal cortex	Prosopagnosia
Temporo-parietal junction	Autoscopic hallucinations Out-of-body experiences
LEFT HEMISPHERE	
Gyrus angularis	Gertsmann's Syndrome Balint Holmes Syndrome Autoscopic experiences
Parietal lobe	Unilateral spatial hemi-neglect Heteropatognosia
Occipital lobe	Heteropatognosia
Supramarginal connections	Autoscopic experiences
BOTH HEMISPHERES	
Temporal lobes	Prosopagnosia with visual hypo-emotionality
Limbic system	Prosopagnosia with visual hypo-emotionality
Corpus callosum	Asomatognosia

The perceptions that we refer to our body or to any of its parts are the perceptions that we have of hunger, thirst and our other bodily appetites, to which can be added pain, heat and the other affections that we feel (as if they occur) in our limbs and not in external objects. Thus we can simultaneously feel through the same nerves the coldness of our hands and the warmth of the flame as we bring our hands close (...) without there being any difference between the actions that make us feel the warmth or cold in our hands and those that make us feel that this occurs outside us. [421]

Consequently, the internal and external Cartesian sensitivities have the same nature although they refer to two different perceptive spheres: the external world and one's own body. In both cases we are dealing with what Descartes considered as thoughts (*pensées*), or the contents of consciousness, which we know in an immediate way.[422, 423] These contents are caused by the body (in contrast with other contents such as volitions[421]). Thus, real events, some external and others of one's own body, cause changes in the sensory organs that in turn generate the contents of the immediate consciousness, i.e. mental contents.

According to Janet,[424] in the late 18th century and early 19th century the study of what were called internal,[425] visceral, or organic sensations, the fundamental feeling of existence ("*a feeling proceeding from one's body function,*" Maine de Biran[426]), the *splanchnic ego*,[427] *sens du corps* or body sense,[428] and panesthesia or general sensation (Hazen) came into vogue. To these concepts must be added the contributions of Cabanis and Peisse in the comments on a book by this author[429] and those of other authors like Seze, Paul Janet, Bain, Maudsley, Jouffroy, Hermann, Richet and Bouillier.[424]

The internal sensations are generalized feelings of pleasure or pain that provide information on the notion and existence of the organs,[430] on needs such as hunger and thirst, and on organ functioning, for example, digestion, etc. At times the descrption of internal sensations include vague and general feelings,[428] such as the boy who feels himself grow or, later on in life, adults who feel themselves age. To these feelings more complex feelings are added, such as sadness, distress malaise, well-being, or joy, which Ribot referred to the body: "*melancholy and joy are reflections of the state of the body and the function of our organs.*" However, Janet[424] is critical of many of these manifestations and wondered if it was well-demonstrated that feelings of sadness, joy, fatigue or effort are related to body function or the state of the stomach or bowel. He adds that "*any doctor can tell you what extremely silly things some patients say in their manic accesses, which contrasts with what occurs in melancholic states and has nothing to do with the state of their organs.*" On the other hand, many organs are insensitive to pain and the location of the sensation of the organs migrates to the mouth or anus. Despite everything it must be recognized that the contributions of Ribot are a precedent to the description of corporal and vital feelings in Scheler and Kurt Schneider, to which we will refer farther ahead.

KINESTHESIA

The word kinesthesia derives from the Greek *κίνησις* (*kinêsis*) `movement´ and *αἴσθησις* (*aisthêsis*) `sensation,´ meaning the sense of the movement of parts of the body. Kinesthesia is a kind of proprioception in which the vestibular information on position and spatial displacement has been suppressed.

In 1557, a controversial figure, Scaligero (Julius Caesar Scaliger, also known as Giulio Cesare della Scala) described the sense of position and movement with the name of **sense of locomotion**.[431] In 1826, Bell[432] and Duchenne de Boulogne[433] put forth the notion of a **muscular sense**[434] and Brindley and Merton considered a **sense of effort** because they realized that it is often not pure sensory information that comes from the sense organs, but perception of an internal feedback to an efferent order per se.[435] In 1880 Bastian,[436, 437] referred to a broader concept of **kinesthesia** than the muscular sense because it included sensations from the tendons. In fact, in 1889 Goldscheider proposed three kinds of kinesthesia as the result of experiments on muscular anesthesia: muscular, tendinous and articular.[438-440]

All this contributions evolve around the fact that, in the same way that perception is an elaboration of the external reality and its stages, the perception of the own body, of its stage and of its situation from the sensations produced by the movements of the muscles, articulations and tendons.

Bastian[437] also conceived the idea of a **kinesthetic center** that governs the body as a whole based more on movement than on mere muscular afferent information, of which we are unconscious or only "weakly" conscious. Something essential is also needed, the reminiscence of the impressions of past movements.

It has sometimes been considered that it is the kinesthetic sensation of the position of one's own limbs that enables us to walk. It is true that one needs to look where one has one's foot in order to take a step, in the same way that one needs to measure the width of one's shoulders and compare it with the width of a door in order to know if one can pass through it. But this does not imply that we have an internal sense of the size of our bodies by means of which we know where we fit and don't fit. The knowledge of our girth or of our height is not the fruit of an external observation, but that does not make it a product of an internal sensation. It simply does not respond to any observation, whether external or internal. Analogously, we also know without external observation

where we can park our car and where it does not fit, and nobody would believe in the existence of a kinesthetic sensation on the perimeter of the bumper. With all that, the question is not whether sensations of position exist or not, but whether those sensations serve for what they are supposed to do, for example, to walk. To use the words of Wittgenstein: "*We don´t actually judge the position and movement of our limbs by the feelings that these movements give*"[441]

For Bastian, kinesthesia is a cortical phenomenon that goes beyond mere impressions of the muscular sense, or proprioception. For Bastian and Wernicke,[442] the cortical motor area is a center of kinesthetic images.

The idea of kinesthesia was not unlikely, although limited as formulated. The human body reaches its full potential thanks to movement, which is the basis of creativity and of the capacity for expression and communication between human beings and other living beings. We move because we exist and by means of movement we situate ourselves and are able of structuring ourselves better in, and with, the world, thus becoming aware of ourselves as active beings, as living beings. Therefore, movement is one of the keys to being human.[443] We are, therefore, human reality in movement, not static. The epiphany of the human body is movement.[444]

CŒNESTHESIA

German medicine has long distinguished between the senses of the skin, or touch (*Tastsinn*), and the common or general sensation (*Gemeinempfindung* or *Gemeingefühl*),[130, 445] or body feeling (*Leibgefühl*), which corresponds to cœnesthesia insofar as it is understood as the general sensation of the existence of one's own body and its parts. The word comes from the Greek κοινός (*koinós*) `common,´ and αἴσθησις (*aísthesis*) `sensation.´

The term *cœnesthesis* was first used in 1794 in the doctoral thesis of Hübner, which was carried out and probably strongly influenced by Reil[418, 446-448] to refer to the common sensation (*Gemeingefühl*) that, by definition, includes all the bodily sensations that persist after separating all the sensations associated with the skin, that is, the sensations that do not proceed from any specific receptor (touch, temperature, pressure or location) or sense organ. Common sensation includes pain and "objectless" sensations, such as well-being, pleasure, tiredness, hunger, nausea, muscular sensations and other sensations common to several organs, such as deep pressure or specific sensations like tingling, trembling or chills. For Reil, the means by which the soul receives information about the state of the body was a body sense. The word cœnesthesia did not appear in the literature in English until 1837.[449]

Reil was a physiologist and physician with a strong philosophical background. He was initially influenced by Kant and later by the *Naturphilosophie* of Schelling, and maintained close relations with Goethe; Reil coined the word psychiatry.

According to Starobinski,[446-448] three kinds of representations were described in the thesis of Hübner, that differ based on the object represented. In effect, the soul represents:

1. Its own intellectual state, forces, actions, representations and concepts; it distinguishes these things by itself and thus becomes aware of itself.
2. Its external state and the relation of the whole human being with the world.
3. Its own bodily state.

Each of these three kinds of representations is the responsibility of a particular organic apparatus: sensation (*sensatio externa*) is excited by the senses; certain activities are born and fully develop in the organ of the soul (i.e., the brain); and cœnesthesia is mediated by the nerves, which are generally distributed throughout the body.[450] Hübner closely follows the teachings of his master, for whom mental diseases were the consequence of an imbalance between three main mental forces: 1) the sense of oneself as an integrated, differentiated and permanent person (*Selbstbewußtsein*), 2) the sense of the relative importance of surrounding objects (*Besonnenheit*) and 3) the capacity to focus one's attention (*Aufmerksamkeit*).

Weber[451] used the experimental method to study muscular sense "*because the tactile and muscular senses can be investigated without harming*" the living being, but he finally integrated it in *Gemeingefühl* (common sensation), which consists of something more than the sensation of the relative posture of the parts of the body and of the body's spatial position. Common sensation is the awareness of our own state of sensations (*das Bewusstsein von unserem Empfindungszustande*), in which the objects are not perceived as such.[452] Consequently, it can be argued that a sensation that does not involve specific receptors is not senso-perception but something different, "*it is the awareness of our own state of sensations,*" which is constructed from perceptions.[157] This is what latter on phenomenologist called *Erlebniss* (lived experience), as we will see below.

Høffding, a Danish philosopher influenced in his early work by Kierkegaard, later developed an interest in positivism and experimental psychology and was deeply interested in cœnesthesia. He had a close relationship with Wundt and may have been familiar with the writings of Reil through him. For Høffding,[453] cœnesthesia was the "*general feeling that derives from the state of the entire body, from the normal or abnormal development of the vital functions, particularly vegetative functions.*" The stimuli that give rise to cœnesthesia are vague, poorly localized and not perceived as discrete, isolated stimuli, but as a whole. On the other

hand, cœnesthesia is a feeling in which organic sensations give rise to the notion of oneself independent of other individuals and external objects. The notion is complemented with the existence of tactile and visual stimuli intimately linked to the body and a "feeling of unity" to which Wundt[454] referred to, which is the fundamental attribute of the experience of self as an organized unit.

The term cœnesthesia, or common sensation, was in general use until the beginning of the 20th century and referred, as we indicated, to the diverse aspects of body perception and the boundary between the body and psychic life.[418, 455, 456]

Reil's concept of coenesthesia comes to us through Herzen[457] and other authors down to Ribot,[446, 447] and eventually leads to the body schema concept introduced by Bonnier.[458, 459] Cœnesthesia should be thought of as a vital feeling (see below) in which the harmony that normally exists between the diverse bodily functions is experienced as a vague feeling of satisfaction and well-being. Everything that disrupts that harmony will give rise to a more or less defined or acute feeling of malaise. For that reason, cœnesthetic disorders are closely associated with the vital feelings and their morbid manifestations, especially depressive and anxiety disorders. The concept continued to be used in philosophy and thus, by Ortega y Gasset the hipocondry is a hyperesthesia of internal sensations.[28]

Confused perceptions

The "vague and poorly localized stimuli" of Høffding, the "*sensus vagus*" of Kant,[460] and the "weakly conscious afferents" of Bastian[437] correspond to the confused perceptions that Leibniz had mentioned in his extensive correspondence with Baron Ernst von Hessen-Rheinfels and Antoine Arnauld Jr.[461] He wrote von Hessen-Rheinfels on 6 February 1686:

> "*They explain the relation between soul and body, having passed as inexplicable or miraculous, and the origin of confused perceptions.*"

He wrote Arnauld on 6 October 1687[461]:

> "*Now, to all the movements of our body there correspond certain more or less confused perceptions or thoughts of our soul; ... it is like my having to have some perception of each wavelet on the shore if I am to be aware of their joint effect, namely the crashing noise of the surf. So we do feel some confused result of all the movements occurring in us, but because we're accustomed to this movement within us we aren't clearly and reflectively aware of it—except when there is a considerable alteration in it, as at the start of illnesses. It would be good if physicians applied themselves to identifying more accurately these kinds of confused feelings that we have of our bodies. Now, since we are aware of other bodies only through their relations to ours, I was right to say that the soul expresses better what pertains to our body. We know of the satellites of Saturn or Jupiter only through movements that occur in our eyes" ... "All our future thoughts are nothing other than the continuation of our earlier thoughts and perceptions, in such a way that if I were able to precisely know everything that occurs to me or that I perceive in this moment, I would be able to see everything that will happen to me or will perceive always.*"

Leibniz in these texts points out three characteristics that were later attributed to cenesthesia and to bodily perception in general: its subliminal nature while the body is in harmony, the fact that the world is perceived through one's own body and the importance of the comparison over time of what is perceived.

Thus, Forest [462] has established a relation between these observations and the Kantian distinction[460] between *sensus fixus,* the organic impression, and *sensus vagus,* the vital impression. In the same line, López Ibor,[34, 463] following Weber,[451] distinguishes between organic impression and vital impression. The first one is senso-perception by which we perceive the objects of the world in which we are. If I rest my hand on the table, what I perceive is the table and the qualities of its temperature, texture and solidity, but not my hand. If I then place a book on top of my hand, I perceive the book in addition to the table, but never my hand. However, there is another type of sensations "in which objects are not perceived as such."[452] What do I perceive then? I certainly do not perceive my hand as an objective reality or as any sort of object. What, then? The only possible response is that I perceive a subject, I perceive my body as the subjective experience of myself.

Critique of the concept of cœnesthesia

Cœnesthesia supposes the existence of sensory organs different from those focused on the perception of the external world, "nerves generally distributed throughout the body," that would be a structure interposed between one's own body and self consciousness. However, this structure, this idea of sensory organs conceived as "organs within organs," or as a third sensory system, is a notion that Marcel[5, 464] and other authors refused to accept. Acceptance would ask for a definition of involve the nature of these new organs and, eventually, of an infinite number of intermediary organs that transmit sensory information to the soul or, in more modern language, make one self aware of the sensations.

Cœnesthesia has been considered the foundation of a "sense of existence."[465] The idea of cœnesthesia leads to the concepts of body image, the "cerebral image of my body," and even corporal experience. Consequently, the reason for considering cœnesthesia as a common sensation is lost and the diverse investigators have gradually come closer to the awareness of oneself as a corporal being, i.e., they have moved beyond the dualism in which the body informs the

consciousness of external events and informs itself by means of organs that transform physical energy (light, pressure, temperature, etc.) into conscious events. Although consciousness is always linked to the activity of the nervous system, not all nervous activity involves psychic activity. Nervous activity is a much broader concept than psychic activity and consciousness is thus something added on.[40]

Among the authors who have been critical of the concept of cœnesthesia, Schiff[466] is unconvinced about the existence of two separate orders of sensations, sensations destined to inform us about the external world and sensations destined to inform us about our body, and proposes two new interpretations of cœnesthesia. The first idea is that cœnesthesia consists of all the sensations that do not correspond to a special sense, an idea analogous to the *Gemeingefühl* (common sensation) described above. Cœnesthesia would be a residual form of sensation, an idea that also failed to convince Schiff, which is why he proposed a new expanded definition: "*Cœnesthesia is the set of all the sensations that, in a given moment, are perceived by the conscious mind and constitute its content at that time.*" Starobinski is of the opinion that Schiff fails to resolve the problem of defining cœnesthesia since he ends up confusing it with the whole mental life.[418] However, Schiff on the one hand recovers the Cartesian idea of *pensée* and, on the other, addresses later phenomenological proposals, particularly those of Marcel and Merleau-Ponty in their reference to the conscious being and neuroscientific, which we will discuss below since cœnesthesia is the biological basis of the consciousness of self or the sense of one's own identity, which would have a physiological basis: "*All consciousness of self resides in cœnesthesia.*"

For Searle,[467] once body image is granted the same mental status as sensations, the image of one's own body becomes a mental experience. Consequently, the relation between self and one's body is out of place because the body itself is a mental object. Thus, pain is in the brain and not where it has been caused. Pain materializes in the mental image that the brain has created of the body, "*When we feel pain, or any other sensation, the real experience occurs in the image of the body that exists in the brain.*" At the heart of the question it is as if all pains were phantom pains or, as Searle says, *"all our bodily sensations are illusory body experiences because the connection between the apparent location of the sensation and the physical body is a connection made by the brain.*"

The hypothesis that one's own mental states and experiences are perceived by a new internal sense is, according to Geach,[468] a chimera: *it can be correctly claimed that one does not observe one's own conduct to deduce one's own moods from the conduct. No one observes oneself howling in pain and then deduces that one is afflicted by intense pain. However, the knowledge that my mental states are not the fruit of an external observation does not allow me to conclude that they are the result of an internal observation because such knowledge is not the result of any observation, either external or internal.* The step from the absence of an external observation to the presence of an internal observation is fallacious. Wittgenstein himself explained it well: "*One say, e.g., 'Due feels conviction, one doesn´t infer it from one´s own words or tone of voice.´ But what does it mean to say that one feels conviction? What is true is: one does not make an inference from one´s words to one´s own conviction; nor yet tothe actions arising from the conviction.*"[469]

Therefore, the question is not to deny the existence of œnesthetic sensations and a diffuse visceral sensation, but to point out that this sensation, this mode of being given the body to consciousness is neither the end of, nor the privileged point of view for addressing the question of how each human being lives inside his or her own body in health and disease.

PROPRIOCEPTION

In 1906, Sherrington introduced the terms exteroception, interoception and proprioception.[470] Exteroceptors are the organs that receive information from the outer world: eyes, ears, oral and nasal cavities and skin. Interoceptive sensations are the sensations that proceed from the internal milieu of the body. They are fundamental in the regulation of internal metabolic processes for the maintenance of homeostasis. Signals of interoceptive origin result in behaviour oriented toward satisfying needs or eliminating states of tension (for example, hunger, disease, etc.) and the receptors are found in the internal organs.

Proprioception, from the Latin *proprius,* meaning 'one's own', is the sense that provides information about the relative position of the limbs and parts of the body and the position of the body in space. Proprioception makes it possible to regulate the movements required for an action and contributes to the perception of one's own body.

Proprioception is constructed from sensations that come from the neurons of the inner ear, which provide information on the movements and orientation in space, and other sensations that arise from the stretch receptors of the muscles, which provide information on position. The sense of sight is also involved in proprioception.

According to Critchley et al.,[471] the information on the internal state of the body is transmitted through lamina-1 of the spino-thalamo-cortical tract, which converges with vagal afferences. These afferent pathways are of very small diameter in comparison with the proprioceptive tracts. For Craig,[472] this finding is a manifestation of the physiological distinction between the inner and outer body.

The traditional notion is that proprioception is based on a feedback mechanism that modulates the necessary adjustments to be made for effective movement. Nevertheless, it should be taken into account that with a latency as long as tendinous reflexes have, on the order of 100 ms, *feed-forward* would be necessary to provide information on the body position before the position is reached. On the other hand, the neuromuscular spindles not only inform about the degree of muscular stretching, but also anticipate the degree of stretch that will be reached, which makes this structure somewhat more than a passive "*detector,*" converting it into a *"simulator"* capable of anticipation. For that reason, Munk[473] believes that the cortex holds a store of images of movement, which in its essence is not inconsistent with what Head and Holmes[474] proposed. (See below)

In human beings we can distinguish between conscious and unconscious proprioception. The conscious proprioception information is conveyed by the fibers of the dorsal and posterior columns to the medial lemniscus and the cortex.[475] Unconscious proprioception is conducted through the dorsal spinocerebellar tract to the cerebellum.[476]

Although proprioception has an intrinsically somesthetic dimension, proprioception is not a mere adaptation of the body to its own reactions, since movement contributes to defining a perceptive field to its own measure. Thus, for Berthoz[477] and Gibson[478] the external senses have a determinant role in proprioception because information about one's own activity is received through these senses. This concept invalidates the Sherrington trilogy of exteroception, proprioception and interoception, at least with regard to the first two of these senses. On the other hand, the substantial difference between tactile and visual sensations should not be overlooked. Visual sensations, although generated in the retina, are projected into the external world to allow the objects in space to be identified without a being necessary direct contact with them.[479]

Exteroceptive and interoceptive stimuli

The limits of the interoception concept vary from one author to another one. Strictly speaking, interoception refers to the visceral sensations in general,[480] in the sense of the physiological status of the entire body (including pain and temperature), not just the organs. This broad notion has been given the name of *somatic cognition*,[481] which covers both the perception of body parts (for example, the fingers) and the internal organs. The sensory cortex plays an important primary role (area 3b) in somatic cognition.

The exteroceptive and interoceptive stimuli are of the same nature, either physical (for example, heat, cold) or chemical (acidity). Leder[482] has called attention to the fact that at the moment that a stimulus becomes interoceptive, it stops being exteroceptive and offers the example of an apple that disappears into the interoceptive realm after being eaten.

Exteroception provides extensive and reliable information on external reality. Although it is true that the visual spectrum is only a very narrow part of the electromagnetic spectrum, the infrared and ultraviolet range being imperceptible to us and ultrasound and low frequency sound waves being inaudible, what we do perceive is sufficient for our survival and, if not, we can increase our spectrum of perception using a large variety of instruments, from Geiger counters to infrared-sensitive photographic film.

None of this is possible with interoception, which lacks the sensory wealth of exteroception. Within the context of exteroception, we can describe an infinite number of different tactile sensation, not to mention aromas, flavors, harmonies or colors. The messages of the body are coarser and its language is poorly developed, which is a problem for clinicians. On the other hand, the spatial discrimination of interoception is very low compared to that of exteroception. The spatial resolution of the tactile sense of the skin is on the order of 1 mm and half of that on the lips and tongue, and it becomes even finer in blind people who read in Braille.[483, 484] A hunter may infallibly hit his target, but the "here" of the pain or discomfort of a patient laying on an examination cot may refer to broad, different and distant parts of the body.

This lack of spatial discrimination has lead Ricoeur[485] to refer to "*the strange mixture of local and nonlocal*" between sensation and feeling that occurs in pain, hunger, thirst and all vital needs, that on the one hand are located in a limb, in the mouth of the stomach, a dry throat, and at the same time manifest as general malaise. I feel thirsty and I am thirsty are expressions that respectively allude to this phenomena. An overlap and a transfer between corporal and vital feelings (see below) exists. It is a common phenomenon in medicine, regularly occurring during the examination of patients, but it is uncommon in daily life.

Leder[482] also indicates that interoceptive language, in contrast with exteroceptive language, always bears a heavy affective load, which is due to an effect repeatedly emphasized on these pages, namely that bodily experience is not emotionally neutral. The distance between what is perceived and the person perceiving it disappears in interoception, in which the object of perception is one's body, or more precisely, one's self.

Many people are not very capable of providing information about their symptoms or physiological processes.[486] Women more often describe symptoms by associating them with external cues. Anxious people or

people who have a negative affective load complain about more symptoms whereas those who have had traumatic experiences in childhood or in the interval of one to six months before the appointment tend to complain about more symptoms. Excessive complaints form part of the hypochondriac attitude in which hyperesthesia of cœnesthesia exists,[28] often reinforced in clinical situations by the person who accompanies the patient, who reminds the patient again and again to not forget to tell about every pain or discomfort.

THE SENSE OF SPACE

The experience of the otorhinolaryngologist Bonnier[456] with the treatment of people working on roof tops and his studies of vertigo brought him to the conclusion that a healthy person could not function without a postural schema and this schema had to be able to distinguish between two separate kinds of functions, functions linked to the internal ear and spatial and proprioceptive functions per se. The vestibular function participates in our body schema because the vestibular nerve is the nerve of space. The differentiation between a "sense of space" and an "articular sense"[457] underlies "objective orientation" and "subjective orientation." Thanks to the latter, we know the situation of our bony levers in their mutual relations and their relative angle thanks to the perceptions and images that constitute the articular sense.

Bonnier attributed laberynthic vertigo to hyperesthesia of the vestibular *tactility* of the ear, which is even capable of causing the impression of having the body doubled up in space. For him the existence of a sixth sense was straitforward, and he assigned ontological and epistemological preeminence, conceived as a variation of position in the space to posture over movement.[457] For Sherrington, posture involves a set of proprioceptive reflexes, some static, some tonic and some antigravitatory, and others that correct deviations in balance.[487, 488] These reflexes include the myotactile reflex and the mechanisms of correction of deviations in balance, which are manifested in the patellar reflex, which is a purely proprioceptive reflex in the decorticated animal.[489, 490]

FROM SENSOPERCEPTION TO CEREBRAL SCHEMAS

Towards the end of the 19th century, a series of authors became interested in syndromes that do not alter limb function or the maintenance of posture and balance, but alter the experience that links each of us with our body. As a result of this work, a series of new concepts arose. Bonnier[491] introduced the term "*schema*" to define the representation of the body:

> *...schema, topographic configuration, attitude. Due to this problem, some of our parts stop being taken into account in our bodily concept. When we pay too much attention, we speak of* hyperschematia, *and too little attention,* hyposchematia; *alterations are referred to as* paraschematia. *Aschematia is specifically the anesthesia of the topographic notion, i.e., the spatial representation, distribution, form, situation, or attitude.*

For Bonnier, what is important is the spatial location of the sensations. The author suggests the existence of a conscious spatial representation of the body (*schema*,) constituted by the orientation of the body and its parts, their volumetric properties, the location of the sensory afferents and the person's own bodily experience.[491, 492]

Other analogous concepts are **autopsyche**,[359] **self-representation of the body**,[493] **internal autoscopy**,[494] **postural mode of the body**,[495] the **spatial image of the body**,[496] *self image*[497] and the **body image** or **somatogram**.[498]

Postural schema

Head and Holmes in 1911 published an extensive paper on sensory disorders associated with brain injuries that it has not lost relevance.[495] In this article they described the existence of a postural schema constructed from proprioceptive stimuli which are compared to the stimuli from previous moments, as proposed by Leibniz.[461] To construct this model, the brain transforms the stimuli in the same way that a taximeter transforms distance into shillings and pence:

> *Each appreciable change enters the conscious mind already loaded with its relation to something that has preceded it earlier, much as a taximeter displays the distance converted into shillings and pence. Thus, the final product of the test for the appreciation of posture or passive movement appears in the consciousness as a measurable postural change.*

Body schema

Almost simultaneously Pick[496] proposed the idea that there is not a proprioceptive postural schema but that each perceptive modality has its own schema and all of these schemata are integrated together into a body schema. Pick based his ideas on his clinical experience, which led to the description of autotopagnosia, which he viewed as a body schema disorder like phantom limb and the inability to locate the parts of one's own body in space.

Pick[496, 499, 500] based his studies in works of Munk[474] and Wernicke,[359] for whom psychic life consisted of the **allopsyche** (external awareness), **somatopsyche** and **autopsyche**,[501] and

used the expression of Head and Holmes, but thought that there are different "schemata" for different sensory modalities and different parts of the body, the representation of the body surface being particularly relevant. From these schemata, especially the visual schema, "body awareness" is formed (*Bewusstsein de Körperlichkeit*[501, 502]).

Body image

Since 1935, working with relaxation techniques, Schilder[503] considered a *body image to be a permanent and constant synthesis of all the bodily sensations,* which makes it a sort of cœnesthesia that unifies the sensation of body as a single entity and one's own. With this work, Schilder went one step further with regard to previous investigations and concepts, including his own earlier work,[504] and introduced a new concept, the idea of body image. Body image is a representation, a creation of the brain beyond the mere aggregaste of perceptions. In the same line of thought, Conrad referred to the perception of a *Gestalt,* meaning a form or figur.[505] On the other part, for Schilder the body image is linked to activity, which explains the presence of phantom limbs.

In addition to being a neuropsychiatrist, Schilder was a psychoanalyst and a member of the intimate circle of Freud. For that reason he focused attention on an essential aspect, the idea that the experience of own body is not affectively neutral, an idea that we will revisit further on.

Schilder defined body image as[506]:

The image of the human body is the image that we form in our mind of our own body, the way that our body appears to us. We have been endowed with certain sensations. We see part of the body surface. We have tactile, thermal and pain impressions. There are sensations that originate in the muscles and their sheaths - sensations that come from the muscular innervation – and sensations that arise in the organs. Beyond that is the immediate experience of the body as a unit. This unit is perceived, although it is more than a perception. We call it a schema of our body or a body schema using the description of Head, which emphasizes the importance of the knowledge of the body's posture, or the postural model of the body. The body schema is the three-dimensional image that each person has of him or herself. We can call it "body image." The term indicates that we are not referring to a mere sensation or imagination. A personal or self-centered concept of the body exists. This means that, although the image has appeared in response to our sensations, it is not a mere perception. Images and mental representations are involved but are not a mere representation.

In this definition, the following should be emphasized:

1. The image is formed using information from the propioceptive and visceral sensations and perceptions.
2. Beyond the senso-perceptive aspects is the experience of a unit, the body schema.
3. The body schema is the three-dimensional image that each one has of oneself, which can be called a body image to emphasize that it is not a sensation or imagination, but a personal view of the body that is not merely a perception, although it comes through the senses.
4. The body image may consist of forms and mental representations, but it is more than a representation. It is not simply a photograph, but the representation of an object like others.[507]

Schilder, here and in the rest of his work, is not very consistent with his language and often mixes terms from Head and Holmes, like body schema, with his own terms, like body image. The ambiguity of his vocabulary reflects the difficulty of conveying ineffable experiences as well as the ambiguity inherent to his training as a neuropsychiatrist and psychoanalyst. In any case, the terminological doubts are clarified considerably when he refers to the dimensions of experience.

For Schilder,[506] the body image has three dimensions:

1. A physiological basis, the body as a material entity, the agent of what we know when we experience pain.
2. A libinidal structure, which is the conscious or unconscious experience of one's own body as an object of love and perceived reality.
3. A sociological dimension due to the influence of culture on the reality of the body.

Schilder handled these dimensions separately, undoubtedly in the interest of clarity and methodologic rigor, although he often deeply examines the problem of the body-mind relation in more general terms. His method was based on the detailed diachronic analysis of the descriptions of his patients from the perspective of each of his three dimensions. This introduced another peculiarity into his work; his verbal tense is the first person present ("my body," "autumn saddens me"), and not the third person past ("one's own body"),[508] resulting in a personal and direct style more characteristic of phenomenology than neuroscience. The diachronic character of the experience is clearly exemplified by his writing that the body image *is not a structure, but a structuration.* Therefore, body image implies the synchrony of diverse senso-perceptions and the diachrony of a structuration process that develops over time, although it is true that this notion can and should be applied to any senso-perceptive phenomenon.

In addition, the notion of internal perception that contrasts with external perception does not cease to be a chimera that arises from a poor understanding of what Wittgenstein called "*the asymmetry between the first and*

third person present singular of the psychological verbs," which implies a disparity between knowledge of one's own mental states and the mental states of other people. Thus, although I use your conduct to know what your mental states are, I do not have to observe my own conduct to know what mine are.[509-512] As Wittgenstein writes, "*I know when I see something only because I see it, without hearing what I say or observing the rest of my conduct, whereas I know that another person sees what the person sees only by the observation of the person's conduct.*"[513]

The problem is that when one observes this peculiarity of the psychological verbs, which constitutes a fundamental element and not a mere linguistic contingency, an almost insurmountable temptation arises to claim privileged access to one's own states of consciousness, to an ineffable internal sense by which one's own mental states can be felt. According to this interpretation, one would have an ineffable perception of one's own states of consciousness, hence one's own mental experiences would be the object of an inner feeling, an *innewerden* or infallible inner awareness to use Dilthey's words. In summary, once the asymmetry between the first and third person of the psychological verbs is aprehended, the temptation lies in interpreting it as indicative of an asymmetry in the kinds of observation, thus opposing definable external perception against an ineffable perception of one's own states of consciousness. Locke[514] thus proposes a new internal sense that does not coincide with the internal sensation to which we have referred, an *inner sense* by which we perceive our own mental states as opposed to the traditional external senses.

The step taken by Schilder, was to add psychological and social components to the body schema, which lead him to propose that both neurological symptoms and psychological experience are substantially equal, but organized in accordance with different laws. Dilthey would have been able to defend this concept and proposes a subtle and interesting difference between the more organic cases and psychogenic cases:[515]

> *I am not of the opinion that the organic and psychogenic cases are identical in their structure. The psychogenic cases occur at absolutely different levels. Still, the same basic principles guide the psychogenic and organic disorder. The organic patterns of the body image... are not really damaged or deteriorated in the psychogenic cases, although they are not used. The organic apparatus is not functioning. It could be used if the emotions of the patients allowed it. However, psychogenic repression always carries with it something of the organic sphere.*

Despite the effort of Schilder, the neurological and psychological investigation of body image remained separate in the decades following his work,[503, 508] although contributions such as those of Sheets-Johnstone[516] recall their postulates. For the latter investigator, the emergence of the mind is linked to the movement of the body (kinetic experience), spatiality (tactile-cenesthetic experience) and the sense of corporality (affective experience):

> If the ego is first and primarily a corporal ego, and the self and representation of the self are substructures of the ego, then the first requirement is to understand in the broadest and most precise terms possible what it means to say that the ego is first and primarily a corporal ego, essentially, to spell out how the kinetic/tactile-cenesthetic/affective body is the foundation of the ego.

Clarifications of terms

Poeck and Orgass[501] have called attention to the lack of specificity of the vocabulary used in research on the body experience, a defect that we have not always been able to elude and is related to the different perspectives adopted by the different authors. Body schema and image have been used indistinctly, but many other terms have been added,[386] such as corporal consciousness or awareness, corporality, corporeity, etc.

Gallagher[3] and Gallagher and Coles[517] think that it is essential to distinguish between body schema and body image. They base this suggestion on the analysis of the rehabilitation of a patient with a loss of proprioception from the neck down and on the patient's efforts to guide himself consciously using his body image and thus hasten his recovery from the proprioceptive damage. That is to say that the patient had lost a large part of his body schema (proprioceptive), but maintained his body image (experience).

The **body schema** is a system of sensory-motor abilities that can act without having to pay attention to them, such as:

> *...a system of motor capacities, abilities, and habits that enable movement and the maintenance of posture. The body schema is not a perception, a belief, or an attitude. Rather, it is a system of motor and postural functions that operate below the level of self-referential intentionality, although such functions can enter into and support intentional activity. The preconscious, subpersonal processes carried out by the body- schema system are tacitly keyed into the environment and play a dynamic role in governing posture and movement. Although the body-schema system can have specific effects on cognitive experience...it does not have the status of a conscious representation or belief.*
>
> *The visual, tactile and proprioceptive attentivenes that I have of my body may help me to learn a new dance step, improve my tennis game or imitate the movements*

of others. Ordinarily, however, I do not have to to putting one foot in front of another when I'walking... Posture and most body movements normally function without the aid of a body image.[3]

In contrast, the **body image** consists of a system of perceptions, attitudes and beliefs referred to one's own body that integrate one's experience of that body with the notion that one has of oneself (within the framework of a person's own culture or from a scientific perspective) and emotional attitude towards it:

The body image consists of a complex set of intentionalstates-perceptions,mentalrepresentations, beliefs, and attitudes–in which the intentional object of such states is one's own body. Thus the body image involves a reflective intentionality. The body image often involves an abstract and partial representation of the body insofar as my perception, thought, attention and emotional evaluation attend to only one part or area or aspect of the body at a time. It also is possible that as a set of beliefs or attitudes about the body, the body image can involve inconsistency or contradictions.[3]

For Gallagher and Meltzoff,[116] in the body schema and body image, two different levels that are distinct from the central nervous system, are involved. The principal differences are shown in table V. In any case, the body schema and body image share certain characteristics: they are multimodal, meaning that they are based on different sensory systems, and innate, as demonstrated by the existence of phantom limbs in cases of limb aplasia or amyelia.[518]

Thus, the body image is closer to being a representation than a functional capacity. The silence of the bodily experience refers to the schema, which under normal circumstances borders on the body image and is accessible to the conscious mind. For Metzinger,[518] it is the limit of what I can consider the phenomenologic experience of "my body":

You are never in contact with your own body – as an embodied conscious entity, you are the content of an image, a dynamical image that constantly changesin a very high number of different dimensions. However, this image is at the same time a physical part of your body, since it invariably posses a true neurobiological description.

For that reason, Hadley[508] could say that according to this formulation, body image includes what we know as our own body.

All this does not exclude the idea that three classes of body representation can be considered:[495, 519, 520] sensorimotor (body schema), visuo-spatial (body surface) and semantic (body image). Two kinds of disorders have to be distinguished, disorders that affect spatiality (like autotopatognosia) and semantic disorders (like the agnosias referred to the body). If this is the case, we have to consider not just two types of body systems, as proposed by Gallagher, but three or more to include the affective aspects of body image, thus incurring the risk of infinitely multiplying the body representations.[113]

Table 5 Body schema and body image[113]

Body schema	Body image
Unconscious	Available to consciousness, even if only at the margin
Subpersonal level (it would be better: objective)	Personal level
Anonymous	Sense of ownership (my body)
Coherent and holistic	Abstract and partial
Interaction with the environment	Distinguished from the environment
Involved in action	Rarely involved in action
Deficits in deafferentation	Deficits in neglect syndromes

THE INTRABODY

For Ortega y Gasset,[28] the self is constituted by three strata that make up a person's architecture. They are "*three personal centers, that although beingi ndissolubly articulated, they do not cease to be distinct.*" There is a bodily self that affects vitality; an ego (psychic self) of the soul that is the center of consciousness and a spiritual (or mental) self in charge of the higher functions of volition and intelligence.

The self pertains to the person and the three selves "belong to one" in three ways:

1. The body and spirit have a manifest external dependence. In the case of the body, that dependency is on the cosmos and on the relations imposed on us by nature and on which biological life depends, and in the case of the spirit, dependency occurs with respect to the truth or the norm, which imposes on us the same objectivity of reality "*What seems clear is that, when we think or wish (the two activities per se of the spirit), we abandon our individuality and become part of a universal orb*" in an objective world. For that reason, we are not individuals in either body or spirit. The soul is what is the center of our individuality. "*Only the person in whom the soul is fully formed possesses a separate center of his or her own*"; enclosed in that center, a person finds that "*feelings and yearnings well up from the center of one's self.*"

2. The soul forms as it separates from the social periphery from which it builds inwards, centralizes in the self and from the self exp*resses its most singular mode of being. The fundamental property of the soul is its eccentricity, "we feel individual thanks to the mysterious eccentricity of our soul.*"
3. Only the soul makes us individuals in the face of the world and others, and at the same time we recognize the world and others as o*ur own, we make them ours.*

One has double knowledge of one's own body:

We know, in effect, how the tree, swan and the star are on the outside, but in addition, everyone perceives his body from within, he has an inner appearance or view.

Wouldn't it be worthwhile to analyze and describe in some detail how one's body is for everyone, seen from within, what is the internal landscape that it offers? The inner body *does not have color or a well-defined form like the* outer body *has; it is not, in effect, a visual object. However, it is constituted by sensations of movement or tactile sensations of the organs and muscles, by the impression of the dilatations and contractions of the blood vessels by the slight perceptions of the course of the blood in the veins and arteries, by sensations of pain and pleasure, etc.*[28]

The outer body is thus a physical reality in its anatomy and physiology. The inner body is not simply the body perceived from within, but the body lived from within. It has, in addition, another form of existence that is pathic on the one hand and intentional on the other. It is not a pure instrument of the self, but the self converted into an instrument of itself to unfold its action in the world and discover its intimacy.

FOURTH PART: HOW THE BRAIN CONSTRUCTS BODY SCHEMAS

THE INTEGRATION OF DIFFERENT SENSORY PERCEPTIONS

Those who have studied agnosias have described the location of the different underlying central nervous system dysfunctions as if that were always feasible. The reason for this approach is that the agnosias described have been the consequence of strokes due to brain conditions in the form of cerebrovascular accidents, localized trauma or tumors. Such a localizationist perspective brings us to the conclusion that a given lesion produces a certain type of agnosia because the affected capacity for recognition resides in that structure. If we add to this that the basic psychological function involved is often poorly defined and that the methodology used does not allow such well-founded conclusions to be reached, we find that we are not far from the standpoint of phrenology, as mentioned above. The fact is that the correlation between brain areas and neuropsychological deficits is far from linear. The reason why is that brain function is governed more by circuits and connections between different structures than by isolated areas. However, until connectomics[521] is able to provide more data on the human connectome,[522] it is worth while to briefly review the most significant findings, which might help to understand how the brain generates the perception of the own body.

The process by which the brain constructs body schemas requires the integration of exteroceptive, propioceptive and interoceptive information with each other and with the executive activities of movement associated to that information to obtain a symbolic content that allows a harmonious and effective body experience and operation. This complex process requires an extensive neuronal network and the question that research tries to answer is how to attain a final result that consists of a stable and unitary system of experience of one's own body (*corporeal self*),[77, 503, 523, 524] not conditioned by spatio-temporal experience and persisting until death.

MIRROR NEURONS

The process of the global and harmonious integration of the body demands the participation of the so-called **mirror neurons.** These are cells that are both motor and sensory, which confers on them the capacity to sense and anticipate the movements of other living beings. This allows the individual to learn adaptive behaviours and establishes the bases for social relations.

Mirror neurons are the biological structure inherited for the recognition of gestures and bodily responses. However, in and of themselves they are not sufficient to explain the psychological and social dimensions of the body image in the broadest sense, as capable of integrating perceptions, sensations, concepts and ideas about our own body and its relation to other bodies.[525]

Mirror neurons have been encountered in premotor and motor frontal areas, in the cerebral zones responsible for emotional and cognitive processes, such as the temporal and frontal regions, which means that when a subject looks at another to imitate an action, it does not dealing only withvisual perceptive activity inherent to the primary sensory receptor areas.[526]

DEVELOPMENT-RELATED ASPECTS

The cognitive-emotional genesis of a person's body image is acquired and learned over the lifetime. As time passes, the neurobiological mechanisms implicated in the body image are reinforced by experience, particularly in childhood and adolescence, when the neuronal networks underlying body image are configured. For this reason, each one of us has a different concept of his or her own body image, which is part of one's personal experience. In the

process of developing one's body image, the assimilation of new information through the sensory systems is essential, especially touch, proprioception, the vestibular system, the sense of motion through the pyramidal and extrapyramidal systems and the interaction of these systems with the visual system. The processing of this information involves the somatosensory cortex, which receives afferent fibers from the proprioceptive systems and sense organs, the parietal lobe, specifically, the posterior parietal region, which is related to attention and consciousness of the body, the insula and anterior portion of the temporal lobe due to their role in memory and emotional recognition, the frontal lobe in its posterior, more motor, portion and its anterior portion, where the cognitive integration of all the processes described above occurs, and the medial prefrontal cortex. According to Zimmer[527], the medial prefrontal cortex might be the structure in charge of integrating relevant information about the identity of one's own body and self. Nevertheless later we will highlight the role of the insula and adjacent structures in the recognition of one's own body and awareness of self.

The representation of one's self develops slowly from the age of approximately one year and a half,[528] when the child acquires a notion of "self"[529] and of the "self that I recognize".[530] The visual recognition of oneself is the aspect most studied, but there are other important points, such as the emotions, especially shame,[531] empathy[532] and altruism.[533] Recognition of one's self involves autobiographic memories[534] and the abilitity for imitation.[535]

The concealment and the denial of one's self are early manifestations of the ability to understand mental states.[536] Two important aspects are the use of personal pronouns including "I", "mine"[537] and the engaging in playing activities.[538]

Lewis and Carmody[539] have studied the development of self-representation in children 15 to 30 months old by means of magneto-encephalography and reached the conclusion that the only structure whose maturation is related to self-representation is the temporo-parietal network. This finding is extraordinarily suggestive because this region is implicated in language or, better yet, with the capacity for encountering the sense of what is perceived and with the ability ofcommunicating it. We have suggested that this is the area of the *logos* in the classical Greek sense of the word, which is found to be especially active in patients with schizophrenia, especially if delusional symptoms predominate.[540]

THE CENTRAL AND PERIPHERAL GENESIS OF BODY SCHEMATA

The question of whether the perception of the body is generated from proprioceptive or cœnesthetic stimuli, understood in either a broad or narrow sense, that is to say, from the "bottom-up" or, if a more or less important brain participation is necessary for its genesis, from the "top-down," has been answered in different ways over time and has been the object of important recent investigations. The conclusion is that both one and the other are necessary, as we have already discussed in the section on the phantom limb.

Bottom-up organization of body consciousness

The idea that the consciousness of one's own body is born in the senses was already considered by Aristotle. Medieval commentaries on Aristotle's *De Anima*[417] contain a sentence that has become an aphorism: "*nihil est in intellectu quod non fuerit in sensu*" (nothing exists in the mind that hasn't already been in the senses).

More recently, the neurophysiologist Jaspers[541] reconsidered the importance of sensory afferents in the formation of awareness of one's own body and the idea that sensory stimulation is the basis of this knowledge, meaning that the awareness of one's own body is generated from the bottom-up. The neurobiological substrate of bodily consciousness would be the ascending reticular formation and the connections of the intralaminar nuclei of the thalamus, whose cortical afferents allow the integration of sensory stimuli to give rise to a subjective consciousness of one's own body.[542, 543]

In the early moments of life the infant receives proprioceptive stimuli, particularly those related to feeding, breathing and balance that allow the child to adapt to its environment naturally and progressively. At this stage, the activity of the brainstem arousal structures is necessary.

In a second stage, the infant becomes progressively more capable of perceiving sensations of the skin, which lead the infant to discover the parts of its body (hands, feet, trunk, etc). Cutaneous sensations gradually become integrated with the visual and auditory stimuli, and the activity of the posterior temporo-parieto-occipital cortex acquires greater prominence. This allows the experience to become integrated and acquire consciousness of its body schema.

As the child develops motor skills like walking, moving and adopting complex postures, the child becomes aware of the position and situation of its body and parts, thanks to sensory input. Finally, as a result of the integration of the amygdalo-hippocampal-orbitofrontal cortex in this process, emotional and social aspects are incorporated, which are essential for the definitive experience of one's body.

Muscle tone

An important aspect of the bottom-up processes of the cerebral organization of bodily experience is muscle tone. Muscle tone is related to posture and attitude, particularly as it affects human relations. For Stamback,[544] each person has a certain muscle tone organization, which makes it

possible to characterize human beings by their tonic manifestations. Muscle tone provides proprioceptive sensations that fundamentally affect the building of the body schema.

Muscle tone is based on attention processes derived from the activity of the ascending reticular activating system and learning (for example, of writing) and emotional processes are an implicit part of it. Therefore, muscle tone is an integral part of body schemas as an essential part of our gestures and attitudes.

Posture and balance

A second important point in the bottom-up cerebral organization of body experience is posture and balance as the necessary elements for communicating, adapting to the environment and forming the body schemata. Posture affects body, whereas balance affects space. Posture and balance together allow the development, adaptation and integration of the body in one's physical, personal, emotional and social surroundings. The integration of the vestibular system in cerebellar activity shapes a subcortical circuit necessary for properly coordinating the body schema by the posterior cerebral cortex.

Erect or standing posture (bipedalism) differentiates human beings from other species and broadly extend the reach of the human body. When someone opens his arms, the body image grows enormously, in such a way that the movement of extending the limbs delimits a new space and modifies the boundaries and the distance between the self and the world. This is what Minkowski[545] called the *"distance experienced,"* which is different from real distance because it is not expressed in geometrical terms. A necessary inner distance also exists, which is defined as a distance experienced despite the proximity of the contact, which is the distance that mediates between a person and another person or between a person and an object. One's own surrounding space constitutes the medium between the self and the world. Through this space the other can be kept at arm's distance or allowed to approach and be received with open arms.

More recently, Blakeslee[546] concluded that one's personal space extends 45 to 120 cm around the body and that this volume moves and changes with the circumstances. This author also attributed an important role to the right *gyrus angularis*, which when exposed to transcranial magnetic stimulation abolishes a subject's ability to distinguish themselves from the rest.

Of all the spatial dimensions acquired with erect posture, the most important is lateral space. The movements of arm and hand make lateral space accessible. Most human trades originated this way, in such a manner that the primitive abilities developed in the lateral space allow one to learn to sew, to plant, to weld, to play the violin, etc. On the other hand, the hand is an instrument that serves to maintain the relation with space. For example, when somebody loses balance, he or she stretches out a hand to find something to lean on, using the hand in the dark as a "guide" to ward off harm. The phobic patients feel safer if having something in their hands.

Posture expresses emotions and affection. For Ajuriaguerra,[547] an infant's first communicational activity is postural, in the form of the tonic dialogue that is established between a newborn and its mother.

Facial expression

The face has about 47 muscles,[548] most of which have an insertion on the bone and an insertion on the skin, or lack a bone insertion and have an action not counteracted by antagonist muscles. The facial musculature is not a muscle system working against gravitation. All this indicates that the function of the facial muscles is rarely to move the body or some of its parts. The facial muscles are mainly muscles of expression and for nonverbal, hence predominantly affective, communication.

Peripheral activity alters and may deform the perception of one's own body. The first studies on the activation of the facial musculature by means of electrical stimulation of muscle fibers were those of Duchenne de Boulogne,[549] who found that activation of the zygomatic major muscle, which innervates the musculature of the corners of the mouth, causes smiling. His famous illustrations were used by Darwin in his work on the expression of emotions in humans and animals.[550]

Several studies concide in showing that modifying the state of contraction or relaxation of different facial muscles can transform negative emotions into positive cues and bring somebody from facing situations of daily living, sadness and bad mood to joy and optimism. The corrugator supercilii (*m. corrugator supercilii)*, procerus (*m. pyramidalis nasi* or *procerus nasi*) and the frontalis muscles (*venter frontalis musculi occipitofrontalis*) are associated to the expression of negative emotions, such as depression, fear, anger and fury, but these muscles have also been considered important and crucial for non-negative emotional expressions, such as surprise in which the fibers of the last muscle are activated.[551-554] In contrast, the *orbicularis oculi* muscles of the eyes and eyelids (*orbicularis oculi sive palpebrarum*), which move most of the eye musculature in conjunction with the *zygomaticus major* muscle (*m. zygomaticus major*) is activated when somebody smiles or is happy.[555-557] Thus the relaxation produced by injection of the botulinum toxin in the *corrugator supercilii, procerus, frontalis* and *orbicularis oculi* muscles of the eyes can

enormously improve facial expression and at the same time have positive consequences for the individual's emotional state.[558-560] The same activation can be achieved by simply placing a pencil between the teeth to simulate a smile, which favors the selection between figures showing happiness.[561] On the other hand, spontaneous positive emotions also are associated with the activation of the *orbicularis oculi* muscle,[562, 563] whereas when smiles appear in negative situations, under forced circumstances, the *orbicularis oculi* muscles of the eyes are not activated.[562, 564, 565] In a study carried out by placing golf tees on the forehead to force the movement of the *orbicularis oculi* muscles of the eyes, it was found that the activation of these muscles caused a tendency to view images with disagreeable emotional content more negatively.[566]

Top-down organization of body consciousness

Leibniz himself qualified the Aristotle aphorism quoted above by adding the words "except the intellect itself:" *Nihil est in intellectu, quod non fuerit in sensu, excipe*: *nisi ipse intellectus*.".[567] In the same sense, for James, "*consciousness is not a derivative of sensory inputs but is generated intrinsically and modulated (or contextualized) by said sensory inputs*"[568] and from a truly dual perspective, he proposes a synthesis between the material world and the mental states related with them, which are not mere brain stages. They are: *mental states that can interact with one another and, within the realm of the mind, obey their own causal laws*.[569]

In the late 19th and early 20th century, Janet[424] and Blondel[570] discussed the role of peripheral cenesthetic stimuli and how they are influenced and even annulled by more "central" or "higher" functions. These terms are placed in quotes because cenesthetic stimuli are not considered to be due exclusively to brain mechanisms.

Janet[424] mentions that in none of the cases of depersonalization that he had examined could he demonstrate any minimal peripheral sensory disorder, and that he had not observed mental symptoms in patients with *tabes dorsalis,* whose bodily perceptions were seriously altered. Thus, he insisted that the existence of an alteration of "*body sensoriality*" seemed to him a "metaphysical" hypothesis. Consequently, psychopathological phenomena like depersonalization and a feeling of emptiness, should be considered as a deficit in the psychic energy available for action, rather than as a sensory disorder:

> *A scientific psychology should consider psychological facts as actions and relate to them in those terms. The empty feeling is a disorder of action and not of poorly understood sensitivity or of the consciousness.*

Analogously, the *secondary action* is affected in depersonalization, which Janet conceives as the contribution of beliefs to the circumstance experienced and an effective integration with the *primary action* which is the an immediate reaction to the external or internal sensory stimuli.

Similarly, Blondel[570] considers that no purely physiological (peripheral) theory can explain the phenomena observed in clinical practice. There is need for another component, which is language, the "cœnesthetic message," although language per se does not determine the appearence of mental disease. The morbid component is of the lack of the verbal response to bodily perceptions. This response is ellaborated with the linguistic tools received from the society to which belongs. This contribution of Blondel paves the way to more phenomenological considerations in relation to the meaning of the perception of one's own body that we consider below.

On the other hand, when focal point is displaced from the physiological body, where the internal stimuli intended to get meaning through language, to the body according to society (which imposes on that hermeneutics the codes and rules of the collective) Blondel comes close to modern sociologists, above all, to the postulates of Durkheim, quoted below:

> *There really is a part of ourselves that is not immediately subordinated to the organic factor: namely everything inside us that represents society. The general ideas that religion or science imprint in our minds, the mental operations these ideas presuppose, the beliefs and feelings that are at the basis of moral life – all the higher forms of psychic activity that society awakens and develops in us – do not follow in the wake of the body, like our sensations and our bodily states. This is because, as we have shown, the world of representations in which social life unfolds is overlaid on its material substrate and does not originate there.*

It is then necessary to create a language for the body, beyond dualism in any of its forms. At heart it would be a new language, poetic and mystical, that speaks of the human being and not of "its body". A difficult language indeed:

> *How we can speak of the body without it being drown in silence and, without transforming the body in language? A language in concordance with the body is found only if our speech about the body aurpresses speaking just about the body.* [60]

For Blondel, normal consciousness is the result of the onset, perhaps of the imposition of concepts and interpretation tools of the system of collective representations, and thus disregard what is individual, *psychologically pure*. Normal consciousness is a consciousness in which the cœnesthetic stimuli are abolished by the impersonal system of socialized discourse. It is not the body

that imposes its law on consciousness. It is society that, through the mediation of language, takes control of consciousness and imposes its law on the body.

In disease, the morbid consciousness, which is incapable of using language in accordance with collective laws, is a consciousness immersed in the cœnesthetic individuality, in non-verbality or pre-verbality restricted to the use of the most daring metaphors. If this were not enough, Blondel emphasizes the poetic nature of these attempts because poetry rebels against social norms and is the expression of what is most idiosyncratic, what is "purely psychological," which has something in common with the "morbid consciousness."

Some of these notions reappear reworked in texts of Freud about censorship and what is forbidden, but even if all importance is taken away from the body in the etiology of mental disorders, the place and scene of the manifestation of the disorder is brought to the forefront:

> *The nervous system is an apparatus having the function of abolishing stimuli which reach it, or of reducing excitation to the lowest possible state: an apparatus which would, if this were feasible, maintain itself in an altogether unstimulated condition.*[571]

For that reason, behaviour is sometimes guided by the epicurean satisfaction of needs, or by the stoic annihilation of the sensations involved.

> *The aim of an instinct is in every instance satisfaction, which can only be obtained by removing the state of stimulation at the source of the instinct. But although the ultimate aim of each instinct remains unchangeable, there may yet be different paths leading to the same ultimate aim; so that an instinct may be found to have various nearer or intermediate aims, which are combined or interchanged with one another. Experience permits us also to speak of instincts which are inhibited in their aim, in the case of processes which are allowed to make some advance towards instinctual satisfaction but are then inhibited or deflected.*[572]

To understand the consciousness of body from the neurophysiological perspective associated with the arousal processes linked to the reticular activating formation is insufficient. Thus, when the sensory afferents are lost as a result of the adaptability of the sensory receptors (for example, when the feeling of the clothing we wear or the aroma that we perceive when we first put them on disappears after a short while), body consciousness does not disappear. Ascending sensory stimuli cannot be associated to body consciousness. In phantom limb, the brain reorganizes the information besides peripheral stimulation and, in addition, in prolonged deep sensory deprivation, the brain reorganizes body information on the margin of sensations, often getting to the point of producing hallucinations, many of which refer to one's own body. In "El cuerpo y la corporalidad,"[34] we included a chapter on experiences with psychomimetics in which illusory and hallucinatory modifications of the bodily experience and surrounding world are emphasized. The same occurs in cortical blindness, associated to alterations and important defects in the field of vision that unable patients to adequately carry out visual and visuo-motor tasks, including saccadic and manual location movements, detection of movement, and even color discrimination.[573] These patients are not fully conscious of the visual afferents necessary to complete these tasks, meaning that only a conscious part of their visual system has been destroyed whereas the rest has remained in good functional condition.

However, once the process is consolidated, the *top-down* mechanisms that are the consequence of cerebral activity independent of sensory stimulation can generate the personal bodily experience.

The *top-down* processes are essential in the formation of the body image in the sense of Schilder[503, 504] because they integrate the most complex processes of the human being in which spatio-temporal aspects, mental representations and abstract knowledge are combined. The body image transcends one's knowledge of the personal physical space in which bodily activity develops, situating itself in a different temporal and mental space that allows one to be able to abstract, imagine, symbolize and even distort one's own schema.

The double process of constituting of one's own body image, on the one hand as an objective reality associated with perception of its form, dimensions, weight, etc. and, on the other hand, as a subjective reality linked to the personality and manner of being, is unavoidably the consequence of some sort of general organization of the body image at the level of the brain. This global involvement affects multiple neuronal networks, including especially the structures of subcortical origin, such as the amygdala and hypothalamus in their relation with the prefrontal cortex. The amygdala controls central emotional processes whereas the hypothalamus controls body weight. Thus, information and perception processes interact with more general processes, which explains the great extension of the neuronal networks involved in consciousness and the experience of body image[514]

For Llinás,[97, 575] the awareness systems are an intrinsic functional process of the brain that is modulated by sensory processes. The intrinsic activity occurs as result of a 40 Hz activity of the dorsal thalamus able to generate and maintain the synchronization of distant groups of neurons and of extensive projections to the cerebral cortex, that transcends that of the sensory and motor cortical areas. The process is one of temporal binding of the cortical activity modulated by afferent sensory impulses that, among other things, are responsible for the stimuli that fall within the "*quantum*" percept (12-15 ms)Below thia quantum two stimuli are not perceived as separate entities. The conscious experience of our state and body schema demands a large number of neuronal connections in addition to those required to receive

sensory inputs, wherein lies the importance of a *top-down* approach based on complex attention or cognitive processes.

Finally, most complex processes of the human being, such as self awareness,[90] and those involved in planning, social judgment, empathy and complex reasoning are associated to frontal activity.[576]

Periphery and center

Sensory stimuli are as necessary as central activity. It has been argued that hallucinogen-induced alterations of consciousness are exclusively of central origin. Schilder[503, 504] did not agree and argued vigorously with Conrad,[505] who accepted the idea and recalled the experiments of Hoff and Pötzl,[577] in which anosognosia was caused by the simultaneous functional exclusion of the parietal cortex and thalamus without producing any alteration of consciousness occurring. Riddoch,[578] in a general review, and many other authors consider that such changes of consciousness are necessarily. On the other hand, hallucinogens do not abolish sensory afferents, so hallucinations are often illusory distortions of dream-like nature. The fact that this type of substances has effects on the peripheral nervous system and the filtering of sensory information should not be overlooked.[579, 580] This same play between peripheral and central factors takes place in the case of chronic pain such as fibromyalgia,[581] which has implications for treatment.[582]

It is thus clear that peripheral and central mechanisms participate in the production of the body schema. Thus, to raise the question as an either/or option between peripheral and central effects is out of focus. Rather, it is necessary to think about how much of the determination is central and how much peripheral. Better yet, it can be asked in what way it is central and in what way peripheral. The schemas of the world are not the consequence of an exclusively sensory process. For von Uexküll,[583] what is fundamental in our perception of the surrounding world is the image of our motor potential. Therefore, perception is not merely the result of sensory impressions. Perception is only possible through the interaction of external impulses and internal activity. Any perception is an encounter, a creative encounter.

LATERALIZATION OF BRAIN ACTIVITY

At the end of the19th century, the clinicians associated the right hemisphere with insanity, euphoria, the presence of dissociative episodes and hysteria.[584] Later, Babinski[585] described anosognosia in two patients with left hemiplegia, and many other cases have been described since then, but hardly one sure case of right anosognosia. Gerstmann[586] questioned why a lesion in the left hemisphere caused digital agnosia and a lesion in the corresponding location of the right hemisphere produced anosognosia.

Critchley[236] called attention to the presence of a right-left orientation which was subject to morbid alterations, while the orientation in the vertical and sagittal planes remained intact. It is as if the right-left orientation was especially vulnerable.

The body schema allows self-consciousness and concsciousness of the own spatial limits, of the integration of motor behaviour with propioceptive-steroceptive stimuli and, above all, of their location in space. Lateralization is subject of special interest in the study of body schema. While the brain performs asymmetrically functions associated to lateralization that include cortical and subcortical structures. Laterality allows the organization of spatial references, orienting the own body in space and the position of the objects in relation to the body, therefore facilitating the perceptive integrative processes and the establishment of the body schema. Body laterality thus seems to be a consequent function of cortical development that maintains a certain grade of adaptability to environmental influences.

Laterality develops allonga series phases from lack of differentiation in the first two years of life, through a lack of a clearly defined timeline between two and four years, until it reaches automatization in the school stage. This development facilitates, among other things, learning or reading and writing. In this stage, the participation of posterior cortical structures in spatial information analysis have significant importance in the construction of the body schema.

Over time, it has been seen that the right hemisphere is involved in a long series of functions:

- Maintenance of intentional movements.
- Spatial attention.
- Visoconstructive skills.
- Voluntary eye movements.
- Topographic orientation.
- Emotional, comprehensive memory.
- Comprehension of gestures and emotions of others.
- Body image

Disorders of the self and of the borders of the self, including conversion reactions.

Thus, the left hemisphere is belived to be more involved in the logical operations and the right as being more dedicated to the analysis of experience[587] of the physical and emotional sense of self, that is, of the individual consciousness of the own body and its relation with the world and the emotional states.

The study of the consequences of localized brain lesions has provided the following data:

- Right frontal lesions affect social behaviour, hindering interpersonal relations and social consciousness.
- Right frontal-parietal lesions affect the control of impulses.
- Lesions of the right temporal lobe affect the feeling of familiarity, which could cause fear and elated mood.
- Lesions of the right parietal lobe affect the body image, and as a consequence, is imparment of the topographic orientation and of sense of the relation of body with the environment.
- Lesions frontal-medial and orbital-frontal and alterations of the corporeal, relational and narrative self.[588]

On the contrary to that which could be expected, the interruption of the connections between both hemispheres (i.e., in callosotomy) does not cause a deep alteration in the "unit of awareness" and does not affect the personality, nor mood, language and intelligence. The changes that turn up involve the emotional response to negative or aversive stimuli, and a decrease the feelings of fear, rage and emotional social reactions such as shame, jealousy or guilt.[589]

The right hemisphere and the self

Lesions in the right hemisphere produce body identity disorders,[590, 591] give rise to a spacial disorientation[592] or interfere with the relation of self-environment. There is an impairment in the understanding of behaviours associated to different social situations, in the interpretation of social and emotional behaviours, to the planning of actions in the social context and in keeping important issues for the person (i.e., faces, persons, voices, names, linguistic expressions, calligraphy, topography).[593] Most of them are essential functions in the Theory of Mind, which is also impaired in lesions of the right hemisphere.[594]

Devinski[595] has put forward a hypothesis on what the cerebral functions in the self-consciousness would be from an evolutionistic perspective, in order to identify how they would be affected by a lesion or stimulation of the right hemisphere. Essentially, anosognosia and topographical disorientation would be a consequence of an interference with the identification function of the body image and its relation with the environment; the self-borders limits with the ability to distinguish the self from the no self; prosopoagnosia, visual agnosia and the experience of *déjà vu* with the recognition of known objects and persons and the inability to understand or express emotions, achive appropiates gestures, entertain sense of humor and irony with a reduction in facial expressivity and in the vegetative responses to emotional stimuli.The impairment in this long list of behaviours would be a consequence of a deficiency in the ability of emotional understanding and of reacting to environmental or body stimuli.

A large part of the functions described are impaired in schizophrenia and there is data that suggest greater involvement of the right hemisphere in the disease.[596] The incorporation of advances in neuropsychological research to the psychopathology of schizophrenia and of other mental disorders is beginning to create new paradigms. A deconstruction of the psychiatry has even been postulated, although with certain naivety.[597]

Research with patients who have undergone callosotomy has shown that the left hemisphere is the "interpreter" that gives a logical order to the afferent information and constructs narratives on the own image and beliefs.[598] The analytic-verbal functions are carried out in this hemisphere.[599] The left hemisphere is involved in the monosemantic contexts.[600]

The left hemisphere is the hemisphere of the *logos*, which gathers information, organizes it and expresses it in words,[601] a function that is impaired in delusional activity, which probably is a consequence of a hyperactivity of the language areas.[540]

The left hemisphere of the non-verbal, integrative, functions, which are precisely those having the most adaptive value, due to their ability of monitoring the self-behaviour and affective integration.[599] It is the hemisphere that is involved in the polysemantic contexts. For Weinberg,[600] suicidal behaviour would be the consequence of a hypofunction of the right hemisphere, which is already hyperactive in depressive states, which would require the left hemisphere to assume tasks for which is not prepared, with the result of a major tendency to dissociation, to alienated and negative perception of the body, to greater sensitivity to pain, to cognitive restriction and to difficulties in affect regulation, among other alterations.

The right hemisphere controls social aspects of verbal expression, such as metaphors, the understanding of ambiguous meanings, the sense of humor or irony. It is also responsible for the organization of a conversation, of whether the speech is accelerated, vague, tangential, logorrheic or simply disinhibited speech.

The right hemisphere makes it possible to relate with the external (extracorporeal) world, with the own (corporeal) world, or in terms of Ortega y Gasset, the extra-body with the intra-body.[28] The right hemisphere participates in the sense of physical and emotional self, in the individual awareness of corporeal being and of its relation with the environment and emotional stages.

IDENTIFICATION REPRESENTATION OF THE BODY

In the identification of the body in general, the inferior frontal gyrus of both sides, the middle frontal gyrus, the cingulate, the central and post-central sulci, the inferior parietal lobule and the fusiform gyrus of the right hemisphere are involved.

The representation of the body of the others requires the so-called extrastriate body area, in the posterior temporal sulcus of the middle temporal gyrus and also perhaps the

fusiform body area[602] and the integrity of other areas according to the characteristics to perceive: extrastriate body areas and fusiform gyrus for the twisted posture, superior temporal and inferior frontal gyri for body in movement. The repetition of their presentation of the same posture gives rise to a suppression of the activity of most of these areas.

When the insular cortex is damaged, the subject responds to painful stimuli with smiles[603, 604] because although he or she is capable of perceiving the stimulus as dangerous, the pain is not longer aversive, so that both requirements are fulfilled for the appearance of the laughter, the progressive creation of a expectative model and a sudden change of it. In this case, the pain-like threat and the disappearance of the feeling of threat, is what transform it in a false alarm that produces hilarity.

Identification of the own body

Corporeal awareness is the perception, knowledge and evolution of the own body and of that of the others. The interoceptive stimuli are very important in it. Corporeal awareness depends on the activity of many brain structures: inferior parietal lobe and inferior parietal sulci of the right hemisphere and posterior orbital gyrus and lateral occipital gyrus of the left hemisphere and premotor cortex.[605, 606]

The processing of the own body image has a modular character, that is, the involvement of recognition of one's own face does not affect that of the body and vice versa.[607]

In the distinction of which sensations, events and objects belong to the world or to the own body, there is an involvement of frontoparietal connections of the right hemisphere,[608] and above of all the temporoparietal junction. The inhibition of this last area by transcranial magnetic stimulation clearly interferes with this discrimination.[609]

In a series of articles, Craig[472, 610-612] performed an extensive and in-depth review of the role of the anterior part of the insular lobe and the pre-reflexive consciousness (awareness), beginning with his description of a lamina I phylogenetically novel spinothalamocortical tract associated to the nucleus of the solitary tract that provides the posterior insular cortex with primary interoceptive information of the condition of the own body. The posterior insular cortex contributes to all the subjective body feelings and to the pre-reflexive emotional awareness in accordance with the theory of James-Lange and the **"somatic marker"** notion of Damasio.[144] Somatic markers are emotional responses, conscious and unconscious, associated to the brain representation of the condition of the body, in order to modulate the response of the body beyond the mere cognitive aspects. To extremely are emotional processes anticipating to the rational process, which are established based on past emotional experiences. In support of this hypothesis is the fact that the emotional the emotional responses are associated early neurophysiological activity (50-150 msec), while the rational ones take about 300 msec. What is interesting is that two hundred years earlier, Pascal had reached the same conclusion, that emotions were not mere illusions of rational thinking, rudimentary thoughts (Descartes). With him, sentimental life (the non-rational of the human nature) acquired an important role. He wrote in his work "*Les Pensees*"[613]:

> *M. De Roannez said: "Reasons come to me afterwards, but at first a thing pleases or shocks me without my knowing the reason, and yet it shocks me for that reason which I only discover afterwards." But I believe, not that it shocked him for the reasons which were found afterwards, but that these reasons were only found because it shocks him.*
>
> *All reasoning is reduced to giving way to feelings.*

For Craig, there is anatomical evidence to recognize that there is a progression of integrative representations of affective body feelings that culminate in a representation of all them in the anterior insular of both hemispheres. This plays a determining role in the integration of feelings regarding the body whose affective representation has received the name of "sentient self",[611] sentient self is therefore an awareness wich is at the core of subjectivity.

In Spanish we have used the term pre-reflexive consciousness to translate "awareness" and to distinguish it from reflexive consciousness and arousal. The former consists in apprehending something. The second adds a meaning and understanding of what is apprehended and the third, based in the activity of the ascending reticular matter of the brainstem, is the capacity of being awake and attentive.

The anterior insular cortex is involved not only in subjective feelings but also in attention, in choices and cognitive intentions, in music, in the perception of time, in the awareness of sensations and movements, in the visual and auditory perception, their visual image,in the reliability of sensory images,in the personal expectations and in the trust in other individuals. No other brain region is involved in these functions, which have in common that they involve pre-reflexive self-consciousness.

For Craig the cortical base of the awareness is an ordered combination of representations of all the instant feelings present during a limited period of time. The key for the sentient self is in the integration of the salience of these stimuli, of an emotional nature, we ruled by their evolutionary role in keeping and making the individual and species progress. This process goes from the homeostatis (energetic) level to the complete body feeling which is the heart of the coding of all feelings. It is worthwhile pointing out the parallelism of these perspectives and the philosophical and clinical perspectives around the vital feelings, the endothymic background of the personality, the thymopathic circle, definitively, of the "seam of the soul and the body."[121]

The revision of body feelings carried out in the posterior insula is integrated in the middle and anterior insula uni- or

bilaterally, depending on the origin of the activity. In the pathway of the posterior part of the insula to the anterior part, homeostatic information or the motor function (of the hypothalamus and amygdala), environmental (of the entorhinal cortex and temporal poles), of the hedonic components (of the nucleus accumbens and of the orbitofrontal cortex) and motivation, social and cognitive (anterior cingulate cortex, ventromedial and dorsolateral frontal cortex) is successively integrated. The model of Craig provides a neuroanatomical base to build body experience from its most primary aspects, the *tactus intimus*, progressing to the identity of self in the world, going through the kinesthesia, the body schema and body image that we have described further above. For Craig each one of these stages has a specific evolutive advantage that culminates with the emotional communication characteristic of the hominids.

The key moment in this process is the unified representation of a "**global emotional moment**" on the anterior insula-frontal operculum junction, the base of a "material self" or sentient self at a precise moment in time, in a "now," that overlaps in a series, a meta-memory, in a metaphor such as that of the taximeter of Head and Holmes, but in this case emotional and not postural, in which the (emotional) salience is the key.

The anterior cingulate cortex has close connections with underlying anatomical areas such as the already mentioned frontal operculum, anterior cingulate cortex and the hypothesis has been proposed that the von Economo neurons play an important role in all of these activities.

The neurons of von Economo, described by this neuroanatomics in 1929[614] are bipolar cells, that is, they lack dendritic branchings, of large size, located in the frontoinsular and anterior cingulate cortex of the great apes and humans. They are more numerous in the right hemisphere. Originally they were probably projection neurons, although their final targets are not well known. In their beginning, there were involved in the homeostatic regulation of appetite, however over the course of their evolution and development, they have assumed many of the functions attributed to the anterior insular cortex. The insular lobe is the terminal station of the interoceptive impulses. The insular cortex of human beings is notoriously differentiated from that of the rest of the animals due to its role in the awareness of the own body. The anterior cingular cortex is involved in many activities and procedures such as intestinal distension and orgasm, craving for tobacco, maternal love, decision-making avilitity and having a sudden intuition. It is possible that all may be due to a re-representation of interoceptive afferents and above all, in the case of the von Economo neurons, contained in the awareness.[612]

The neurons of von Economo and those greatly related to them, the fork cells, selectively express bombes in-like peptides such as neuromedin B (NMB) and the gastrin releasing peptide (GRP), involved in the sensation of satiety. It is very possible that when these neurons are affected, this plays a role in frontal dementia, in autism and in schizophrenia.

EMBODIMENT

The human body, as it is not limited to its physical dimensions, and extends to all that which it constitutes as its, goes much further beyond, this is called embodiment. Therefore, clothing and adornments form a part of the body, they have been **incorporated, embodied**[615] and therefore are manifestations of the individual per se. Even the Neanderthals used pigments for makeup.[616]

The body as subject exceeds the body as object, to which it constantly adds objects that do not belong to it. This sometimes occurs, such as in the case of clothing, for different reasons, among them personal or of group or status identity. Other times, it is for reasons of activity, that is the cane of a lame person, the bicycle of a biker, the paintbrush of the painter, or the car with which we move around. When we drive a car, our body experience reaches the wheel with which we want to avoid a pothole or park near the curb. In many cases, it is a synesthesia in which the visual perception of the incorporated object "projects" the tactile sensations (to the type of a screwdriver that is being used, for example) into an extracorporeal space or a particular "mental diplopia" is produced when the blade is perceived at the same time as the own face and in the image of the mirror when shaving in front of a mirror.[160]

In the experiment of Lackner,[617] the subject has to sit with their arms bent towards their shoulders, touching the tip of their nose. Then, if the biceps tendon is stimulated with a vibrating object, a certain number of subjects feel that their arm is stretched and their nose has lengthened.

All of this is because the brain has great capacity to incorporate instruments and transform them into extensions of their own body image and to be able to make it recruit new brain structures to carry out the action. Therefore, Ramachandran[618] has been able to point out that when a primate performs an action, for example pick up a banana, visual areas and specific areas related to movement of the hand and the perception of space are activated, while when it uses a stick or any other object to reach the fruit, the brain activation is more extensive and includes areas related with the peri-individual space.

In the section on the phantom limb, we stated how the cortical areas involved in the body schema are not established forever and how tactile and even thermal sensations of the absent limb are shifted a few centimeters away from the point that would correspond to them of the Penfield and Rasmussen homunculus.[190, 200, 202, 203]

Synesthesias and body image

The great plasticity of the body image[22, 160, 161, 208] overflows any perceptive modality involved, and a serie of

experiments allows important manipulations of that perceived. All of them deal with the generation of tactile sensations with visual stimuli.

Ramachandran and Hirstein[161] and Ramachandran[619] have described "the phantom nose illusion." For them, an individual sits in a chair where they cannot see anything on the sides. The experimenter sits in front and with his left hand holds the index finger of the left hand and has it repeatedly and randomly touch the nose of the experimenter while the experimenter touches the subject's nose in the same way. After some time, the subject feels as if his nose has been dislocated or stretched out.

Something similar has been achieved in phantom limbs. For example, with a mirror placed in the sagittal plane between both arms that allows the image of the actual healthy forearm, it is seen as superimposed on the absent limb. In this way, the movements of the image reflected of the healthy arm are perceived as movements of the phantom forearm. The synesthesic perception thus substitutes the perception of the phantom limb.[160]

Ramachandran et al.[620] were able to suppress the discomforts of a phantom hand due to intense pains produced by the sensation that the phantom fingers were digging into the palm. To do so, they used a box with a vertical mirror where the subject introduced his healthy hand that was symmetrically reflected in such a way into the visual field of the patient as if it were his amputated hand. Then they asked the subject to make movements, opening and closing the healthy hand, movements that the subject also perceived in his mirror image. After a few repetitions over two weeks, the painful sensation of the nails digging into the palm disappeared.

In 1998, Botvinick and Cohen published an interesting experiment that they called **rubber hand illusion**.[621] To do so, they placed a rubber hand such as those can be bought in shops that sell articles for jokes and disguises, on the table together with one of the hands of the subjects and both were simultaneous stroked with a paintbrush or with the finger. After a few minutes, the true hand was hidden from sight and the rubber one was still stimulated. A high number of subjects stated they continued to notice the paintbrush or the finger passing over the rubber hand. Often, not even this was necessary since the surface of the table can be scratched in the same way.

In the experience of the rubber hand, the temperature of the dispossessed hand decreased and the brain responded slower to the stimuli on it.[622]

There are some changes to the experiment, as the use of a mirror. In any case during the experiment there is an activation of the posterior parietal cortex and the temporoparietal junction, which increases the perception of the peripersonal space and increases tactile sensitivity (greater salience). This sensation of embodyment is greater when the rubber hand is threatened with being hit, pinched or cut and in these cases, cutaneous conductance is increased.[623] The "resurrection" of the phantom limb with mirror and lenses reduces the size the phantom member and associated pain.[624] The visual *feedback* can restore the altered function.[213]

It is well known that the prostheses of limbs are more effective when there has previously been a phantom limb. Thus, interest has arisen to see if the phenomenon of the phantom hand could be applied to the prosthesis in such a way that its "incorporation" or "embodiment" would include tactile and not only propioceptive stimuli.[625]

The phenomenon of embodiment makes it possible to explain the phantom limbs without amputation,[626] those which occur in aplasias of a limb or congenital amyelias or those which can induce a "phantom hand" in amputated persons.

The hypothesis that underlies this phenomenon is that these sensations are produced because they are activated in different areas. These data are consistent with the results obtained in the magentoencephalography (MEG) in which changes are observed in the localization of the sensitive areas, especially when there are abnormal sensations. More than being a change in the map, what is produced is a change in the route of the brain circuits involved, which supposes that there are stable or long-lasting changes in the sensory signal processing in the adult brain.[604, 620, 627, 628]

BODY SCHEMA AND INTENTIONALITY

Oppenheim[629] was the first to call attention to the fact that when two simultaneous stimuli are produced in two symmetric parts of the body, one of the sensations extinghishes while the other prevails. Something similar occurs in the phantom limbs, when a stimulus on the area of the healthy limb corresponding to the symmetric point of that in which the sensation of the phantom limb is more alive is sufficient to eliminate the phantom sensation.[630] The phenomenon is not limited to the tactile sensation since Head and Holmes[495] and Riddoch[578] described how stimulation with two lights cannot be perceived in more than one visual hemifield, when the visual systems is lesioned on only one side, but the lesion is not sufficiently intense to produce by itself, a hemianopsia. In some parietal-occipital lesions, this relative hemianopsia or hemiagnosia of situation is able of causing extinction of the hemilateral tactile sensations. One female patient of ours, after leucotomy due to severe obsessive disorder, woke up from the anesthesia with total paralysis of the external rectus muscle of the right eye, which spontaneously disappeared within a few weeks. It is interesting that the paralysis was not accompanied by

diplopia. The patient knew about her eye mobility defect, since she had clearly observed it in the mirror and asked why her right eye could not look towards the right and if the persons with this defect "had to" see double.

In these cases, this is not a simple lack of concentration since the patient does not pay attention to the extinguished or darkened sensation because she cannot. One patient of Critchley said "*The stronger sensation diverts my ability to be able to experience a second one. It seems that I cannot pay attention to my left side when my right side is stimulated.*"[524]

This happens also in normal circumstances. Two audible stimuli cannot be equally heard simultaneously by both ears. The experience with dichotic listening in which different messages are sent through headphones to each ear goes in the same direction. The hearing of one stimulus interferes with that of the contralateral one and it is poorly remembered.[631, 632] The subject hears one or the other of them distincty.

The consequence of these observations is that sensory -perception is a function that has the characters of all psychic function, its intentionality[633] and the fact of being timely.

The intentionality involves tension between an active center and the periphery. When we look at an object, we are, to a certain degree, within the object itself. The interest with which we do it depends on ourselves and our intention. Interest is precisely this, being-between (from Latin *inter-esse*).

Sensation and movement form a unit around which the **circle shape** (*Gestaltkreis*) of von Weizsäcker[209] is formed and therefore agnosias and apraxias go hand-in-hand. Thus, body perception is linked to true or virtual movement that have an intentional character. In situations of absolute rest, only those parts involved in the psychic activity are perceived, those in which the subject is interested, or those other parts in activity that contact with the outer world. If, instead of the body being at rest, it is in movement, the experience of it is located in the part of the body that is most intentionally involved. When one speaks while walking, the experience is in the speaking.

As we have already mentioned, when an attempt is made to perceive the hand leaning on the table with one's eyes close, what is perceived are the support points of it on the surface. If, after, a book is placed on the back of it, the sensation is transferred to the points in which the book is supported. In the first case, what is perceived is the table, in the second, the book, but in both, what is not perceived as the hand. Except in cases of disease or abnormal circumstances, it is irrelevant to perceive the own body, what is of **interest** is to perceive the objects, changing, of the world and not of our own body in it.

FIFTH PART: THE BODY EXPERIENCE

Up to now, we have gone into some depth reviewing and criticizing with some strictness the two key concepts used to interpret that referring to the body as a part of the human nature, the dualism and the perception of the body itself, especially in disease. Thus, we have tried to demonstrate how the dualistic perspectives are a group of metaphors to explain the nature of evil and thus establish some moral principles to teach and control individual behaviour. However, dualism, and a large part of the monisms proposed as an alternative, continue to be an illusion that is not dispelled by denying one of its components to fall into a spiritualism such as that of Sigismund of Calderon or into a reductionism such as that of Crick, since we are neither a dream nor only a package of neurons, or to be more exact, we lack arguments to defend both these.

On the other hand, the long list of suggestions onthe reality and nature of a sixth sense, a kinesthesia, a proprioception or a cœnesthesia, and the proposal of body schemas in their different forms make it necessary to consider, over and over again, a body perceived and a subject who perceives. This is so because the own body is not one more of the objects of the world perceived and because the relation of the subject who perceives is restricted to apprehended through the own body, the own body wich I am.

At some point in that explained up to now, we have encountered the sensation that there is something "further beyond" the agnosias, more "central" than the apraxias in which it is the experience of the body itself, or better said, of the experience that each one has of themselves as a real human being. This new perspective has significant clinical importance. In the same way as above, we analyze the discrepancies and confrontations between the body as object and the body as subject. From this new perspective, we can confront the discrepancies between body and identity, in a series of cases in which the core is lack of identification with the own body. This is what happens in the trans-sexual person who does not identify with their anatomic sex, and does not want it to impose or to condition their relations with the others and who requests surgery and hormone treatments to be able to identify themselves and be identified with their body.

Thus, it is necessary to distinguish between:

1. **Body perception** that is shaped around the sensory-perceptive functions, which is integrated into the body schema and image and whose alterations are agnosias in the wide sense, which affect the dimensions of the body, its sensorial characteristics and its integration into space.
2. **The body (lived) experience,**[121,634] that is, the personal aspects of the body such as the identification per se and

its social dimensions, which have significant philosophical, neuroscientific and clinical importance. The alterations of the body experience have an influence in affect the personal aspects of the body, which are identity and its social dimension. Among them, there are some dissociative or conversion disorders, especially those that affect mobility and the anesthesia and sensory losses (hysteria), the somatomorphic disorders (hypochondria, body dysmorphic disorder, vertigos called psychogenic or thymopathics of López Ibor[121, 634]), anorexia nervosa, some identity disorders (apotemnophilia), especially sexual (non-fetishistic transvestism, transsexualism, including the non-homosexual man-woman) and in the psychological elaboration of somatic symptoms (Munchausen or Münchhausen syndrome). We propose to further include the alterations present in mental diseases such as schizophrenia or depression, neurasthenia, depersonalization-derealization disorder and other general ones in the clinical setting such as pain. Up to now, these disorders have not been considered as a group and, for example, in the ICD-10,[122] only identity problems are mentioned in the sexual identity disorders, passingly in the dissociative disorders and as disorders to be included, identity disorder, within other emotional childhood. The DSM-IV[123] also includes alteration of identity as a borderline personality disorder criterion.

WHAT IS A LIVED EXPERIENCE?

Lived experience is the translation of the German word *Erlebnis* a derivate of the verb *erleben*, and which in turn is stems from *Leben* 'life.' Literally *Erleben* mean 'still being alive when something, ' that is, what is a direct apprehend as opposite on the contrary to what is known, or believed to be known, without having had a direct experience because someone has metion it or because it has been inferred, supposed, or imagined. Schiller and Goethe used *erleben* with this meaning.[635] It is believed that the word *Erlebnis* `experience,´ was used by Hegel in the letter describing a trip as *mein ganzes Erlebnis*[636] `my total experience´ stating that which is learned such an experience was acquired immediately and forever. On the other hand, there is also the noun *das Erlebte* which means `the experienced,´ an event being realized that becomes permanent compared to that which would be the fleeting experiences.

García Morente has given an example of Bergson:[637]

A person can carefully study the map of Paris; studying it very well; writing down the different names of the streets one by one; studying their addresses; then they can study the monuments on each street; they can study the maps of these monuments; they can review the series of photographs of the Louvre Museum, one by one. After having studied the map and the monuments, it is possible that this person may have a view of the perspectives of Paris, by a series of photographs taken from many points of view. In this way they may obtain a regularly very clear idea, very clear, very detailed idea of Paris. This idea could be improved increasingly more, according to whether the studies of this man become increasingly more detailed; but it will always be a mere idea. On the other hand, 20 minutes of walking through Paris are an experience.

There is an abyss between 20 minutes of walking along the street of Paris and the largest and most detailed collection of photographs. One is a mere idea, a representation, concept, and intellectual elaboration while the other is placing oneself really in the presence of the object, that is, living it, living with it, really having it within the life, not the concept that substitutes it; not the photograph that substitutes it; not the map, nor this schema that substitutes it, but it itself. Thus, what we're going to do is live the philosophy. To live it, it is essential to enter into it as if one enters into a forest; to enter into it to explore it.

Thus, the word *Erlebnis* includes two meanings, direct comprehending and lastingness. During the 19th century, *Erlebnis* became popular in the biographical literature, in artistic creation, especially in poetry,[638] and above all as a key word in the opposition to the cold rationalism. For instance, from Rousseau´s key concept was life (*Leben*) and therefore that experienced (*das Erlebtes*). Experience is a concept cherised by Fichte, Hegel, Husserl, Dilthey, Scheler, Jaspers, Heidegger, García Morente and Ortega y Gasset, in their attempt to overcome the abstracness of the understanding characteristic of rationalism, based on the mechanistic sensations because all of them considered experience as the final foundation of knowledge. In fact, for the neo-Kantism, *Erlebnis* is the core concept associated toconsciousness.

Erlebniss is therefore **lived experience** (*Lebenserfahrung*), something alive, which lasts over time, because it is constituted in the connection of the emotional states, which cannot be reduced to mere rational mechanism. Because living is not only a contemplative activity but also an event; man is not res cogitans, he is not mere reason, but also res dramatica.

For Dilthey, the concept of lived experience includes the special feature of human sciences. Beginning with Descartes´ **res cogitans**, he defines the concept of lived experience as reflection, interiorization, and based on the special characteristics form of these concepts, he attempts to build epistemology in order to be able to understand the realm of historical sciences. The crucial facts in history do not consist on experimental data to be measurements but rather units of meaning, but rather structures of the meanings that are found in the human sciences. Those, however strange and incomprehensible they may seem to be, can be traced to the final units given in consciousness, units which by themselves no longer contain anything strange, objective or to be interpreted. These units of experience are by themselves units of meaning,[639] which is something that was later developed by Husserl,[40] for whom the unit of lived experience

is not understood as a piece of the present flow of experience of the "self" but as an intentional relation.

To experience is to transform the fact itself into a historical and personal event (López Ibor).[640] Lived experience is an experience, that leaves a permanent imprint event on the character and contributes to shape the personality. Lived experience is therefore a significant experience in the life of a person.

Erlebnis has been translated to `vivencia´ (*lived experience*), a neologism that according to García Morente was introduced into the Spanish vocabulary by collaborators of the Revista de Occidente,[637] although some authors had attributed the translation to the philosopher himself or to Ortega y Gasset,[641] for whom `Vivencia´ *(lived experience) is that type of immediate relation in which the subject enters or can enter with some objectivities.* The word does not exist in other languages. In French, *experiénce vecué is generally used*, in English it is translated to *lived experience* or simply experience and in Italian, the same, *esperienza*.

DIMENSIONS OF THE LIVED EXPERIENCE OF THE BODY

According to with Stanghellini,[642] the phenomenology conceives the experience of the body itself as being structured around three dimensions. We will explain these in greater detail and will complete with other aspects that one important for the symptoms of some diseases, especially mental ones. The three dimensions are:

1. The experience of my self.
2. The objective and meaning-bestowing.
3. The experience of other people, the intersubjectivity.

The experience of my self

The experience of my self is the minimum awareness of oneself which, beyond other phenomenological considerations, is anchored on the experience of the own body and its situation among the rest of the people and of the objects of the world.[77] It is the experience of living the world per se, of being-in-the-world here through my own body, which is manifested in different ways. In the words of the mystic Hildegard of Bingen:

> *"And in this way a man was created from the beginning: both above as well as below, both by strength as well as within existing in all parts of the body* (...). *It was neiter the spirit nor the soul, but rather the bosy human, the omnipresent manifestation of human existence* (*corpus ubique est*) (...). *On the outside as well as on the inside, up above and down below (estra et intra, supra et subtus), the human being is nothing other than a body. And this is the essence of man* (*et hoc modo est homo*)."[643, 644]

Any human being has the experience of him or herself as being conscious, bestowed of an identity and a idiosyncrasy and that being subject of the own behaviour in the widest meaning of the word. Furthermore, the individuality of the existence is inexorably attached to a body:

> *A being can only appear to oneself as a personality if it appears as a link to a body which, although it can be considered by itself as bestowed with an absolute priority regarding all other object, cannot, nevertheless, be treated by it as not being more than a simple instrument.*[5]

The conscious being

The human body is a fundamental topic of phenomenology. For Husserl, the body is essential for the "*original level of the experience*," that is established "*through the body and its senses.*"[645] Even more, "*only by its empirical relation with the body is the consciousness converted into human or animal, and only by this means does it occupy a place and the time and space of nature.*"[646] These fragmentary references had great influence on, among others, Merleau-Ponty ("*the spirit is only reflected through the body*")[77], Sartre,[74] Marcel,[647] Ortega y Gasset and Zubiri (the body is the "*experience of doing, feeling, thinking and wanting* "[16]). In this same sense Lévinas has stated in this regards:

> "*Freedom of the Self is inseparable from its materiality. This definitive character of that existing, which constitutes (in turn) the tragic of loneliness, is materiality.*"[648]

Body, personality and identity

Traces of phenomenology can be found in psychopathology and in psychoanalysis. For Janet,[424] that which was previously considered the soul is the personality and in agreement with Ribot,[430] personality is not in the soul, it is in the body. Consequently, it is not possible to advance in the study of personality without having previously understood this character of having a body, a body different from others:

> *Je sens, je pense en dedans de moi, je suis moi-même sensation d'odeur de rose, comme disait Condillac.*[424]

On the other hand, the study of the origins of the Ego led Freud[649] to the conclusion that the Ego is a differentiation of the Superego due to the contact of the body with the external world. The Ego arises from the encounter of the stimuli that shape the Superego with the external reality and in the "Ego and Superego," he writes:[649]

> *A person's own body, and above all its surface, is a place from which both external and internal perception may arise. It is seen like any other object, but to touch it yields two kinds of sensations, one of which may be equivalent to an internal perception. Psychophysiology has been fully discussed in the manner in which the person's own body acquires a special position among the other objects of the world of the perception. Pain*

too seems to play an important part in the process, and the way in which we gain new knowledge of our organs during painful diseases could be a model on how in general we reach the idea of our body. **The ego is first and principally a bodily ego***; it is not simply a surface entity, it is, itself, the projection of a surface.*

The meaning of the Ego in psychoanalysis corresponds to the clinical and neuroscientific concept of body image, that is, the never-ending perception of the ego of itself and to the feeling of its continuity over time, space and causality.[650] Along this same line, Shont[507] stated that body image and Ego are practically synonymous terms and for Fisher and Cleveland,[651] among others, the ideas of Freud[652] are the true description of the body image and its development. It is important to point out that the development of the Ego is associated with primary narcissism, and consequently to personal identity.

The human body cannot be studied without also understanding that it is a person. The body is that which makes it possible to be reliazed as a person. The integration of the person in the action is performed through the body, it is expressed in it, and it also reveals the deep sense of the integrity of man as a person.

The person is not only "singled-out mankind." The person is also a way of being a member of mankind. This mode of being is the personal experience. The characteristics of human nature, endous every single individual to be a person: man exists and acts as a person.[653] Marcel consideres the personal identity linked to the body as: *this species of irresistible invasion of my body on my self that is the basis of my condition as man and creature*. Therefore, Merleau-Ponty[654] referred to **own body** and that which was expressed by Marías[12] as **"***I am someone bodily, not* something*, but* someone *bodily.*"

The proposition of a psychological body amid subjectivity and organic corporality does not resolve the issues being discused. The body as a subject, the own body as mediator between self-consciousness and the world, while having an absolute priority, is not one thing, neither a "psychological thing," "*it is not an object, but the absolute condition for any object to be given to me," "a certain way of giving to oneself without being able to treat oneself at all as an object.*"[5] In this sense, Marcel maintains at the end of the Diary both that the body as mine transcends all possibilities of being objectifyed and that the act by which the body is aprenhended as mine is not a representation but rather, in virtue of its privileged place, has to be considered as the possibility of all objectivation and not an object. That is why he states "*I feel my body*"[464] versus those statements that inadequately express in indivisible unit between soul and body[464] or, that is, which poorly consider the personification of the self that Marcel aims to point out with his "*I am my body.*"

The body experience extinguishes with life, but the identity of the body remains, although only for the forensic point of view, practically indefinitely.

Subjectivity

The question of subjectivity is a cornerstone of the philosophy of Husserl.[655] He refers to the "enigma of subjectivity " as something unknown in past times and that arises due to the crises of European sciences. López Ibor has also mentioned this aspect, analyzing the discovery of intimity[656] and Ellenberger the discovery of the unconscious.[657] In one way or another, from different perspectives, the three coincide that modernity has deeply transformed the view that the human being has of himself and of the world. The medieval doctrine of a nature created and directed by God is replaced by humanism, in which the human being is the measurement of all the things. Modernism leads to pessimism, which links the thinking of Schopenhauer and Nietzsche, who long for new times and for a superman,a theme that oozes in the philosophical and literary creation of all the XX century.

Husserl considers that the subjectivity is the core problem of knowledge and subjectivity only exists embodied, because man is both an object among objects and the subject of the wide spam of options allowed by man's freedom.[658]

Basaglia,[659] on his part, considers that the **enigma of subjectivity** is found in the study of the relations between the self and its body, and that this study is the core of all psychopathological research, in the ambiguous subject-object bipolarity. He adds, following Merleau-Ponty[660] and Sartre,[74] that there are only two possibilities for self-fulfillment: 1), the alterity of the facticity per se and of that of others, in other words, of the contingence of the individual existence, in virtue of which an interval is established between my self and my body and the body of the others and 2) alienness, which is the loss of this interval in which my self is invaded by my body and my body is invaded by the body of the others. Alienness consists on renouncing to one's own facticity, and not a choice. It is interesting to verify how along these lines, Basaglia defends an opposite position to that of the antipsychiatric schools of thought that are usually attributed to him, and he considers alienness, the condition of alienation, as a possibility not chosen by the subject. To explain the interval lost in alienity, Basaglia uses the texts of Straus[263] on human posture and the body being in the world. Upright posture allows for a new gaze, in which the subject suddenly "recovers breath" while the face moves away from the proximity to the world and acquires the ability to think about their body and the world. This is the ability to which Guardini referred and that we have mentioned below. However, this act of thinking is only possible, according to Sartre, thanks to the gaze of the other, because on the one hand this makes me feel my objectivity and on the other hand the subjectivity of other. Next, Basaglia considers that the interval is basic to safeguard my intimacy and requires a silence and an existential mode to understand and be understood. Thus, a double relation is established with the other, the objectifying gaze and the judging silence, which is what makes it possible to understand the meaning of the relation with the other. The interval

should be considered as the space needed between two bodies for each one to safeguard their own identity against the other and if this interval is lacking, one of the poles will be determined by the other. In the case or extreme, one of the two remains objectified, reified, considered as a thing and the relation becomes chrematistic in the sense of the word given by Dorr and Tellenbach.[662, 663]

In the last decades, the human body has been revolved and the individual features appears more purely in the daily life. The fact that the human being has realized, or at least sensed, that his own body is something more than an object of the world has had a fundamental influence in this new perspective. For example, Muslim women hides their face behind a veil, a hijaab, or a burka, which shows no more than her eyes and sometimes not even these. Members of some religious orders cover their figure with unprretentious cloths and the soldier has to renounce the individual traits of his appearance under his uniform. However, none of the measures is sufficient. The member of the religious order, in order to keep her body hidden from others, much remain in cloister, the same as the Muslim woman must accept a similar restriction to the daily life. "Clothes do not make the man," but to the contrary.

The body is not an extra thing, an object among objects, but rather a personified subjectivity. Whether I am my body or my body is what I am has been considered from different perspectives. The most radical attitude against the existence of a transcendental ego and as assumed by Descartes and Kant, is represented by Wittgenstein, who wrote: "*there is no such thing as a subject who thinks or entertains ideas.*"[664] For Wittgenstein, there is no such thing as the self, since in its relevant use, self has no reference. Thinking "*takes place, but it is not done*[665] from which it cannot be deduced "*ergo sum*" but simply that "there are thoughts." From the neuropsychological point of view, this would mean that there are thoughts that arise in a body in accordance with psychobiological functions and laws but there is no subject who believes, controls or directs them.

For Thomas of Aquin, the soul may subsist to the putrefaction of the body, but even in this case *anima mea non sum ego (my soul is not I).*[666]

> *What is the relation between me* - asked Marcel - *and the apparatus that serves me - my body? It is clear - he answers, that I am not limited to serving my body. There is a meaning in which I am my body, whatever this may mean in another sense.*[667]

In the words of Sartre:[74]

> *There are no psychic phenomena that must be linked to a body; There is nothing behind the body, but that the body is wholly psychic.*

In the end, the personification, which is a process and not a state and even less of final stage, cannot be understood in terms of an object of internal sensations and even less of a psychological object. The body is not an own body because it is felt but because of being sentient.[668]

The striking and enriching concordance between philosophical tradition represented by Pascal and Neuroscience[148, 669, 670] to which we have referred to above has importance concerning subjectivity. The same way we cannot say that we have a body but that we are our body, we have to state that we don't have emotions but that we are our emotions, from what Heinze deduces that the notion of person is an abstraction based on our emotional and corporal nature. More accurately,[671] Rosfort and Stangellini,[672] state that our relation with the emotions that emerge from our affective center is of the same nature as the one we have with what we are, that's to say, with our situation and social background, with our physical constitution, with our relationship with others and with our self-esteem. The fact of being a person is not an ilusion, as Heinze and others consider from a philosophical[673] or neuroscientific perspective,[674] but a "basic particulars" in the sense of Strawson[675] since nor the body not the emotions can be understood without the notion of **personhood**, that's to say, the quality that makes us have the condition, the value and the dignity as a person which is the source of our individuality. As a consequence, the human body, the human emotions are different from the rest of animals: the body reveals an intentionality in its movements and the emotions are so rich that they cannot be understood but when referred to a person. Rosfort and Stangellini discuss the fragile dialectic between the being (in German *Sein*) and seem to be (in German *Schein*), to which thinkers since Rousseau[676] have referred to this fragility is evident in Kurt Schneider's[677] concept of psychopaths in need of esteem, characterizes by their filothymia,[121] that's to say, to want to be more than they are, what is a main trait of hysteria according to Jaspers.[136]

The living and lived body

As an internin summary we can conclude that the primary experiences is that of an animated body or, if preferred, a personified soul. For Zutt, the *lived body* is an ontologically phenomenon, ontogenetically originated and therefore prior to any kind of thought[615] This line of thought induces the thought that self experiences itself as embodied: *I am a embodied self, I am my body* (Marcel).[654]

Zutt stresses that the original phenomenon is that of *Leib* and not that of *Körper:*[615]

> *To understand that which is the phenomenon of living corporality (`Leib´), complicated thinking operations are not necessary. It is enough with the observation of the everyday. For example, I am the one who is writing here and my friend is the one who comes through the door. What I see entering are not somatic manifestations, but my friend. Body and soul are, on the contrary, the result of abstractions that are not possible to understand ... The immaterial soul have no place in the*

material and therefore cannot enter. The body occupies a space as any other material fragment. It is visible but it is not presented to me as my friend who enters. To enter is a manifestation of corporality.

Body and world

The body experience of subjective body (`Leib´) and not of the body object (`Körper´) is not only a concept or image that a person has of himself. It is also a way of relating with the world. For example, the person who suffers a depression maintains a posture with shrugged shoulders, arms dropped to the sides, slow and short steps, which indicate a sensation of dejection against the surrounding world. From this perspective, the experiences cannot be considered as sequences or integration of sensations, memories, thoughts, ideas, which occur in the mind, but rather they are something more complex, aimed at the integration of the self in the world. Any experience of man is always an experience and pertaining to the world. When man experiences, it is always in the world, oriented to him.[263] The world is undergoing constant change and consequently, the body too. Thus, García Bacca[678] could distinguish between man as a subject, that is, the body as something defined, stable and permanent and the man as theme, that is, the body as evolution, dynamism and progress. We are born with a body, which through action, movement, adapts, transforms and shapes itself as a human body, both experienced and worldly. For Husserl the body is the tie to be placed in the world since:

We should remember that only through the experience of a connection between consciousness and lived body towards a natural empirical-intuitive unit is something like the reciprocal understanding possible between animal beings that belong to a same world.[679]

For phenomenology, the world in which we unfold is more than a mere social world, it is a "world-with", (*Mitwelt,* Heidegger[73]), more radical, to which everything in which we socially do not participate also belongs.[680] For Zutt the first quality of the *lived body* is its *essential reference to the world* (*welthafter Leib*).[615] Being related to the world means, first of all, having a place in the world and manifesting oneself in it as body that looks and is looked at, listens and is listened to, touches and is touched. But this body that appears, occupies a much greater space than that body-object, for instance, the body that examines the internalist on the couch or is operated on by the surgeon in the theatre.

The lived body is also the place where lies the look, or it is in the place where the voice listened to comes from, or even more, in that far-away country where the beloved one who is being written to is. *"The world is not what I think, but what I live.".*[77] *"The world is made through the body."*[681]

The body and the world form a whole: I am I and my circumstance[11] I *am someone embodied, linked, through the body to the world, so that I am* in **my body,** and I am in *my world.*[12] Sartre states:

The being for-itself (the body) is by itself relation with the world... By the simple fact that there is a world, it could not exist without an univocal orientation in relation to me... My body is also coextensive to the world, it is integrally spread across all things and at the same time it is condensed into this single point that all these indicate and which I am, without being able to know it. Thus the emergence of the being for-itself (the body) in the world in turn makes the world exist as totality of the things and for the senses as the objective way in which the qualities of the things are presented.[74]

If body and world are inseparable, if the body is essentially worldly (*Welthaft*), it has to participate in the qualities of the world, as the eye participates in the quality of the sun. In words of Goethe: *Wär nicht das Auge sonnenhaft, die Sonne konnt er nie erblicken,*[682] which could be translated as if the eye were not a participant of the quality of the sun, it could never look upon it. What is interesting is that Plato and Plotinus had already previously expressed this in a similar way. The first one wrote: *And the eye was made by the Creator as similar as possible to the sun,*[683] and Plotinus states in his dissertation on the beautiful: *Never did eye see the sun unless it had first become sunlike, and never can the Soul have vision of the First Beauty unless itself be beautiful. Therefore, first let each become godlike and each beautiful who cares to see God and Beauty.* [684]

This condition of our body allows the knowledge of the other as fellow human being. The disposition of the objects and devices of the world around this center which is my body, makes me recognize the body that appears in my horizon as loaded with subjectivity and capable of objectifying me.[74]

The body as support

Furthermore: The body is the support of our being,[615] subject to successful or unsuccessful mechanisms of adaptation of failure of them. Disease is a manifestation of failure of the body in a particular place or function. Where we have pain, we feel the body. Jaspers[685] states that we have acquired awareness that the human body in every act of respiration, in every heart beat, we feel at the limits. In disease, the body reveals itself with meridian clarity and it is precisely there where the pain appears,[649] or the failure of a function. Ruffin[686] says that the impairment arises because of tiredness when the activity of the body fails as exhaustion or disease.

The lived experience of my self

The self is the principle of activity of the psychic life. The human being in state of awakeness is rarely at rest. Thinking does not stop and the heart constantly full of

restlessness. As Fichte[687] said, the self is not a thing or deed but rather action (*Ausdruck einer Thathandlung*).

The self, **the principle of activity**, runs away from itself. In the same way as the eye cannot see itself, this self cannot grasp itself. However, at the same time, the psychic functions do not exist in abstract, they appear in a specific individual. Definitively, I am the one who perceives, remembers, feels or thinks.

Kant wrote:[460]

The human being is infinitely above all other living beings because it has a representative consciousness of the self. Thus, it is a person and conserves the uniqueness of its consciousness through all the modifications that may affect it, always being one and the same person. (...) We are always oneself, but never the same.

The self only exists while performing in each moment. It is thus the center of existence, the self is the subject of the consciousness of the world, of others, of oneself. This **self** can be understood in two ways, on the one hand it is the self as experience of the body and on the other it is the psychological self- a self lived as pure subjectivity.

The experience of the self or consciousness of oneself is characterized by five properties, four described by Jaspers[136] and the fifth by K. Schneider.[135] In accordance with them, the self is experienced as:

1. Extingued from the objects and persons in the world.
2. Distinc.
3. Distinc over time.
4. Active and owner of its activity. The feeling of activity (awareness of activity) called selfhood is that which makes feelings, thoughts, body, life, etc. recognized as own.
5. Existing and alive.

The objective and meaning bestowed experience

The human body is not one more object among the many objects existing in the world, but a subject that transcends itself, towards the world and around which the objects in it are organized according to their meaning for me (body).

The body is the *Nullpunkt*, the zero point, from which the perceptive world is organized. Everything or every quality are oriented to my lived body. This is also true for what is the imagined or remembered, because whatever its characteristics, qualities or even its own spatiality, it can only be imagined or remembered in reference to my body. Then it is from my body and the perception that I have of it that I am going to be able to constitute the world surrounding me and through which the other bodies are spatialized, and thus also from this center that is my body, I am going to constitute the global world, the worldly world. From the phenomenological point of view, the land is in the center of the world and in the center of the center, is my body, as zero point.

There is the possibility of experiencing the body externally, as forming a part of the world, of the time - space constellation. This is the capacity of going beyond the own body, taking a distance, considering it from outside. Guardini stated:

"*It is an essential characteristic of the psychic sphere that man, over and over again, can go beyond the immediate group of their specific existence (dasein), maintain a distance, consider...*".

Zutt[688] has placed this expression in the axis of his anthropology and has deduced, based on it, his comprehensive psychopathology.

The perception of the own body

Experience is organized in accordance to perception and motility. In agreement with Husserl, each modification of the body implies a modification of the external world.[30] We perceive the world through the body and not only intellectually, therefore "*being a body is being attached to a certain world.*"[142] We perceive the world from and with the body, we are embodied.[482] This attachment is achieved through movement, action and perception.[444]

The body is the condition for experiencing the world and consequently the condition of all learning processes.[20, 61]The body is the way to have an own world and thus perceive the objects as part of a circumstance. Knowledge is in **enactive**, that is specific to a situation.[689]

Some neuroscientists[689, 690] have reached the same conclusions as phenomenology and psychiatric anthropology through different pathways something stressed by current philosophers such as Clark[691] and Noë[692]. The novelty is that there is an added evolutionary component.

Mind, body and world interact to promote better opportunities of adaptation forthe individual. Gallagher argues in favor of an embodied cognition and defends that the body shapes the mental activity, although *from behind the scenes*.[3] The point of view of Gallagher is that once it is known how the body schema shapes perception, it possible to deduce how it cognition is, which is the result of perception, is shoped. Ultimatelly this perspective is a reaction against rationalism because mental activity cannot be reduced to a cybernetic process, computed in accordance to certain logical rules, separated from the enviroment. It is necessary to "*put back together the body and the world.*"[691]

The human movement

We move because we exist and by movement, we position ourselves and are able of organizing ourselves in

and with the world. As a consequence, we become conscious of what we are as human beings. Movement is one of the key methods to approach learning about human nature:[444] for the search and recovery and of course for the nature balance of the human being.

The perception of movement is a unifying factor of the body image, of the different parts of the body and of its relations with the surroundings. Movement requires the anticipation of a plan, of a sketch,[693] in order to implement an action. There are neurophysiological mechanisms for control this kind of such as the negative fronto-medial potentials (*error-related negativity*, *correct-response negativity*, *feedback-related negativity*).[694]

The erect posture

Erect posture is a unique characteristic of human being. In humans, the spinal cord is really a column.[263] Erect posture needs a special configuration of the whole body, in order to allow to free the hands from locomotor functions. As a consequence, the arm and the hand achieve control of the surrounding space. By elevating of the head above the ground, human beings are able to look to the horizon and the sky and raise the arms. Smell, already distant from dust, stops being important, and becomes reduced to its minimum expression.

The freedom obtained by hand and arms from the locomotor function, allowed new competencies. This does not only mean that they acquiered new skills, but that they remain in a state of enormous plasticity. A hand which does not walk is able to collect, grasp, press, loosen, twist, stike, hurt, calm, touch, halt and among an infinity of possibilities, also to heal. The same happens with smell. As humans no longer needs it, smell acquires a new capacity and function. The atrophy of the olfactory areas of the brain frees the rhinencephalon from the analysis of the stimuli of the immediate setting and allows it to assume other functions, especially, the affective ones. These concern to the human settings, personal and of the society, in which we live. The rhinencephalon of the greyhound is that of man as is a paw to a hand. The hand is only occasionally dedicated to walking and the rhinencephalon is only rarely dedicated to smell. Both have acquired more specifically human functions.

The body as a home

The process of the body of extending the horizon almost infinitely goes in pararell to another feature:takingdistance and putting limits. This is the anthropological basis of *inhabiting.* It is not that we inhabit because we have dwelling places, but the opposite, we rise up walls as a prolongation of our body in its need to distance itself.

Therefore it was possible for Heidegger[695] to say that the living body exceeds the limits of the space, it lives inhabiting, occupying a territory and incorporating objects at its reach:

> Our being attuned (" Das Gestimmtsein") does not primarily refer to the psychic. It does not refer to any inner state which after, enigmatically, is projected outside; colors, persons and things.... they do not come from outside or inside, but arise from oneself as a way of being in the world. The existential event, then, in itself, is the fundamental structure that we see altered in the patients.

Zutt sustains that the "inhabiting" is an "existential order" related with another fundamental order, such as *rank.*[688]

> *There are persons who never go past the hallway of my home and the contact with them occurs at the entrance door from the street. Others reach the living room of my home (acquaintances, condolence visits, etc.). There are even fewer who come to take a meal with me in the dining room (friends), and very few enter my bedroom (only my wife and children). The rank, as inhabiting, are functions of the lived body while it is manifested in the world. But they are not fixed, but rather change with time, they are historical. Belonging to the essence of this body that appears from a certain position and posture is also walking, always being going to some part.*

Therefore, it can be said that the human being not only occupies place, but rather inhabits it, and lives in it. In Spanish, *habitar* (inhabit) and *vivir* (live) are words that are almost synonymous, which already indicate to us how much the one has of the other.

*The enacting body**

Enacting body refers to the body which does something, literally, "that holds another position" and that manifest itself as subject agent. That is, the body which, in the perceiving, in the acting, in the feeling, in the sexual activity, etc, performs an action, exercises a function.[60]

However, the eventuality of the human being is manifested brutally when the enacting body is not in condition of "holding an office" and it is experienced as resistance. Precisely the notion of a resistance to the action, has been stressed by studies on perception an experience and of the body (Maine de Biran[426]; Dilthey[65]) when the body

* N.T. In the Spanish version we have used, following Runge Peña[70] the Word fungiente, a term used in Central America with the meaning acting, performing or holding an office. The verb fungieren exists in German with the meaning of playing, being, acting. The motion overlaps with the verb to enact. The prefix en-adds to act a formality, making the act official, as when enacting a law.

is reified and devitalized. This is the "experience of the materiality" of the body[681] or of the objectifying distance or *distality* associated to the pain,[696] to melancholy,[662, 663] or to disease in general.[697] Thus, for Zutt, the body is also support,[698] wich may fain when becoming ill.

Intersubjectivity: The experience of others

For Merleau-Ponty corporality is in the center of the **intersubjectivity** and therefore of the **intercorporality**, which is none other than the pre-reflective nexus between my body and that of the others.

According to Grosz[18] the body is both the object perceived by the others and the reality lived by the subject, beyond the separation between object and subject. Even more, for the other human beings is a personal reality.

In the subjective experience, the body is lived as presence, as manifestation, mine towards others and of others towards me. Being in the world, is not only to have a room in a tridimensional space. It is also living among others, living beings, are manifested (and we present to them) as human bodies, not as mere objects. Therefore, we live in a physiognomic world and not in one of lights and shadows. One of the most daily confrontations is that of photographs. If the face of a non-photogenic person shows no charm, with the expression decomposed, and if, on the contrary, a person can be portrayed as from the back, serves to make what I am saying clear, and we can add that if man is capable of painting, of collecting images, it is not because there is an art of pictures, but precisely the opposite, these exist because man is capable of seeing, looking and living in a world of the images.

An image is more than the reflection of light on the surface of the skin. An image is made up of the clothes, gestures and expressions, movements, the rhythm of breathing, sweat, trembling,the diameter of the pupils, and in general all the acts and movements in which the body is manifested.

The look is an essential quality of the living body (Zutt;[699] Sartre, 1943) capable of revealing unfathomable secrets. A furtive glance is capable of betraying and a deep glance of startling.

The body as manifestation

The human being expresses, communicates, manifests with and through his body, which is its epiphany, and what is more important, these manifestations form a part, they are not an added accident, of this body that lives.[444]

The human body language is a form of multifaceted expression that includes many levels and spontaneous and instinctive, while calculated, communication. It is a paralanguage that accompanies all verbal expression. It may accentuate the information and modify it. It may cancel its meaning, changing it into a meta-communication. It may be independent of the language of words when someone consciously decides to express him/herself with gestures in the daily life or in the artistic setting. It may perform a purposeful action or on the contrary, it may be disconnected from mimic. It may be real and simultanously fictitious information material and it always simultaneously includes the function and expression of movement. Its temporal and energytic dimensions and qualities can be objectively measured, but its expression continues to be subjective and it admitting multiple interpretations. Thus, it is not strange that according to Allan Pease, 65% in the language is not verbal, or it is corporal; 28% is in the tone and other parallel aspects, and 7% would be wording language.[700]

Body language is more tuthful than verbal expression,[701] that verbal expression is the source of deceiving. "*La parole a été donnée a l'homme pour déguiser sa pensée*" (Men seem to have acquired *speech* in order to conceal their thoughts), Talleyrand said to Godoy´s envoy Izquierdo.[702] In fact, politics is the art of deception as conceived by Aristotle who wrote that the politicians are the only ones who have the right to lie as long as they do so for the good of the *polis*. This is so because human body language has an important spontaneous component that is difficult to simulate or dissimulate, sometimes independent when not contrasted to verbal expression, manipulable if one has the ability to "have a poker face."

To express is to lett out feelings, ideas, concerns that move or agitate our intimacy. Expression is the flow that is established, with the world surrounding us. Expression is the faculty of the human to manifest feelings and experiences both whether sharing them or when they are a spontaneous expression. Expressions are elaborated in our body. All of the emotional history of the human being is stored in our body and is expressed through movement. The expression becomes intentionally communicative, it serves the body language.

Movement acquires the meaning of a message, and the expression is transformed to human communication. Body movement of the human being implies: a type of behaviour that affects all human beings, an elemental and primary activity of the human existence.

Merleau-Ponty also opens up the possibility of a variation that is both socioculturally and bibliographic of the experience of the own body on supporting that the body is eminently and expressive space.[703]

SPATIALITY AND LIVED EXPERIENCE OF SPACE

According to with von Uexküll,[583] every living being is not simply in the space, but rather creates a surrounding world or peri-world around it. Each individual selects the external stimuli and the shape them in a way that is characteristic to the species and more discriminately to oneself as individual. It is a innborn characteristic.

Plügge[704] states that under normal conditions, we do not experience space, its borders, barriers or threats.But sometimes, this is not possible and the first thing that happens is that the individual feels restricted on his/her actions.

Thus, it results that while the body as object occupies a defined and stable space, with the fixed volume limited within its surface, the body as subject is in space in a different way. To be in a room, means that the body is in one point and in all parts. This quality is that which is referred to by Heidegger as going beyond, setting through space (*Räume durchstehen*).[695]

The dimensions of lived space are not measured in unities of the metric system and sometimes they are in true contradiction with it. The bedroom of my neighbors is at two or three meters from my office table. However, for me it is more distant, even practicably unreachable for my imagination, than the other extreme of my home. The wall in between is not a division but rather an almost insurmountable border. However, we can even assure that if there is a wall between my neighbor and me, that if my home has doors and four walls, it is because man is a being who by nature constructs homes.

The external reality is not grasped but by the **resistance** offered to the action of the subject.[65, 426] Reality, then, is manifested in its harshness. If being, were just to features contemplate and not to act, the living being would not know where they stood, nor with surroundings or energetic of the world. Bollnow,[705] beginning with the thinking of Dilthey, develops this idea more fully:

> *I need some (things or men), they enlarge my existence, increase my force. The others exert pressure on me and they limit me.*

Next to the pressure that reality exerts on the human being, there is something positive in it that dilates and increases it. In the case of Dilthey, these actions of the reality do not only refer to the cosmic reality but also to the human one. To overcome doubt about reality, it had to be perceived as harshness, as external resistance.

> *In this situation of the doubt and of the despair, reality may be derived from the moment of pure resistance. It is only in this resistance that man finds the undoubtedly foundation for the existence of a reality outside of man.*[65]

However, it is not only resistance that is important, in this the necessary insertion of a world lived in which one moves is stressed. López Ibor[34] described that Parkinson's disease patients often stop for a few seconds in doubt before going through a door even though there is no impediment to their continuing. This fact has been attributed to the virtual narrowing of the space, which is imprisoning, as if the physical space is really narrowed. However, we think that it is more the difficulty or slowness to establish the necessary schema of the new space that opens up after the door, in which it is necessary to integrate and accommodate the movements of moving to be carried out.

TEMPORARILITY AND LIVED EXPERIENCE OF TIME

For Heidegger[73] the anthropological structure of man starts with its temporality. The past not only penetrates into the present, but acts on it, limiting its possibilities, its own flexibility, and imposing the present on it like margins through which it must necessarily flow. The future is also not the enlargement of the indefinite capacity, the hope, the wide perspective but also that which is feared and what is of concern. This fear and concern imprisons both the present and the past, and the current moment is experienced full of borders and limits. Thus, death has so great a weight on the present, as an unquestionable limit of the existence.

For some authors, besides the instincts or impulses, of thinking and volition, there is an element of vitality that is the time. Life itself is futurition, coming-to-be, and in its own essence, the essence of time is constitutively implicit. This concept has allowed Minkowski,[706] Gebsattel,[707] Straus,[263] and others, based on the notion of the **lived time** (*temps vécu*) to analyze, for example, the experience of time in depressive states. In the depressed patient there is, according to von Gebsattel, an alteration of temporality consisting on the predominance of the past and absence of the future. In depression, there is a temporality disorder, defined by von Gebsattel , as a disorder of existence, of vital progress,[707] that is experienced in many ways: lack of perspective of future, waking up "one day without end," boredom (which in German is *Langweile*, lit. prolonged wait), as a "slow pain" or similar sensations.

BODY EXPERIENCE AND AFFECTIVITY

All the considerations on inner sensitivity, cœnesthesia, proprioception and body schema share an important limitation, which is that of overlooking the fact that body experience is not affectively neutral. As opposite to external sensations that sometimes may be lived passively without being accompanied by a special mood.[708] This is due to "*the nature of the feeling that motivates (phenomenologically) the apprehension of this body as mine*."[709]

There is considerable terminological confusion in this area. This should not be surprising since it deals, on the one hand, with personal experiences that are difficult if not impossible to verbalize. They are ineffables, they are outside of the reach of rational explanations and they were not given sufficient attention by philosophers and thinkers until recently. In the tradition of phenomenology and psychopathological anthropology. In Spanish *sentimiento* `feeling´ and *humor*`mood´ are those whose encompassing and correspond with the `*Stimmung*´ of Heidegger. The problem is that their equivalents in English, *feeling* and *mood* have different meanings.[710] *Feeling* indicates the sensory experience. Thus, Ratcliffe[711] has introduced the

expression "*existential feelings,*" whose objective is either the own body nor an object of the world, but rather they are structures of the relation between the self and the world, that include a feeling of reality, significance, relation, "situativity," we could say a consideration of myself in my own circumstance.

Therefore, existential feelings are inextricable features of the same experimental structure, that is unitary experience. That is why body feelings are not mere sensory-perspective experiences but are modes in which the world is presented to us through the body. An important contribution of Ratcliffe[680, 712, 713] is precisely that of the importance of the body experience in feelings, to which, according to him, Heidegger had not given sufficient attention.

Body and vital feelings and vitality

In fact, the primary experience of the feelings is often linked to the experience of the body and there is in then vegetative component. Marcel[5] first and then Schilder[503] are those who have emphasized this essential.

Feelings are not mere mood states, since they have an essential cognitive component. Emotional consciousness is consciousness of the self in the world and therefore any mood state has a sense in it, where always returns to it (for example, fear to the object of fear, happiness to its motive). For Sartre,[714] emotions are a substitutive behaviour, which arise when the rational and objective are not possible, which make the subject become installed in a metaphoric relation with the world. Due to the ineffable of death of a loved one, the person enters into a state of sadness, in which reality acquires new meaning, although it may be no more than that of withdrawal, setting oneself up and inhibiting all action or commitment. Thus the rationalization of feelings and what had provoke them, tone them down or make them disappear. Thus, under normal circumstances, it is possible to reflect on the emotions and as a consequence they are transformed as when conforting somebody or in psychotherapy.

Mood states are always accompanied by somatic phenomena (tachycardia, sweating, blood pressure variations and neuro-endocrine secretion variations) and behavioural ones. The vegetative correlates are, for Sartre, the **serious side** of emotion.[714] We currently know that they are the expression of the adaptive function of feelings, for example, when there is an undetermined threat, as yet unidentified, a complex reaction arises. This reaction is psychic, so that the subject becomes aware (feel anxious), physiological to prepare the body to cope with the threat for the homeostasis (stress mechanisms), behavioural (preparation for the fight or fleeing), of a call to attention to advise about the situation of danger (facial and body expressions, bristling) and request for help (asking for help or to be careful or simply shouting).

Kinds of feelings

Scheler[715] distinguished four kinds of feelings:

1. Sensory feelings (*Sinnliche Gefühle*), or feeling-sensations (*Empfindungsgefühle*) specific to the body. They serve the instinct of conservation in its most biological aspect and is build on the body sensations, or follow its structure. They are states such as pain, a knot in the stomach due to hunger or cold on the back from fear.
2. Vital feelings (*Lebensgefühle*), or feelings of the living body (*Leibgefühle*) also refers to the body, but are not localized but rather are felt as if they were in the whole body and the way in which we are installed in the world. Thus, we can perceive a scene as happy or sad. Both the localized and general sensations are partially originated by external stimuli, partially by stimuli of the body itself and partially by representations and thoughts, as are, above all, sexual sensations and emotions. The vital feelings revolve around fullness, calm, weakness, inner emptiness and tension. They make up a unitary whole, and in them, we experience our own life. They are globally extensive (*Gesamtausdenungscharakter*) in the own body, on the contrary to sensory feelings that are localized. Vital feelings always refer to "me" by the Ego's-own-body, that is by the unitary consciousness of our own body.
3. Psychic feelings (*seelische Gefühle*) or pure feelings of the Ego (*reine Ichgefühle*), which correspond with to the directed feeling of Lersch[716] or reactive feelings, caused by an outer event. They are generally the expression of an inclination, of taking a position and consequently of an evaluation. Therefore, while in the first two types, the fundamental experience in its absence, here we are living with an eye on the world surrounding us, not of whether I have a pain here or there or if I have exhausting tiredness. In this third category, there is the clear appearance of pleasant and unpleasant, happy -sad, ecstasy-anxiety, pleasure -displeasure, interest -boredom, love -hate, trust -distrust, etc.
4. Spiritual feelings, (*geistige Gefühle*) or feeling of the personality (*Personlichkeitgefühle*), are spontaneous, absolute beyond specific values. They are ways of being, instead of ways of existing.

We use the term vitality as regarding vital feelings, and not as that of biological vitalism as in Driesch[717] who considered that in living beings, there are phenomena that cannot be explained only by physical-chemical laws and that there would be others characteristic of life itself. We also do not use it in the meaning of philosophic vitalism, as action against reason as in Nietzsche.[718] The word vitality refers to a stratum of the human nature among the more purely biological and most personal ones, following the concepts of Lersch et al.,[716] among them the ratiovitalism of Ortega y Gasset[719] that aims to be an intermediate position, and very close to existentialism, in which reason and intuition were placed at the service of life. Thus, for Ortega, life would

be a radical reality and man would not be nature but history, because life is that which we make it and that which happens to us.

Thus, the consideration about the role of the feelings leads to a more radical approach than that explained above, if possible. If the whole problem was that I should feel my body through the cenesthesia for it to be mine, we would miss that which is important. Because the question is rather that I am my body insofar as I feel, I am. And this places the body besides the subject, and not that of the psychic object. Thus, the body is not only our way of being in the world, our belonging to the world, it is "*our way of existing.*"[720]

Marcel maintains that "*It can be seen straight away that my body is only mine inasmuch, however confusedly, it is felt. The radical abolition of cœnesthesia (internal perception), supposing it were possible, would mean the destruction of my body insofar as it is mine. If I am my body it is while I am a sentient being.*[142]

The question is not whether attention must be focused on the body per se before focalizing it on any other object, it is rather that the body is the condition of the possibility of giving attention to any thing, even the body itself. Because it is the condition of possibility of all attention and all feeling, just for it has an absolute priority, the body per se is not an object, and is also not an inner feeling. The body subject is, thus, not something among the things in any way.

The hands are those that touch, it can be said to refer to an example of Husserl, just because they are the condition of possibility that something is tangible, cannot be object of touch. This does not make them a mental thing. Of course, I can touch one hand with the other, but then, the touched hand does not have priority! It is not possible to touch the touched. The body subject, that which has absolute priority, is the sentient, not felt, body. The primary feeling, the *Urgefühl*, cannot be felt."[655]

Alexithymia

The studies of Ruesch[721] on the infantile personality **and those of** Marty and of M'Uzan[722] on operatory thinking culminates in those of Schalling and Sifneos[723, 724] on alexithymia, literally *lack of words to express the feelings*. According to them, the patients suffering psychosomatic disorders have much difficulty in verbalizing their affects and instead describe the specific circumstances they are in, and the mental operations that lead them to them (operatory thinking). The lack of verbalization of the affects leads to it becoming chronic (see above).

THE AMBIGUITY OF THE BODY EXPERIENCE

For phenomenology, the question is to know how my body is mine, what the being mine of the body means or how I experienced my body as mine. The goal of phenomenology it is not to consider the qualities of the body as an object, of my body as observed from the outside by others or myself. However, it is not possible to speak of my body, because it would be dealing with it as an object, the body, which would belong to a subject, me which would be reintroducing the dualist tension. Strictly speaking my body is not mine, because I am my body, and what I am cannot be mine.Therefore the relation between me and my body is both dual and ambiguous. I am and I have my body, in the words of Marcel. The body subject (*Leib*) is the body that I am, the body (*Körper*) is the body object that I have.[725]

For Marcel, there is *an immediate essential relationship between my consciousness and my body that occurs in the space*, or rather that is established through the external perception that I have of my own body, and *another in which my body has in the internal perception (cœnesthesics),* so that my corporality has *two ways of absolutely different existence*; one objective existence - linked to an external perception - and another subjective - linked to the own consciousness. However, he also warms that both ways of consciousness of the own body are indissoluble and conjointly solidary so that one cannot occur without the other.[5]

For Ricoeur,[77, 726, 727] the opposition between body-subject and body-object does not coincide with the double direction of the gaze outwards, towards the outer-body and inwards, towards the inner-body, but rather it is the consequence two attitudes. On the other hand, going from the personal to the natural mode is a kind degradation by which the acts are reduced to events.

> *One goes from the phenomenological point of view to the naturalistic point of view, not by inversion of the internal to external, but by degradation of the external and of the internal.* On his part Merleau-Ponty[142] has also maintained that:
>
> *(The) body, as a chemical structure or agglomeration of tissues, is formed by a process of impoverishment from a primordial phenomenon of the body-for-us, the body of the human experience or the body perceived, that the objective thought converts into a theme, but one in which it cannot be verified that it has undergone a thorough analysis.*

For Escribano,[728] the question is not that of contrasting an external observation as opposed to an internal one, as distinguishing two different attitudes, one naturalistic (body-object) and another personalistic (body-subject), or if preferred, of applying the methods and perspectives of empirical sciences and simultaneously those of the human or spiritual sciences, in the concept mentioned above of Dilthey to the study of the human body.

Merleau-Ponty[77] refers to the ambiguity of the experience of the body. Ambiguity means that we are the body that we experience and the body that we live. Better

said we are able to experience and to live because we are body. He also manifests the fact that we are an integration of late and impulse, a fact that transforms the body-self into the body-thing. We are the unitary ocurrence of a bodily self and a worldly body. Diseases are established in this ambiguity.Therefore, all diseases are psychosomatics in the wide sense of the word and therefore the role of genetics and that of the enviorement, the etiology and meaning of the disease, cannot be separated. The patients live in this ambiguity and the physician moves within it. Thus, the physician has to manipulate the body of his patients and know how to be attentive, to listen and to question solicitously about their personal life. However, at the same time, the physician, in a precise moment, will have to distance himself from the specific situation and reflect, using the knowledge that science provides him.

The ambiguity of the being -in -the -world is the ambiguity of the body. Merleau-Ponty wrote:[142]

> *Because our existence is ambiguous, it is partially autonomous and partially dependent. This ambiguity would originally affect our freedom. It has to operate limited by the situations in which our ambiguous human condition is committed. The conditions of likelihood are not pure fictions but belong to a being located in the world and approached by the ambiguity of the vents. If the Cartesians would return among us, they would be surprised to find a philosopher and even a theologist who has the favorite subjects of: The radical contingency of the world.*[660]

THE DAILY EXPERIENCE OF THE BODY

The daily experience of the body is characterized by two aspects. The first is that it is an immediate sensation that the own body is located in a specific place and time, and that our self is located in it. Body and self are perceived as a unit in the world and separated from it.

The second it that under normal conditions, we hardly perceive something of the own body and only we do so when it is ill and causes discomfort and pains or while demanding an excessive effort and then the beating of the heart, deep breathing and resistance of muscles and joints are noticed. Thus, one of the facts to keep in mind is that the disease reveals an unknown, the own body, because no one knows anything about their gallbladder and even that it exists until the day they have their first colic.

From the phenomenological perspective, the normal experience of the body depends on the concordance (*Einstimmigkeit* of Husserl) of the sensory experience and the own affective (lived) experience, which makes my body something familiar, while in the abnormal experience of the body, this continuity is broken. The normal experience consists in a natural attitude,[29] unquestioned one,[729] which Merleau-Ponty called perceptual faith.[77]

Normality includes grades of continuity - discontinuity or identity - otherness on different levels, which alternate in the abnormal states (table 6). In the healthy state, the own body is the great silence. The experience is about an image of something hollow and empty,[503, 504] silent, transparent, just a sensation of presence,[463] subliminal[730] of which we have a peripheral awareness.[731] Leder[482] has written on the **absent body,** alienated, because the tendency is for the body to remain in a **corporeal background** which leads to a problematic awareness mode, arises when specific physiological or social experiences occur.

Sartre[74] has described three dimensions of this body:

- The first is that which we have just described, **the body passed-by-in silence** (*passé sous le silence*). It is the daily experience of the action, in the performance and in the goal in which we are, while ignoring each and every single of the movements involved in then. The mountaineer climbs sloped wall of the crevice, to the anchor points, to the wind and the climbing route, not of the contractions of his muscles.
- The second is the **external observation of the body**, as when we see the mountaineer and the scenery which his body is fighting, a live object in movement, a performing organism that triggers in us the idea that it is governed by a center that is inside him.
- The third is the **subject that feels observed**, the mountaineer who realizes that I am looking at him. As a consequence, he slows down his movements, he feels awkward, vulnerable, his world has been overflowed in the direction of the other. The gaze from the other destroys the silence (*passé sous le silence*) that makes it impossible to ignore it. The *gaze*, important manifestation of the living body, and the dynamics of *looks and being looked at* are the sources of the intersubjectivity.

Van de Berg[732] had called attention on the unilaterality of the Sartrean doctrine, which is that which we see exaggerated and caricatured in body experience disorders. For Sartre, the gaze from the other always ends up producing alienation. The eye that deprives me of my world, automatically *coagulates* me as if I would have been surprised *in fraganti (red handed)*. All the examples mentioned in the *L'être et le néant*[74] speak in favor of a misanthropic view: a man looks through the keyhole at a scene that was not aimed to be contemplated by him and suddenly realizes that his reprehensible behaviour is observed; another walks along a deserted street and hears behind him that an unknown person draws back the curtains to silently observe him. The Sartrean gaze is the gaze at the back of a stranger, a malicious look, treacherous, which produces shivers from head to foot. It would not be difficult, van den Berg finishes up, to present a long list of examples that denote an opposite meaning in the gaze of the other: there are understanding sympathetic and friendly gazes. We can add that, by its own definition, the Sartrean glance projects the nothing on the object and therefore on the body as such.

Table 6 Grades of continuity and discontinuity

Level	Continuity		Abnormality
Emotional	Relaxation	Tension	Malaise
Spatial	To be well situated	To not be it	To be in no part
Temporal	Synchrony	Asynchrony	To be outside of time
Intersubjetive	To be oneself	To not be it	To be alienated

Modesty and immodesty lead to the dynamics of the master and the slave. The human being usually does not show his body, and when he does so, it is with fear or with intention to fascinate. It seems that while showing his body, the foreign gaze that goes over the body takes it away from him or, on the contrary, the other will become enslaved. While I have my body, I can be reduced to an object or, to the contrary, I can become its master and look at it for my part. Nevertheless, this control is an impasse, since I have converted the person that incites my desire for recognition into a fascinated being, who has lost its freedom, and no longer is a person for me. The same can occur in the loving relation in which its contradictions are due to the metaphysical structure of my body, also object for the other and subject for me.[77]

SIXTH PART: CONFRONTATION BETWEEN BODY AND IDENTITY

BEYOND THE AGNOSIAS

Up to now, we have considered body in its most straight forward and neurobiological senses. From here on, we will do it from a wider and more comprehensive perspective, which includes the meaning of what is perceived. This new approach is fundamental for the understanding of the nature and manifestations of some mental disorders and also of some some philosophical problems.

The phantom limb and the different forms of agnosia, this deals with, in words the proprioceptive information of Gallagher and Meltzoff,[116] which is necessarily integrated into a body schema in order to perform the action. However, in many mental disorders, there are important, sometimes predominant, alterations of the body experience that cannot be considered as agnosias. That is why we speak about that there is "a territory which is further beyond," the realm of the conscious proprioception. In order words, it is necessary to differentiate the perception of the own body from the experience or better, the **lived experience** of it.

Indeed we are able to jump from the experience of the body object to the body subject and vice versa.[733] If my shoe is tight, I experience my body with the dimensions of an objective reality. If I use diets and exercise to improve my appearance for the summer, I am experiencing a subjective reality that also aims to have an impact of the opinion others have of me when going to the beach together. However, there are some conflicting situations, which are the consequence of the ambiguity of the body experience described above.

Some of these situations are normal. For example, Freud called attention to the fact that we sometimes do not recognize ourselves in the image of a mirror. He cited an experience of his own that he had when he woke up one night in a railway wagon car, and he confused his image in the mirror with that of a person who would be entering his compartment (Freud suffered from *siderodromophobia*, fear of trains, and the anxiety may have influenced this false recognition).

Wolff, was able to show the difficulties that anybody has to identify photographs of his or hers own hands or profile, if he or she are not expecting to be shown them. If someone takes in a covert way a photograph of the profile of somebody and shows it latter mixed with photographs of other individuals, the person may not be capable of recognizing it. The immediate capacity we have of recognizing ourselves or the parts of our body is mainly due to the expectation. When we expect to meet someone, we recognize him or her immediately, but if we run into someone without expecting to, we hesitate for a moment. The times we see our own image without knowing it are rare, which is why is it necessary to recur to such contrived experiments. On the other hand, it is known that most persons do not correctly visualize the size of different parts of their body, tending to overestimate the dimensions of their head.

In other instances, the confrontation affects some of the characteristics attached to the body experience: the experience of the world in the derealization; self-awareness in depersonalization; the body experienced in the Cotard syndrome, in severe psychosis and in hypochondria and hysteria; the experience of the self in the delusional disorders in general; the erect posture in the camptocormia (which was previously believed to be of hysteric origin and is not attributed to a degeneration and atrophy of the lumbar

paravetebral muscles)[734] and in the comoptosis (that is considered to be psychogenic);[735, 736] the movement in catatonia; intersubjectivity in the identity disorders and thus almost *ad infinitum*.

Poeck[737] carried out an interesting experience. He asked a patient who had an arm aputated to place his stump a few centimeters from the wall and to tell to him what had happened with the sensation of the phantom limb: had it faded away?, had it folded itself?, did it cross the wall? Plügge[738, 739] who repeated the experiment, did calling attention on the displeasure produced in the patient by the situation, *Are you calling me a liar, doctor!*

This displeasure is constant in all the situations in conflicts between the body as object and its experience: the experience of the cadaver of a loved one, that of a body that is not as perfect as a patient suffering from anorexic nervosa would long, the deception when we hear our own voice on tape for the first time or the displeasure of adolescents with the shape of their body. Frenkel-Brunswik[740] has referred to this event as the *painful truth*, Holzman as *latent split*[741] and Janet[742] as *shame of the body*.

The "Center of the Soul"

According to Zutt,[743] for Jaspers, neurological knowledge goes up from one stratum to another stratum towards the nervous mechanism, as if it increasingly approaching the *center of the soul* and that the highes disorder discovered in such a way up to that time was apraxia.[136] He adds that our knowledge about these aspects has been acquired in ascending sense, but is lost beyond the motor apraxia, at present, according to Jaspers, in the setting of the unknown.

Only one comment should be made to these sentences, that is, that of associating the word agnosia to apraxia, because both always go together.

Zutt has made a very similar statement when he wrote:

> *In the agnostic and apraxic disorders, there are peripheral alterations, that is, of the instrumental apparatus in the sense of J. Lange. The inner attitude and fundamental faculty of exteriorizing (expressing, discovering) are "more central" than the apraxias.*

A modern perspective of this interpretation is found in Orengo who, although he proposes a common etiological mechanism for psychopathological phenomena and neurological symptoms, he differentiates them because the former could have an explanation of top-down while the latter would be caused from bottom-up.[744, 745]

In the text cited, Zutt refers to two of his own works.[262, 743] In the first one, he analyzes the attitude of patients with hysteria and begins with the fact that for each emotion, a distinction can be made between the active part, which is the attitude, and the mimic and pathos which is the process of the interiorization in form of perceptions and feelings. Normally, both go in together since they are a part of the adaptive function of the sentimental life (see body experience and affectivity). But sometimes the internal attitude appears somehow independent from from the self, and as a consequence in some personality disorders it affects behaviour and expression. Prototypical cases are hysteria and some personality disorders in which the individuals assume feelings which are fremd to him, paving the way to internal attitudes that seem unreal but in the eyes of the patient are not. Due to this, Bumke[746] stated that the natural attitude of the hysterical persons is to pose and therefore they seem to be often engaged living their own stage show.[136]

The ability to express or manifest ourself, is clarified by Zutt with an example: a Parkinsonian patient would be able to express himself if he were capable of moving, while a catatonic patient would be able to move if he were capable of expressing himself. The catatonic patient has lost something more than the possibility of moving: that is the ability to manifest or express himself and as a consequence the surrounding world becomes uncertain for him. That known appears crumbles into pieces, and is replaced by delusion.[743]

KINDS OF CONFLICTS BETWEEN BODY AND IDENTITY

The lived experience of the body changes, it is sometimes modificed in an distressing way, when falling ill. Then, the indigen ce of the own existence comes upfront and the ambiguity of being and having a body, the chiasmus suddenly disappears consequently. The body is manifested in all its objectivity and the doctor and patient are faced with a new language. The unity between the body, the self, and the world comes apart in the disease, in such a way that the body becomes a threat to itself and there is a need to change the style of the interpersonal relations.[747]

In the disease, the body also does not reveal its anatomy in the way that it is studied in the dissection room or in the surgery room. The body performs a *self-dissection* so to speak. Through the diverse form experiences, such as pain, anxiety, dizziness, etc., it speaks a new language. The anatomy of the extrabody is different from the anatomy of intrabody and one is no less important than the other. The symptoms of the disease often only explain those of the intrabody. Its language is that of suffering.

Pain and body experience

Painful experience sare a good example of this transformation. Pain is an alarm sign and a signal that appears in the localization where damage or lesion has been produced. It also occurs when there is threat of harm. From the evolutive point of view, pain has great adaptive importance, because it alerts to the fact that some tissue has been or may be damaged or lesioned.

However, there is no direct correlation between pain, damage and threat and the individual response to pain is very variable and subject to important psychological and environmental influences, which makes the study of pain very complex.

On the other hand, pain is a constant concern of the human being, who asks: What is it?, What does it mean?, Why and for what?, Is it possible to live without it? How can it be relieved? And finally, Why does it exist? There considerations on pain have some important philosophical, moral, ethical, religious and cultural components. In any case, pain is difficult to describe and define, it is a **private experience** (Szasz).[748]

Pain is so difficult to define that it has sometimes been denied. For Aristóteles, the seat of the pain is in the heart and its nature, an intensification in the sensation of touch.[749] This notion is shared by current investigators: *pain is, simply, too much*, Melzack.[750] Descartes proposed the paradigm of the rope and the bell:[751] pain is the consequence in the brain of something that occurs somewhere else in the body, as the ringing is produced at a distance by the sacristan. Therefore pain would be a specific sensation, according to a dualist model.

The Spanish Royal Academy defines pain and other related words as:

> **Dolor** (Pain)*: 1.- Uncomfortable and afflictive sensation of one part of the body due to an interior or exterior cause. 2 Feeling of sadness and sorrow.*
>
> **Dolora** (painful): *brief poetic composition of dramatic spirit, that implies a philosophical thinking.*
>
> Doliente (mourner)*: in mourning, relative of the deceased*
>
> **Dañar** (harm) *(damnare 'condemn):1. Cause detriment, harm, impairment, pain, discomfort. 2. Ill-treat, spoil something. 3. condemn someone, make a judgment against the person*
>
> **Pena** (Poena) *(Poena, "punishment,", penance) : 1. Punishment inflicted by legitimate authority to one who has committed a harm or offense. 2. Care, sorrow, great feeling. 3. Pain, torment or corporeal feeling. 4. Difficulty, work. 8. Mourning veil*
>
> **Condolencia** (Condolence)*: Participation in grief of other. 2. Expression which the feeling one has about their pain or sorrow (condolences) is communicated to another*

The *International Association for the Scientific Study of Pain*, IASP, describes pain as *an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.*[752]

The definition should be completed with two extra features: pain gives rise to *some specific responses* (vegetative, psychological, behavioural[753]) and to a *request for help*, accompanied by the hope of being helped.

Thus, pain is accompanied by:

- Loss of or threat to body integrity: lesion, damage by a cause.
- Loss of or threat to personal well-being: malaise, sorrow, pain.
- Loss of or threat to social status: sorrow, punishment, penitence, condemnation.
- The experience of an inflexible fate: crisis, rupture of the existence.

And it causes:

- A request for help (crying out for, shouting).
- A response of help.

The experience of pain brings the presence of one part of the body whose existence normally goes unnoticed into the consciousness. It is not a rational knowledge, but rather a lived experience. Pain shows that there is a body that endured damaged and eventually succumb to it.

The pain objectifies one part, one that is damaged, of the body. Bakan[696] considers that the function of pain is to establish distality, a neologism to describe the distance in the consciousness of the part of the damaged or threatened body. Distality consists in getting rid of the attributes of the subjectivity in order to be able to act on the painful part of the bofdy. Pain means reifying the suffering part to be able to act on it as if it was not personal, curing, cleaning, cutting or disinfecting. In words of Pemán,[754] *pain does not belong to anyone; pain is a coexistence; pain as truth is not possessed, it is them who possesses us*, a sentence that agrees with Gadamer[639] for whom it is the truth that finds us and not the opposite.

Sartre[74] refers to pure pain as an experience having unique character:

> *I am in a chair reading. The reading matter is so interesting that I forget about everything around me. After some time, it seems to me that I am beginning to not feel well, although I hardly realize it. Only when the discomfort is stronger and makes me stop reading, then I realize that I have a headache.*

Cassell,[755] has criticized that modern medicine does not sufficiently consider the impact of suffering associated to pain and the disease, taking into account that relief of suffering is one of the goals of medicine. The reason is that physicians considers at the body and the somatic symptoms and not sufficiently at the person of the patient.[756]

On the other hand, as we have seen above, pain objectifies one part, a damaged part, of the body and establishes a *distality*,[696] it reifies the painful part to be able to act on it. Pain, on objectifying a part of the subjectivity, makes it possible to treat that part without threatening or forcing the subjectivity, in accordance with the hypothesis concept of Bakan[696] on distality, explained further above. It

is the same language of the Gospels of St. Matthew that states: *If your hand causes you to sin, cut it off*. In other words, if one part of your body has dissociated from you, you can treat it and repair it in the case of medicine, acting with means which under other circumstances cannot be used in human beings (and also not in animals).

The paraesthesias (or paresthesias)

Plügge[681, 739] has made a very careful analysis of the paresthesias. Paresthesia is a symptom that has been given a causal neurophysiological explanation neurologists. However, for the patient, it acquires a special meaning: The finger or hand are "numb" or "falling asleep."

Paresthesias are also frequent in the feet. The patients complain of sensations of paroxysmal or persistent cold, but one that is always abnormal. Cryesthesia can become complicated, and become widespread with other thermal dysesthesias.

The language of the body in the daily medical practice

Taking into account what we have considered about pain and paraestesis, we come back to the dualist perspective, the *dualism of the disease,* which if it makes any sense, it is that of the hope, a false hope, of a soul that survives, that as opposed to a live or dead body.

In disease, the language of the patient is transformed, often deeply transformed. Language becomes monosemantic or simply inexact, as it replaces a term applicable to the body as object with a quality of the body as subject, or vice versa. Dupré,[757] and shortly after Blondel,[570] drew attention in their respective publications on the cenestopathies to the fact that the patients use a great number metaphors to describe their symptoms (as "dull pain," "slow pain," "tenderness," "agony","soreness"). They reached the conclusion that the body nervous information is intact and that what is missing is the so called "eliminating action" of the positive intervention of the language.

Leder[482] also points out the interoceptive language, on the contrary to the exteroceptive, is always accompanied by a great affective load, which is due the fact, often repeated in these pages we have repeated in these pages, that is that the body experience is not emotionally neutral. The distance between that perceived and the perceiver disappears in the interoception, in which that perceived is my body, or better said, my self.

Plügge[697] has taken an interest in the verbal expression of the patients. He begins by considering that there are two verbal forms in most of the Indo-European languages, one active to refer to the action or performance and another passive for the feeling affected or moved. However, the daily use does not agree with such a radical dichotomy, which, on the other hand, is not equivalent in all the languages. Plügge uses the German example of "*Ich friere*" `I am freezing´ to mean that `I am frozen´ and in Spanish it must be taken into account that there are two forms of the copulative verb, *ser* and *estar*, in English:`to be´. The active form (in Spanish) indicates something intentional,[758] something that is in front of me, a goal which the subject tends towards. The passive form is focused on the past, on the motive, cause or occasion that makes me feel affected. The active form indicates a state, something permanent, something that is available, latent.

The use of the reflexive verb to substitute the passive form, for example "to become frozen" indicates a discontinuity, a distance between the self and that which the self feels and, in our opinion, it is the expression of a latent dualism, between the subject, the self that feels and that body that is frozen.

On the other hand, the reflexive verb form is constructed without the subject, "to be frozen" which is a way of expressing how something affects passively a person. In these cases the body experience is exogenously determined and therefore it is experienced as imposed. In the Latin languages, the same meaning is achieved with the verb "haber" and in Spanish with "tener", "*j'ai froid*", "tengo frío" (I am cold) is the same as "sentirse congelado" (I feel frozen). Underlying all these forms is a passive state, a finding oneself, and a principle of action, of behaving (in German *Gehaben*). Following Buytendijk[759], Plügge recalls something that we have often referred to in these lines, that all perceptive act is *a priori* a feeling.

In this way, an anthropological dialectics is established in latin languages between "haring" (sadness for example) (in English- to be sad) and `to be had´(due to the sadness). This dialectics is present in the Spanish expressions `*morir*´ (to die) and `*morirse*´ (to be dying) or French `*je meurs*´ and `*je me meurs.*´

An infant suffering from heart disease does not perceive his or her own heart therefore the disease manifest istself through non specific symptoms (i.e., tiredness) or behaviours (i.e., squatting posture). Only when reaching adolescence is the child capable of perceiving the beats, the tightness and the precordial pain, becoming aware that he or she has a heart, and at the same time somehow, the heart "has him or her". The same occurs to the adult who after becoming ill tells the doctor, "up to now, I did not know I had a heart " and this discovery is experienced as strange and threatening.[739]

Thus it belongs to the human condition to be able to behave with oneself, with one's whole body, as referred by

Marcel[647], and with its individual parts, as is observed in everyday medical practice.

The extreme cases of the disembodiedement are present in anosognosia where the affected limbs are experienced as foreign, as an object, as something that belongs to another person.

The language that refers to the lived experience of the body (corporality) and its parts in the disease is varied. It uses active, passive and reflective forms. There is a tendency for the subject to disappear ("*pain does not belong to anyone,* " Pemán[754]). They are established around the dialectics of "to have" and "to be had," from a perspective that includes the future and becoming present. It is a blurry language, with lack of clarity, arbitrary and inconsistent, due to the fact that the ill person is suddenly faced with something previously ignored and non-problematic, a body experience that had been silent and safe, a body up to then a carrier (*tragende Leib*[698]) and at the same time a union of the subject with the world (*welthaftes Leib*[699]). That is why it is an impossible language, still not articulated, slippery, that cannot be quantified, that has to resort to adjectives because it is not dealing with things that can be referred to by nouns, sometimes so indeterminated that the patient cannot express anything else but an "I don't know what is wrong with me Dr." or "I have something and I don't know what it is" because in the heart of the "well-being" and "malaise" language runs out.[760] For Plügge,[697] corporality has something of the power of the media, and this is because the same expressions are often used to refer to ourselves and to the world, for example, when we speak about a sad scenery or that I have a bright day.

To be or ...

One of the peculiarities of the Spanish language is that it has two different verbs that correspond to the English to be, *ser* and *estar*. The dialectics and the problems raised by Plügge and others are present in the problems to set up rules have created for the use of the Spanish copulative verbs *ser* and *estar*. The reasons why well-defined grammatical rule have not been found is because, in our opinion, these are verbs that refer to basic anthropological dimensions of the body experience (corporality) and its worldly and bearer character (*welthaftes tragende Leib*[699]). This characteristic is difficult to specify in grammatical rules suitable for schoolboys or for non-native speakers learning Spanish. In any case, the use of one verb or the other does not entail an ambiguity since they are not interchangeable between themselves and when one verb is used instead of the other, even in the easiest sentence, the meaning changes profoundly. It is not the same to say in Spanish *ser bueno* (`to be good´ - quality of goodness) and to say *estar bueno* (to be tasty/attractive).

From the etymological point of view, the forms of the verb *ser* come from two Latin verbs: *esse* 'to be' and *sedere* `to be seated.´ [761] The primitive means of *esse* was `to exist´, but it was slowly restricted until almost being reduced to the mere conjunction between predicate nominative and its subject. The meaning of *sedere* has changed along several centuries, from `to be seated´ to simple `to be.´

Estar `to be´ is derived from the Latin word *stare*, `to stand,´ `to be firm,´`to be still,´[761] although its original meaning was 'to place,´`to be standing´ or `to stand,´ its use in Spanish has been derived towards the meaning of finding oneself or existing in a certain way, that is specified by the word which necessarily follows the verb.

Ser `to be´ denotes the essence, so that the being par excellence is God ("I am that which I am"), from which it has been deduced that *ser* is to be permanent, while *estar* is to be transient. One can be (*ser* in Spanish) a (chronic) patient or be (*estar* in Spanish) ill (of an acute ailment). However, there are many examples in which the rule simply is not fulfilled: *ser virgen* `being a virgen´ or *ser médico* `being a physician´ or *estar muerto* `being dead´ or *enterrado* `buried´, although in the case of being a doctor is for all one's life and for the faithful Christian country, who believes in the resurrection of the flesh, death is not definitive.

All this has lead to abundant and deep controversies which, in summary, conclude that:

Ser `to be´ is sometimes used with the meaning of suddenly appearing in the consciousness, of become present, of the onset of a history, reality or circumstance.[762] The verb *ser* describes something about that which is considered as stable, perennial, permanent or absolute. It is a definition, so that it has been said that it is a semantically empty verb, a pure copulative very, a mathematical formula in which A=B. Thus, it is an adequate verb for the formulation of predicates that are applied in a specific way and directly to an individual or object ("so and so is fair-haired," "the table is made of wood"), as absolute truths. *Estar*, on the contrary, refers to the accidental and transient qualities, sometimes voluntary in which case it is conjugated in reflexive `to be still,´ a finished but futurible event,[763] in such a way that the being is a becoming future, a personal becoming future ("man is always the same, but not always the same," Kant).[460] An important aspect is that *estar* leads to an event in the past which is that which originates it.[762]The *estar enfermo* `being ill´ is a consequence of having become ill, of having caught a disease, something finished although futurible.[763]

The predicates for the verb *estar* refer to states or episodes and therefore imply space-time change or limitation. The verb *estar* has a temporal structure and it must designated a particular event.[764] *Estar* refers to perfect predicates, *estar* is a verb that designates a defined action, a relative reality, a description that changes from the absolute

truth described by the verb *ser* and, consequently opposes it. The verb *estar* describes that what is unstable, in progress, change or changing, when something that is already acomplished has the opportunity of being transformed. While the verb *ser* has an absolute character, the verb *estar* can be replaced by many other verbs.

In the use of the verb *ser*, the language easily becomes a stigmatizing,by considering the persons as a schizophrenic, neurotic or subnormal in an absolute and permanent way. This aspect is emphasized if the difference between *ser* and *estar* is based on distinguishing quality and state, trait or state in the sense that a predication with *ser* is inherent to the subject (*ser español* or `to be Spanish´) and independently of the time of the statement while a predication with *estar* appears more external to the subject and only valid within the limits of the statement *(está nacionalizado* or `he is naturalized´).

The problem-patient

Problem-patient is not simple a patient who poses diagnostic or therapeutic difficulties. But also the problem is the consequence, a disparity between subjective symptoms and objective signs, between the body as subject and the body as object. In most of the cases, the objective results of the examination are negative but, however, the patient feels ill. A physician who strictly follows the scientific-natural principles of medicine will often have to deny the reality of the disease, due to the disparity between how the patient feels and the findings of the examination, between symptoms and signs. Therefore, the physician also evaluates, makes a diagnosis, prognosis and treats this *feeling ill*. From this, the question "how are you ?" Health is manifested by the absence of symptoms, by the silence of the body and by the positive feeling of health, of body well-being in many occasions after the disappearance of the body malaise.

This background of malaise which is experienced in a specific way only in the specific moment is preceded by another in which the fact of being is being transformed into *dis-confort* or clear malaise.

The reification of the body

This dialectic which underlies the **objectifying distance,**[697] or **distality**[696] with the body that hurts or that is manifested in the form of any symptom, is a **disembodiment** that the patient usually refers to with expression such as "my leg has gone crazy."

It is precisely this reification that allows the physician to act on the sick body. In the daily life, access to the body of the others is limited and is governed by very strict rules (a handshake, for example). On the contrary, all clinical actions outside of this circumstance will be a offense: opening the stomach, removing an internal organ, providing the patient a drug (poison in the old meaning), or a privation of a right or at least bad manners.

Later Dörr and Tellenbach, in a detailed phenomenological study of a female patient in melancholic state and lack of interpersonal reciprocity described *Melancholie-Gefühl* and therefore, the core of depression as "chrematic." In their own words:

> *Chrema was for the Greeks a useless object and exactly the opposite of physis, which in this case would correspond to the lived body (*Leib*). The depressive body is closer to the* Körper*, of the body object, than of the body subject, intentional and directed to the world (welthafter Leib* [615]*).Perhaps this would produce a nauseous sensation in us, as that experienced in front a corpse on the autopsy table. This character of thing that irradiates the almost purely material presence of the stuporous patient becomes clear in its availability. We could summarize the experience saying that her look hides behind her eyes and that her spirit had sunk into the body.*[662, 663]

Shape and appearance

There is a group of patients who suffer enormously because the revealing character of their body is unshearable. The most frequent case is produced in body dysmorphic disorder, the minor forms being as the erythrophobia that is relatively frequent in adolescence. In some conditions of the sexuality, there is a confrontation between image and personality, for example transvestism and trans-sexualism. In addition, in some hysteria, the symptoms revolved around this problematic aspect.

The Sartrean concept on confusion between the objectitself and what applied to it, is exaggerated in fetishism, in phobias and in body dysmorphic disorder. This perspective allowws to understand how it is useless to direct the action of the physician towards the object, the deformed nose, but rather to its meaning. The first point in the psychotherapeutic strategy in such cases is that of not questioning the stigma, but rather the feeling stigmatized.

In anorexia nervosa, there is a confrontation between the body itself and what the patients want it to be. It is not only the body aspect, or the expected fear of maturing, but rather an exaggerated desire to have a pure and perfect body. It is an Apollo-like and ascetic eagerness.

These patients are also the example of what happens with other patients who cannot give free action to the spontaneity which is appropriate to life. These adolescents live devoted to the regulation of their body that must be

exact and precise. They have to eat little in order to not feel weakened and they need to make sure the functioning of their colon is manifested daily. In a similar way, the impotent persons are attentive to the behaviour of their genital organs. Other hypochondriac patients live in attention to the frequency of their pulse or of the heaviness of their digestions or stool rhythm. The drug addict and the alcoholic do not support what their body entails, limited and specific, and seek the anesthesia of the body experience through drunkenness.

The interior and intimacy

Taking the body per se as reference, the interior space can be distinguished in a double perspective, that of its physical dimensions and that of its vital qualities. There is an anatomical interior, surgical, and an interiority or intimacy. There is an interior that we can see, feel, hear or manipulate. It is what the physician does daily with his patients, looking to bring hidden diseases to light, to decipher the secrets of a disease. To do so, inspection can be used or an auscultation that is so penetrating that it uses a stethoscope as an instrument, that is, an instrument to look, or as a clearer example, the surgeon will resort to piercing the surface of the body and exposing the entrails to his sight.

Rovaletti has dealt with the subject of the interiority[765] and criticized the dualist postulates because they leave no other choice than to consider a conscience enclosed in the body and therefore a *hidden corporaleity and a masked interiority.*[766] Therefore, Merleau-Ponty could state that "*there is no interior man*"[77] and that the interior and exterior are inseparable. "the world is wholly inside and I am wholly outside myself."

When we state that such person in their interior thinks one way or another, or that their interior organs are these or those, we use the same world and we move into the sphere of a distinction of interior-exterior that has two radically different meanings.

This way of revealing, separating the different organs and parts of man does not really discover the true interior. We open the abdomen and see the liver. What do we see in it? Its exterior. We cut it into parts and what do we discover? The surface of the cut. And in this way, step by step, we are looking for, provocatively, an interior that before being reached has become exterior. This way of revealing was called by Heidegger herausfordernde Entbergen, (lit. unveiling challenge) which is a provocative, defiant, challenging way of discovering, which requires nature to give in, simply **to exteriorize**,

When we say that said person deep down inside thinks this, or that they have a rich interior life, or that, inside they are happy, or simply that the "person suffers a lot but does not show it," we are referring to other meanings. They are the same as the prophet, which loudly proclaims *De profundis*... This interiority that we also call intimacy cannot be broken down into parts such as the above. We cannot describe it by on exposing it to light. We have to ask it to reveal itself to us, we have to, reverentially, request that it opens up to us, as one opens up their heart to a close, intimate friend. This is also the task of the physician, and in this, he already is radically differentiated from the anatomy or pathology, discovering this interior of his patients. It is what Heidegger called herausbringende Entbergen, (lit. out-bringing unveiling) and that we can translate by revealing by invinting to. It is what we do every day when we say to a patient "please, tell me."

Some patients desperately seek that the surgery free them of their interior defects and often achieve their purpose of getting surgery on, but continue to being unsatisfied and continue to try again and again. Jiménez Díaz called them polytattooed. The extreme case is that of Münchhausen or Munchausen syndrome, characterized by unending pilgrimages through clinical services for useless or almost useless surgical interventions.

Sex and gender

There is currently some confusion about the use of the terms sex and gender, which should be clarified.

Sex is a biological characteristic that differentiates males from females in animals and men from women in the human species. They correspond to the Greek words ἀνδρός (*andrós*) and γυνή (*gunē*) and the Latin *vir* and *femina* or *mulier*. The word man, originally human species, in Greek ἄνθρωπος (*anthropos*) and in Latin *homo* has been acquiring the meaning of male, in a process of devaluation of the woman, subjected to the male as expressed in Latin *uxor*, which means, in turn, female and wife. The fundamental fact is all the social groups expect different behaviours from the persons of each gender, who, in turn, also receive different treatment.

Gender originally is a grammatical characteristic. It can be masculine or feminine. However, in recent times it has been acquiring the meaning of "*a combination of agreements through which society transforms biological sexuality into products of human actively and the way that these transformed needs are satisfied.* "[767]The WHO considers gender as a combination of roles, behaviours, attitudes and attributes that a certain society considers adequate for men or women.[768]

This transformation is justified by the fact that the sexual roles are to a large degree, conditioned by stereotyped attitudes and behaviours in a concrete social context, developed by a significant educational pressure.[98] On the

other hand, the term gender is increasingly used to describe a typology and behaviour assumed as own to the identity or acquired by personal decision.

The term is used as alternative to sex (biological) to stress that the roles, behaviours, attitudes and attributes are not determined and even less so imposed by cultural stereotypes, biological determinism and even less by a morbid disposition, with the goal of not stigmatizing any form of orientation, identity or sexual practice or subjecting them to ethical rules on what is natural, good or healthy and less to legal restrictions.

In summary, identity and behaviour are the result of a disposition (biological temperament) modeled by social and cultural influences and by individual factors, conscious or unconscious, which shape the character and stereotypes, with which the subject feels they have a right to identify or not. The fact is that the correspondence between chromosomes, biological sexual characters (primary or secondary), sexual orientation and inclination, social role, behaviour and sexual identity are not univocal. That is the reason for the intersexual states, variants of orientation, inclination, behaviour and sexual identity and its morbid forms.

Other somatization disorders

Somatization disorders are the succesors of hypochondria and hysteria. The notion of conversion reaction, in general psychosomatic reaction, arose from the application of the Freud schema, according to which psychic conflicts may be transformed, they were "converted" into somatic symptoms such as paralysis, and anesthesias or attacks. The disease is thus the expression of an conflict of unconsciousness.

Conversion reaction has two important characteristics. One, it is established through the somatic or voluntary nervous system and has a symbolism (analog to that of dreams). For example, paralysis makes it possible for the patient to avoid having to do something that the person unconsciously rejects.

Although some disciples of Freud such as Jelliffe,[769] Groddeck,[770] Ferenczi[771] and Garma[772] referred to conversion reactions in which the vegetative nervous system was involved, it was Alexander[773] and his disciples from Chicago who applied this notion to all psychosomatic diseases. In this case, to the so-called **psychosomatic or psychophysiological** reaction, would happen through the autonomous vegetative or nervous system and lacked an unconscious symbolism. It is the vegetative correlate of emotions.

However, these postulates stand on a false ground. Conversion reaction is not something specific and it is not differentiate from that which happens when, in any human being, a thought *is converted* into an act or an emotion is accompanied by a vegetative correlate. Nemiah states:[774]

A normal woman in coitus under the influence of consciously felt sexual desire will voluntarily and happily perform the bodily movements appropriate to the sexual act. A hysterical woman, without any conscious experience of sexual feelings and wishes, will have a hysterical convulsion, which she exhibits all of the movements of coitus without being at all aware of their significance. What distinguishes the two women is not a difference in the way their sexual desire (a mental phenomenon) leads to the physical movements of coitus (a bodily phenomenon). The difference is that , in the hysterical woman, the process takes place in a disassociated state outside of her conscious awareness.

Therefore, it is not possible to accept a concept such as that of conversion reaction. There is nothing that converts into nothing. There are no conflicts that jump over the body or that are expressed through it.

In the draft of the DSM-V[775] conversion disorder is called **Functional Neurological Symptoms** and is defined by the presence of neurological symptoms which, after an adequate clinical evaluation, are considered to be incompatible with a general medical disease. The clinical manifestations are of the type of weakness, pseudoepileptic episodes, syncopes, abnormal movements, sensory symptoms (among them loss of sight or hearing) or speech or swallowing difficulties. The DSM-V draft adds that although associated psychological factors are detected at the onset of the symptoms, these are not essential for the diagnosis.

When only neurological symptoms are present it is necessary to create special categories for disorders that belonged traditionally hysteria, for example pseudocyesis.

What next? Is there any alternative pathogenic hypothesis? We think so.

In the first place, both phenomena conversion and psychosomatic manifestations are the consequence of anxiety suffered by the patient. The anxiety may be due to conflicts or to stressful situations, both more or less conscious. The questions remains, what role does the body play in both cases?

In the case of hysteria, the key is in special manner adopted by the patient to cope with anxiety by replacing it with other emotions and the consequent internal attitude[262] embraced by the patient leading to odd motor and behavioural manifestations. The adoption of play-acted feelings gives rise to internal attitudes that seem unreal but in the eyes of the patient are not: the natural attitude of the hysterics is the pose[746] and therefore they are able to live through their own theater.[136]

In the case of pyschophysiological or psychomatic reaction, the explanation is more simple. It deals with vegetative correlates of the emotions.

Normally, the active part (attitude) and the passive one (interiorization of affect) go hand to hand, but in others it does not, and the internal attitude was a certain autonomy

of the self that is manifested as behavioural disorders as alteration of the way the body espresses itself. For López Ibor,[34] this split in the integrated and comprehensive feeling of the body experience is the disease itself:

It is not because there is a somatic projection of the emotional state, not even a conversion reaction, but that the disease is a disintegrating experience and the appearance of morbid kinesthesia, a form of disintegration. Morbid emotion, above all morbid anxiety, is, basically somatotropic. In the threat of dissolution of the harmony of the self, the threat of dissolution of the «corporeal self » is included, and this leads to this form of partial dissolution which is the experience of the neurotic disorder.

Therefore, neurotic and psychosomatic symptoms are not only the expression of defense mechanisms. They have, by themselves, a hybrid character, ambiguous in the sense of Merleau-Ponty.[77] On one part, they express disease, and on the other, they are the disease itself. If when a patient is anxious believing or having palpations, the palpations are an expression of the patient's anguish, but at the same time, they are the anguish itself.

Hypochondriasis

According to Plügge,[738, 739] here are different manifestations of hypochondria: attitude and experience. In the attitude, there is an exaggerated appraisal of the meaning of the body, in the basic way of experiencing it. The patients describe it as an ill defined malaise, which grows little by little untilreaching a feeling of fullness. Szilasi[776] speaks of cumbersome feelings. As if something weightly would have been lodged in the hypochrondium. There are grades and modalities that can be thought between this primary hypochrondiac experience and the hypochrondiac attitude.

Plügge rightly points out the intrinsic relations established between *behaviouring* and *being*, which are equivalent to the internal attitude and feeling of Zutt.[262] It is common to observe chronic ailments of moodness, accompanied by phsycal activity and odd fatigability in heart patients, which are the expression of the experience that the world has become impassable.

Wulff[777] distinguishes, in principle, two forms of hypochrondria, one related with endogenous melancholy and another psychogenic, but once again, the Jasperian and Schneiderian dualism is insufficient to describe the phenomena that occur in clinical settings and therefore a third form has to be added. In fact it is the most important one, in which the psychogenic theory does not explain the facts. Latter is present in patients who have no important problems in their lives and whose symptoms bear a resemblance to the hypochondriac depressions of the elderly which lack the aggressive feature of the clearly psychogenic forms about and that show certain degrees of anxiety. In many cases, the concern the symptoms about, their chronicity, the doubtful findings of repeated examinations or the ambiguous information that the physicians, uncertain, provide, are important factors leading to iatrogenic chronification of hypochrondria.

Often patient gives the impression using his body as a way of communication, of expressing the failure of confronting life situations that cannot be coped with. Therefore the disorder is considered as a psychogenic origin. The "pains" of the persons with hypochondria, reproaches or requests for pardon, or both things simultaneously, are present. What is interesting is that this behaviour is echoed in some family member who, when accompanying the patient to visit the docotr, act as a sound box, stressing the complaints and reminding the patient of anything they may have forgotten. The hypochondriac behaviour needs a spectator,[707] and an interlocutor.

That which characterizes the person sufffering from hypocondriasis is not only concern about the own body or the presence of vague interoceptive sensations being experienced as threatening. Ruffin[778] has described how the disease combines concealement worry and perceptions regarding the body. These consist of a passive observer attitude, attentive and reflective in the face of the own body, that is detached from the activity of life in the natural, non-problematic, relation between body and world. Hypochondria may become a more or less lasting vital attitude that can be defined as mood, fear or thought loaded with concerns about the loss or absence of body integrity, if we understand integrity as both the structural and functioninal, and what this means for the appearance of future threats.

Sometimes the symptoms appear suddenly with no relation to possible discomfort or events having clinical significance. It is precisely the surprise factor which converts vertigo, tachycardia, unexpected bowel movement into the core feature of a hypochondria crystallization. López Ibor has made a detailed description on how neurotic symptoms often originate from a "crystallize reaction."[121, 634] In the case of hypochondria, the fact that suddenly the silent body is no longer silent, it becomes problematic and the patient appeals to it as a means of communication,[777] the organs intone their own language in an effort not so much as to express the difficulty of coping with a situation or as a manifestation of more or less unconscious conflicts, but rather in an effort to seek safety against potential diseases or their consequences. The body, suddenly, appears in the consciousness as an obstacle against a life project, it becomes a threat and recalls the eventuality of the own existence and the need to incorporate death to life ("*sucht den Tod in das ganzes Leben einzubeziehen.*").[779] Thus, Wulff considers that hypochondria, the same as obsessive disease or sensitive delusions of reference, belongs to the "great crisis of trust," that in a very specific and ambiguous way question our behaviour towards the others and the world. They are a crisis of the body as support.[698] For Wulff, these situations are more frequent in the elderly males may manifest themselves as the "crisis of the 40's or the 50's."

The ICD -10[122] defines hypochondriac disorder as a persistent preoccupation with the possibility of having one or more serious and progressive physical disorders. Patients manifest persistent somatic complaints or persistent preoccupation with their physical appearance. Normal or commonplace sensations and appearances are often interpreted by a patient as abnormal and distressing, and attention is usually focused on only one or two organs or systems of the body. Marked depression and anxiety are often present, and may justify additional diagnosis. Fears of the presence of one or more diseases (nosophobia) also belong to hypochondriasis. For a definite diagnosis, the persistent belief in the presence of a serious physical illness and a persistent refusal to accept the advice and reassurance of several different doctors that there is no physical illness or abnormality underlying the symptoms should be present.

In the hypochondriac disorder, anxiety and intense depression are usually present, which may justify additional diagnoses. Fears of the appearance of one or more diseases (nosophobia) also stand out in the ICD-10.

Standing out among the diagnostic criteria, in addition to the persistent belief of the presence of a serious somatic disease, or persistent concern about a supposed deformity, is the insistent refusal to accept the repeated explanations and guarantees of different physicians that there is no somatic disease hidden behind the symptoms.

The DSM-IV-TR[123]defines hypochondriasis by preoccupation with fears of having, or the idea that one has, a serious disease based on the person's misinterpretation of bodily symptoms. A second criterion is the preoccupation persists despite appropriate medical evaluation and reassurance. It should be mentioned that the DSM-IV-TR excludes concerns about appearance, therefore it does not consider the body dysmorphic as a hypochondriac disorder, which we considered to be the most correct in accordance with the current knowledge.

The draft of the DSM-V proposes giving a new name to somatomorph disorders, that would then be called **Somatic Symptom Disorders**. Because somatization disorder, hypochondriasis, undifferentiated somatoform disorder, and pain disorder share certain common features, namely somatic symptoms and cognitive distortions, these disorders are grouped under a common rubric of **Complex Somatic Symptom Disorder**.

Another proposal is to eliminate hypochondria and add a new category, Illness Anxiety Disorder characterized by the almost complete absence of somatic symptoms and by the presence of a preoccupation with having or acquiring a serious illness. If a general medical condition or high risk for developing a general medical condition is present, the illness concerns are clearly excessive or disproportionate. The individual's concern is focused not on any physical distress per se, but rather on a suspected, underlying medical diagnosis. As a consequence, the person performs related excessive behaviors (e.g. checking one's body for signs of illness, repeatedly seeking information and reassurance from the internet or other sources), or exhibits maladaptive avoidance (e.g., avoiding doctors' appointments and hospitals).

Depersonalization and derealization

Fuchs[780] has associated derealization and depersonalization with loss of sentimental impact of the depressive states whose maximum exponent are the nihilistic delusions of the Cotard syndrome. Patients presenting this syndrom have lost senses and feelings and feel empty, even dead. The suffering present is unbearable because being dead ther is no hope of getting rid of the when dying therfore suffering that the they see themselves as being forced to wander "as souls in pain." Furthermore, this sensation of loss of vitality isfelt to be perceived by others, who may appear to them to be bad actors.

Cenesthopathies

Dupré introduced the term *cenesthopathy* in French psychiatry as "*the local morbid disorder of common sensitivity in the sphere of the general sensation corresponding to the hallucinosis in the sphere of the sensorium.*"[757] For Dupré, the concept of cenesthopathy includes a wide range of somatic complaints that are the result of a combined alteration of the imagination and emotion.[781] Based on this, they proposed two large groups of cenesthopathies: "painful" and "paresthesics," (and each one of them has been divided into cephalic, thoracic and abdominal.) The patients in the first group experienced their organs as "stretched, torn, and twisted" and those of the second group experienced itching, hyperesthesias, paresthesias, etc. The syndrome was never accepted by Anglo-Saxon psychiatry, which reclassified these symptoms over time as hypochondriasis, neurasthenia or dysmorphophobia.[782]

Cœnesthesic schizophrenia

In schizophrenia and in others delusional disorders, especially in Capgras Syndrom, are the others not oneself are those, who become separated from social world. That makes them to seem like automatons, or puppets disconnected from the social world, to which the patients belong.[783] There are experiences that remember the description of Licenciado Vidriera by Cervantes.[784] In extreme cases, subject experiences oneself totally out of the common world, isolated in his particular realm. In these cases, the body is not longer the possibility and the way for perceiving in general and for perciving oneself in the world, to become a mere perceived object,[785] the body has been reificated.

Cenesthesic schizophrenia as a subtype of the group of schizophrenias was described by Huber in 1957,[786, 787] based on a group of 50 patients, before the introduction of antihic

medication. The term itself of cenesthesia means that we are not dealing with a patient who has hypochondriac attitudes or with a delusional phenomena, as those who are included among the first rank symptoms of Schneider[135] as "*all that made by another in the field of volition, impulses and sensations.*"

The body sensations of cenesthesic schizophrenia are accompanied by significant affective neurovegetative, motor and senso-perceptive disorders while the typical schizophrenic symptoms are limited to brief psychotic episodes. For Huber, some of the cases described as *cenesthopathies* by Deny and Camus[360] are compatible with the new disordere as described by him.

The body symptoms of the cases of Huber consist in each patient in a variety of changing, wandering sensations on the surface or in interior of the body, which appear in form of paroxysms and brief episodes, associated to specific physiological rhythms and meterorological phenomena. They prone to atmospheric influences and have a novel, rare, special character, partially bizarre, which makes it very difficult for the patient to describe them. Therefore, the patient recurs to comparisons, resemblances and neologisms.

Huber distinguishes three levels of cenesthesia, which may be simultaneously present in the same patient:

1. Uncharacteristic sensations.
2. Qualitatively special and odd body sensations (cenesthesias *strictu senso*).
3. Somatic hallucinations felt as being imposed (first-rank symptom of K. Schneider).

The most frequent types of cenesthesias are:

1. Sensations of numbness and stiffness.
   a. Somatopsychic depersonalization: the patients experience their own body, organs and members as alienated or absent.
2. Sensation of weakness of movement, sometimes in a growing manner.
3. Circumscribed sensations of pain (such as drilling, cutting or burning), changing in intensity over time.
4. Migrating sensations, that is, vague fluctuating body sensations, sometimes so painful that they lead to suicide.
5. Electric sensations.
6. Thermal sensations of hot and cold, more or less diffuse.
7. Sensations of movements, tensions or pressure inside the body or on its surface.
8. Sensations of abnormal heaviness, lightness and emptiness, of falling, of levitate or elevate oneself.
9. Sensations of reduction, contraction or constriction or of enlargement, extension and elongation. These are always body image disorders.
10. Kinesthetic sensations of movements of the limbs.
11. Vestibular sensations (qualitatively strange alterations of orientation and body balance).
12. Sensations caused by acoustic, emotional and tactile (hyper or hypoesthesias) stimuli, sometime only in one half of the body.

In general, the cenesthesias are combined with malaise, asthenia and exhaustion and with affective symptoms that appear in two stages:

1. **Lively affectivity**, adequate, that can increase until reaching a state of transitory anxious agitation, sometimes in form of crisis.
2. **Indifferent and inadequate affectivity**, dominated by apathy, lack of interest or elated euphoric state. The patient is completely prisioner of by the sensations and the clinical manifestations have clear psychotic traits.
3. In some cases, the disorder of the affectivity is irreversible, **bluntness**, and the patients show a typical asthenic- of an hypochondriac residual syndrome.

Among the neurovegetative symptoms, Huber described paroxysmal tachycardia and bradycardia, tachypnea, hypo and hypersalivation, nauseas, vomits, constipation, nocturnal enuresis, daytime enuresis, daytime oliguria, polyuria, urinary incontinence and tenesmus, acrocianosis, dermatographism, edemas, vasodilatation and circumscript vasoconstriction, hyperhidrosis, oily skin, disorder of the sleep-wake cycle alterations and of the thermoregulation, weight variations, increased sensitivity to meteorological changes and mydriasis.

Among the motor symptoms, fine tremor, dyskinesias of wings of the nostrils, tetaniform spamus and catatonic symptoms. Finally, cognitive dysfunction and disorder of the control of impulses may be also present.

For Huber, this type of schizophrenia has a subcortical etiology and he gave much importance to the enlargement of the third ventricular initially manifested by pneumoencelphaography[788] and more recently by other imaging techniques[789] and by the electroencephalography.[790]

It is important to state that the core psychopathological trait of the cenesthopathies in schizophrenia is the way how patients consider them and understand them. They do so in a state of hyperreflective consciousness and with significant affective strangement. The final result is therefore an experience of increased strangeness between subjectivity and body experience.

Another aspect is the fact that many cenesthopathic experiences are imposible to be described. They challenge the posibilities of verbal expresion. Blondel[570] even proposed that the alterations of the cenesthesis were the primordial magma preceding the *crystallization* of delusions, a concept that is very similar to that presented by Conrad´s *trema*.[791] For Ey,[792] the cenesthopathic hallucinations involves the experience of the body as a total or partial entity, as an external, devitalized reality, in short, unspeakable. Minkowski[793] had already mentioned about the devitalization

of the experience in the person suffering from schizophrenia.

The problems of persons with schizophrenia in this social functions may be attributed to a dysfunction in the processes of identification and body differentiation that in turn allow for inter-subjective knowledge through body-to-body *attunement* and to a dissociation of the self from others.[794]

In schizophrenia, there are alterations of the *self*, of the body awareness and of the characteristic symptoms that are the expression of a splitting of the self, which have been attributed to right hemisphere dysfunctions.[596]

Reilly[795] and Munro[796] have described a picture which they called monosymptomatic hypochondriacal psychosis and which in Japan is sometimes known as cenesthopathy,[797] which is a form of delusional disorder that generally occurs in elderly ages. The principal symptoms are delusional ideas about a part of the body. The disorder has been associated with dsymorphophobia, but its nature is clearly delusional. For example, a patient of Mukai[798] began to have oral problems in form of burning pain and ended up with the delusional idea of having a deformed mouth and later a deformed face and latter on, of all of the body.

The body experience in depression

In depresive disorders, as there is an alteration of the social and interpersonal experience, that presents itself a sensation of estrangement, of feeling painfully separated from a world that seems to follow its course independenly from the patient. Those affected express it saying that they are trapped, or living like in a cristal bubble, or that they have fallen in a bottomless pit.[799]

Dörr[800] has called attention to the fact that neither the DSM-IV nor ICD-10 give the sightes room among the diagnostic criteria of depression about the body experience disorders. In the DSM IV, reference is only indirectly made to the body experience in two out of the nine diagnostic criteria: the first (depressed mood) and the sixth (fatigue or loss of energy). We found a more direct reference in regards to weight gain or loss (criterion number three), but we should be aware that it deals with a non-specific symptom. There is nothing in the ICD-10 that refers to the depressive experience of the body and its clinical description is limited to cognitive symptoms (anhedonia, poor concentration and self-esteem, feelings of guilt and pessimistic view of the future).

However there is a description of a subjective alteration of the body experience in Kraepelin,[801] in Eugen Bleuler,[802] and above all in the concept of vital sadness of Schneider.[135] In the 1960's, Pfeiffer[803] carried out a study to identify fundamental symptoms of the endogenous depression in different cultures, reaching the conclusion that these were, above all, somatic, and specifically the following:

1. A shift of mood state towards the depressive pole ("difficult-to-define" state).
2. "Alteration of vegetative functions" as sleep, appetite and libido.
3. "Abnormal body sensations" as pains, parenthesis, paresthesias and sensation of heaviness.

Therefore all the symptoms that Pfeiffer considered fundamental because they were common to such different cultures as that of the German and Indonesian are linked to body experience.

Researches on the nature of the somatic symptoms of the depressive disorders carried out at the end of the 1960's and in the 1970's put forward the concept of masked depressions.[804-806] This diagnosis is applied to people with depressive features with predominant somatic symptoms, who do not generally visit the psychiatry and which pose important diagnostic problems in the daily medical practice. This observations paved the way for the study of somatic symptoms of depression even when affective manifestation were absent, the "*depressio sine depressione*,"[807, 808] or depressive equivalents.[809]

Melancholy has been described in phenomenological terms as a restriction, inhibition or rigidity of the lived body experience (*embodiment*, so called Fuchs[810]). The restriction may affect specific areas of the body (feeling like one has an armored vest on the chest) or as anxious body rigidity or as a generalized sensation of lack of energy and vitality and of not being able to pull the body. The body stops being the access to the world and becomes an obstacle and its physiological functions slow down. The whole body enters into a state with some reminiscences of hibernation. In extreme cases, embodiment is an emulation of the cadaver.[810]

Restriction affects the surrounding space, the patient stops being alert, and perceives everything in matte, faded, far away and passivity dominates his/her sensory-perception. There is also a motor inhibition and the posture is one of despondency. The body becomes heavy, almost inert and the world can only be reached with great effort. The objects are no longer close at hand, they are simply there (referring to the concepts of Heidegger of *zuhanden* and *vorhanden*).[780] The body has become a prison, or returning to Plato and the gnostics, a grave.

On the other hand, as we have mentioned above, feelings are manifested through the body and through them, we take charge of the feelings of the others. Therefore in depression, then, affective resonance is lost because the body is, itself, resonant.[811] This is manifested by lack of interest and in the most severe cases by not being able to even feel sadness, which is a core symptom of the depressive illnes[812] that sometimes is found as **anesthetic melancholy.**[813]

Dörr has carried out a study with the same purpose as that of Pfeiffer, looking for the identification of fundamental

or core symptoms allowing for the diagnosis of an endogenous depression under any circumstance.His conclusion is that all the depressive symptoms are organized around only three fundamental phenomena:[814]

The change or disturbance of the body experience (*Befindlichkeit* in German), which includes from tiredness to nausea, anxiety, lack of energy, muscle pains and sensations of coldness.

The change or disturbance of the functioning body, that is, of all those functions that connect us with the environment and whose most characteristic symptoms are psychic and motor inhibition, anhedonia, lack of drive to make decision, memory loss, etc.

The change or disturbance of the body temporality (different from the temporality of existence) and which, in practice, is manifested as alteration, inversion or suspension of the biological rhythms. This temporality alteration was already identified by von Gebsattel.[707]

A third concurrent study is the "Vienna criteria for research" investigation on depression and the description of an endogenomorphic-axial syndrome of depression by Berner,[815] characterized by two fundamental phenomena: a disorder of *Befindlichkeit* and an alteration of the biological rhythms. The syndrome of Berner is practically identical to that described by Dörr, except that it is includes the different forms of inhibition in the disorder of the body experience, which Dörr considered to be independent phenomena.

The difficulty to describe the depressive mood experience gave rise to the description of a melancholy feeling (*Melancholie-Gefühl*),[662] one of us described in the study on masked depressions and the depressive equivalents,[809] emulating the *Praecox-Gefühl* (praecox feeling) of Rumke

We have already mentioned before, that Dörr and Tellenbach, consider the core of depression as "crematic",[662, 663] that is to say, lifeless.

SEVENTH PART: IDENTITY DISORDERS

Before describing the identity disorders, especially those affecting the experience of the body, it is necessary to make a brief review on how human beings, and not only ourselves, identify with groups we consider to be ours and how we stigmatize, reject and combat those with whom we do feel appart.

THE IDENTIFICATION PROCESS

Lovaglia et al. have published an article on social development and human evolution that greatly clarifies the subject of individual identification.[816] They consider human evolution as a consequence of the pressures precipitated by xenophobia that has characterized the primates for the last several millions of years. and of the standing position that have given rise to lethal incursions between groups of the same species. About six million years ago, the divergence between the homo and chimpanzee lineage, which at a later time was split up into bonobos or pygmy chimpanzees, *pan paniscu*, took place. The common ancestry of both lineages lived in organized groups and were already xenophobe, as was demonstrated because they frequently engaded in lethal raids between groups of the same species. The intergroup conflicts and intra-group cooperation was the engine of the human evolution.[817] The standing position increased the possibility of forming new groups.[818]

Consequently, the evolutionary pressure has gone in the direction of the selection of the individuals who are most capable of leading these incursions and of protecting the group itself from other groups. In this way, the size of the groups increased, their internal organization improved and the capacity of distinguishing the members of the own group from those of other groups and of the hierarchy of the individuals in the group itself increased. It should be stressed that this is the process that has given rise to the progressive encephalization of the hominid and not that which was previously believed, that is, that the brain grew as a consequence of the need to create and use more efficiente tools, since very primitive primates, with small brains, are capable of making and using utensils.

The xenophobia between groups and the intragroup cooperation requires an increase in both cognitive capacity and emotional repertoire and therefore the problem of recognizing who is foreign and should be attacked or own that should be protected has been a cognitive challenge for survival that has lead to human evolution, and, consequently evolution is not only biological, but also social.

About four million years ago, there were almost no environmental stressors for the hominids. It was a period of time when there were abundant resources, few predators and the daily life was probably comfortable. At that time, the greatest source of environmental stress in the hominids was the hominids themselves. As they were living in an increasingly larger and more communal groups, they needed to develop an increasingly larger behavioural repertoire. That is how the cohesiveness between the groups of the homo species grew and, together with, the xenophobia towards other groups, inherited from the primates.

This hypothesis of Lovaglia et al. would explain the so-called evolutionary oxymoron of the hominids which the increase cooperation and tolerance with the individuals of the own group goes in paralellwith the intolerance and belligerent towards members of other groups.

According to the **theory of social identity**,[819, 820] the awareness of self rest on identification with the group. That is, the identity of a group is not the consequence of the sum of the identities of its individuals but rather the opposite. It is the individuals who identifieshim or herself with a particular group. Once the identification has been established, the individuals attribute pleasant and desirable characteristics

to the intra-group members and repellent and unpleasant characteristics to members outside of the group. Two different processes operate herein, one of **categorization**, which is an automatic phenomenon by which categories of the group itself are defined and of those outside and the individuals from one and another are identified based on a certain discrimination traits, that is, a **stigma**. The second process is the self-enhancement, that is, the intra-group characteristics are perceived as more pleasant and desirable, the contrary that happens with the foreing group.

Emotional control has made possible the evolution of the productive capacity through the implementation of social hierarchies that are increasingly more complex. They are based on collaboration or not in competition, so that social status has been increasingly more consequence of the contributions of the individual to the group rather then on the control of other members of the group.

According to the **Characteristics of the Status Theory**,[821] the group give more value to the initiatives of members who are the most competent and have the most likelihood of contributing to the success of the group. In addition, when the goal is clear, the hierarchy is more effective. A high rank social level in the society of primates and humans entails benefits such as access to resources, reproductive success and greater longevity, because the group considers them valuable and protects them. The evolutionary pressure goes in the direction of acquisition of greater mental and of social manipulation capacities and therefore of larger. Society become more equalitarian because even the small groups have more chances of fleeing from threatening neighbors. In any case, the groups made up of individuals having higher cognitive capacity are those that have best survived.

Two cultural variants have appeared in the course of the evolution.[822] The first is made up by societies dominated by men, with a rigid hierarchy, organized in clans and very hardened, such as the society of chimpanzees. The groups have a geographically stable nucleus, and females from other groups can be incorporated in roles of subordinates. In them, the threat of inter-group conflicts increases the influence of the males and the social hierarchy.

The second is made up of clans formed around the females. When males get together with a significant other, they enter into a new clan in which they have little influence but maintain their ties with their original clan, in which they have considerable influence. This type of societies gave rise to an egalitarian alternative that made it possible for the brain to grow. These are more stable, effective and conflict-free societies. Thet are a society of hunters- gatheres that have been able to survive about 300,000 years. Around 15,000 years ago, the complexity grew. An overabundance of resources allowed a more sedentary llife that led to agricultural societies and with them to greater social control such as the one based on public ridiculing, ostracism.

At this point, it should be remembered how persons with anorexia in the psychiatry units immediately form a closed group, that is sometimes a true pressure group or as Internet that encourages the identification and strength of a group which easily develops a proselytism that is sometimes close to the psychology of sects.

THE STIGMATIZATION PROCESS

One consequence of the process of social identity is that the group may also designate who belongs to the group itself and who does not, according to certain biological, psychological characteristics, special behavioural patterns or traditions. The facial traits, line of ascent, Rh blood group, religion, eating or not eating pork, skin color, language or any other trait may be a stigma that identifies a person or group as foreign,or an object for xenophobia.

Stigma is refers to any body characteristic designating something bad, on the moral aspect of the person bearing it. The word stigma is derived from the Greek στίγμα (*stigma*, plural *stigmata*) 'a mark,´ especially that made with a sharp object and this, also from *stizen* `tattooing,´ `pinching,´ `puncturing,´ from the proto-Indo-European PIE *\*st (e) ig-* with the same meaning. From it, the Latin *instigare* `urge´ is derived. *Stizien* (`tattoo´) was the mark imposed on the slaves or criminals in Ancient Greece, so that others could recognize them and identify them. Later, the Christians used the term *stigmata* in relation to the marks that were reminders of the wounds of Christ on the cross.

Therefore, stigma means a mark, a mark that is imposed on the subject, and subsequently becomes permanent. The `marker,´ this being the person who stigmatizes, loses control over the situation, which after this, becomes imposed. The efforts to eliminate the mark makes it stand out even more and exposes it to acquiring more negative elements.[823]

Goffman[824] considers stigma as a negative attribute, so that persons who are stigmatized are considered inferior. He classified these conditions into three different groups overt or external deformation, "tribal stigmas," as, for example, sex, ethic group, religion and "deviations of personal traits" such as mental disease and unemployment.Thus, stigma is not a static and fixed condition but, on the contrary, it is related to social values and identities. It is a process that contains two fundamental elements: recognition of "a mark" and the consequent devaluation of the marked person.[825]

Once a subject is stigmatized, this person becomes a stereotype and all the person's behaviour is attributed to it. The encounter with the stigmatized person gives rise to the construction of a theory on stigma to explain the inferiority and the danger it means or the animosity generated by the stigmatized person.[824]

The stigma leads to the action, the discrimination against the stigmatized person, which is manifested in customs and laws. The dictionary of María Moliner[826] defines the key and related concepts as follows:

- Prejudice: Judgment that is formed about something before it is known. Generally, it has a pejorative sense, meaning "preconceived idea" that deviates from the exact judgment. Routine idea on the suitability or unsuitability of the actions from the social point of view, which inhibits acting freely.
- Discrimination: Action of discriminating
- Discriminate: See two things as different or as distorted. Specifically, give treatment of inferiority to some members of a group for social, religious, political and other reasons.
- Stigmatize: Leave someone marked with a defamatory accusation.
- Stigma: Act or circumstances that constitutes a dishonor for someone.
- A mark: Defect, vicious or physical or moral harm.

These different attitudes ally themselves to create a malignant vicious circle. The stigma is a consequence of the fear and threat that the possibility of that irrationality has for the rational being. The fear produces rejection, flight and distancing, which makes it impossible to acquire sufficient knowledge and the ignorance makes it impossible to cope with the fear with rational arguments (figure 1).

The prejudice is the way in which the stigma is perceived and what is different in the person who perceives it and in the person suffering it. The identities concern with the group and the reactions can be divided into three levels - cognitive (knowledge), affective (feelings and attitudes) and behavioural.

Christian anthropology resides on the human body and not in the salvation of the soul. One of its supports is the conviction that man has been created in the image and similarity of God and that in the intellectual faculties of man, that is, in his reason and will, the philosophical and theological reflection has seen a privileged sign of this affinity with divinity. In effect, these faculties permit man to know God and to establish a dialogue relationship with him. They are prerogatives that convert the human being into a person. However, it should be stated that all man, and therefore, not only his spiritual soul, with the intelligence and free will, but also his body participate in the dignity of the *image of God*.[827]

IDENTITY AND SELF-RECOGNITION DISORDERS

The title of this section highlights the fact that identity is associated to the need and struggle to be accepted and to receive acknowledgement.[828] Several psychiatric disorders share distrosionof self-recognition disorders: Dissociative disorders with depersonalization or dissociation of identity,[829] psychotic disorders with decline of self-reference and self-recognition,[830] and anxiety and personality disorders.

The disorders that affect self identity per se and that are dispersed in the current classifications of mental disorders. Among them, there are two groups that do not primarily affect the experience of the body and three others that do affect the experience of the body identity (table 7).

Gender identity disorders

Among the **Gender identity disorders**, according to the ICD-10,[122] include transexualism defined as a desire to live and be accepted as a member of the opposite sex, usually accompanied by a sense of discomfort with, or inappropriateness of, one's anatomic sex, and a wish to have surgery and hormonal treatment to make one's body as congruent as possible with one's preferred sex; the **Fetishistic transvestism**, which consists The wearing of clothes of the opposite sex for part of the individual's existence in order to enjoy the temporary experience of membership of the opposite sex, but without any desire for a more permanent sex change or associated surgical reassignment, and without sexual excitement accompanying the cross-dressing; **gender identity disorder in childhood** characterized by the desire or insistent demand of belonging to the opposite sex that is accompanied by intense and persistent malaise due to one's own gender. The ICD-10 also indicates that on rare occasions, a gender identity disorder may be present associated to persistent rejection of the anatomical structures of one's own gender, although for the DSM-IV-TR,[123] which makes this disorder approach a body dysmorphic disorder. The desire to belong to another gender in the DSM-III was a necessary diagnostic criterion of the **gender identity disorder of childhood**, which, unfortunately, has disappeared from the DSM-IV.[831] Behind the word "belong" is an identity problem in the sense of not forming a part of the group of those of the same gender (biological), but of the other gender (personal, social).

Dissociative identity disorder

The dissociative identity disorder includes that which was known until the DSM-III[832] as **Multiple personality disorder**,[833, 834] a name that has been kept in the ICD-10 as asecond deficit cathegory (F44.81).[122] It is characterized in the apparent existence of two or more different personalities, that do not coincide in time, of the same individual. Each personality is complete, with its own memories, behaviour and preferences, which may be very different to those of the single premorbid personality. In the most frequent form, one personality dominates, but never has access to the memories

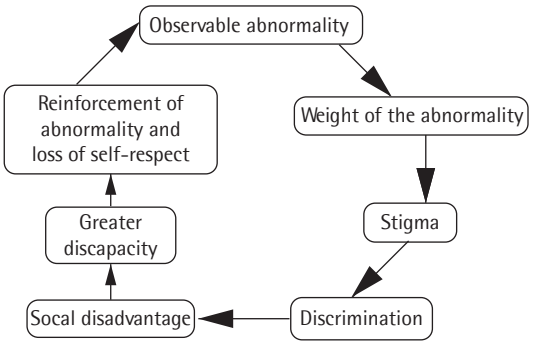

Figure 1 The Vicious Circle of Stigmatization

Table 7 Personal identity disorders

Disorder	It affects identity
Gender identity disorders Transexualism Non-fetish transvestism Gender identity disorder in children	Gender
Dissociative identity disorder Multiple personality disorder	Personality
Body dysmorphic disorder	Form and appearance of parts of the body
Body integrity identity disorder or apotemnophilia	Limb integrity
Anorexia nervosa	Identity as a woman

of the other and each one almost always ignores the existence of the other. The DSM-IV-TR[123] specifies the diagnostic criteria a little more. They include the presence of two or more identities or personality sates, each one with their own and relatively persistent pattern of pattern of perceiving, relating to, and thinking about the environment and self, the fact that the different identities or personality states control recurrently the behaviour of the individual and the presence of inability to remember important personal information, which is too extensive to be explained by mere forgetfulness.

In patients with a dissociative identity disorder and with different emotional states, functional neuroimaging techniques have been able to show the presence of specific localized changes in brain activity, able of generating at least two differentiated mental states, each one of them with their own access to self-biographical memories related to traumatic events. These findings suggest that there are different cerebral blood flow patterns for different self awareness and that, the medial prefrontal cortex and the posterior association cortex play an important role in the integration of the conscious experience.[829]

On the other hand, the dissociative symptoms, especially those that affect self identity, are very frequent in people with borderline personality disorders and in wich there is an overlap with the dissociative identity disorder. In these cases, the dissociative experience consists in depersonalization and derealization, amnesia, dissociative symptoms and dissociative identity disorder. [835]

In the following, we consider some of the body identity disorders in greater depth.

BODY DYSMORPHIC DISORDER

People who suffer body dysmorphic disorder come to the physician with the demand to be freed from a deformity, more or less evident or supposed.

In the ICD-10, dysmorphophobia is a part of hypochondria. In the DSM-IV-TR,[123] body dysmorphic disorder is a part of the somatomorphic disorders and is characterized by the presence of a marked concern for an imagined (or real) defect in the appearance that causes clinically significant distress or a social, occupational deterioration or one of other important areas in the activity of the individual, such as studies or close relationships. It sometimes includes avoiding appearing in public or even going to work, behaviour such as going out alone at night in order to avoid being seen or as not going out at all, reaching social isolation.

The term "imagined" referring to deformity has been criticized[836] and its replacement by perceived or by perceived by others has been proposed. Once more, we are faced with the difficulty of making a disease out of a deformity or of a perceived defect, when the essential is how one considers oneself. Cases when the patient has not remained satisfied with the outcome of the surgical intervention and that have led the patient to assault, if not kill, the surgeon have occurred on some occasions,[837] show that the fact of being satisfied with the surgery is not related with correcting a deformity. On the other hand, the meaning in English of imagine does not fully coincide with its meaning in Spanish. *Imaginar* in the DRAE[838] has four meanings, the last of which is that which most adapts to the body dysmorphic disorder:

1. Represent ideally something, invent it, create it in the imagination.
2. Presume, suspect.
3. Adorn a site with images.
4. Believe or imagine that one is something.

Most of the authors consider dysmorphophobia as an obsession (Janet,[839] Dietrich,[840] Corbella and Rossi,[841] Noto-

Campanella,[842] Tomkiewicz and Finder,[843] Schachter,[844] Hay,[845] Alby et al.,[846] etc.) and perhaps, although not rightly, as a phobia, as was done by Morselli himself[847] who in 1886 cuined the name of the disorder. Schachter[844] described two types, one closer to obsessions (dysmorphophobic complex) and another more delusional one (dysmorphic delusion), based on the respective presence or absence of egosyntonic feelings, which is included in the ICD -10, although the current tendency is to not differentiate them.[848, 849] The differentiation between obsessive idea and delusional ideas cannot simply be made from the criterion of attitude taken in regards to it, since it is not specific to any of them. There are obsessions that are accepted and others that are rejected, and the same occurs with the delusional ideas. The difference between one and another must be found in the disorder of the experience of the activity of the self that is present in the delusional ideas and not in the obsessive one. The former is experienced as imposed, besieged from outside the self. It is in the second in which the experience of property, belonging or sameness of the activity of their self is not lost.

The reality is that the dysmorphic idea often has the nature of the over-evaluated idea. In fact, the DSM-IV and ICD-10 make reference to concern and not to obsession, and in accordance with both systems, the body dysmorphic disorder may be a somatization disorder or a somatic delusion disorder that supports the fact that it deals with overvalued ideas.[850] However, the International Consensus on Obsessive-Disorder considers the body dysmorphic disorder as a part of the obsessive spectrum.[851] In fact, the truth is that the psychopathology of the overvalued ideas has received little attention and its origin is not clear. In the cases we are referring to and in others such as anorexia nervosa, the idea is secondary to another, the desire of having another appearance, of dominating the body. In definitive, of being different.

The subtle referential traits that the disorder sometimes have is because what concerns the patients is their appearance, which is why they feel watched, **depised** and even investigated in their personal life. However, all this takes place while the phenomenon maintains its obsessive character and while it does reach the point of truly having the feelings of being questioned, subjugated, approached that people with schizophrenia suffer.

In the draft of the DSM-V,[775, 836] it has been proposed to transfer body dysmorphic disorder to the ecathegory of the Anxiety and Obsessive-Compulsive Spectrum Disorders and the disorder is temporally defined as concern for one or several defects or faults in the physical appearance that are not apparent, or are only minimally apparent, to the others and because in the course of the disorder, At some point during the course of the disorder, the person has performed repetitive behaviors (e.g., mirror checking, excessive grooming, skin picking, or reassurance seeking) or mental acts (e.g., comparing their appearance with that of others) in response to the appearance concerns. If said defect exists, the concern and anxiety experienced by these persons are excessive, since they perceive it in an exaggerated way. The affected person may complain of one or several defects, some vague characteristics, or of their appearance in general.

The most affected zones of the body in body dysmorphic disorder are:[852] skin (73%); hair (56%); weight (55%); nose (37%); toes (36%), abdomen (22%), breast /chest/nipples (21%), eyes (20%), thighs (20%), teeth (20%), legs (overall) (18%), body build /bone structure (16%), facial features (general) (14%), facial size /shape (12%), lips (12%), buttocks (12%), chin (11%), eyebrows (11%), hips (11%), ears (9%), arms/wrists (9%), waist (9%), genitals (8%), cheeks/ cheekbones (8%), calves (8%), height, (7%), head (size or shape) (6%), forehead (6%), feet (6%), hands (6%), mouth (6%), jaw (6%), back (6%), fingers (5%), neck (5%), shoulders (3%), knees (3%), ankles (2%) and facial muscles (1%).

The confrontation produced in these cases is not a rational phenomenon. It is a disparity of values. Therefore, it is impossible to logically argue with the patients. In the erythrophobia, the patient blushes when reminded of their shyness. In the body dysmorphic disorder, the patient is always ready to say "yes, but...." and they are swept along by their disease. The "Wolf Man," the famous patient of Freud, suffered dysmorphophobia (which was never correctly diagnosed by any psychoanalyst), during which Freud, who he had already loved and respected, became his enemy, and he was capable of betraying him.[853-855] The sufferer of dysmorphophobia has his/her inner self on edge and does not know how to hide from the others, since the sufferer is ashamed of his/her presumed inner evilness.

There is little statistics on satisfaction with one's own appearance, leaving aside the need for change that some persons have. Busemann[856] made a study in students of a school. At 12 years of age, 12% were unhappy with their body image and at 16 years, 28%. In the third school cycle in the USA, 46% of students had some concern with an unsatisfactory appearance of their body and 28% also had an "exaggeration of their body image."[857] In another study, the proportion of those who were not satisfied was 28.7%. However when the clinical significance criterion was applied, only 4% fulfilled the DSM-IV criteria for body dysmorphic disorder.[858] In the general population in the USA, 87.4% had concerns about their appearance.[859] With obesity, Meyer and Tuchelt-Gallwitz[860] reached similar conclusions. Such extraordinary numbers should not surprise us if we look at, for example, the consume of pills for losing weight and diets or, to a smaller degree, the proliferation of gymnasiums, beauty salons, and women taking advantage of the least amount of sunshine to become tan.

In Japan, there is great concern, more than in other countries, about not causing others discomfort, for example, by having a sloppy appearance or being unattractive.[852] It is not surprising that Japanese psychiatry has described disorders related to this characteristic as taijin kyofusho, Taiji or fear of people (anthropophobia) or better of interpersonal relationships. One of the subtypes of this

disorder is shubo-kyofu or phobia of having a deformed body.[861]

Dysmorphic disorder is not a rare clinical picture. Two studies carried out in Germany found prevalence between 1.7-1.8% (CI 1.2-2.1%),[862, 863] and there is the impression that their number increases in Western countries. This could be due to technical possibilities of corrective surgery and cosmetic medicine and the importance that the body has acquired in the modern World, in this specific case from the point of view of the existing illuminating quality of the person and as sign of identity. If the human being has become convinced that it is not as easy to hide the body under clothes, and above attempts to eliminate everything from the attire that has a symbol of a social class or state, the human figure remains as the most authentic and naked instrument to reveal or hide their privacy.

There is a gradual transition between that which is no more than individual variation, more or less in disagreement with the passing, local or general tastes of the fashion, an authentic deformity of the dysmorphophobia. The former includes corrections of wrinkles on the face of women or baldness in men, which are dealt with almost as daily cosmetic acts.

The body dysmorphic disorder is more prevalent in adolescence.Quite natural because it is a period in which the body figure begins to be important and not only for the sexual life as psychoanalysis would say (genital libido), but above all socially. The transition from childhood to adulthood, slower and nowadays, confronts the person with an uncomfortable situation because they are not considered the same as the others, and above all, they also one where they greatly disagree with the image of their own identity. Some will be considered as "older" without seeming to be, others will suffer being considered as minors by another adolescent of their same age since they seek more mature boys, perhaps men, etc. The disappointments, allusions, and comparisons, may materialize this lack of satisfaction with that which the subject wants to be and how others see him/her. Furthermore, during adolescence, the body experiences significant development, not only in height and development of the tertiary (and secondary) sexual characters, but also of organs that contribute to shaping the features. The nose is the most typical case (Linn),[864] although there are others such as the hands, muscle mass, look of the eyes. An important fact is that when adolescence ends, important changes can no longer be expected in the figure and at that time, concerns may arise that had remained latent. It is frequent to find, if one looks forit, that those who suffer dysmorphophobia have spent years hoping that their stigma would disappear in one way or another. The problem of the adolescent with the body figure at this age is such that it must be considered, as Tomckiewicz and Finder[865] state, as "physiological."

Those who suffer body dysmorphic disorder generally have anancastic personalities, and above all, sensitive ones in the sense of Kretschmer,[866] very sensitive to the image that others may be able to form of them. They are generally intelligent. In some, a precipitating trauma can be found in form of ironic sentences or comments, deception or failure or other similar reasons of that style have been discovered. We do not think that it should be attributed a more than accessory, anecdotic role but it has the virtue of materializing into shame about one's own body.[839] However, it is not shame of the body, but shame alone, that of the self. Thus, the person with erythrophobia blushes when sexual subjects are mentioned that make them feel ashamed, their voice trembles in public, and they wish that the earth would open up and swallow them, longing to be able to withdraw an escape from the looks of others.

Body dysmorphic disorder must be separated from other disorders in which the problem of body experience appears on the first level. First of all, it is not possible to differentiate those who have a true deformity from those who have an imaginary one and the repercussion that they may have on the life of the individual or that they suppose as threats of future physiological alterations is also not expressed. This is a problem which is, itself, and according to the criterion of the person suffering it, is strictly cosmetic. Malformations with physiological repercussions are general internal without cosmetic consequences. Other external gross malformations, consequences of abnormalities in the embryological development, such as cleft lips and a few others, are, per se, so gruesome that they are corrected, as far as possible by the possibilities of the technique, regardless of whether they produce pathophysiological alterations or not.

We also leave aside the type of delusions present in people whit schizophrenia that make the patient live as a prisoner of the experiences that influence certain organs or functions. In them, the significance of the symptom as well as its approach and the treatment of the disease is very different. There is very little relation to some forms of delusions of the adult age such as the Cotard Syndrom, the dermatozoic delusions or circumscript hypochondrias, although the name of circumscript hypochondria is applied to other disorders,[867] among them the dysmorphophobias[868] and the dermatozoic delusions.[869]

An important aspect is the great comorbidity in body dysmorphic disorder. There are some disorders in which there are traits or symptoms analog to those of the body dysmorphic disorder. In many cases, the definition of the disorder is conventional. However, we are not interested in the nosological or diagnostic features but rather in the underlying psychopathology, and, daringness permitted, the anthropological perspective.

Selvini-Palazzoli[870] proposed grouping the following syndromes: anorexia nervosa, hypochondria, depersonalization and dysmorphophobia. A lesser form of the dysmorphophobia is made up of the erythrophobias, however in these, no surgical intervention is proposed and in most of the cases, they have a more favorable spontaneous evolution. Obesity,

thinness, and transvestism also revolve around this problem of appearance which we consider to be core in the dysmorphophobias.

The question of the origin of the sensitivity that patients with dysmorphophobia have for the monstrous, raises two problems. The first is that many of them do not have enough reason for their obsession. This indicates due to fact that the knowledge is not a rational one. The second is that, as long as we are considering it, there are few persons who are happy with their appearance. These two points merit consideration in greater depth. It is difficult, as a physician, to become a critic of the esthetic, however, the fact is that the patient sometimes comes for this reason. The surgeon and/or family, may consider that the intervention is not necessary or once it has been performed, with good apparent result, the patient may not be satisfied. The fact that many persons adapt to living with a deformity, or even more, they incorporate it into their life, driving their own-self-improvement is not a relief to people with dysmorphophobia.

Clothing attire form part of the body experience and can be used to modify self appearance. Thus, even the most primitive populations had adornments, and there are tattoos that symbolize a status or condition, and masks, and adequate dress for each circumstance, etc. Some people dress conventionally, others add a drop of frivolity to their attire, others dress casually, but in their stubbornesstly, show up to what point they impose their body image on others. The problem for the transvestites is solved by the tailor or by the lingerie stores, but this does not always happen. The image we have of ourselves is very different from that which others have of us. If we have forgotten the impression of recognizing our image in the mirror, on the other hand we remember that of hearing our own voice recorded on a tape recorder. Why is there such deception?

Dysmorphic disorder and identity

We have previously mentioned, following Buytendijk[871] and Merleau-Ponty[6, 77] that the body is the condition of the own individuality. Thus, it could be thought that a deformity, which serves to give greater enhancement to the image itself in contrast with the others, would be the condition for individuality. This is not always true, although the historic examples are well known and include from the attitude of Kierkegaard[869] to that of Napoleon. Others partially achieve it, this being at the expense of always severe, resentment type characterological deviations. Others, on the other hand, are not affected at all by their deformity, even in spite of the circumstances.

Persons with body dysmorphic disorder feel excluded, denigrated, rejected, definitively, stigmatized, as a consequence of their deformity. They believe that by eliminating it, everything would magically, change the external circumstances and late the possibility of being integrated in the society and to lead an active life. Kubie and Machie[870] have described how transsexuals feel as members of a segregated minority and Monello[871] the same for obese adolescents. Psychoanalysis considers that the surgical intervention would satisfy a fantasy of being reborn.

Why aren't those who suffer body dysmorphoric disorder happy with their own look? Why can't they adapt to it as others do? Why can't they change it into the backbone of their individuality and maturity? None of these questions have, so formulated, an univocal answer. The health person does not experience the problem of aspect so acutely and when they do so, they do it differently. The experience of the body is an experience of presence, but a subliminal one. There are times in which this is not true. Girls who dress in front of the mirror do so thinking about the impression they will cause when they meet up with their friends, but when the moment arrives, within the joy of the party, they no longer think about it. The model or the actress lives continuously concerned about themselves, and even politicians do so, but this is due to their profession, and they are aware that they accept the demands of the good aspect. They know very well that if they leave the circumstances in which they live, they can be freed of the slavery of diets and cosmetics, or who knows if sometimes they think that they could be good actors or politicians even if their appearance was not so good.

A very significant fact stands out in the body dysmorphic disorder, in some more than others. Those affected experience their more or less presumed abnormality not as a cosmetic flaw, but rather as a moral one. It is not only the fear of scandalizing,[872] but rather a feeling that they are carriers of a stigma that may reveal personal qualities to others, of creating a mark that would permit others to consider them asevident perverse persons. They feel blemished, stigmatized.

This attitude should not be too surprising. In the end, it is as old as humanity (slaves, members of a tribes, circumscribed Jews, are distinguished not only by their dress but also by certain indelible scars) and this continues in the current medicine. Gall, on developing phrenology, and Lombroso with his criminalistics, both in the 19th century, and the constitutional and anthropometric theories, which has undergone such development in psychiatry, follow the same line of thought as those suffering body dysmorphic disorder. Definitively, it deals with the physiognomy, that is, discovering the character through the physical traits, which since Aristotle[873] has often been considered as a pseudoscience but that resists disappearing. Thus, for example, aggressivity in males can be predicted by the proportion between height and width of the face.[874] Finding the footprints that encouraged or predispose the body, or rather, that identify the psychic, private and personal life of the human being is an old dream of humanity, in which these patients believe.

What faults do they feel they carry? More biblically, we could ask ourselves: Who sinned, this man, he or his parents?

In some of these cases, it seems that it is parents, as deduced in some cases. Pasche[875] says that they feel "created, not engendered" by their parents. This is an essential difference from the erythrophobias of the adolescents. They feel they carry an intimate and hereditary evil. Morel[876] would not have found purer stigmatized degenerates, even more so because for them, their "stigmas" determine their fate. In such a way, they go back to positions that are basically out-of date, perhaps in relation to primitive thinking, on the relationships between the good and the beautiful or between evil and ugliness. Those suffering dysmorphophobia think like the classical Greeks did, that external ugliness is a manifestation of the inner evil.

The study of these patients shows that this is not the perception of a defective form or of "a mild defect" but rather an identity disorder. Well studied, it is seen that the patients do not seek to modify, for example, the shape of their nose for cosmetic or cultural reasons, but because they feel stigmatized. Sometimes their nose reminds them of a parent with whom they do not want to feel identified, others due to presume lack of uncorrectable harmony. This is an ethical problem and not a cosmetic one, and unless we take the latter word in the more extensive sense as is done in the DSM-IV-TR.

It is not a simple deformity, which is demonstrated by a patient our ours who went to an otolaryngologist to request correction of the soft palate in order to have a more pleasant voice, one more resonant.

A 17-year-old male who had been referred by the otolaryngology Service, where he had gone requesting surgery of the airways to modify the tone of his voice because he was not satisfied with it and because he attributed his problems in his interpersonal relationships to it. The patient belonged to a middle-low social economical level on to a conflictive family setting because his father tended to have unsuitable reactions and deafening discussions that bothered the neighbors. This made him feel very ashamed.

His disorder had begun when he was 12 years old and since then he has been under psychiatric treatment. Its first manifestation was social withdrawal, that he attributed to the fact that his peers laughed at his siblings, making him feel ashamed, and later at himself with comments such as "you have the voice of a robot." When he changed schools and went to a Vocational Training school, he felt even more maladapted and the target of constant mockings.

Reaching 16 years of age, he began to ask for surgery for his voice, because in this way, his problems would be solved and as a consequence he would be able "to study and have friends" and of his nose, so that he would "stop looking like a monster." Since then, he has not talked about anything else and also pressured his parents to ask for a loan for the surgery. On the other hand, he became more and more withdrawn, hardly going out of the house, spending the whole day in front of the television, or entertaining himself with monologues in which he revealed fantasies, such as being an airforce pilot. He was sad and threatened to kill himself if he would be forced to go to school. He attempted suicide twice. In both cases, he had spent several days saying that life had no meaning for him, due to his voice problems, his nose and the acne, that also was a great obsession of his. His attempts failed because at the end, he lacked drive to carry them out.

The subject of English was the hardest for him and there was a classmate who called him "frog," perhaps because he pronounced the "rr" poorly. Things got worse when another classmate called him twangy and this led him to fall into a profound state of sadness because the acne on his face, his twangy voice and ugly nose was too much for him. The psychiatrist treating him said that these were obsesions and that his voice was totally normal.

From the clinical examination, it should only be mentioned that the facial acne was significant, his voice mildly twangy, with mild hypoacusis, with loss of perception of acute tones.

In spite of the overlapping between the body dysmorphic disorder and the body integrity identity disorder, the recommendation for the DSM-V is to not incorporate the latter into the former.[836] From our point of view, the latter should be done, incorporating the body dysmorphic disorder into a large group of identity disorders. Considering that the concern for appearance is secondary to the problem of identity, this is a poor solution for it and does not allow for an adequate therapeutic approach. The axis of the therapeutic intervention should not be based on appearance, size, form or symmetry of one part of the body. Rather, it should be investigated in the underlying problems of identity and development. On the other hand, in the clinical recommendation mentioned, it has not been considered adequate to include dysmorphic disorder in the hypochondriac disorder as is done in the ICD-10[122] in its section on somatomorphic disorders, which is correct, considering that this does not entail identity problems.

That is how we clearly see how the problem of patients suffering from body dysmorphic disorder is not physical in these patients, and therefore they cannot be studied with the objectivity that the physician applies to the body. It is also not possible to consider them as pure psychological phenomena as would be done in a dynamic way carried to its extremes. The disease is manifested (especially in these cases) through their experience of the lived body, with the ambiguous character that it has. This results in the burden of

meanings, omens, and predictions that the symptoms bear with them.

Thersites komplex

Of all the names proposed for the body dysmorphic disorder, the one we consider the most attractive is that given by Stutte:[880, 881] Thersites komplex. In fact, Thersites, in the classical world, is the characteristic ugly person (cross-eyed and lame) because that is how the Iliad described it. But there is even more, if we read beyond the facts, we understand that everything is impregnated by a great evil, deformed and innocuous, as our patients feel.

Thersites (in ancient Greek Θερσίτης), is a minor character of the Iliad, in whose Chant II (211) it is described as follows:

> Now the rest had sat down, and were orderly in their places, / but one man, Thersites of the endless speech, still scolded, / who knew within his head many words, but disorderly; / vain, and without decency, to quarrel with the princes / with any word he thought might be amusing to the Argives. / This was the ugliest man who came beneath Ilion. He was / bandy-legged and went lame of one foot, with shoulders / stooped and drawn together over his chest, and above this / his skull went up to a point with the wool grown sparsely upon it. / Beyond all others Achilleus hated him, and Odysseus. / These two he was forever abusing, but now at brilliant / Agamemnon he clashed the shrill noise of his abuse. The Achaians / were furiously angry with him, their minds resentful. / But he, crying the words aloud, scolded Agamemnon:

The ugliness of Thersites was a consequence of having a cleidocranial dysplasia or dysostosis,[882, 883] which is characterized by agenesis of the ribs and malformations of the head, especially of the teeth and of the maxillofacial and skull bones. However, it should be stressed that no reference on this type of deformity accompanied by psychic symptoms or uniform behaviour patterns and even less that it deals with persons with antisocial problems appears in PubMed.

Shakespeare,[884] Hegel, who called the resistance to the abuse of the kings *thersitism*,[885] Robert Graves,[886, 887] and many others have stressed some features such as the fact of rebelling against established power much, so that he was considered a protomarxist, and of speaking for the Greeks who considered the Trojan war as a mistake. At the same time, he is considered as a man of the working class, who was almost always referred to without a last name, and who is presented as descendent of the pre-Hellenic population, of the indo-Germanic tribes (his skull is pointed, that is non-Hellenic).

On one occasion, Achilles confronted Pentesilea, the queen of the Amazons, who fought for Troy. The story indicates that the Greek hero had been secretly falling in love with his adversary, who, however, he had to kill in combat. Immediately after, Thersites threw himself on her, pulled out her eyes and ignominiously humiliated her corpse, with which Achilles responded by slitting the throat of such an evil character.

The aesthetics

For Baumgarten,[888] aesthetics, from Greek αἰσθητική (*aisthetikê*) `sensation,´ `perception,´ αἴσθησις (*aisthesis*) `sensation,´ `sensitivity´ and from -ικά (ica) `relative to,´ is the "*science of the beautiful, to which a study of the essence of art, of the relations of it with beauty and the other values are added.*" Esthetics is not a science of the beautiful based on rules, but on the way the person is manifested in his/her appearance and features. Thus, Changeux wrote: *"Réconcilier le malade avec le beau, le bien et le juste est la finalité de la médecine."*[889]

Feeling beauty is something better than understanding how we finally feel it.[890] Beauty is an essence, an indefinable quality that is felt in many things, which, due to the unlikeness it may have in other regards, receive the name of beautiful in virtue of a special, half wonderment, half love, emotion that is felt in its presence.

Beauty is the splendor of reality, of form, of order,[891] but what is important is not what is beauty, but what is evoked by its contemplation (*pulchra sunt quae visa placent*, those things that, seen, please, are beautiful, Thomas of Aquin[892]).

Beauty, as we feel it, is something beyond description. It is never possible to say what it is or what it means. It exists for the same reason that the object is beautiful, or the world in which such an object is found or we, who contemplate both. It is an experience that hardly requires explanation.

The beginning of the esthetics of the 18th century, formulated both by Rousseau and Kant, was based on the notions of a *common sense* and a *sense of the beautiful*. This, in some way, would refer to some shared personal values. Some authors, Nesbit,[893] for example, have expressed pessimism about the loss of a world with common reference values, to a *Weltlosigkeit*.[894]

From the analysis of experience considered above, the affinity existing between the structure of *Erlebnis* as such and the way of being of the esthetics can be deduced. The esthetic experience is not only one form of experience among others. It represents the experience of the essence per se. As the work of art is a world by itself, in the same way that which is experienced esthetically is, as an experience,

deprived of all connection with the current time. The work of art could almost be, by definition, an esthetic experience. This means that it is able of driving the spectator outside of the context in which he or she are carrying them to a new relation with the totality of existence. The experience of art entails a fullness of meaning that not only belongs to its content or object specifically but also to the total meaning of the life. Precisely, it is not combined with other experiences to be integrated into a single flow of experience but rather it immediately represents a totality.

The esthetic experience is a privileged model to consider the meaning of experience. The work of art is understood as the achivement of the symbolic representation of life and every experience tends towards this end. That is why it stands out by itself as an object of the esthetic experience. The conclusion that esthetics reaches is that the so-called *Erlebniskunst* (art based on experience) is art per se. "*Poetry is the representation and expression of life. It expresses experience and represents the external reality of the life*."[638]

Eco considers that all artistic expression and its consequent cultural manifestations should be understood in their historical context and a sole method of analysis, that is a semiotic, should be applied to them to be able to interpret any cultural phenomenon as an act of code-governed communication.[895, 896] He later dealt with ugliness,[897] the *beauty of the monsters,* which in past times could have been considered as diabolic monstrosities or manifestations of death and are currently manifested through the kitsch, the camp, the punk and *piercing*. The general conclusion is that ugliness and therefore beauty are not constructed from esthetic criteria but rather from political and social considerations framed within specific historical moments. Although in appearance, beauty and ugliness are antithetic concepts, this is not true. For Eco, ugliness is not the contrary of beauty, since it includes, in accordance with that expressed by the artists, the grotesque, the brutal and the bloody as the artists represent it. Thus, the horror that the ugly provokes is fascinating.

Therefore, persons with body dysmorphic disorder have a fear of revealing immoral private affairs.

The cosmetics

In this context, cosmetics as an art of beautifying should be remembered. The word is derived from classical Greek κοσμητική (*kosmetike*) `the art of dressing and decorating,´ that is derived from κοσμητής (*kosmetes*) `director,´ `decorator,´ in turn from κοσμέω (*kosmeo*) 'have at one's disposal' (i.e. the stars in the sky), `prepare,´ `order´ (the troops at the battle fields), 'equip,' 'dress,' 'groom,' 'beautify,' 'dress´ 'universe,' 'cosmos,' ' worldly life,' 'this world (in comparison to the afterlife). Cosmetics is therefore the art of beautifying through a method, of correct proportion, of a style, definitively of a harmony, at the service of an order and social hierarchy, definitively of the identity and identification of a group at a certain time. It is possibly the oldest artistic manifestation since it has been demonstrated, as we have mentioned, that the Neanderthals used makeup.[616]

BODY INTEGRITY IDENTITY DISORDER OR APOTEMNOPHILIA

Body integrity identity disorder[898] or apotemnophilia, from the Greek άκρο *(άρο)* 'extremity,' τεμνειν (*temnein*) 'to cut' and φιλιά (*philia*) 'love,' 'attraction,' is the intense desire to have a limb amputated in order to correct a discrepancy between the actual body and the body image that would be considered as desiderable. The rejected limb is experienced as a handicap or interference with one's own identity. Generally a desire to be disabled, to have to overcome architectonic or social barriers, and to have to use crutches, wheel chair or prosthesis is present. The desire to be amputated is permanent and there are frequent and uninterrupted demands to surgeons.

Because very few surgeons will agree to amputate a healthy limb, cases are known in which the subjects have harmed their own limb (by firing a weapon, by seeking railroad accident or similar methods) so that the only remaining possibility was amputation.

The most frequent reason alleged for wanting the amputation is that by doing so, the discrepancy between the anatomy and the true feeling of oneself, that is, the identity of the subject, would be corrected. In fact, most amputees have felt better after the amputation.[898] Thus, the disorder has been attributed to fascination with deformity, disability, and to the admiration provoked by the **capacity** to overcome a defect, to the perceived role of heroes of the amputated, to the attention those affected receive and to an uncertain sexual component and perfectionism. The roots of the body identity disorder probably are found in childhood. Those who suffer it generally speak of significant events in the beginning of the school age, which materialize in their desire to be like someone amputated or disabled who they have known and have admired for their strength of character.

Apotemnophilia is a disorder with a high grade of identification and proselytism in the massmedia and in internet media. Those who use crutches or wheelchairs in public without having been surgically intervened are known as pretenders.

The initial idea of the nature of the apotemnophilia was that it was a paraphilia. However, in most of the cases, the component of desire and sexual attraction is absent. In fact, the experience of displeasure with the own body generally occurs very early in childhood, in a period in which the paraphilia roots have not been established. This has given rise to the proposal of alternative names in spite of the fact that the desinence "-*philia*" indicates not simply a tendency that does not necessary have to have a sexual component, although it has been used abusively for historical reasons

exclusively in this restrictive sense. That is how the name of the body integrity identity disorder was put forward,[898] although the term apotemnophilia could be maintained for the cases of the identity disorder in which there is an explicit and dominant sexual component.

Apotemnophilia and body dysmorphic disorder share the dissatisfaction with how the body looks and the hope of being able to overcome it through a surgical intervention. On the contrary to dysmorphophobia, what the subject with a body identity disorder desires is to correct the disharmony that exists between their body image and anatomy per se and not with the appearance of their limb, which is not perceived as deffective or shameful. Their experience is that the limb in question is not congruent with themselves. However, as we have seen, also in persons with dysmorphophobia, there is a lack of satisfaction and agreement between look and identity, sometimes due to the appearance (dysmorphophobia), others because of the anatomical and functional integrity (apotemnophilia). This aspect approaches both clinical pictures to other disorders such as sexual and gender identity disorder.

Apotemnophilia has been considered as an acquired somatoparaphrenia, for example, due to a cerebrovascular accident. In favor of this is the fact that the desire for amputation affects the left limbs more (amputation above the left knee) and in the somatoparaphrenia the involvement is predominantly of the parietal lobe of the right hemisphere. That is why it has been suggested that in the apotemnophilia, the cortical representation of the limb that the subject desires to amputate is lacking[899] because of a congenital dysfunction of the upper right parietal cortex.[900] For this reason, vestibular caloric stimulation has been proposed as treatment, that is, the application of cold water in the right ear of the patient.[901]

The body integrity identity disorder is different from the Münchhausen syndrome because the demand is not an intervention per se but rather a result, the lost of the member and the subsequent discapacity, although in the Münchhausen syndrome there is also a component of identification with a severe and disabling disease.

Demands for amputation have been described in cases of fixed dystonia, a rare disorder affecting young women who, after minor peripheral nervous lesions, develop abnormal and painful postures of the limbs, demands that have been considered as a form of body integrity identity disorder.[902] However, this is not so, since the desire of the affected person is to be free of a diseased, dysfunctional or painful limb and therefore it is not an identity problem.

A variant of apotemnophilia is the desire and ascination to be castrated, that is present in some males (*wannabes*).[903] Both pictures can be overlapped.[904] There are probably several types among those who want to be castrated. In 40% of them the desire has a fetishistic nature, and mutilation rarely occurs. In another 20%, the desire is due to other reasons such as freeing themselves from sexual impulses, reducing libido, changing the look of their genitals and masculinity or preventing criminal sexual behaviours. In them, the risk of reaching castration is high.[903] In fact, 20% of the *wannabes* have attempted to mutilate themselves and only 10% have sought medical care.[903] In many cases, there is the desire to be free of androgens and their consequences. It happens in persons who have suffered abuses and threats of castration in childhood, homosexuals, those having observed castration's of animals in childhood and as a consequence of religious condemnations of sexuality.[904]

This disorder should not be confused with **acrotomophilia**, from Greek άκρο *(ákpo)* 'limb, ' τεμνειν (*temein)*, 'cut' and φιλιά (*philia*) 'love, ' 'attraction,' and the **amelotatist**, from Greek, α (*a*) 'without,' μέλος (*melos*) 'limb' and ταξίς (*tasis*) 'irresistible attraction,' which is the sexual impulse toward someone who already has an amputated limb. In any event, there are persons who suffer both disorders and within the community of persons with apotemnophilia those who suffer acrotomophilia are called *devotees*.

An extensive review of the literature has led to the conclusion that apotemnophilia can be considered as a cultural syndrome, an expression of psychological suffering, which does not have an unequivocal psychopathological meaning.[905] In the same study, it is verified that the body integrity identity disorder and the generic sexual identity disorder overlap.

The ethical aspect of the surgery of the apotemnophilia has given rise to controversies[906] based on the principle of the patient's autonomy. If this only were related to the desire for amputation to reach one's own identity, there would be no reason to reject the intervention as if it were any other cosmetic intervention. However, voices have been raised against this same principle of autonomy[907] by considering that the demand has a morbid origin and to comply with to it would be the same as participatingin an assisted suicide in a profoundly depressed person.

The degree of the desire and the consequences of the intervention are elements to consider. Steering the problem towards the possible presence of a serious psychiatric, but non-manifested, condition, or of a parietal cortical condition of areas involved in the recognition of the body per se also do not resolve the ethical problem. This ethical problem debates between the effort to integrate the rejected limb into the new body image,[908] for it to be congruent with the struggle to make it be recognized and accepted as belonging to one's own identity.[909]

THE BODY OBJECT AND BODY SUBJECT IN ANOREXIA NERVOSA

Phobia of gaining weight, which is an important diagnostic criterion in anorexia nervosa and which has given rise to the name in German of *Pubertätsmagersucht* (' anxiety for thinness in puberty') did not arise as an important

trait of the disease and of the rejection of eating until more or less the 1930's and it is not always present in the non-Western cultures. Thus, a search has been made to find the most universally validated clinical traits.[910] The probable reason is that the fear of gaining weight is secondary to a more core aspect of anorexia nervosa that is related to the meaning which gaining weight has. The same occurs with the eagerness for starvation,[911] although this does not mean that the continuity of a condition of self-imposed starvation that has existed since the middle-age, or before and the present, should be accepted because clear cases of anorexia nervosa were not described until the 19th century.[911, 912]

However, it is true that it was described in the Victorian time period in the United Kingdom that suffering anorexia nervosa could be considered as a sign of distinction, and the same occurs now in some circles.[912]

For these reasons, it has been unfairly written, that the disease has changed over time,[913, 914] when what needs to be considered if it would not be true that it is the capacity to control intake that has changed. Thus, it deals with going even deeper into its characteristics beyond it simply being an eating problem or a search for thinness. It is necessary to ask what being thin means.

People who suffer anorexia nervosa describe their disease as an efficient strategy to cope with and avoid negative emotions, to transform their identity and obtain control. They even refer to a critical and dominating "anorexic voice" that wants to dominate the more rational self and impose its own repertoire of values.[915]

According to some cognitive models of the eating behaviour disorders there is in the vulnerability to sufferfrom one of them maintains that an identity development disorder that leads to conceive themselves as obese individuals patients.[916]

Nordbø et al.[917] have published an interesting study on the value and meaning that the anorexia nervosa patients give to their symptoms. They have made a very detailed study of interviews having a phenomenological orientation, which provides the following eight constructs:

1. Security: feelings of stability and security
2. Avoidance: avoidance of negative emotions
3. Mental strength: inner sense of mastery
4. Self-confidence: feeling acknowledged and worthy of compliements
5. Identity: achieving new identity
6. Care: eliciting care from others
7. Communication: Communicating difficulties
8. Death: wishing to starve oneself to death

An disorder of the body experience, especially of what Sartre[74] described as the "body for the others," the body that feels observed, when one experiences one's own body, and oneself as an object being looked by the others, when one feels looked at, it is present in the eating behaviour disorders, which, consequently, have been considered as an identity disorder that affects the polarity between the self and the other.[918] In this situation, the feelings of decency and shame are born, as we have mentioned above.[919, 920]

The influence of modern feminism has given rise to a new interpretation of anorexia nervosa,[921] which is the consequence of the changing roles of the woman in the modern societies in all the cultures. However, some empirical studies with attitude evaluation scales (for example, the *Attitudes Toward Women Scale* and *Eating Attitudes Test*), have not been able to verify it.[922] The two basic characteristics of anorexia nervosa, desire to developed a feminine look and the attempts to avoid the appearance and consequences of becoming an adult woman, are characteristics of a gender identity disorder.[923]

Asceticism

Two defense mechanisms characteristic of anorexia nervosa have been described: intellectualization and asceticism. The former is a rejection of the traditional role of the woman, which we could call "Neolithic woman." This role is one in which the woman is dedicated to taking care of the home and the offsprings, cooking and being "the rest of the warrior." The adolescent who develops anorexia nervosa has another ideal, that of assuming roles that were up to just a few years ago alsmost mostly reserved exclusively to males.

Asceticism has received, in spite of being a core trait of anorexia nervosa, less interest outside of the psychoanalytic literature. The reason is the resistance to go beyond the paradigms that psychiatry is comfortable with, and to avoid delving in aspects related to religion and spirituality.[924] In fact, religiousity is omnipresent in anorexia nervosa, beginning with the ascetism and guilt, the ethical codes of sacrifice and immolation, of the loyalty, of the negation of sexuality and sin and temptation.[925] Anorexia and ascetism share their belonging to a process of idealization[926] and, consequently, of identification.

Asceticism refers to a self-denial, a strict moral of rejection of the temptations of the body, of its sexuality and even of its contingence.[924, 927-929] Asceticism related with intake and the development of the body forms a part of the religious beliefs in anorexia nervosa, which aims to give meaning to self-imposed starvation and the ideals of beauty of the women over time,[930-933] from the Middle Ages until our times[921, 934, 935] and the identification with a culture.[936-938] Asceticism is associated to choleric temperament, elevated control of rage, perfectionism and fear of growing up, which suggests that self-imposed discipline and the elevated control of the

patients with anorexia are related to a temperament predisposed to rage, to fear of becoming an adult and to pathological perfectionism.[939] Some of these personality traits, including identity problems, persist after the clinical manifestation of the disorder havedisappeared.[940]

Asceticism implies control of the body and a way of being, a control that culminates in the loss of feminine forms that make the women an object of desire. This type of woman has always existed and they have resolved their aspirations in different ways. Many of them, which Bell[934] described as "**holy anorexia**" characterizes women who during the Middle Ages entered into religious orders because of different mechanisms described. Sometimes, they were led to the extreme and the starvation was not only of the body but also spiritual. The brilliant biography of Octavio Paz[941] on Sister Juana Ines de la Cruz is the best description that can be made about the psychology of anorexia nervosa, in its creative aspect.

Another interesting example is that of Saint Liberata. Heroic deeds have been added to her legend and this has been transforming into other Saints over a millennium. The character arose at a certain time and place with great force and originality, that of Gallaicia in the 2nd century. Among the cultural aspects of anorexia nervosa is the fact that prior to that time, there was little that could lead to suspicion of the existence of this disorder and way of life. Several things are needed for this to occur. In the first place, food must be sufficiently guaranteed, and there must be a production of calories per inhabitant with variety that also requires a choice to be made about what one is going to eat at each moment. In the second place, something that is the consequence of the above is necessary, that is, the choice of how much and how one is going to eat must be subjected to social norms and rules, which can be accepted, violated or be the object of an excess as expression of the search for control of the instinctive forces that assault the individual *ab inferos*. Although we have not made an in-depth study, it is not easy to recall mythological characters or old legends in which the traits of anorexia nervosa appear, at least with the splendor in which it occurs in the myth of Saint Liberata. We say myth because neither she or her equivalents that we mention below are mentioned in the Saints of the Catholic Church. They are not documented in the Acts de los Martyrs[942], or in the Roman Martyrology[943], although strangely, some of her sisters such as Saint Quitter do appear, in spite of having been persons of worship in many points in time of the history

The case began in Bellagio, the current Baiona (in northwest Spain). Around the year 119, when Lucio Castelio (or Cathelo) Severus was praetor of Lusitania and Gallaecia. His wife, Calsia, while her husband was away visiting his possessions, gave birth in a single delivery, to nine girls. A multiple birth was considered as a dishonor, an offense for all the lineage, because it meant that each child is a son of a different father and a monstrosity because only animals have births of this nature, especially the pig, which is a dirty and impure animal par excellence. For these reasons, Calsia ordered her servant, Sila, who had helped her in the difficult time, to, in the greatest of secrecy, drown the nine newborns in the river before their father found out that the mother had given birth, a good test of the improper behaviour of a human being.

However, Sila was a devoted Christian and did not obey the order. She decided to secretly take care of them, and they were educated by Saint Ovidus, bishop of Braga, and they, in their adolescence, took on the vow of chastity. In one of the many persecutions that the Roman authorities subjected the Christians to, Liberate and her sisters were imprisoned and taken before the praetor. Calsia recognized them and had to confess the whole truth. Then Catelius wanted his daughters to renounce their faith in Jesus Christ, which the sisters refused to do, even though they had been offered presents and honors. Then the praetor had no other possibility than to condemn them to death, as ordered by the law. To avoid that their father would have to order their execution and the subsequent tragedy, the sisters decided to run away, knowing that in the end, the Romans would kill them, as it happened. All suffered martyrdom in different places and for some historians, Saint Liberate died on the crucifix on 18 January 139 in Sainte-Livrade-sur-Lot, in the Aquitania, where according to some historians had also been born and not in Balcagia.[944]

The legend of Saint Liberate and her eight sisters brings to mind the fate of Moses, saved from the waters of the Nile to lead the people of Israel to the promised land. Analogically, the fate of the nine sister saints is that of freeing the nations from the pagan oppression and lead them to Christianism, through the example of the martyrdom.

Other versions indicate much later dates in the history, since the first pursuit of the Christians in the Gaul are in 177, during the persecution of Marcus Aurelius and are circumscript to the area of Lugdunum, the current Lyon. Another hypothesis place the events during the domain of Diocletian at the onset of the IV century and others in the V century during the barbarian control of the Aquitania.[945]

Another version of the legend places Liberata (in Spanish, *Librada*) in the 8th century and tells how, when while she was still a girl, her father the King of Portugal, probably a pagan, promised her in marriage to the Moorish king of Sicily. What is most likely is that Liberata took a vote of chastity and prayed to God for help in making her body less feminine, while she actively combated her femininity by fasting. Weight loss was soon accompanied by the appearance of body hair, including a beard. Finally, God had no other choice than to reward her by freeing her from the last vestige of her femininity, her menstruation. The saint's name

recalls this ultimate freedom. At the end of the story, her father, the King, ordered her crucifixion.

The venerated relics of St. Liberata were transferred from Aquitaine, where they had been venerated since the 8th century, to Sigüenza in Spain in the 9th century. Since the 15th century, St. Liberata has been the patron saint of Sigüenza, where she was first venerated at the urging of Bishop Don Fadrique, who was of Portuguese origin. The altar of the saint can be found in the northern arm of the cruciform cathedral of Sigüenza, a cathedral of plateresque style that was designed by Covarrubias in the 16th century. The altar of St. Liberata features statues of her eight sisters, and the remains of the saint herself are kept in a repoussé silver coffer in a niche in the center of the altarpiece. This arrangement of the altar powerfully reflects the victory of this singular woman who achieved sainthood by eclipsing her body, even beyond death. St. Librada (as known in Spanish) is known as St. Liberata or Livrada in other countries where Romance languages are spoken.

The legend of St. Liberata overlaps that of St. Wilgefortis, who also fasted to ward off marriage. Many dictionaries of saints combine the stories of Wilgefortis and Librada, although it is now clear that they were differen with different histories that share some common points.[944, 946] It should be noted that the representations of St. Librada and her sisters highlight her beauty, prudence and eloquence, the adornments a good medieval queen would wear, since they did not cease to be daughters of the earthly king, Lucio Catelius (or Cathelo) Severus, as well as the King of Heaven, Jesus Christ.[945] However, the different representations of Wilgefortis show her as a bearded and masculinized woman.

The case is that the rebellion of Wilgefortis, which was unconscionable in the Middle Ages, ruined her father's wedding plans because her first suitor broke his nuptial contract. In reprise, Wilgefortis' father ordered her to be crucified, a mode of execution that had not been used since the fall of the Roman Empire. The martyrdom of Wilgefortis had enormous impact and fasting spread widely as a way to avoid marriages arranged by parents. As a result of the visible evidence of Wilgefortis' fast, the loss of her feminine form and the growth of her body hair and beard, this saint became known for and was represented as a bearded woman, sometimes with masculine features, or was depicted as a crucified Christ-like figure. The message could not be clearer. The rebellion of an adolescent girl could only lead her to renounce her feminine condition and lose her femininity in order to be strong and remain virgin. Hence she received the name Wilgefortis, meaning the "strong virgin" and others such as Dignefortis (" strong in dignity") or Eutropia (" the well bred woman").

Another etymological origin of Wilgefortis has been proposed, which may possibly be more exact but remains unknown among the people who passed on the legend. According to this etymology, the name comes from the old German *hilge Vartz* or *Fratz,* the "holy face," which is a translation of the name of a famous image, the *Volto Santo.*[947] This painting has long been attributed to Nicodemus, a disciple of Jesus, and was venerated in the Basílica de Lucca. The painting shows Christ crucified and bearing a crown of thorns, with a beard, long hair and a somewhat androgynous appearance as he is dressed in a long tunic.[948]

Saint Wilgefortis is invoked at times of crisis in the lives of women, such as in cases of infertility, when a wife is "unable to give" her husband a child, when a woman seeks to free herself from an unwanted marriage or end the torment of a consummated marriage, or for help in hiding or releasing her from an unwanted pregnancy. The saint is also known by the names of *Uncumber* in English, *Oncommer* or *die heilige Kümmernis* in German, *Comera*, *Cumerana*, *Komina*, *Kummernis*, *Kümmernis*, *Ontcommene* and *Ontcommer*, and *Ontkommena* and *Uncumber* in other Germanic languages. All these names derive from *kummern,* or to be "concerned" and the faithful supplicate the saint for release from an onerous load or concern. The practice even extended to the invocation of the saint at death's door. Therefore, the saint has also received the names of *Hulfe* (from *Hilfe*, or "help") and *Regenfledis*.

It is said that "the shadows help light be more resplendent" and this principle holds true for many of the forms of punishment that people inflict on themselves to modify their body image, including the fasting of saints, anorexia nervosa, self-mutilation and amputation to make oneself an invalid in apotemnophilia. Thus, it must be stressed that intellectualization and asceticism are not in themselves pathological psychological mechanisms and that most women can have a fruitful and satisfactory personal development and find meaning in their own lives. Pathology is what brings an adolescent to the edge of death, enslaved to disease, without more future than losing a few more grams or at least not gaining them, whereas other women, as in the case of Sister Juana Ines, are inspired to the heights of literary creation.

CONCLUSIONS

The study of the human body is the mainstay of medicine. If a doctor is obliged to be familiar with the patient in the disease and not only with the disease in the patient (Marañón), this double interest should be undertaken from a double perspective, the perspective of what some phenomenologists have called the body as an object and the body as a subject. This particular is also applicable to the patient who suddenly must face the reality of having a body that, although formerly silent, now erupts in an awareness of the body as life-threatening and a source of malaise and disability, of being a body (Marcel). This ambiguity, which becomes particularly patent in disease, forces the clinician to resort to disparate and undoubtedly complex areas of knowledge in an attempt to analyze these disorders in depth and in extension, drawing from the history of thought, philology, philosophy and even theology, primatology and neuroscience, all without losing the clinical perspective.

The human body in its double reality has been and continues to be a huge unknown, when not harshly insulted and burdened with blame, which have done no more than convert one's own body and the bodies of others into an object of scorn or a cheap bit of merchandise. We hope that the readers of the present paper will come to realize that these words are not an exaggeration. Although the final conclusion may seem far-fetched to some, we are our bodies and our bodies are each of us, but it took some effort to come to this reality. Another conclusion is that, being what we are, we sometimes do not feel how we are and a confrontation emerges, sometimes within the limits of normality and other times frankly pathological. Consequently, the clinician is forced to entertain complex ethical considerations and the scientist must come to accept the pathology of personal identity.

The text is divided into seven parts. The first part, the human body, challenges the dualism that has permeated writings about the body over the course of history. The survival of the dualistic view over time and its success are due to the fact that it provides a simple interpretation of human nature that is undoubtedly of some use: there are two substances in it, one that distinguishes us from all other beings and the rest of the individuals of the human species, the soul, spiritual life, mind or consciousness, and another more undifferentiated substance, the body. The soul is bound to dominate the body, to survive after death when the mortal remains of body rot, disintegrate, and are buried, incinerated or dispatched to the depths of the sea. Dualism attempts to explain the origin of evil and the attitude toward overcoming evil, and does so effectively. Evil arises, *ab inferos*, from the dark recesses of the body: the soul, if it functions correctly, can overcome evil and in so doing ensure its eternal wellbeing after the earthly body is cast off. This anthropology has ancient roots. It appears in the Upanishads of the Vedic epoch, dating possibly from more than 8000 years earlier. Dualism appears in the Orphic texts, in Plato and, above all, is at the core of the gnosis that has been handed down to us in modern times as "scientific" thought, contaminating Christian tradition as heresy, as well as other possible traditions that we have not studied to avoid deviating too far from the original objective of this work.

In the course of formulating arguments against dualism, we saw ourselves forced to abandon the project of updating as a second edition "*El Cuerpo y la Corporalidad* [The Body and Corporality]", published by Juan J. López Ibor and one of the authors in 1974.[34] This work was often erroneously interpreted as dealing with two realities, body and corporality, and not with two different aspect of a single reality. In addition, the neologism "corporality" contributed to stigmatizing the word "body", which had never been our intention and we wanted to avoid at any cost.

The monistic perspectives also deserve criticism. Monism excludes one of the components of the dualism, resulting in either radical materialism or mysticism. It also is easy to attribute one of the components to the other, in what has been called a mereological fallacy. According to this view, the brain thinks, is conscious, loves, prays, suffers or simply goes crazy. None of this is certain, the subject that thinks and does all the rest is a subject that undoubtedly could not do any of it without a brain, in the same way that it is a person and not a person's stomach that feels hunger, although the person could not survive without the digestive system.

Among the diverse monisms proposed, the one that comes closest to what we consider essential if is the so-called **dialectical monism**, which can be complemented with the notion of the **chiasmatic resolution** of Merleau-Ponty in a monism for which we have found no other name than **chiasmatic monism**. This monism could also be termed **Janusian** in honor of the god Janus of Roman mythology, according to whom mental and physical aspects are just that, two different aspects of the same reality, both of which have their own adaptive value. The chiasmus resolves the dilemma between deduction, which refers to the logical order of discourse as it develops from generalities, and induction, which inverts this order and develops goes from discrete particularities to generalities in a dynamic way, coming and going from one perspective to the other in a constant state of tension that does not find a stable point of equilibrium, hence its creativity. This "*unitary duality per se*" comes to mean that the structure of thought is what makes us consider the phenomenon of the human body, of one's own body, from two perspectives and not as two different realities.

The **second part**, **conflicts between the body object and the body subject**, is a review of a series of dysgnosias, including the agnosias per se and phantom limb phenomena. These conditions are true natural experiments for studying the experience of one's own body. We add to this experiments such as that of the rubber hand and others of synesthetic nature that are designed to better understand how the brain generates the experience of the body. Some of these situations have been used as evidence of the survival of the soul, as when Lord Nelson or Captain Ahab thought that the persistence of the amputated limb in consciousness was proof that the soul can survive not only the loss of a limb but the loss of the whole body itself.

According to Ramachandran, the brain generates a stable system for contrasting perceptions from different sources and thus make proper decisions, which implies the addition or rejection of discordant information. In consequence, the experience of a phantom limb depends on the integration of information from different sources associated with the reorganization of cerebral maps, motor discharges from the affected limb, the subject's body image and the memory of painful somatic sensations produced by the damaged limb.

The neurobiology of the agnosias is complex and diverse, which means that the perception of one's own body is a phenomenon that requires the participation of diverse cerebral areas and circuits.

The **third part, the perception of the body**, deals with the different theories of body perception, beginning with the *tactus intimus* or *tactus interior* of the School of Cyrene. Over the course of history, many hypotheses have been proposed that define a sixth sense or describe how the five traditional senses are integrated in a common sense. In the 18th century, ideas such as that of cenesthesia, the importance of movements in the perception of the body (kinesthesia), and of posture and vestibular integrity and the distinction between exteroception, interoception and proprioception of Sherrington. All of these ideas are the basis for considering how the brain organizes a postural schema of the body (Head and Holmes), or a hypothesis about how the rest of the senso-perceptions or participate in a body schema (Pick) or when affective elements are associated to form the body image (Schilder).

In the **fourth part, how the brain constructs body schemas**, our aim was to analyze the brain processes involved in the construction of bodily experience. The process by which the brain constructs body schemas requires the integration of exteroceptive, proprioceptive and interoceptive information per se and with the executive activities of movement associated with this information to achieve a symbolic content that enables a harmonious and effective body experience and function. Recent neurobiological studies provide cumulative information that is sometimes difficult to integrate, largely because many basic research scientists lack knowledge of the human sciences and clinical practice that would make it possible to use a single, coherent language. This is one of the challenges of neuroscience that is being explored by a few illuminated minds. Among the more recent contributions are those of Craig on the stratification of the functions of the anterior part of the insular lobe and adjacent areas thanks to their connections with other cerebral areas. In their work, a forward to backward stepwise progression is established between the most elemental functions, which serve to maintain the energy homeostasis of the individual thanks to the sensation of satiety, to the most complex and symbolic functions. The von Economo neurons and their close relatives, the fork neurons play an important role. The role of "mirror neurons", which are an inherited biological structures for the recognition of gestures and body responses, is also noteworthy.

We dedicated a fair amount of space to an old question, the question of whether the process involved in the development of the body image originates on the periphery, in the skin and sense organs, or responds to central mechanisms in the cerebral cortex. This discussion has acquired new relevance with the question of whether body perception arises from the proprioceptive or cenesthetic stimuli, broadly or narrowly construed, meaning that it would be from the bottom-up, or if some degree of participation of the brain is necessary to generate body perception, acting from the top-down. The long history concludes that both mechanisms are needed to for the temporal development of the perception of our own body.

The **fifth part, body experience**, deals with the more personal aspects of bodily experience, alterations of which are present in many mental and behavioural diseases, including some dissociative or conversion disorders, somatomorph disorders (hypochondria, body dysmorphic disorder, and the so-called psychogenic or thymopathic vertigo of López Ibor), anorexia nervosa, some identity disorders (body integrity identity disorder or apotemnophilia), particularly those of the sexual nature (non-fetishistic transvestism, transexuality, including male-female nonhomosexuals), and the psychological elaboration of somatic symptoms (Munchausen or Münchhausen syndrome).

In order to understand these conditions, a phenomenological consideration of human experience is required, which is anchored in the concept of experience as an experience lived, laden with sense, which leaves a deep impression on a person. To experience something is to convert data into a historical and personal event and there is nothing more significant than what is referred to one's own body.

Bodily experience has a series of characteristics, such as the quality of being an experience in the world. Phenomenology conceives of one's own body as structured around three dimensions of experience, *the experience of self*, *objective experience loaded with sense, and the experience of other persons: intersubjectivity.* The experience of self is the minimum consciousness of one's self that, other phenomenological considerations aside, is anchored in the experience of self and situation in relation to other persons and worldly objects. This involves the experience of inhabiting one's own world, of being there through one's own body, which is manifested in different ways. The human being has an experience of self as a conscious being, endowed with an identity and idiosyncrasy, and a subject of its behaviour in the broadest sense of the word. This subjectivity provides an interesting datum in the experiential concept of self as one realizes that one's body is something more than an object in the world. One's body is not just another thing, an object among objects, it is subjectivity incarnate. Objective experience endowed with sense maintains that the human body is not just another object among the many objects that exist in the world, but a subject that transcends itself in relation to the world, around which the objects that exist in the world are organized according to their significance for the subject (body). The body is point zero, from which the perceptive world is organized. Every object or quality is oriented in relation to one's body as it is lived. This also applies to what is imagined or remembered, since regardless of its characteristics, qualities or even its own spatiality, it can only be imagined or remembered in reference to my body. Thus, parting from my body and the perception that I have of my body, I am going to be able to constitute the world around me through which the other bodies are organized spatially; thus, from the center used by my body I am going to constitute the entire earthly world.

On the other hand, bodily experience is not neutral in terms of affect, nothing of what refers to one's own body leaves us indifferent. In fact, it is just the opposite, no affective experience occurs without having a bodily (tachycardia, sweating, variations in blood pressure and variations in neuroendocrine secretions) and behavioural impact.

The daily experience of the body is characterized by two things. The first thing is an immediate sensation that one's own body is situated in a specific place at a specific time and that one's sense of self is situated in the body. Body and self are perceived as a unit in the world and distinct from the world. The second thing is that under normal conditions we barely perceive anything of our own bodies; we only perceive our bodies when they are ill and cause discomfort and pain, or when an effort is required of the body that surpasses its capacity and we become aware of the beating of the heart, deep breathing or the resistance of muscles and joints. For that reason, one of the facts to keep in mind is that the presence of disease unveils an unknown, one's own body, because nobody knows anything about the gallbladder, not even that it exists, until the day that the first colic occurs.

The **sixth part, conflicts between body and personal identity**, deals with a series of disorders that specifically affect bodily experience: the experience of the world in depersonalization; the consciousness of one's self in depersonalization; the experience of body in Cotard syndrome, major psychosis, hypochondria and in dissociative and conversion disorders or the experience of self in delusional disorders in general.

In the **seventh part, identity disorders**, we briefly analyze the process of identification from the vantage point of primatology. Identity is not a simple quality and recent anthropological studies carried out in primates, particularly pygmy chimpanzees or bonobos (*Pan paniscus*), and studies of the social behaviour of hominids and their ancestors, have reached the conclusion that one of the mysteries of anthropology, the so-called oxymoron, which makes the human species both the most solidary and most violent with regard to fellow humans can be explained through mechanisms of identification. These mechanisms derive from the xenophobia of primates, which is a consequence of their high degree of socialization, which inspires bloody raids against other groups while intragroup solidarity grows. In addition, the growth of the brain is not explained by the use of tools, which are also used by subjects with smaller brains, but by social structure, which obliges the young to distinguish early and identify the individuals of their own social group and other groups. From this point, everything intragroup is seen as better and the individuals of other groups are lesser beings that can, and on occasions should, be destroyed. In this view, group identity is not the weighted sum of the identity of its members; instead, members identify with the group due to a series of perceived qualities.

This part includes disorders that are normally included in different categories in which there is a discrepancy between the experience of body and one's own identity. These persons reject their own bodies, not for aesthetic reasons of form or figure as is usual by accepted,but because they do not identify with their bodies, their aspect in general or some of them parts. It is not simply that they would like to seem or see themselves in one way or another, nor is it a desire to change appearance; they do not feel that they are what they look to be.

Among the these disorders are body dysmorphic disorder and related disorders, such as erythrophobia, anorexia nervosa, body integrity identity disorder and disorders of sexual nature (transexuality, non-fetishistic transvestism, sexual identity disorder of childhood).

Anorexia nervosa is the paradigmatic case for the study of body and identity because the concepts related to this disorder have been enhanced by the study over history of spiritualization and asceticism, rejection of the traditional role of the woman dedicated to taking care of home and children, cooking and making "a man's home his castle." Asceticism implies control over the body and manner of being, control that culminates with the loss of the feminine forms that make a woman an object of desire.

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