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On Collingwood's historicism

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Abstract

Some main historiographic aspects of R.G. Collingwood historicism are considered as basic elements for certain epistemological discussions about possible relationships between theoretical and social-humanistic sciences. Moreover, further remarks on creative mathematical thought are made in the light of what established.

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Preface

Veritas filia temporis.
Aulo Gellio

The main purpose of this paper is try to claim the fundamental importance of the historicist view in general knowledge theory, also in scientific context, starting from some main lines of Robin G. Collingwood historicism in Historiography, taking so the opportunity to revaluate the quite misunderstood Benedetto Croce historicism to which the Collingwood's one is inspired. Discussing the Collingwood's historicism from different viewpoints, it has emerged a particular composite structural psychodynamic model which proves, among other things, the inseparability of internal and external history and new possible viewpoints on some fundamental epistemological questions concerning social and human sciences. Moreover, from what shall be said emerge some possible remarks on creative mathematical thought.

1 Introduction

One of our main reference is [1], and we begin by quoting what the Author says in [1, Chapter 4], about Collingwood's Historiography.

> [...] *Robin George Collingwood (1889-1943) who, according to E.H. Carr, is the only significant British philosopher of history in this century, has idealism and subjectivism in common with Benedetto Croce. According to Collingwood, the object of history does not consist of the occurrences of the past but just of the thoughts about these occurrences. The historian must try to re-experience or re-enact*[1] *the thoughts of earlier individuals. When he has succeeded in doing this he knows what has happened and does not need any further information or explanations of why the event took place. The history of thought, and therefore all history, is the re-enactment of past thought in the historian's own mind.'*
>
> *Collingwood's idea of re-enactment covers a special historical form of understanding where the historian has to steep himself in the thoughts of the past and seek a kind of sympathetical harmony with them. Since the understanding acquired in this way can only be valid for actions that result from thought, these are the only kinds of occurrence that form the substance of history. According to Collingwood, science, art and politics belong to this category but not any kind of natural event. This leads to the strange result that biographical descriptions do not belong to history. Collingwood's justification for this is that biographies are structured on biological events - the birth and death of the person concerned - and not on intellectual ones. This result alone ought to provide grounds for scepticism as far as the value of Collingwood's ideas is concerned. Surely it would be artificial to exclude biographies from history.*
>
> *The really problematical part of Collingwood's view of history lies in the idea of re-enactment and in the assertion of what kind of thoughts can be re-enacted. According to Collingwood, the historian, in order to understand the thoughts of Archimedes, for example, has to rethink these thoughts in his own head:*
>
>> "We cannot relive the triumph of Archimedes or the bitterness of Marius; but the evidence of what these men thought is in our hands; and in re-enacting these thoughts in our own minds by interpretation of that evidence we can

[1] That it could be related with what some Authors call *retrocognition*.

> know, so far as there is any knowledge, that the thoughts we create were theirs".

But how is the historian to know that his re-enactment has succeeded, that it is really the thoughts of Archimedes that he is rethinking? Collingwood does not supply any criteria for this but seems to think that it is subjectively determined by the intuition of the historian.

Collingwoodian re-enactment is, in reality, a rational reconstruction of the thoughts of the historical agents. Such a reconstruction need not take the authentic thoughts of the agent seriously and is not, therefore, primarily directed at the authentic past. According to Collingwood, it is furthermore not just any intellectual activity that can be re-enacted. This is only the case with reflective, goal orientated intellectual activity, i.e. the kinds of thoughts that are concerned with the solving of problems.

> "In order, therefore, that any particular act of thought should become the subject-matter for history, it must be an act not only of thought but of reflective thought, that is, one which is performed in the consciousness that it is being performed, and is constituted what it is by that consciousness ... A reflective activity is one in which we know what it is that we are trying to do, so that when it is done we know that it is done by seeing that it has conformed to the standard or criterion which was our initial conception of it".

If the historian is to understand the thoughts of Einstein, for example, he must therefore identify the problem at which the thoughts were directed. But the problem is only known via a conclusion reached in reverse from the solution of the problem; this makes Collingwood conclude that we only know, and can only know, the successful thoughts of Einstein, that is, those concerning problems that Einstein actually solved. This leads to the strange result that we can never say a scientist or philosopher concerned himself with problems that he could not solve; for we cannot have any historical knowledge of such problems. This is, of course, an unacceptable result since we do know that Einstein did actually work on problems that he did not solve. All human beings have had failures when trying to solve certain problems and in a great many cases we know about these unresolved problems.

Some parts of Collingwood's programme have had a positive influence on the history of science. This is true of his insistence

that historical statements have to be seen as responses to problems and that the historian ought to concentrate on these problems; and it is true of his relativist moral that what is of relevance for history is not a matter of how far past statements were true or false in an absolute sense, but of how they can be understood in the context of a problem; and, finally, of his assertion that the historian ought to attempt to think himself back into the past. But, as with Croce, it would be true to say that Collingwood's historiography, taken as a whole, is unacceptable to history of science. As indicated above, it contains many elements that are in direct conflict with what modern history of science is striving to do. [...]

Collingwood's viewpoint on history is in accordance with the diachronical ideal, as appears, for instance, in the following quotation (see [1, Chapter 9])

> *History ... meant getting inside other people's heads, looking at their situation through their eyes, and thinking for yourself whether the way in which they tackled it was the right way. Unless you can see the battle through the eyes of a man brought up in sailing ships armed with broadsides of short-range muzzle-loading guns, you are not even a beginner in naval history, you are right outside it.*

In this paper, we want to give some reasons and justifications to the Collingwood's historicism from the general viewpoint of Philosophy, Anthropology and Psychoanalysis.

2 Philosophical considerations: I

From the philosophical viewpoint, R. Aron (see [18] or [19]) state that a historical interpretation aims towards a reconstruction of the existence of the historical person with his thinking modes, starting from past events hypothetically reconstitued, even with the help of some psychoanalytic tools, identifying adapted historical units in which to operate.

In [20], M. Francioni devotes the first sections of his Introduction to some preliminaries considerations on the general History of Science, deprecating a presumed objective and abstract internal history that should become mystifying if it does not took into account its real subject genesis made by various psychological and cultural aspects. It follows that are fruitful and not inevitable the various psychosocial and economic aspects of the external history, that should be coherently unified with the internal historical ones, only

when be well determined and distinct the relative subjective and objective contexts conditioning the ideal epistemic process of the given science. In a nutshell, it is a deontological necessity of any science historiography to comprehend the (individual, social and community) subjective genesis variable of its novelties.

The necessary combination of the internal and external histories will be validate by a new interpretation of the orthodox freudian psychanalytic theory of the human psyche, that will be presented later.

P. Casini, in his preface ([21]) to the Italian edition of the M. Daumas' *Histoire de la science* (Librairie Gallimard, Paris, 1957) confirm the mutual pernicious retirement between the individual disciplines, the arid technicality, the extreme specialization, the neglects of the links with the history of culture and society[2]. He stresses the inaccuracy of certain pseudohistorical reconstruction where the historical subject under examination is isolated and avulsed from the philosophical and cultural context in which it was born and evolved thanks also to the change of the latter mentioned coordinates that have provided the right climate for creative thinking. It is short-sighted and unrealistic leave out the history of exact sciences from the so-called *Geistwissenschaften*; from here, the need of an interdisciplinary historiography.

From the epistemological viewpoint, in a certain sense some aspects of Collingwood's historicism are re-considered by K. Popper in his *situational analysis* where he replaces the Collingwood's psychological re-enactment with a conjectural reconstruction of the problematic situations that were at the foundation of the historical problem under examination.

In opposition to T. Kuhn and K. Popper, I. Lakatos considers his *rational reconstruction* respect to the so-called (rational) internal history and against to the (irrational) external history (that he considers of secondary importance respect the the first).

Finally, in this context of the post-positivist epistemology, P.K. Feyerabend confirm the importance of the irrational components for the scientific revolutions, reaching to a certain methodological pluralism and to the so-called *epistemological anarchism*; his original philosophy will receive some partial confirmations from the next psychoanalytical considerations on the creative thought. Moreover, Feyerabend confirms as the main validation method must have historical nature.

In [2], H. Weyl explains the essence of the new scientific mind turned over to a pluralistic and dynamic world, opened also towards the religious mind by means of an action resulting from the harmonic union of scientific creation

[2]For the emergence of the methodological need concerning a certain interdisciplinarity in History of Science, see also [26, Chap. 1] and [27, Cap. I].

plus philosophical reflection[3].

From the hermeneutical viewpoint, H.G. Gadamer (see [3] and [116, vol. I, Cap. 1, § 1.3]) confirms the possible role played by the unconscious in certain interpretation methods. Influenced by the heideggerian thought, H.G. Gadamer questions the centrality and autonomy of the historical research object and puts attention on the active dialectic between research subject and research object, and on the importance of the meaning for us of the subject. The hermeneutical method of understanding is analogous to that of the *Verstehen,* that it is the so-called phenomenological Dilthey's *comprehensive understanding* regulated by the so-called *principle of motivation,* opposed to the explain understanding (*Erklären*) regulated by the causality principle. The Verstehen is contrary with the usual scientific methods: indeed, for the former, the understanding comes from identifying into the object, whereas the latter classifies the research object within the framework of the action of a more general set of laws. However, Gadamer says that these differences may be less real that they seems.

On the other hand, J. Dilthey, in his historicist and idealistic vision, has resumed the philosophical concept of *Weltanshauung* to denote a certain collective vision of the world, transcending the individual one, and characterizing a well-determined epoch; this term is also resumed by C.G. Jung in his psychology outlining the remarkable changes in Individuals when such a related Weltanshauung change into the social group to whom they belongs. This term will be also resumed by K. Jaspers.

However, nowadays it is a common, well-established idea that the unconscious play a fundamental role in every mental process (see, for instance, [4] and [15]), hence, in particular, also in the creative thought, as already said by J. Hadamard and H. Poincarè (see [5]) in the mathematical context. However, there is no unique psychoanalytical theory explaining a creative process: indeed, each psychoanalytic school has its exposition.

If the unconscious is at the basis of every creative thought, then some aspects of the Collingwood's Historiography (like his psychological re-enact, and so on) are possible according to the following psychoanalytical and anthropological viewpoints.

[3]Further, Weyl says that these two activities must be integrated each other, otherwise the scientific creation is lost in the mechanicalness of the pure routine and the philosophical reflection become abstract talk; in the man remain the need of a totality, a tension leading to the intuition of Infinity that may be only symbolically represented.

3 Psychoanalytic considerations: I

We start from the Jung's Analytic Psychology that, with the Lévi-Struss' structural anthropology and the existentialist-phenomenological trend[4], is the most adapted to explain and to justify those Collingwood's Historiographic aspects under examination. Among other things, the Jung's Analytic Psychology put much attention to explain the creative thought: see, for instance, the theories of E. Neumann as exposed by A. Carotenuto (see [6-8]), and others.

Following [9, XV], there are many common points between the jungian ideas and some important his historical theories with general historiographic aspects: for example, M. Goldwert has pointed out the existence of certain relationships between the historical mind of A.J. Toynbee and the Jungian Psychology (see also [223, Cap. V, § 10]), observing the historical importance of the jungian collective unconscious and the historical functions of the archetypical development; Goldwert hopes in the development of a Jungian psycho-historians school, reconnecting it with the so-called *psycho-history* current (see [10, Chapter 18]).

The fundamental historical importance of the jungian ideas is also witnessed by some works of W. Pauli that has had deep relations with C.G. Jung (see [9, XIII], [11]): indeed, the basic 1952 paper *The Influence of Archetypical Ideas on the Scientific Theories of Kepler* by W. Pauli (see [13]) prove the importance of the jungian ideas from the historiographic viewpoint, and, subsequently, Pauli put increasing attention on the role of unconscious in the scientific discovery (see [12, Cap. 13] and [225]).

Further, possible relations between Psychoanalysis and History (with its related Historiographic Models), are pointed out by G. Fossi (see [14, IV-D]).

The fundamental assumption of the existentialist-phenomenological psychiatric approach, mainly according to K. Jaspers and M. Heidegger, is the empathic approach in the understanding the man with attendance feelings in order to penetrate his world, relive and work out his real-life experienced underlying his behavior so that we can understand them. Following [212, Parte II, Cap. III, § A), subsection b)] for a complete discussion of the different types of the concept of comprehensibility, let's just say that the *comprehension* (according to Jaspers) is quite different from the explanation of natural sciences, since it means to state the relationships between a psychic cause and a psychic effect which cannot be put it into a rational causal relation

[4] On the other hand, in [16, XII], it is declared a possible resemble between the phenomenological transcendental consciousness and the jungian collective unconscious. This analogy may be also extended between the Lévi-Strauss' unconscious and the collective one.

but instead it is intelligible only with an «immediate intuition» having its sources into our internal experience (and this last is necessary and sufficient to give us the certainty to have understand the psychic links of the given phenomenon under examination). This way of knowledge is the unique possible. According to H.C. Rümke, the Jaspers' psychopathology is summarized in the classification and in the most accurate possible description of the subjective experiences of the man, after that the investigator has represented it in his mind. Following [16, IX], the life of a man is a set of *Erlebnis*[5] joined together by a structural connection into a evolving meaningful whole. According to K. Jaspers (1913), it is possible to understand this human process by means of introspection for our experiences, and through identification and understanding by suppositions for experiences of others. Of course, we cannot have a direct experience of the most intimate Ego of the Other, but we can empathize into the Other with introspection. This possibility of understanding (*Verstehen*) is a 'feeling by agreement' involving an interpersonal approach; this Verstehen is no possible by (rational) explain (*Erklaren*) since the latter objectives the phenomenon.

This jaspersian understanding, limited to the normal experiences of a man, were subsequently extended to the psychotic experiences too by the Anthropoanalysis (or *Daseinanalysis*) by L. Binswanger through the Heidegger's existentialist ontology (according which the being of the man must be understood as a being-there-in-the-world), the Husserl's phenomenology (according to the being of the man is established in the transcendental context - like a transcendental consciousness - that is to say, outside itself) and developing the Brentano's assumptions on intentional consciousness (according to every psychic phenomenon is always a phenomenon related to a real or imaginary content, and this intentionality makes the consciousness not a something but an understanding); the Daseinanalysis replaces the subjectivity of the jaspersian empathic understanding with a 'work lighting' of the modes[6] in which is performed the existential plan of the human presence, starting from its ontological 'a priori' that are the heideggerian 'being-there-in-the-world' (*Mitsein*) and the husserlian 'being-with-others'; the direction of this arrangement is the 'authenticity' of each man, that so will become aware of all his inauthentic and alienated aspects of his existence.

The initial Biswanger's anthropoanalytic[7] address was at the basis of

[5]This is the simplest consciousness act in which it are merged the experience of something with the related sensation immediately felt.

[6]These (Binswanger's forms of presence) are universal ontological structures, or universal anthropological categories, that allow us the understanding of any man into his interpersonal relationships, while respecting his individuality.

[7]The Biswanger's Daseinanalysis has been renamed *Anthropoanalysis* by D. Cargnello

other phenomenological currents, as the E. Minkowski phenomenological psychology (founded on the bergsonian understanding for intuition - see [22]) and the H.W. Gruhle's address named Verstehende psychologie (funded on the *Einfülung,* that is to say, an understanding by identification - see [24]). The jaspersian understanding, the Minkowki's intuition, the Gruhle's identification and so on, are specific methods of understanding of the so-called *Geistwissenschaften* (only apparently distinct from the methods of *Naturwissenschaften*).

These meaningful concepts of the existentialist-phenomenological trend will be linked with the psychoanalytic context by J. Lacan: indeed, they will be resumed and extended within the structuralistic methods of the De Saussure's Linguistic and of the Lévi-Strauss' Structural Anthropology, reaching to an original psychoanalytic theory that, among other things, may be taken as a valid base for explain certain main aspects of the mathematical thought. For an interesting exposition and critical comparison among the various currents of structuralistic thought (mainly of M. Heidegger and C. Lévi-Strauss) considered by J. Lacan, see [118, Cap. 5].

4 Anthropological considerations: I

In this regard, the work of C. Lévi-Strauss is very important (see [17]). Among other things, Lévi-Strauss has studied the laws and the structures of the unconscious on the basis of his anthropological studies; the Author says that the unconscious is the set of all psychic structures regulating any thought. These universal and atemporal structures are present in any primitive or civilized, normal or psychotic man. Lévi-Strauss say that the unconscious is the place of the Science, so that to obtain a valid interpretation principle for every knowledge it is necessary and sufficient to achieve the unconscious structure underlying the objective of this interpretation. The Lévi-Strauss' unconscious is quite different from the Freud's unconscious: the former ceases to be the ineffable refuge of the individual particularities, the depository of a unique history that makes each of us an irreplaceable being. It represent a universal symbolic function common to every man, that exerts with the same atemporal and universal laws; in it, there is no place for a personal history, nor can it be the place of the freudian drive, of the wish or the place of their suppression. Its main function consist in imposing the above structural laws to drives, emotions and representations coming from other places. According to P. Ricoeur (see [132]), the Lévi-Strauss unconscious is of kantian type, with a prominent intellectualistic character,

(see [23]).

anti-reflective, anti-idealistic, anti-phenomenological, until it can be even homologated to the nature. The Lévi-Strauss unconscious is the main source of every culture, of every form of science, and the place of every possible logic system[8].

From these few recalls emerges the fundamental importance of Lévi-Strauss' Structural Anthropology for understanding the deep sources of the human knowledge.

5 Psychoanalytic considerations: II

To this point, it is necessary to recall the main aspects of the freudian theory from the object-relation model[9].

The freudian psychanalytic theory has evolved from its birth till to the last years of the Freud's life. We are interested to the second freudian topography in which the psychic apparatus is differentiated into three main psychic agencies: the Ego, the Id and the Super-Ego (or Superego). From the economic viewpoint, the energy flow of the libido, always addressed to the satisfaction of the unconscious wish, is governed by two main principle, namely the pleasure principle and the reality principle, respectively involved into the primary and secondary process, and into the development of the processes related to the various object relations. The libido mainly includes the death instinct and the life instinct whose ambivalence, regulated by the above energy principles and by the choice of objects, distinguishes the phase of the stages of the psyche evolution (oral phase, anal phase, phallic phase, latency phase, genital phase and so on), during which the individual personality is formed according to S. Freud.

At the basis of the creative thought there are some psychoanalytic phenomena (as, for example, sublimation[10], reaction-formation, aim-inhibition, idealization and so on, mainly acting during the latency phase) of the above instincts, directed towards the object or towards the meta of the given instinct.

[8] These last arguments will be resumed when we'll sketch some aspects of the work of I. Matte Blanco in Section 14.

[9] Hereafter, as regards the choice of a proper philosophical mind theory, we assumes, depending on the cases, or a monistic idealism or a mind-body dualism. In any case, when we speak of mental disorder, we always suppose this from the functional viewpoint and not from the organic one (also in the mind-body dualism case). For a possible overcoming of the functionalist-organicist duality, see for instance [233].

[10] According to S. Freud, the noblest character aspects of an Individual is largely obtained by sublimated instincts. For an interesting study of the sublimation from Freud to Jung, see [102, Cap. 8].

A fundamental question is the origin of the Ego and Super-Ego agencies. In this regard, there is no unanimous consent and each psychoanalytic trend has its theory. For instance, according to S. Freud, the Ego genesis is susceptible of two interpretations: one consider it as an apparatus of defense that has differentiated from the Id by means of contacts with external reality, whereas the other consider the Ego as the result of identifications leading to the formation (within the person) of an love object invested by the Id. Instead, M. Klein asserts that the Ego is an agency always present till from birth, whereas J. Lacan says that it is formed through the so-called mirror's stage (see later).

S. Freud, in his last incomplete 1938 work (see [25, Chapter 8]), says that the Ego develops from the "cortical" (or superficial) layer of the Id by means of the contact with the real external world, and induced by two factors, the ontogenetic and the phylogenetic dangerous (the latter being essentially unconscious). Subsequently, Freud introduces a new notion, that of *splitting of the Ego,* often due to the fact the the Ego is coming to grips with a new agency, that he calls *disavowal*[11] (coming from the disown of the perception of certain painful demands coming from external reality), and that initially he puts at the basis of the origins both of psychoses and neuroses. The result of this splitting is the formation of two independent and conflicting psychic settings of the Ego, one taking into account the reality and the other that, under the instinctual influence, detaches the Ego from the reality. Both these two settings exists dialectically side by side, and one can prevail over the other. Next, recognizing possible failures of the synthetic nature of the Ego, Freud took over that this splitting of the Ego could be considered as a universal psychic process.

In [25, Chap. 9], the Author argues about the sources of the Super-Ego: it begins around five years when a part of the real external world was assumed into the Ego, through identification, giving rise to an independent agency called *Super-Ego.* Part of this agency is unconscious, and it officially assumes the role of agency only when the Œdipus complex is fully overcame. It is the result of the overcoming of this fundamental complex.

However, S. Freud, respect to all his other previous formulations on the origins of Super-Ego (in particular, in *The Ego and the Id* of 1922), in this last his work he introduces another new point of view supplementing the previous. Indeed, the Author says that the Super-Ego still plays the role of external world for the Ego, although it has become part of the inside world. For the rest of the life, the Super-Ego will represent the influences of the childhood, the parental influences with their social and racial affiliations,

[11] Or *scotomization,* according to R. Laforgue (see [20, Cap. 9, § 2]).

their tastes, needs and traditions.

The last lines of [25, Chap. 9] concern the fundamental historical role played by Id and Super-Ego: the Id contains the individual and collective historical heritage, whereas the Super-Ego, as intermediator agency between the Id and the external world, unifies the actual and past influences; further, with the onset of Super-Ego, we have an example of how this is converted in the past.

Following [28], the genesis of Ego can be explained in two ways: as a gradual differentiated adaptive system starting from the Id by contact with the external world or as a result of various identifications leading to the formation of many cathexis objects by Id.

In the period 1914-15, Freud work out the notions of Narcissism, of Ego as result of identifications and of differentiation within the Ego of certain its ideal components. The Ego, which is largely unconscious, can be deeply and continuously reshaped by the identification, becoming the intrasubjective residue of certain interpersonal relations, starting from an initial identification by means of a narcissistic oral incorporation. The Ego is no longer conceived as a single personified agency within the psyche, but some of its parts can be separated by splitting (from which it follows, for example, the critical instance) in such a way that we can speak of an Ego system[12] including the Ego's Ideal, the Ideal Ego and the Super-Ego (see [28]).

6 First critical remarks

At this point, according to what said in [6, Cap. X] and [7, Cap. 1], we propose another interpretation of the above orthodox freudian theory of psyche, that unifies the individual and social psychoanalytic trends. Our interpretation makes use of different psychoanalytic theories, according to [7, Cap. 1] and to the so-called *principle of the variety of possible patterns of interpretation,* enunciated by R.P. Feynmann (see [29, Chap. 2] and [30, p. 668]), which states that one of the surprising characteristic of Nature (other its essential simplicity[13] - see also [138, Cap. 12]) is the variety of the possible interpretative schemes; on the other hand, as said at the end of [83, Linee di Psicoanalisi, Cap. 10, § 10.4], the real life of Psychoanalysis is the intersection of the various psychoanalytic trends, as a result of their crossing and siding. For a general view of the epistemological aspects of Psychoanalysis,

[12]Also C.G. Jung has formulated an analogous system, naming it more specifically as an *Ego's complex* (see [100, p. 20]).

[13]Which lead us to formulate a certain *principle of essential simplicity of Nature* (R.P. Feynmann).

see [129] and references therein.

We consider the unconscious and the libido in the jungian sense. The Ego is assumed to be constantly changing throughout life[14] (for instance, according to E.H. Erikson - see [4, Cap. 7, § 5], [75, Cap. IV, § 5] and [32, Cap. II, p. 54] - and to the Ego Psychology followers; see also the continuous consciousness evolution of E. Neumann - [6, Cap. XI]). If we suppose an Ego[15] existing since the birth (according to M. Klein - see [6, Cap. III] and [14, p. 77] - and to the modern perspectives - see [31] and [218, Cap. 7]), certain defence mechanisms as, for example, the freudian disavowal, the kleinian paranoid-schizoid position, the lacanian mirror's phase, the Rank's anxiety trauma of the birth[16] and other, can induces a splitting of the Ego into the two agencies Ego's Ideal and Ideal Ego that, that, according to D. Lagache and H. Nunberg, must be considered as distinct. The Ideal Ego is an intrapsychic formation resulting from the primary narcissism that, following D. Lagache, is an unconscious narcissistic formation due to a primary identification with the mother (and with some masochistic characters), whereas the Ego's Ideal is the place of Super-Ego (with some sadistic characters); the same Author states that it is very important to take into account the distinction between the Ideal Ego and the pair Ego's Ideal - Super-Ego, and that, further, the Ideal Ego is irreducible to the Ego's Ideal. Instead, the concept of Ego's Ideal is changed during the evolution of the freudian thought, simultaneously with the changes of the concept of Super-Ego (see mainly [28]): in fact, it is assumed that, in turn, the Super-Ego is a formation of the Ego's Ideal distinct from it; following what Freud says in *Massenpsychologie und Ich-Analyse* (1921) and in [25, Chap. 9], this Super-Ego is rather a collective Super-Ego strictly connected with the formation of social groups (see [28]

[14] On the other hand, the same S. Freud has continuously changed his thought about the origins of the Ego. Indeed, following [36, Chap. 9] and [68, Cap. 7], in his last works (as, for example, in *Analysis terminable and interminable* of 1937), S. Freud has recognized the existence of certain hereditary or innate components of the Ego, free from instinctual sources; he spoke of an epigenetic principle for the development of the Ego, so that the Ego is assumed to have innate roots, intrinsic factors of maturation and an independent development parallel to the instinctual development (mainly led by identifications). The latter hypothesis on the Ego's autonomy, will be assumed, for instance, by the psychological theories of H. Hartmann and G.W. Allport. Also E. Glover supposes the presence of an Ego (and of an Id) since the birth (for a discussion related to a possible existence of certain psychological predispositions since the birth, see [7, Cap. 6]). Following [65, Cap. I, p. 15], it is very likely that during the embryonic life be possible the existence of a protopsychology and of a protoemotionality of the fetus.

[15] There are many uncertainties on the development of the Ego (see [14, 6), p. 77]).

[16] To confirm this fundamental concept of O. Rank, it may be invoked some important psychological studies on the prenatal social behavior development: for these, see [218, Cap. 7].

and [33, Chap. I and III]); on the other hand, other Authors as, for example, P.H. Miller (see [34, Chap. 2, § 2.2]), states that the Super-Ego is a formation of the Ideal Ego, so that, in this case, this agency must be intended as of individual type. In any case, according to the orthodox freudian theory, the Super-Ego definitely takes place as agency with the final resolution of the Œdipus complex.

However, it is interesting to examine the freudian mechanisms governing the formation of the first rudiments of Super-Ego. Following [35, Cap. XXI, § 166], the Super-Ego is a formation of the Ideal Ego by means of identification; subsequently, the Author says that this agency is completed with the resolution of the Œdipus complex. However, in [35, Cap. XXI, § 170], the Author states further that many other elements contributes to the formation of Super-Ego: every sort of authority, in addition to the paternal one, contributes to a deep modification of the individual Super-Ego, making it increasingly impersonal. In such a way, the Super-Ego may be considered as an agency evolving through a continuous stratification until to an adult multi-component Super-Ego. Following [36, Chap. 8], the freudian Super-Ego follows from a narcissistic identification with a mechanism analogous to the internalization mechanism operating in mourning studied by S. Freud in *Trauer und Melancholie* (1917); the Super-Ego has an archaic and primitive moralistic structure, and may change by incorporating various imposition models.

On the other hand, the possibility of certain splitting phenomena concerning the Ego and Super-Ego, also in an adult being, it has been recognized by many other Analysts. As regards the Ego agency, following [71, Chapter 6], there have been many theories of the Ego, as, for instance, those of J. Royce and J.M. Baldwin (sources of inspiration for the Ego's theory of P. Janet). The first Author supports the thesis according which the distinction between Itself and not-Itself has mainly a social origin. The our empirical self-consciousness depends by a series of contrast effects whose psychological sources lies in the own social experiences; the Itself of the child grows and forms through imitation, so that originally the empirical Ego is subjects to our social experiences, and, in the real social life, the Ego is always known as in contrast with the Other. The child internalizes his own social relationships, so that afterwards will take place a contrast between the Ego and the Other, understood as a contrast between the past Itself and the actual Itself, between the individual self-consciousness and the social one. The second Author distinguishes three main phases on the genesis of the Ego and of the Other. Initially, there is a projective phase in which the child perceives the external personalities with which it comes into contact, before he has an own perception of itself; after to the seventh month of life, there is the sub-

jective phase in which the imitation makes the child able "to pass from my experience of what you are (Other) to an interpretation of what I am (Ego)". Subsequently, there is an 'ejective' phase in which the child inverts such a process, that is to say, "to pass from the most complete perception of what I am (Ego) to a most complete knowledge of what you are (Other)"; moreover, according to Baldwin, the Ego and the Other born contemporaneously, in the sense that "the my perception of myself (Ego) grows through the imitation of you (Other), and, conversely, the my perception of you (Other) grows by means of my perception of myself (Ego)". According to Baldwin, hence, the Ego and the Other are essentially of social nature, namely, each is a *socius* and each is a creation by (a reciprocal) imitation. William James (1893) has been the first philosopher that has attempted to define the notion of Self (or Itself) distinguishing between an I and a Me; the Self is a duality formed by the I as awareness subject capable of knowing, and by the Me that is known by the I. The I and Me cannot be separate inside the Self: the I is the knowledge reference for the Self, whereas the Me is the Self as viewed by the I; in turn, the Me is divided into three categories: the material Me, the social Me and the spiritual Me. Subsequently, C.H. Cooley (1908) has illustrated and highlighted the social nature of the Self, elaborating the quote "looking glass self" (in a certain sense, resembling to what will say Lacan).

Following [37, Cap. 18, § 2], R. Sterba (1932) has identified a therapeutic splitting of the Ego during an analytic process, whereas J. Strachey (1933) states the possibility that an Analyst, during the psychoanalytic process, may assume the role of an auxiliary Super-Ego (incorporated by the patient) distinct from the archaic Super-Ego. In [37, Cap. 33, §§ 1,2,3], it is recalled that H. Sachs (1925) has already recognized possible modifications of the Super-Ego during the analysis, whereas F. Alexander (1925) consider the Super-Ego as an anachronistic structure that may be demolished; S. Radó (1925) postulate the formation, by the Analyst, of a parasite Super-Ego near the original Super-Ego. Raymond B. Cattell (see [63, III, Cap. 6]) says that the Super-Ego is a structure primarily unconscious, that develops mainly from the end of the Œdipus complex, but that it is reinforced by the internalized aggressiveness and other instances[17]; moreover, it is susceptible of an insufficient or excessive development in dependence of the educational conditions. Finally, H. Rosenfeld (see [38]) has identified multiple splitting of the Super-Ego in certain schizophrenic patients.

From the above discussions, we infers as be conceivable splitting phenomena both for Ego and Super-Ego agencies. For our purposes, it are important some concepts due to D. Lagache (see [39, Chap. V] and [40]), al-

[17]For a complete study of the aggressiveness, see, for instance, [165].

ready mentioned above. According to this Author, the Id and the Super-Ego represent an influence of the past: the Id reproduces the inheritance while the Super-Ego reproduces the parental and social influences. Instead, the Ego is mainly determined by the experiential properties of the human being. However, the Author argues that the Super-Ego, de facto, may exist before of the same Individual, that is, it may have innate character. The development of the human personality is mainly due to the cooperation of many variables - among which the relationship mother-son and the early forms of the Ego and Superego - through a progressive socialization process that is performed through multiple and subsequent identifications. In [40] (see also [41]), the Author exposes his ideas about a splitting related to the pair Ego and Super-Ego, already mentioned above: he focuses on the contrast between the pair *Narcissistic Ideal-Ideal Ego* (which constitutes the Ideal Ego agency) and the pair *Ego's Ideal-Superego* (which constitutes the Ego's Ideal agency). The first pair takes place when it must choose between a mythical enterprise of idealization (Narcissistic Ego) or to use the mother image as a mirror able to mirror and produce the Ideal Ego with masochistic characters. The second pair occurs when, having initially chosen a speculative enterprise of (external) identification producing the Ego's Ideal, we uses the father image to produce a Super-Ego which makes part of this Ego's Ideal as an ideal of authority by involving a source external to the Narcissism. According to Lagache, from this pair of agencies develop different forms of sublimation but also it may gives serious functional disorders due to a non-equilibrated dialectical relationship between them (for example, the mania is intended as a net prevalence of the Ideal Ego whereas the melancholy is due to a net prevalence of the Superego-Ego's Ideal). Similar splitting phenomena concerning the Ego and the Super-Ego (and their evolution throughout the life) may be traced in the so-called *Klein-Bion model* (see [42]).

On the other hand, studies on Child Psychology (see [43, Cap. 6]), confirm as the child, before he built up an its own Ego, is predisposed to the need to have an Ego by identifications, starting from some innate rudiments of such an agency (R. Spitz); these last considerations are strongly supported by the Montessori's theories according which there exist natural human tendencies predisposing the child to acquire the environmental influences (see [250] and [249]), so that the familiar and social world of the child is fundamental in its psychological growth. Moreover, studies conducted by C. Bülher and R.F. Nielsen (see [43, Cap. 1]) in the context of the social behavior in the childhood, states that in the relationships between the society and the Individual, it is possible to distinguish two poles, which are as innate instances, and which led the Individual from one part to differentiate he from the society and from the other to enter into it.

The multi-component structure of the Ego has been also confirmed by the Berlin Psychosomatics school (see [44] and [45]), according to which the Ego is assumed to be a multi-dimensional interlacement of functions (whom set, in turn, represents the action potential of it) predisposed to internalize the various (external) social group dynamics in which the Individual grows.

As concerns the formation of the Super-Ego, it has been said that the Œdipus complex play an important role in this regard. The orthodox freudian theory says that this complex occurs during the phallic phase, but the kleinian theory, instead, states that it already takes place from birth.

At this point, an our new, possible interpretation of the human psyche is mainly based on the above mentioned ideas of D. Lagache about the Ego and Super-Ego agencies: indeed, from the above discussions, it is very plausible to suppose that the innate Ego's structures (with the above mentioned individual and social-relational predispositions), from a unique Id structure (understood according to C.G. Jung), may be separated into two main structures, the Ego's Ideal and the Ideal Ego, by means of one of the above mentioned splitting mechanisms[18]. Subsequently, through the action of a systems of various mythical complexes (that will be explained later in section 12), from these Ego's structures follows the formation of Super-Ego structures: precisely, from the Ego's Ideal follows an interpersonal (or social, or collective, or institutional, or group) Super-Ego structure, while, from the Ideal Ego, follows an individual (or personal) Super-Ego structure. In such a way, any human being has two contemporaneously psychic structures, an Interpersonal

[18] We are more inclined to give greater weight to the lacanian mirror's stage and to the kleinian one (in general, to their theories), respect to the remaining. Following [59, III.1,2], the lacanian *spaltung* gives rise to a ego as subject of the utterance - denoted by Ego - and to an ego, as subject of the enunciation - denoted by (Ego); these two instances are different, and are due to the fact that the child undergos the influence of the society with its culture, language and organization. The Ego pertain to the lacanian imaginary register, whereas the (Ego) pertain to the lacanian symbolic register. The real essence of an human being correspond to the (Ego), whereas the Ego is the alter-ego, in not the subject but the role, the personage, the place of all imaginary identifications of the subject. Lacan states that this spaltung is similar to the freudian disavowal (see [60, p. 213] and [..]). Moreover, following [77, Introduction], in the objectified subject, Lacan sees a superficial subjectivity, socially constructed, that is the Ego, corresponding to the 'generalized Other' of G.H. Mead (see later) or conceivable as a 'social invention' in the sense of H.C. Shands. In short, Lacan states that the subject receives its own determinations from (unconscious) identifications with the various sociolinguistic systems (as the family, the social group, the social class, etc). Moreover, on this point, J. Lacan and J-P. Sartre agree on the fundamental indeterminacy of the human subject, but with different positions as regards the objectification ways: according to Sartre, the subject is self-determined by its personal choices and actions, uppermost and beyond the sociocultural conditions (determination of the Individual Ego), whereas Lacan, as seen, rejects this sort of 'illusion of autonomy' in favor of a substantial alienation of the subject. See also section 9.

Psyche structurally formed by the agencies Id-Ego's Ideal-Interpersonal Superego, and an Individual Psyche structurally formed by the agencies Id-Ideal Ego-Individual Superego. These two psychic structures are in dialectical relationships and, in normal conditions, must be both present, in an integrated way, in every human being. The Individual Psyche has an evolution according to an epi-ontogenetic time, while the Interpersonal Psyche has an evolution according to a phylogenetic time[19].

We now want to justify the above proposed new interpretation of parts of the freudian psychic model (which will be also retaken in section 12).

The concepts of Individual and Social Super-Ego have been first proposed by many Authors, among which R. Laforgue in 1951 (see [46], [47] and references therein; see also [20] and the Appendices of [48]), where, among other things, he notes as it has been underestimated the influence of the mother Super-Ego, respect to that of father Super-Ego, on the child's psyche development[20]. Sigmund Freud, in *Massenpsychologie und Ich-Analyse* (1921) resumes the concept of 'collective soul' by G. Le Bon[21] and others, saying that it cannot exists an isolated Ego[22], whereas W. Reich speak of a 'mass unconscious' (see also his *The Mass Psychology of Fascism* of 1933). Herbert Marcuse, in [50], speaks of a return of a repressed material into civilization and related influence on its social structure. Marcuse considers the

[19]The fundamental biogenetic law - first quite implicitly sketched by O.F. Müller and, subsequently, explicitly formulated by E.H. Haeckel (1866) - may be interpreted as valid along the development of the Interpersonal Psyche instead of the Individual one (see, for instance, [68, Cap. 5, p. 102, footnote [3]]), even if it may be also assumed valid for certain developments of the Individual Psyche (according to the freudian model); in short, we may suppose that the Müller-Haeckel law be valid for the general psychological aspects, and not the biological ones, of a human being. Moreover, there are important studies on the distinction between psychological time and physical time: for instance, following [227], the psychological time do not follows the laws of the (Individual) Ego but depends by collective environmental circumstances in which the Individual lives. Over 150 years of experimental psychological work prove that there is no a bijective correspondence between the psychological time and the physical one, that is to say, the flowing and the continuity of the psychological time are, in a certain sense, independent by the flowing and by the continuity of the physical time. Hence, the psychological time has also a cultural and social nature, that is, it may be correlated to the Interpersonal Psyche and not the Individual one.

[20]This last remark will be more clear when we'll talk about the system of mythical complexes and its influence on the psychic development.

[21]See also the text *Les lois de l'Imitation* (1890) by Gabriel Tarde, one of the founders of Social Psychology. However, many other Authors of Social Psychology are remembered in the already mentioned freudian paper *Massenpsychologie und Ich-Analyse,* which will be further recalled later.

[22]At this regard, see the Preface of H.C. Shands to [77] (page 14 of the Italian traduction).

possibility of existence of archaic structures of Individual and Social Ego; the Eros (against Thanatos) is assumed to be the essence of the being, and a certain space of freedom makes possible the expression and the sublimation of part of the Eros towards creative aspects, provided that there is a substantial differentiation between the narcissistic Eros and the social one. The society is a complex real dynamical system, where the individual identity (*Selbsichkeit*) must find own place compared to the group: often, it is sacrificed the individual identity compared to the group one. According to Marcuse, the right identity dialectics consists of an equilibrium between the being itself and the responsible group identity (the last acquisition recalls the kierkegaardian ethical living[23]). Elliot Jaques (see [51]) speaks of an integrative reticulum between the personal and social world of an Individual. Raymond B. Cattell (see [73, Chap. 16]), through quantitative methods (statistical factorial analysis), has established the existence of individual (or innate) tracts and environment (or social) acquired tracts; he moreover has introduced the concept of *group syntality,* that it is the group (or social) equivalent of the concept of individual personality. Georges Devereux (see [52]) has defined an "ethnical unconscious" typical and characteristic of any social group; further, every social group has certain defense mechanisms to remove (or to suppress) certain instincts and wishes: these mechanisms are cultural elements introjected since birth through the education and acting at the unconscious level. Herman Witkin and coworkers (see [53, II, Capp. 6, 9]) distinguishes between 'global' and 'articulated' subjects: in the firsts predominates the social psyche, whereas in the seconds predominates the individual one; moreover, the first subjects, in contrast to the seconds, are unable to perform structurally a Rorschach's test. The unity of Individual Psyche and Interpersonal Psyche may be historically traced in the *Umwelt* of J. von Uexküll and in the *individual psychological field* of K. Lewin (see [53, II, Cap. 7]). Carl G. Jung has formulated the concept of *collective consciousness* reconnecting to the anthropological concept of 'group consciousness' of L. Lévy-Bruhl; he further defines a personal (or individual) unconscious and a collective unconscious as components of a unique unconscious structure (see [49, Cap. I, § 2]). Moreover, C.G. Jung considers the Ego as a very particular agency that has both an unconscious and conscious dialectical aspect, from which he distinguishes a personal part and a transpersonal one: the first is designed as individual, the second as collective (see [8, Cap. 7]); it is no possible to leave out of consideration the differentiation of the Individual from

[23]For the distinction between the ethical and aesthetical living of S. Kierkegaargd, see [53, II, Cap. 9]. Moreover, the Author of *Aut-Aut,* already speak of a social-civil Ego and a personal Ego.

his collective psyche (see [8, Cap. 5]); certain jungian theories have had an anthropological application and interpretation from one of his followers, precisely by John Layard (see [58, Cap. 12, § 12.3]). Gaetano Benedetti (see [74, IV, Cap. 3]) emphasizes the important role of the anxiety in structuring the personality and in compel the Individual to adapt his behavior to that of the social group which it belongs. In the Preface of H.C. Shands to the volume [77] (see page 14 of the Italian traduction), it are outlined some interesting remarks about the Super-Ego: precisely, he says that S. Freud have puts the major emphasis on the origin of Super-Ego from the end of Œdipus complex, but neglecting the fact that many other institutions set up a collective form for the development of a new Super-Ego (that Interpersonal) in competition with the old one (that Individual). After, among other things, we recall the distinction between 'external functions' and 'internal functions' of the Ego in the sense of D.J. Levinson ([54]), the splitting phenomena of the Ego by R.D.W. Fairbairn (see [6, Cap. VII]), the ontological insecurity by R. Laing ([176]) with his Interior Ego and False Ego, and the purified-pleasure-ego by G. Deleuze and F. Guattari (see [187] and [188]) who distinguish between an Ego and a non-Ego.

7 Anthropological considerations: II

To this point, it is no possible do not mention certain fundamental related theories of the so-called culturalist or anthropological psychoanalysis. Following [55, Chap. 3], George H. Mead, extending the above theories of W. James and C.H. Cooley, formulates a concept of *Self* as composed by an *I* and a *Me*: the first corresponds to the individual Ego, whereas the second is the so-called 'generalized Other', that is to say how one thinks own group perceives oneself, then corresponding to the social Ego. Through the generalized Other, the social process influences the behavior of each Individual involved in it, and it inserts as a determinant factor for the individual thinking mode. Following [56, Chap. XVI] and [57, Cap. 12, § 12.5], A. Kardiner defines the so-called *basic personality* that it is the average personality characterized by the common traits of a certain society and its culture; to the formation of it contributes the action of the so-called *primary* and *secondary institutions*: the firsts are responsible of the formation of the individual personality as shaped along the infancy, whereas the seconds correspond to the characteristic cultural elements of a society (religion, rites, taboos, legends, traditions, etc) responsible of the control of the instincts due to the influences of the primary institutions on the individual psyche. The basic personality is the result of the actions of these institutions by means of mechanisms of satisfaction, in-

hibition, punishment, etc. We shall return on other interesting aspects of the Kardiner's theory later. Following [61, Chap. V], the basic personality is constellated by personality characteristics alikes to the whole series of primary and secondary institutions, and it includes ways of thinking, aggregates of ideas, the formation of (a social) Super-Ego and the attitudes towards the supernatural. In other words, the specific conditions, existing in every culture, aims the production of a particular type of Individual, adapted to that culture. The variations respect to this common basic personality differentiates every Individual from the other within the same culture, and makes possible the identification of the individual character. Ralph Linton and Clyde Kluckhohn have tried to conciliate the freudian personality theory with the concept of basic personality (see [61, Chap. V]): they have identified a 'core' and some 'peripheral zones' into the personality of a human Individual; the core, substantially, corresponds to the individual (freudian) personality that develops according to S. Freud, whereas the peripheral zones are functional to the formation and evolution of the basic personality; core and peripheral zones are supposed to be independent. These Authors, moreover, states that every culture has the same above structure of the human personality, with a substantially rigid core and more or less variable peripheral zones; the core opposes strong resistances to the mutations since it represents a key element to the unity and integrity of the society: for instance, if it is not allowed a certain ritual practice to a primitive society, simply removing it, then the whole society may show signs of disintegration; the variation of the peripheral zones are quite irrelevant respect to the core, as regards this structure of a culture.

Nevertheless, subsequent studies conducted by R. Benedict and M. Mead, proves that it is no always true that core and peripheral zones of the individual personality are independent, whereas remains confirmed a substantial independence between the same components related to the structure of a culture. Following [58, Cap. 4, § 4.5], Ruth Benedict introduces the so-called *cultural patterns* according to every society adopts (suppressing the other) a particular model of culture chosen from a set of possible symbolic models (Dionysiac, Apollonian, paranoid, megalomanic, etc), aimed towards the integration of the various parts of the individual personality (such an thought current will be resumed by the anthropological interpretative trend of C. Geertz - see [58, Cap. 17]). Following [58, Cap. 4, § 4.6], the main meaning of the studies, conducted «on the field», by Margaret Mead, is as follows: they prove that to distinct cultural values corresponds different educational models, the latest giving rise to the formation of differently oriented individual personalities.

Subsequently, R. Linton introduces the concept of *status personality,*

namely, the social position and role imposed to the child since birth, that he consider more important than the Kardiner's basic personality; indeed, our own attitudes are immediately conditioned by the membership to a given social class that will lead to the structuring of a certain class personality (or status personality).

Cora Du Bois (see [58, Cap. 12, § 12.5]) have tried to confirm, «on the field», the Kardiner's and Linton's theses; her important ethnological researches was conducted at the people of Alor, from which was emerged the outlines of an individual Aloresian personality characterized by the lack of a sufficiently strong individual super-Ego, by a paranoid elements (as suspiciousness), by character instabilities (as apathy, insecurity, indifference). Such characteristics, according to Cora Du Bois, had to be put into relation with an almost nonexistent relationship mother-child in the Aloresian societies due to the fact that in it the women were deeply involved into the production of the agricultural subsistences; for these reasons, the mothers left their children in the village. As a consequence, the sense of frustration and of loneliness - loss of the object - would generated a difficult personality, and this difficulty of relationship with others would established the bases for the development of the (Kardiner's) secondary institutions as, for instance, the mythology, the war, the competition for the acquisition of riches, etc. From these results, Cora Du Bois have formulated the concept of *modal personality,* in a certain sense to be intended as the corresponding descriptive counterpart of the theoretical Kardiner's basic personality.

As pointed out by M. Harris (see [57, Chap. XVI]), the above mentioned "personality and culture" anthropological studies have been neglected because in the period when it were formulated there was no any diachronic study on the historical materialistic (historical determinism) confirmation of the psychohistorical. studies. Following [97, Cap. 21], some studies by D.M. Carmichael (see [254]) prove as the members of a (social) group reason and react according to rapid, reliable and stereotyped modes typical of a culturally conventional way of thinking. According to the relativistic conception, each society contributes to creates an its own personality type: for instance, according to R. Benedict, the individual personality reflects the ethos dominant into a given culture. This lead us toward the consideration of the existence of a certain "national character" which must not interpreted in racist term: following, for instance, A. Inkeles and D.J. Levinson (see [255] and [256]) simply consider the notion of national character in terms of modal personality in the sense of C.A. DuBois according to there exists a series of common characteristics into those single individuals having a given culture in common; from this point of view, the political and economic institutions play a fundamental role in the formation of this collective personality.

Finally, we recall the notion of *schismogenesis* by G. Bateson[24] (see [58, Cap. 16, § 16.2]) according which he indicates a differentiation process in the rules of individual conduct due to a cumulative (or collective) interaction among Individuals; it therefore concerns social group relationships in terms of duality between two main categories, called (by G. Bateson) *Eidos* and *Ethos* which it may be also related to the frommian duality respectively between Patriarchy and Matriarchy or to the jungian duality respectively between animus and anima. This process were developed by Bateson in his studies on schizophrenia, although he were contrary to the notions of collective unconscious and group thought. Moreover, Bateson has formulated an original theory of mind in which, amongst other, he also describes the existence of certain (interpersonal) interaction systems as supra-individual mental systems.

8 Psychobiological considerations

The elementary psychobiology puts the basis for the existence of a predisposition for a social psyche. Indeed, following [61, Cap. I, § 1], the Individual is not a passive or inert entity, but an active subject that work out the information coming from outside. Every Individual may be thought as a particular (biological) dynamical system continuously interacting with the outside: indeed, following [53, III, Capp. 1, 2, 3], from the application of the general system theory (drawn from the Cybernetics of N. Wiener), the human being can be considered as the result of evolution and mutation processes of the Primates, whom main phenomenon were the reduction of a set of inelastic, rigid and very specialized primary instincts (as known for the animals) to an its restricted subset of two plastic and less specialized instincts, the death instinct and the life instinct. These two last instincts are present in every form of life, and characterizes its evolution and behavior. Every form of life is a particular biological phenomenon that may be seen as a symmetry breaking phenomenon[25] (see [4, Cap. 8, § 2.1]) because it is the result of the passage from a symmetric state, that inorganic (racemic mixtures), towards an asymmetric state, that complex organic (mainly formed by L-amino acids

[24] Another important concept due to G. Bateson and coworkers, still correlated to their studies on schizophrenia, is that of *double bind* (see [264]), intended as form of communication coherent inside the familiar context but respect to the external one, for the construction of which he uses the mathematical logic type theory (on this aspect, we shall return later in Section 14).

[25] Another important biological example of symmetry breaking is given by the lateralization processes which stand at basis of the different functionality of the two cerebral hemispheres (see for instance [247, Cap. II]).

and D-sugars, that are, respectively, lævorotatory and dextrorotatory compounds). For human beings, the reduction of a set of rigid and specialized many instincts towards a single pair of less specialized and plastic instincts, represents the main characteristic that distinguishes a human being from the animals[26]. Just this loss of degree of specialization of the instincts has made possible a major degree in the object cathexis of the libido. Indeed, following a suggestion of S. Ferenczi (see [62, Capp. 1, 5]), since the conquest of the upright position, the the new anatomic conformation of the female genital organs has greatly changed; at the same time, the sexual receptivity is no limited to certain annual periods but has spread throughout the year (loss of œstrus periodicity) in a continuous manner. In such a way, the libidinous calls became continuous and were regulated by the epigenesis (that concerns the adaptive acquisitions, by an Individual, through his relationships with other persons, the social institutions and the environmental situations) due to the development of cortex and neocortex structures. The initial set of many rigid and very specialized instincts, typical of animals, has left some of its archetypical signs in the mid-brain and rhinencephalon structures, whereas the evolution of human being from the Primates has been characterized by the formation of the new neocortex structures (telencephalon, neopallium, etc), and, specially, of the frontal cortex specific ratio (or progression index): in fact, following [64, Chap. 4, table 4.1] (see also [63, Cap. 5, Fig. 5.5]), the frontal area is one that has undergone the major superficial extension compared to the remaining cerebral areas, along the evolution from orangutans to man. The evolution (mostly, qualitative) and differentiation of the cortical functions is at the basis of the complex behavioral repertoire of Mammals and of the intellectual evolution of Primates. The homination phase begin at the end of the hominid phylogenesis (see [63, Cap. 5, Scheda 5.1]), that we have seen to be characterized by the growth of cerebral cortex (and, in general, of the whole cerebral mass); the former, is due to many biological causes, among which (see [63, Cap. 5, section 60]) the development of prehensile hand, the bipedalism, and the optical focus, that has contributed to the formation of the consciousness, in continuous adaptation with archetypical quadruped instincts. The loss of degree in the acoustical and olfactory sensibility for hominids, were opposed to the increase of the optical focus that came to monopolize the control of the whole sensorial behavior: so, deprived of any form of posterior alarm system, the hominid could put in front position respect to the objects of the world in order to he can set and dominate it. The bipedalism and the consequent liberations of the hands, due to the use both of the tactile perception and the operational exploita-

[26]In this regard, see the next FAP model of H. Moltz.

tion, is at the basis of the space cognition: indeed, according to K. Lorentz (see [139]), by means of the prehensile hand and the reinforcement of the optical focus, has permitted the exploration of the interior space in which they lived, evaluates directions and depths; moreover, the standing position has made a particular anatomical re-structuration of the inner ear thanks to which the hominid have could experienced the three-dimensionality of space. From these extremely important experiences, again according to K. Lorentz, emersed a so-called *central model of space* deduced from a sort of primordial abstract representation of the three-dimensional space, not through the trial and error method (typical of the instrumental learning), but only through first forms of ideation[27]. The trial and error method is one of the main form of human learning due to the grief proved by human being respect to the other animals: in fact, he is the only living being that, because of the paucity of his instinctive apparatus, must alone to win a position in the world, to this anguishing situation reacting by compensation; from here, the sources of human learning, essentially practical in a first time, and subsequently ever more of transcendental nature until to become an existential need. Only in humans the desire and sexual availability was separated from the œstrus: all that has permitted the formation of a monogamic familiar ties, greatly reducing the struggles for the conquest of the female sexually active; further, this continuous sexual availability has conducted to a specialization of the man towards external activities to the familiar environment, hence to a reinforcement of the group activities (as foraging, hunting, fighting with other groups for men, and mainly care of offspring for women). The consequent high level of parental cares are specific of the human species, since, for secondary, or high quality, nest-building animals, the higher the cerebral dimensions, the smaller the rapidity development of the newborn, so that it results to be extended the period of dependence by parental cares; early offspring animals has a nervous system already matured at the birth, whereas no early offspring animals are characterized by a slow maturation of nervous system, hence they are need of a long dependence by mother. Again according to K. Lorenz (see [139]), one of the consequences of the slowdown of postnatal

[27]In this regard, recent important researches (see [66] and [213]) have indirectly proved the fundamental importance of the human visual perception (and of thinking for images) in the formation of advanced thought (like the mathematical one, as already observed by J. Hadamard in [5]): in fact, this research shows an incorrect representation of the ordered number line in subjects afflicted by the so-called spatial hemineglect, that it is a damage concerning the neocortex parietal area strictly connected with the higher mental elaborations of information coming from other areas (the parietal area is also involved just in the elaboration of some mathematical concepts). Such a research also proves a possible (visual) intuitive origin of the mental number line, isomorphic to the physical number line (in normal subjects)

development is the persistence of childlike characters in adults (neoteny): as a consequences, the human keep for a lifetime the tendency to play, to the exploration of the external world, and a tremendous amount of curiosity, all these characteristic elements of the human creativity. So, the long period of childlike dependence, the immaturity of the nervous system at the birth, and the slow process of encephalization with prevalence of the neocortical structures compared to the paleoencephalic ones, has led to a decrease of the instinctual behaviors (hereditarily acquired, hence rigid) and to an increase of plastic individual reactions and learning abilities, more adaptable to the continuous changing of the environmental situations. Finally, these reached monogamous relationships and the high familiar interactions has led to the origins (and subsequent increase) of social norms. The slow and long maturation of the human nervous system is characterized by a differentiation of the nervous cells and by the formation of a great number of neuronal interconnections, which may continue for a lifetime: it mainly begins from a neuronal tube (see [63, Cap. 6]) that afterwards it subdivides into three main vesicles, the Prosencephalon (or forebrain, from which originates the brain[28]), the Mesencephalon (or mid-brain - average brain) and the Rhombencephalon (or hindbrain - posterior brain); subsequently, the Mesencephalon subdivides into two part, the Telencephalon and the Diencephalon. The neuroepithelial cells of neuronal tube, initially undifferentiated, undergos a subsequent genic differentiation into neuroblasts (from which originates neurons) and spongioblasts (from which originates glial cells). In turn, the neuroblasts are classified into neuroblasts of Class I and neuroblasts of Class II: the firsts are rigidly determined by the genomic program and are formed first, whereas the seconds are more plastic and are formed in a second time. Marcus Jacobson and others[29] (see [67]) has proposed that these two type of neurons are at the basis of the interaction between the genetic hereditary programming (for neurons of Class I) and the environment effects (for neurons of Class II) over the development of the nervous system: indeed, the formation of Class I cells (neurogenesis) is predetermined (genotype), develops with very few variations and finishes with the birth (albeit the dendrites growth and the synaptogenesis continues for lifetime), while the Class II cells has a structure much more variable that may be modified by environmental changes along the ontogenetic behavior of the human being (phenotype). Other than the neurons growth, the maturation of nervous system also comprises the for-

[28]From the evolutional viewpoint, the Eyes starts from the Prosencephalon, that is to say, are part of the brain.

[29]Among which M. Rosenzweig, W. Greenough, H.F. Harlow, V. Denenberg and S. Levine (see [63, Cap. 11]), that have proved as the life environment changes may affects on the development of the nervous system and, hence, on the learning mechanisms.

mation of associative fibers (involved in high mental learning abilities) that links the various cerebral areas among them: this process is quite slow and ends around 20 years; also the formation of fibers for nonspecific afferents (as the important reticular formation) has a late maturation. On the other hand, the brain tripartite subdivision of P.D. McLean (see [63, Cap. 7]) into the spinal-medullary encephalon, the paleoencephalon and the neoencephalon, is approximatively compared with the freudian structural model of Psyche: precisely, the Id corresponds to the spinal-medullary segment, the Ego is localized in areas included between the neoencephalon and the paleoencephalon structures and the Super-Ego is put into correspondence with areas of the paleoencephalon; the reticular formation plays an essential role in the functional interconnections of these structures[30]. The behaviors from spinal-medullar and paleoencephalic structures, are also evident in adults whereas it, initially much instinctual and reflexive in the children, are progressively inhibited by a series of external conditioning (educational rules, social norms, and so on). However, for the human development from the primitive Mammals, the neoencephalon structures plays the major rule: in it, there are the main receiving and elaborating equipments through which it is possible to give a detailed representation of the external reality, to acquire cognitive processes of memorization and learning (also thanks to the formations of many associative areas), to allow the elaboration of sensitive and motor patterns, in such a way that it turns out to be possible the formation of individual schemes of problem solving and to inhibit the old, rigid patterns, coming from the paleoencephalic structures, and commons to all Individuals of the same animal species. As regards the interaction man-environment, following Howard Moltz (see [69] and [63, Cap. 10]), we assumes the relevance of the so-called *fixed action patterns* (FAP): it are patterns, of which are responsible the paleoencephalic structures, genetically determined and little changeable; some characteristics that distinguishes the various FAP are the stereotypy, the independence from an external control, the spontaneity[31], the independence from the individual learning. The stereotypy is at the basis of all FAP, and it is very rigid; moreover, all FAP are refractory to any intervention of the learning. According to some Authors (among which K. Lorenz, H. Moltz and N. Tinbergen), the FAP would the basis over which takes place every further, and more differentiated, learning: the main difference between inferior

[30]For instance, the cognitive theory of emotion by S. Schachter and J.S. Singer (see [63, Cap. 15]), has proved that this psychic function may be interpreted as the result of particular interactive mechanisms between the neoencephalic and paleoenecpahlic (by means of the autonomous nervous system) structures.

[31]One of the best known example of spontaneity is the so-called *vacuum activity* (or *vacuum behavior*).

and superior species lies in a major number of rigid FAP in the former and in a minor number of more plastic FAP in the latter; however, a certain reminiscence (in the paleoencephalic structures) of the original primitive FAP also remains in the superior species. The human subjectivity reaches the individual decisive threshold with the development of consciousness, hence with the acquisition of evocative memory and symbolic thought, with the reflection and with the associative processes by induction-deduction and with experimentation; then, gradually, it develops (according to J. Piaget - see [70]) some first forms of logic rules by means of *reflecting abstraction* processes from which it is possible to develop more complex reasonings, on the basis of less complex concepts that will be reciprocally re-equilibrated with the new acquired concepts. The reduction of the rigidity of the FAP have produced an open biological dynamical system interacting with the external environment, whose cause-effect actions is the result of the combination of an uncertainty rate, by a deterministic rate and by an organizational rate; the latter is the result of the so-called *clinamen functions* whose characteristic actions of interaction and feedback, gives rise to the organized action of own internal factors regulating those of external indeterministic and deterministic factors. The clinamen functions (according to N. Wiener) are the receiving agencies of the external information that will be elaborated and re-communicated to the outside by feedback. These functions mainly are used to the information elaboration and to the organization and stabilization of every open biological system, whom thermodynamical stability (hence, its existence) is strictly connected with the generalized Clausius-Prigogine law (see [53, III, Cap. 3]) according which, setting $dS = d_iS + d_eS$ (where d_iS is the variation of entropy of the system due to the internal irreversible processes, whereas d_eS is the variation of entropy of the system due to the interactions with the external environment - according to the *Clausius law,* is always $d_iS \geq 0$), for the stability of an open thermodynamical system, subject to irreversible processes, is necessary and sufficient that be $dS = 0$, that is to say, the entropy must be stationary (to be more precise, it is not excluded that may be too $dS \leq 0$). The stability of this type of systems is guaranteed by the negative variation of the so-called *negentropy* (or *syntropy*) d_eS opposed the variation of the entropy $d_iS \geq 0$ (that aims to destroys the system if it were only closed): in fact, the negative variation of the negentropy contrasts the destructive tendency of the (Clausius) entropy. In Cybernetics, the negentropy is identified with the Information[32] and the clinamen functions are at the basis of the

[32]The relation between Entropy (S) and Information (I) is of the type $I = -S$, being $-S$ called *negentropy* by N. Wiener.

mechanisms with which it operates. In psychoanalytical terms[33], the negentropy is matched with the life instinct (Eros) whereas the entropy is matched with the death instinct (Thanatos). Without any form of communications with the external (biological and social) world, such a system is inevitably destined to the self-destruction since $d_eS = 0$, and will predominate the entropy $d_iS \geq 0$: in the case of the human being, such a case correspond to the depersonalization phenomena, destructuring the personality (see [53, III, Cap. 4]), when are present conditions of social and sensory deprivation. On the other hand, we recall as every biological system can warrant (by means of its own receptors) its survival only when it is constantly informed of the variations which take place in the external and internal environment of the same system (see [258, Cap. 2]).

9 Psychoanalytic considerations: III

Melanie Klein and Jacques Lacan have been two important historic exponents of the psychoanalytic movement, and in this section we want briefly recall the main ideas of their thought.....

10 Social-Psychiatric and Social-Psychological considerations

To this point, further motivations to the existence of a Social Psyche comes from the Social Psychiatry and Social Psychology. In fact, following [53, III, Cap. 4], the study of sensory deprivation syndromes (an important chapter of Social Psychiatry) may be profitably available to prove the existence of a social psyche. Indeed, the main commons sensory and social deprivation syndromes are the following: a) a more or less deconstruction of personality; b) as a consequence of a), the subject feels this destructuration as a loss of the

[33]Nevertheless, as pointed out by L. Von Bertalanffy, this comparison (due to F. Alexander) between an human being and a organized thermodynamical system is much reductive because it cannot explain many individual phenomena typical of a human being (as the creativity, the exploration and cultural activities, the self-realization, etc). For a human being, it is not enough only to be in communication with the external world, but must mainly have a final aim, that is to say, it must have a teleological behavior subsequent to an arbitrary chose made through his free will (see [72, Cap. I]). Moreover, the chosen aim will be effectively achieved only when a human being has a sufficiently (bergsonian) *élan vital,* obtainable only and only when there is a harmonic interaction between individual psyche and social one; these last relationships may be better understood by the study of the sensory deprivation syndromes.

corporal scheme or of the sense of itself; c) the sensation of which at the point b), depending on the social or environment conditions, dynamically evolves toward consciousness disorders (as delirium, schizophrenic syndromes, etc). In the context of general system theory, such a depersonalization phenomenon may be interpreted as a direct consequence of an increases of the entropy. On the other hand, B. Ackner (see [53, III, Cap. 4]) has stressed as one of the main depersonalization syndromes is the not delirious nature of the depersonalization phenomena that are always lived in obsessional manner, as extraneous to the Ego; moreover, the sense of reality is compromised whereas the exam of reality remains intact: this fact may be used as a prove confirming the existence of an individual Ego (inferred by the just mentioned integrity of the reality exam) and of a social Ego (inferred by the above mentioned compromission of the reality sense). Moreover, as a further prove of what has just been said, E. Bleuler has noted a certain unreality sensation, that is to say, a sensation of being like an automaton because are no longer perceived the impulses of own will. Besides, on the basis of such criteria, it have been conducted further researches that has showed as depersonalization symptoms are widespread among normal subjects (that is, with an integral individual Ego, but with a compromised social Ego). The related symptomatology completely regresses with the cessation of the isolation conditions.

From what has been just said, it is evident the role played by the social relationships for the development of the individual personality. In this perspective, following [63, V, Cap. I], it is included Marxist dialectical and historical materialism as first form of a theory of the influence of social-economic forces on the individual personality. It follows the thesis of the positivistic sociology of E. Durkheim which claims the force with which the social structure it imposes on the individual personality; he moreover emphasizes the anomie condition in which it finds a human being when it is avulsed from the society in which he lives or when the latter has a system of commons social and ethical norms of reference, that it comes putting in a position of incongruence with the individual personality needs. On the other side, the human being may risk the alienation following the evolution of this term from the original political-economic sense of K. Marx to the concept of it in the sense of L. Feuerbach, according which this alienating condition is the act from which the man, unawares, creates a perfect 'deity' to whom to submit, alienating its own human properties with loss of the consciousness of Itself and of the own destiny and will, with passive acceptance of the ideological schemes (in this sense, the social psyche predominates over the individual one) that decides on its behalf. Following [76, Cap. 13], since the animal stadium, it exists a real polarity between the Individual and its group; the modern sociological literature says that the sense of Us precedes the sense of I, the former being

a content of the collective consciousness and much older and important than the latter that seems to be a tardive acquisition. Nevertheless, according to the jungian work *Adaptation, Individuation, Collectivity* (1916) (see [99, vol. 7, Cap. 6]), the (jungian) individuation and collectivity are a pair of opposites, divergent each other, since the former is rejected by the society until the Individual does not return the collective exigences or their equivalent. Jung says that the collective function is subdivided into two metapsychological equivalent functions: the collective function concerning the society and the one concerning the unconscious (so that, according to Jung, we have a sort of unconscious structure of the social institutions, approaching to the Lévi-Strauss thought), that is, Jung identifies a psychological representation of the society as having mainly an unconscious structure; hence there exists a tension between the social development and the personal individuation process the latter being much dependent by the civility and environment in which the Individual lives (see [137, pp. 126-127]). Again following [76, Cap. 13, pp. 244-245], the intensification of international relationships and the weakening of confessional religions will lead towards an amorphous massification not socially classifiable with a consequent nullification of individuation processes, giving rise to regressive evolution making us much similar to an insect society (see [79, Capp. 8, 12, 13] in which the Author rightly advocates a possible future involutive regression of the human society to the insect one due to certain loss of the ability to synthesize some useful enzymes, for instance, because of various forms of pollutions and contaminations - unfortunately, such a situation seems to be dramatically actual; on the same pessimistic line of thought is also [138, Cap. 12]).

From Social Psychology, it is possible to deduce further proves to the existence of a Social Psyche. Indeed, following [75, Cap. II], S. Moscovici states that the social representations are the object of study of the Social Psychology, being a social representation intended as an elaborations of a social object by a social group, having its own logic and language. The concept of *social representation* is due to E. Durkheim that originally distinguished between a collective representation and an individual one, also supporting the irreducibility of the former to the latter, that is to say, supporting the irreducibility of the social facts to explanations in terms of individual psychology. In [75, Cap. II, § 2], S. Moscovici identifies two main formation processes of social representations: Anchorage (analogous to the Categorization of H. Tajfel) and Objectification, that on the whole, may be thought in correspondence respectively with the psychoanalytic cathexis process and object choice (amongst other, fundamentals in the formation of the Ego agency); moreover, S. Moscovici and M. Hewstone identifies further aspects of the Objectification as the Personification and the Figuration, that may be also

put into correspondence with certain analogous psychoanalytic processes (as reification, metonymic processes, etc). Hence, the main formation process of a social representation is the Moscovici's Objectification, that makes it a real entity constructed by a social group (see [75, Cap. II, §§ 3, 4]). In [75, Cap. III], it is introduced the categorization processes and the intergroup dynamics according to H. Tajfel, showing the limits of studying this last dynamics in terms of individualistic reduction. This Author begins from studying the social-psychoanalytic works of S. Freud: precisely, in the freudian *Massenpsychologie und Ich-Analyse* (1921), it is suggested the hypothesis of a certain dynamical and structural homology between the intrapsychic conflicts and the interpersonal ones, the latter being mainly characterized by aggressive instincts towards the other groups. However, although it is certain the importance of these freudian social theories, nevertheless it do not take into account the unavoidable importance of the commons historical, economic and social situations of a given social group. Subsequently studies of H. Tajfel and M. Sherif (see [75, Cap. III, §§ 2-4]) proves as the individual psychological methods are not able to explain the intergroup phenomena, above all those pertaining the competitive out-group vs in-group processes and those concerning the behavior of each member respect to his own group. Experiments conducted by E.L. Hartley and R.A. Hall have proved as the existence of a pair *out-group vs in-group* be characterized by a intergroup competitive behavior (hence, of aggressive nature which may be interpreted as due to sort of instinctual repression - according to a marxist viewpoint). In [75, Cap. III, § 5], an experiment by H. Tajfel and M. Billig have confirmed the above conclusions, namely that it is just the social categorization, and not other factors, to induce the discrimination towards the other group (or out-group) and to favour the own membership group (or in-group). The social categorization process is inevitable because is at the basis of the formation of the own social identity and of the search of an own positive specificity; moreover, according to L. Festinger, in every Individual there exists the natural tendency to confront with others, first identifying with an own membership group. In [75, Cap. III, §§ 5-6], H. Tajfel and J.C. Turner speak of a tendency toward an acquisition of a social identity within a group, and distinguishing between an interpersonal (or interindividual) behavior (within the in-group) and an intergroup one (respect to an out-group) along a continuum range of variation comprised between such extremes; moreover, taking into account the definition of Nation according to R. Emerson, Tajfel identifies a cognitive, an evaluative and an emotional component of a group, that contributes to form the social identity. In [75, Cap. III, § 8], J.C. Turner and coworkers, state that the categorization processes in-group vs out-group depersonalizes the perception of Itself of each Individual towards homologation and stereotypi-

cal dimensions that defines the group membership role. In [75, Cap. IV], it is discussed the concept of social identity according to the school of H. Tajfel that also accepts some theses of C. Gordon and K.J. Gergen about the concept of Itself, distinguishing between a personal identity and a social identity of an Individual. Taking into account the above mentioned meadian conceptual scheme, V. Neisser (see [75, Cap. IV, § 3]) has identified multiple forms of the Self, as the ecological Self, the interpersonal Self, the extended Self, the private Self, and the conceptual Self. The ecological Self is the perceived Self respect to the life environment; the interpersonal Self is involved in the immediate, not reflexive interaction with another person; the extended Self represents the own experience; the private Self begins from the first awareness actions personally experienced by the child, and it correspond to the beginning of the heideggerian being-there-in-the-world (Mitsein), albeit such a form of Self date back to the studies of G.B. Vico (according to I. Berlin - see [152]); the conceptual Self gets its meaning from the cultural and social context to which the subject belongs, and from the ways with which it is in relationship with the others. The private Self corresponds to the individual Ego, whereas the conceptual Self corresponds to the social Ego. Moreover, Neisser states that the conceptual Self is quite praecocial in every Individual, being the information about others already available since the childhood.

Following [80, Cap. II, § 1], the most distinctive stretch of the human life is its social character, so that the study of human being is mainly a study of its social behavior. It has been said as there exist two main opposed psychological theories for the studying of the human behavior: that considering the behavior as an individual disposition and that considering the behavior as function of the environment. There exists a third trend, in a certain sense unifying the first two, namely the interacting approach, mainly based on the *field theory* by Kurt Z. Lewin (1951), according which[34] the human being behavior (B) is function both of the person (P) and of the environment (E), that is to say $B = f(P, E)$. In [80, Cap. II, § 2], it states as the human being has biological predispositions and preadaptations towards the social behavior, so that it is possible to speak both of a biological being and a social being, continuously interacting between them. Many researches confirms the existence of biological bases of the social component of the human being. According to H.R. Schaffer (see [157]) and E.R. Hilgard (see [119]), the development of the human behavior depends both by biological factors independent by the experience and practice, and by the learnings due to a well-defined historical, social and environmental context. On the other hand,

[34]Amongst other, Kurt Lewin was a student of the psychologist K. Stumpf and a collaborator of A. Einstein.

the internalization of norms and behaviors typical of the society, requires a minimal cognitive equipment (certainly having an hereditary component) without which wouldn't exist any form of learning. Because of the continuous dialectical interactions between the Individual and the environment, the components individual being and the social being are in continuous dialectical evolution. The social behavior do not must be intended as distinct from others type of behaviors.

According to [80, Cap. II, §§ 2.2, 2.3], the socialization process is sequentially composed by a primary socialization process and by a secondary socialization process, that may potentially last for a lifetime. According to [158], the child is a human being since the birth, whereas, instead, according to H.R. Schaffer, at the birth the child is essentially an asocial being but strongly preadapted to the socialization process via the above two mentioned steps. The primary socialization is ontologically undertaken since the childhood, it build the first meaningful world (like a sort of ethological imprinting) and is mainly based on the notion of "attachment" due to J. Bowlby, through which it is possible to prepare the subsequent social behavior: this attachment is a development of a personal link which arises from a initial impersonal attraction phase towards the members of own species. The parents are the main protagonists of this primary socialization via attachment and identification processes, through which the child acquires an own interior social reality from which builds up its own identity. The parents mediates to the child the social reality, according to a selection process characterized by their social position and ideologies. The results of this primary social behavior by means of the parental attachment figures is the prototype of every subsequent social relationships model. According to Schaffer, in this primary socialization process also takes part reciprocity phenomena: the reciprocity is the fundamental characteristic of the whole interpersonal behavior, and the language is the first form of reciprocity experimented by the child; supposing the language as the first interpersonal means of socialization, the hypothesis according which the human being has an innate predisposition to socialization, may find confirmation by some theories of N. Chomsky and J.S. Bruner, according which every human being has an innate linguistic mechanisms for language acquisition via the so-called LAD (Language Acquisition Device) and LASS (Language Acquisition Support System) systems, based on certain linguistic universals and on the ability to formulate and to validate hypotheses (by means of feedback on obtained results). Moreover, by the fundamental work of K. Lorenz, N. Tinbergen and K. von Frisch, it has been possible to ascertain (see [196] and [131, Cap. II, § 9]) as the human behavior is founded on biological mechanisms already present in animals: for example, many social phenomena (from group relations to the war) would be

the expression of survival species mechanisms of the animals world, so that there exists a common nucleus between the animal and human ethology. According to P.L. Berger and T. Luckmann (see [159]), the primary socialization finishes when the generalized Other (see above) is formed in the consciousness of the child, and at this point the identity of the child acquires stability and continuity. The end of the primary socialization, hence, coincides with the formation of the meadian I and Me, and, according to F. Carugati (see [161]), by means of the formation of the generalized Other (i.e. the Me), the social process influences the individual behavior, and vice versa, that is to say, the social process or the community are key factors in the way of thinking of Individual. After primary socialization process, takes over the secondary socialization process, and the Individual have already some fundamental social communication elements (as, for instance, the reciprocity, the intentionality, interactive and language abilities, etc) to take part to the social life; the child have acquired a first own vision of the world through the internalization of the reality mediated by parents, and have an own first consciousness of itself. Subsequently, takes part the secondary socialization process in which the Individual may go into in other social institutional sectors. According to Ph. Ariès (see [160]), this process is typical only of modern society with its imponent institutionalization: for the whole medieval epoch till to the modern era, the secondary socialization process were absent, being the young directly inserted in the community without any form of previous educational process, although it have had a more long weaning time respect to the modern one). Differently, the our current society depends by the success of its educative process, that starts relatively early. The socialization process is continuous since every Individual during its life, will come into contact with different cultural contexts, with their own norms, values, models of reference, etc. The social environment does not appear as a undifferentiated totality, but the Individual operates on it, a "social categorization" process (see H. Tajfel) through which the former will appear as a group of different social categories respect to which find place or less. In such a way, the Individual will choose a group respect to which primarily identifies itself (primary group), and eventual others as further possible identification groups (secondary, tertiary, ... group). The Individual mainly (but not only it) will acquire norms, values, knowledge, and a particular way of seeing the reality and world, of the own primary group to whom it belong. Hence, the continuous contact with multiple and various social group realities implies a continuous variation of own cognitive horizon and personal identity.

However, according to [95, Cap. 1], the various social institutions (societies, organizations, classes, communities, roles, systems, etc) aren't observable entities: the only observables are real persons in real places, with their

activities and products; these institutions are mere hypostatization, that is to say, are reified abstractions (mainly, of the entities related to the primary socialization process), that carry out the role of protagonists, so that the (sociologic) rhetoric ideology, as expressed by certain phrases like «the purposes of ideology», must be reduced to the concrete purposes of real Individuals collectively assembled; in general, these purposes are the (aggressive) purposes of those few who holds the power. This last point is further proved by some remarks given by J.A.C. Brown in [61, Cap. IV], according which, from the Œdipus complex (see next section 11), the need for a head and the quality of the subsequent social relationships are consequence of the childlike relationships entertained with the parents: these will influence both on the further relationships respect to those who follows in the authority position to the paternal figure, and on the relationships with the other members of the social group (often considered as rivals in obtaining the approval of the head-father). Hence, the role played by the entities involved into the secondary socialization process should be quite redimensioned (compared to that played by the entities of the primary one).

Along the socialization process (with its two sequential phases), every Individual may develops its own biological and social predispositions by means of a continuous and dialectical comparison with the Other, until to reaches an identity composed both by social and personal aspects. Initially, the child is essentially an organism, with a series of biological preadaptations, whose first forms of existence consists into a state of undifferentiation between itself and the human and physical environment. With a continuous process of various forms of Otherness or Alterity (during the primary socialization process), the child gradually develops a sense of differentiation between what belongs to it, from what do not belong to it, that is to say, the child learns to understand the splitting, needs to do, between who undergoes and who acts.

Henri Wallon has pointed out as the set of social relations is a fundamental requirement for the growth of the human being. For the constitution of the identity is also fundamental the fact that the relationship of the subject with itself takes place through the intermediary of the generalized Other, that is to say, with the phantasy (or imaginary ghost) of the Other that each one brings with it. In other words, the representation of the I and of the generalized Other cannot exist one without the other, that is to say, the consciousness formation cannot to leave out of consideration from the presence of others. To summarize, the elaboration of identity sentiment takes place along the series of relationships taken by the Individual with his physical and social environment, taking into account of the various perception sentiments that he perceives. The identity is not only built up in the course of interactions with

others, but it is also maintained by the social relations: in fact, everyone has need that its own identity have a social recognition, each of which engaging to be acknowledged in its own uniqueness. In conclusion, the own identity is the result of a social construction which is not fixed once for all, but it is in continuous modification in dependence by the various social interactions with which the Individual comes into contact. The social identity is not the sum of these various, possible social group identifications, but mainly it is the result of the identification with the primary social group prevailing in a certain moment of the life. Further, J.P. Codol (see [162]) states that many other personal elements (like the adoption of original behaviors, etc) contribute to the formation of the own identity other than the social one, so that we can to speak of a personal component and a social component of the identity of any Individual. It is clear as in the existential reality, we have a global perception of ourself, and we have the perception of a certain continuity between the most personal and intimate our own aspects and those most directly linked to our social memberships. On the other hand, W.R. Bion has deeply changed the psychoanalytic approach to social psychology considering the social group, like the Individual, having an its own psychology which originates at level of protomental phenomena, being the *protomental system* is the structural matrix from which stems the various emotive components of the basic assumptions of the (social) group mental life and in which the physical and psychic aspects are into an undifferentiated state. Into the social groups take places transference phenomena towards the leader, which constitutes the so-called "group culture" whose elements are unconscious and shared by all group members and which, in turn, it are the just mentioned basic assumptions of the given group.

From the above discussion, it is possible to infer (see also [75, Cap. IV, § 2]) as the formation of the I takes place from Me by means of *Otherness*[35] or *Alterity,* that is to say, the I represents the creative part of Itself respondent to the attitudes of others, whereas the Me consists of an organization of the ratings of others that the Itself reflects; the Itself is the result of a complex dialectical relationship between the I and the Me, and it cannot exist without the presence of some Other. The Me organizes and orients the activities of the I towards behavioral choices otherwise unrealizable if the subject were into a social empty.

Following [45, Cap. 4], the psychosomatic theories of F. Dunbar, J.L. Halliday and A. Mitscherlich moves from a material-ontological perspective according which the human organism must be intended in a psychodynamic

[35]The formation of the I from the Me is similar to the formation of the Itself compared to the Other within the kleinian paranoid-schizoid phase (see [62, Cap. 2, pp. 101-104]).

manner and dotted by social processes, being a common hypothesis of their theories that according which there exist primary behavioral and operative elements, that is to say, pre-individuals and pre-socials (in this regard, Mitscherlich[36] speaks of an entity analogous to the phylogenetic *protopsyche* of S. Ferenczi). In particular, J.L. Halliday (see [167]) states that in the socialization process it are acquired the behavioral models historically prevalent. The Individual is present only in the historically concrete structure of its personality as result of the acquired behavioral models based on social values, parental identification patterns and familiar education. Following this line of thought, it is important to recall the work of J. Piaget on *genetic epistemology* (see [445]) and the work of L.S. Vigotskij (see next sections) on the impossible separation between social and individual factors in influencing the human personality development (albeit with different weight given to each of them by the single Authors).

Following [78, Chap. V], A. Meyer prepares an original scheme called the *map of life* in which he have tried to outline the main life events of an Individual in order to identify their influences in correspondence to certain disorders. The subsequent work of W.B. Cannon (1929), H. Selye (1957), H.G. Wolf (1950) and others, have tried to verify, from the physiological viewpoint, the above Meyer's work, reaching to the conclusion according which it may exist certain mechanisms through which the social events can deeply influences the internal state of the Individual by means of neuroendocrine system. In [78, Chap. VI], the Author recalls a research conducted by A.H. Leighton and J.M. Hughes ([81]) according which the culture, the educational norms, the sanctions, the taboos and other forms of indoctrination, may promote or less certain personality traits, until to get mental disorders.

Finally, the final considerations by H. Dieckmann in [109, Cap. 10, pp. 135-136] also note as it has been thanks to the Psychoanalysis that it was possible highlighted as the development of the character largely depends by the socialization process that the human being must face. Initially, the Psychoanalysis has attributed particular attention to the personal triad mother-father-child in the formation of the character, without any consideration about the various psychological constellations of the environment. But since 1936, E. Fromm (as already said) had detected as the parents are from time to time the representatives of a given cultural group to whom they belongs, unconsciously absorbing of it the related collective structures with the corre-

[36]Inter alia, Mitscherlich has made important studies on the psychoanalytic meaning of town-planning theories, stating the potential psychic destructiveness of the modern city planning because of its structure that ignores the double fundamental human requirement of loneliness and real social contact. Another important study on urban anthropology has been conducted by E.T. Hall in [92]. These last aspects will be recalled later.

sponding ideologies and values, subsequently transferring these to their child by education[37]. The ethnological researches have confirmed the Fromm's considerations, proving how important can turn out to be the character differences, and related educational modes, into groups of populations with different sociological backgrounds.

For other interesting discussions on the social psychiatric aspects and social-political perspectives, see [141] (where, among other things, it are discussed other views on the modern psychiatry).

11 The Œdipus complex revisited

There have been many other important new interpretations of the Œdipus complex after the work of S. Freud (according which its conclusion leads to the formation of Super-Ego which directs the libido's ties towards social affective relationships). Here, we recalls the reinterpretations given by E. Fromm, N. Lalli, C.G. Jung, A. Adler, J. Lacan and others.

According to E. Fromm (see [82, Chap. II, § 2]), the freudian interpretation of Œdipus complex is not complete but only partial: indeed, he did not consider the social context of it, that is to say, as an aspect of patriarchal society[38], but considering it only as a sexual father-son rivalry due to the fact that Freud has examined only the first tragedy of Sophocles' trilogy of *Œdipus king.* Instead, from the consideration of the whole trilogy, Fromm deduces another possible meaning of the Œdipus complex understood as an emblem of the conflict between the matriarchal principle of equality and democracy (represented by Œdipus), and the dictatorial patriarchal principle of law and order (represented by Creon). The Fromm's interpretation is, in some respect, similar to that given by C.G. Jung (see later) regarding the fundamental role played by the matriarchal and patriarchal principles in the human psychic formation.

The remarks by N. Lalli (see [4, Cap. 55, § 2.5]) stresses the many possible aspects and meaningful viewpoints of the Œdipus myth from which derives multiple interpretations of it. The continuous interest for the Œdipus myth means that it must be the bearer of fundamental dynamics of the human being, that it symbolizes the search of the human being on itself and his

[37] These last considerations shows as there exists a certain form of bijective correspondence between the structure of the familiar nucleus and the structure of certain social groups, if we also takes into account what has been said above relatively to the hypostatization of the social institutions (see [95]).

[38] For a critical discussion about the determination of patriarchy, see [88, Cap. V], where, among other things, it is discussed some theses on the inevitability of patriarchy (see [203] and [88, Cap. V, pp. 156-159]).

destiny, and that it explicates the long and conflictual relation parent-child; these last are remarks commonly accepted by almost every Author.

From a global interpretation of the myth, it, first of all, represents a generational clash which implies another much deeper aspect, precisely the following: the need that the father recognizes the birth and growth of the son, that is to say, his identity, and, on the other hand, the need that the son recognizes the father, not neglecting it. The killing of Laius by Œdipus is not a revenge by the latter, but is the price that he pays for the lack of knowledge: it is this misunderstanding, linked to an annulment of the father, that will lead it towards a continuous search of truth and knowledge. This myth also tells us of the possible existence of two pair of parents (the natural pair of parents, given by Laius and Jocasta, and the adoptive parents, given by Polybus and Periboea), that is to say, that natural and the social one.

Following [109, Cap. 10], the jungian interpretation of Œdipus myth refers to the transition from matriarchy to patriarchy: according to C.G. Jung[39], this myth is the history of power complex concerning the conflict between father and son for the dominance of the kingdom. The power complex is not only the clash between father and son (or between the child and the puissant parents) but also it expresses something that belongs to our inner reality: indeed, the consciousness of our civility, structured according to a patriarchal model, leads to a power conflict respect to the compensatory function of (despised and opposed) matriarchal unconsciousness[40]. Taking into account the analogies between this jungian interpretation with that of Fromm given above, it is possible to give an eventual further interpretation of certain aspects of the kleinian Super-Ego formation: in fact, if we consider an early influence (corresponding to the freudian pre-œdipus phases) of the above mentioned matriarchal and patriarchal instances, then the kleinian maternal Super-Ego and paternal Super-Ego may be thought as the result of the action of the normative instances on the human psychic formation according to the respective prevalence of the matriarchal and patriarchal principles (see [128, Lezione seconda]). According to M. Klein, the Super-Ego is a dynamic and potentially evolutive agency, hence not static in the freudian sense.

Analogously, A. Adler gives a similar interpretation of the Œdipus myth. In fact, following [149] and [150], according to Adler this myth must be transvaluated: for instance, it is possible to infer, from the Hippias' dream told by Erodotus (in which the protagonist, aspiring to win his hometown, thinks of sleeping with own mother), as this myth symbolizes the aspiration

[39]John Layard has been an anthropologist that has applied the jungian theories in Anthropology (see [58, Cap. 12, § 12.3]).

[40]See also the original jungian combination of the Œdipus complex with his Electra complex (see [99, vol. 4, Chap. 9, § 6]).

to the domain.

Finally, following [59, Parte VI, Cap. 3], according to J. Lacan, the Œdipus function is strictly related to the overcoming of the alienating dual relationship via internal assumption of the triadic symbolic order (child-mother-father); it is preceded by an imaginary relation between child and mother, and it is concluded through a series of identifications by the subject with different ideals, from the childhood's ideals to the adult's ideals (beginning, in such a way, the cycle of Ego's formation), reaching to the knowledge of the Other. With the Œdipus function, the subject internalizes the so-called Father Law (that is to say, built up the Super-Ego).

A critical revision of the Œdipus complex has also been conducted by the Psychoanalytic Anthropology (see [58, Cap. 12] and [57, Cap. XVI]). The Freud's book *Totem and Taboo* (1913) represented the beginning of culture and personality studies according to the freudian ideas: in it, Freud has outlined interesting connections between the primitive human history and the structure of human psyche, among which the so-called Œdipus complex and certain motivations about the origins of the taboos, putting, as central element of reference, the concept of «emotive ambivalence» (respect to the patriarchal head) resulting from the originary guilt complex elaborated by sons respect to the killing of the father; from the consequent anxiety it follows the origins of totemism and the formation of the primary group (hence the first form of social group) in which every member has substituted its own Ego with a unique common ideal object (the totem), identifying each with other and directing their libidic cathexes toward the head (or totem) - see [61, Cap. IV]. In the subsequent book *Civilization and its Discontents* (1929), Freud has formulated some hypotheses on the origins of culture and social institutions again moving from the above mentioned emotive ambivalence, also taking into account some interesting points drawn from his *Mass Psychology and the Analysis of the Ego* (1921). These last points on the last mentioned freudian works will be, however, resumed later, because in this section, we want to resume some criticisms moved to the freudian Œdipus complex by some other anthropologists. The first criticism to the freudian Œdipus complex has been moved by B. Malinowski in his famous *Sex and Repression in Savages Society* (1927) starting from some of his studies conducted among the people of the Trobriand Islands which presented a monogamic parent structure with matrilinear descendence, characterized by a less traumatic and delayed separation from the mother cures (compared to the Western family structure) and where the authority principle were represented by the maternal uncle. Subsequently, E. Jones replied to the Malinowski's criticism in *Mother Right and the Sexual Ignorance of the Savages* (1924) stating the inconsistency of this criticism because the Œdipus complex, in the situation

analyzed by Malinowski, is referred to the sister (instead to the mother) and to the maternal uncle (instead of the father), calling it the *avuncular complex*; in such a way, the essence of the Œdipus complex is preserved and considered of primordial and universal character. Malinowski accepted the freudian theories but refused certain universal characters given to some of its principles: for instance, he admitted a general trend toward the incest and a certain universal subversion of the father's authority, but considering it as cultural facts susceptible of various contextual interpretations, and both oriented towards a common disintegration of the familiar nucleus considered as the basis of any form of social coexistence. The rehabilitation of freudian theories on Œdipus complex, were incurred by Géza Roheim, though he advocated a shift of attention from the paternal plan to the maternal one; in particular, Roheim deemed of fundamental importance the consideration of certain universal behaviors in the individual cultural elaborations, these last being the result of modifications of childlike behaviors in dependence of certain culturally determined customs.

From what said above, it emerges the importance of certain mythical complexes in the formation of the human psyche, the discussion over this argument being however much more wide, in the following sense. The fundamental formative influences performed by these mythical complex is part of the general role played by the past existence of the so-called *initiation rites* (see [62, Cap. 5, pp. 123-126]). These last rites, relegated in the collective unconscious as archetypes, have played a fundamental role in the development of Individuals and their social relationships, during the puberty, subtracting them by their families and makes them members of a tribe. Among them, we recall the father's authority and the son's obedience, the circumcision as father's castrating imposition to avoid the incest of the primitive horde[41], and so on. According to O. Fenichel ([182]), the purpose of these rites consisted in the search of an own identity within the society, through which every Individual finds a place into the world under the right guide of the social norms and laws without which it will be anonymous. During the puberty, the Individual forms its personality on the basis of what the society think of it (see the above discussion on the formation of the I respect to the Me, in the constitution of the Itself).

Nevertheless, among the mythical complexes, the main role is played by the incest, although its explanation is still quite unknown. In the previous sections, we are mainly exposed the Lévi-Strauss' viewpoints on it, considered the most reliable: according to this Author, the incest prohibition is

[41] The first who have explained the structure of a primal horde were C. Darwin observing the behavior of the great monkeys.

at the origin of the culture and of the social institutions by means of the consequent exogamy principle. Partial confirmation of these considerations of Lévi-Strauss come from the fact that the incest is frequent among the schizophrenic patients (see [172, Cap. 19, pp. 367-368] and [62, Cap. 10, p. 305]), taking into account the fact that, according to the modern psychiatric literature (see, for example, [170, Capp. 7, 8], [88, Cap. VII], [207], [217, Cap. 2, pp. 40-45]), one of the main etiopathogenetic cause[42] of acute schizophrenic[43] and delirious[44] disorders is of social nature[45] with a marked stress predisposition, that is to say, the environment is determinant in developing these types of diseases in predisposed subjects (we do not consider the chronic schizophrenia that, according to present state of research, it aims to consider as mainly due to multi-genetic factors, even if this point of view is not definitive - see [294] - respect to all possible influencing factors for the cerebral structural hardware and functional software); following [173, Cap. III, § 3.1, pp. 77-79], the main primary negative symptoms are social retirement, diminished emotional range, affective flattening, language poorness with restriction of interest and curiosity, and diminished sense of initiative and social interest, all related to the field of social relations. However, at this point, it is necessary to clarify further the etiopathogenetic framework of this fundamental psychiatric disease.

[42]However, many Authors agree on a multifactorial etiology of the schizophrenia (see [208, Cap. 3, § 3.7]).

[43]It is important the following remark: in this context, following [115, Cap. 20, § 20.1], we consider only the so-called *acute* schizophrenia and not the *chronic* schizophrenia; in fact, the former is assumed to be mainly due an environmental causes, whereas the latter is mainly induced by biological causes. However, in both cases, the main common symptom is the breaking with reality. In the follow, if not otherwise specified, when we'll talk about schizophrenia, we'll intend refer to the acute one.

[44]According to [174, Cap. 16, § 16.1], the delirious, hallucinations and autism are the main phenomena characterizing the schizophrenic syndrome. Nevertheless, to this date, there is no unanimous consensus on the symptomatologic classification of schizophrenia: some Authors (as T. Crow) consider a distinction between primary and secondary symptoms, others (as N. Andreasen) between positive and negative symptoms. Instead, as regards the disease etiopathogenesis, following [174, Capp. 7, 8], it emerges a very varied classificatory framework as concerns schizophrenia and delirious: for the first, it are called into question (with a varying and not definitive percentage of statistical incidence) both biogenetic factors (like neurochemical and neurophysiomorphological dysfunctions) and psychosocial-environmental factors, whereas, for the second, it is more inclined toward psychosocial causes being the biogenetic ones poorly significant. The schizophrenia, as outlined by [294], is the main paradigm of the psychopathology.

[45]In this regard, see also the discussion of the next Section on the Rorschach's test about a possible characterization of schizophrenic patients by high numbers of Orig and very poor numbers of Ban, that is to say with a real incapacity to socialization.

To this date, the genetic sources of schizophrenia is under experimental evaluation, so that here we restrict ourself to what is known in the ordinary literature on the argument. According to [174, Cap. 16] (which follows the DSM IV options), the schizophrenic symptoms are rarely evident or sensational but they emerge gradually and subtly; it do not mean a splitting of personality and do not imply a chronic alienation, so that it is incorrect to consider it a real chronic disease but a stable condition of vulnerability. However, beyond any possible definition of it, the crucial point of the related symptomatology is a certain sensation, difficult to explain, of modified relationship between itself and the external world, in which these two terms are often changed in the sense that every thing ceases to be indifferent but becomes psychotically self-referential; the relation with the external world is not the same as before. In many cases, there is social and familiar retirement, with affective inadequacy and the assumption of reflection and pseudoreflection expressions. As concerns the language, it is quite indeterminate and expresses the underlying thought disorders[46]); in its extreme expressions, the language disorder can reach to the construction of neologisms, paralogisms and various rhetoric figures, to the condensation of different words till to the schizophasia in which the sense is completely indecipherable. It is present loss of the ability to the associations by means of the loss of sematic and syntactic coherence or with the improper use of words ordered in paraphrastic or metonymic form. The perception disorders are present in most cases of schizophrenia; in the motor disorders, it are found ambitendency, automatic obedience and a very altered volitive and projecting capacity. Following the etiopathogenesis of [174, Cap. 7], the polygenic factor theory is that more in accordance with the clinic framework of the disease even if there is no any definitively proved theory; among the biological factors, it are considered some imbalances (especially at level of mesolimbic system - see [114, Cap. 21, p. 296]) of the main neurotransmitters (dopaminergic, noradrenalinergic, serotoninergic and GABAergic systems). Among the neuromorphologic aspects, much attention is puts on a certain cortex (and of the cerebellar vermis) atrophies, reduced radiodensity of the cerebral parenchyma and ventricular enlargements (deduced from CAT scan); on a certain reduced metabolism of parietal and frontal lobes, on an increased posterior metabolism and on certain anomalies of the hemispheric laterality (from PET scan); on a certain reduced frontal hematic flow (cerebral blood flow-CBF test). In a crossed-examination involving the CBF test, the PET and CAT scans, then it is mostly pointed out the frontal lobes dysfunction in the schizophrenia etiopathogenesis also connected with other dysfunctions of certain limbic structure (like hippocampus - see [294]): in particular, the results of the Wisconsin card sorting test-WCST and of the Luria-Nebraska battery show a reduced inhibition and feed-

[46]Among which disorganization, incoherence (like the "word salad" phenomenon), illogicality, derailment (that is, the passage from one argument to another completely uncorrelated), tangentiality (that is, answering in oblique way), assonance, thought block, increased latency in answering, etc. In particular, according to L. Binswanger, the derailment consists in answering (through *remandments*) following an its own disciplinary socially unacknowledged but meaningful for it.

back control abilities due to a reduced performances of the frontal lobes functions; an inefficiency of the frontal and prefrontal lobes in schizophrenia may be further confirmed by the behavior of patients subjected to prefrontal lobectomy which seems to show many aspects common to schizophrenic patients (see section 14 for a brief review of this last question). The EEG is quite normal in schizophrenic patients even if some of them show a prevalence of theta and delta waves and a reduced alpha activity; in this regard, it have been conducted some studies on the polysomnographic registration performed on schizophrenic patients (see [173, Cap. III, pp. 79-80]: it have no pointed out substantial differences between schizophrenic patients not pharmacologically treated and those under drug administration except a major decreasing of the total sleep time and of the NREM sleep time. In [289], E. Hartmann has pointed out a certain presumed correlative analogy between the deficiencies of feedback processes and norepinephrinergic (or noradrenalinergic) system, typical of acute syndrome, and the desynchronized REM sleep phase characterized by the same deficiencies, which gives rise a possible biological basis for the similarities between the dreaming and schizophrenia; the Hartmann's suppositions are also partially confirmed by what said in [293, Cap. 5, § 5.1.8.4] in which it is discussed a possible monoaminergic excess of defect as cause of schizophrenia: in particular, a noradrenergic deficiency may be correlated to the so-called negative symptoms of acute schizophrenia (see [173, Cap. III]), whereas an its excess may be correlated to the positive ones. The evoked potentials (EP) have noticed a marked hypersensitivity to sensorial stimuli with consequent compensatory reduction of the information elaboration at higher cortex level. The neuropsychological projective tests (as the thematic apperception test-TAT and the Rorschach's one) have noticed bizarre responses, whereas the Halstead-Reitan battery highlights a deterioration of the attention and intelligence, a reduction of the memory retention time and altered capacity in problem solving; the IQ decreases as the disease progresses. Linguistic evaluation tests by means of event-related potentials (ERP), have pointed out what follows: [299-301] and [311] have proved as the schizophrenic language has no relevant deficit as concerns the perceptive and morphological-phonological-phonetic aspects; [310] and [316] have noticed an almost syntactical correctness, whereas [305-309] and [312-315] have detected semantic and [302-304] pragmatic deficiencies: precisely, the schizophrenic patients are not impaired in syntactic structure assignment but show deficits in semantic-syntactic integration processes; however, this discussion about syntactic and semantic capacities of schizophrenic patients will be retaken later (above all when we shall discuss the lacanian theory). These last studies show difficulties in inserting the proper word meanings into the right contexts socially accepted: hence, the schizophrenic patient adopts an its own expressive non-homologated form, so showing to choice one of the infinite possible modalities of being-in-the-world, in the sense of L. Binswanger; according to this Author, one of the main characteristics of schizophrenia is the unavoidable tendency to find new symbols, neologisms, etc. On the other hand, many Authors have tried to study creativity starting from their previous knowledge on schizophrenia: among these, we recall S. Arieti (see later), the same E. Bleuler (one of the first psychiatrists, together to E. Kraepelin,

who studied this disease), S. Mednick ([296]), J.L. Karlsson ([297]) and A. Rothenberg ([298]) - see also [326-328]; the latter have pointed out a certain prevalence of psychotic states among acknowledged creative individuals whom separated psyche permitted them to consider extreme associations or connections[47] that a classified normal person would have considered disturbing or anxious in their own apparently strangeness (see also [299]). Therefore, a personality modality with a schizophrenic-like thought but also with moments of normal structuration and anxiety-free, may be considered as basic for creative personality. On the other hand, these last considerations find correspondence in a certain psychotic continuum model (see [294, Cap. 1]) according which there is a psychic dynamicity between extreme conditions represented by schizophrenia and manic-depressive psychosis between an intermediate state represented by schizoaffective and depressive diseases which may be noticed, although with very low intensity and duration, also in certain moments of normal subjects: the patient is an Individual who is definitively in one of these two extreme poles, whereas the normal subject oscillates continuously into this spectrum but without stay (for a certain time interval whom range is established by the various historic editions of the celebrated DSM[48]) into one of the two extreme; we propose a continuum triangle in which two vertices are occupied by the above range schizophrenia-manic/depressive psychosis, whereas the remaining third vertex is represented by the extreme depressive syndrome: the normal subject oscillates around the center of gravity of this triangle while the approaching to one of these three vertices means an increasing of the corresponding disease from borderline levels toward acute and chronic ones[49]. This continuum model might moreover find corroboration from what will be said in section 14 about our interpretation of the symmetric-asymmetric process by I. Matte Blanco in creative mathematical thought, according which the unknown (and not otherwise deducible) proof of a theorem, roughly speaking given by a logical connection between its hypotheses and thesis, may be

[47] J.H. Poincaré once said simply that the "creativity is to unite existing elements with new connections as long as they may be of some utility" (see [295]).

[48] This acronym stands for Diagnostic and Statistical Manual of Mental Disorders is the main nosological system as diagnostic and therapeutic theoretical tool for psychiatrists, psychologists and doctors which started from 1952 with the edition DSM-I till to the expected 2013 edition DSM-V. Its diachronic evolution may have some epistemological interpretations as we shall see in section 15.

[49] For instance, the progression of chronic schizophrenia may evolve from a neighborhood of the center, localized for example around the schizoaffective status toward the schizophrenic vertex with an increasing of symptoms from the secondaries to the primaries or from the negatives to the positives. The interior of this triangle may represents the set of the all psychopathologic modalities, whom center of gravity corresponds to normality. This triangle (which could be called *Klein triangle*) may have a possible psychodynamic explanation by means of the kleinian theory of the depressive and schizo-paranoid positions, an Individual being in a certain neighborhood located within this triangle according to its modalities and degrees of overcoming of these positions. However, a certain continuum from normality to psychosis through intermediate states may find an analogous in the Eysenck's concept of *psychoticism* (see [329]).

only found by the symmetric unifying thought: in this case, the symmetric thought, which completely pervades the schizophrenic mind, may play the role of source of new creative connections in subjects able to convert the resulting contents of this primary process to the secondary one (hence also according to S. Arieti - see later) in individuals with an appropriate asymmetric thought[50]. These last considerations might have partial confirm by the above mentioned researches on linguistic properties of schizophrenic patients according which they show a fundamentally integrated syntactic system but are deficient in syntactic-semantic integration and in semantic and pragmatic systems, so that a profitable creative thought can takes place only with the support of a well-established asymmetric thought; others important confirmations of this syncretic unifying thought in schizophrenia patients is due to the fundamental notion of *overinclusion* due to N. Cameron (see [327, Cap. 8] and [325-326]) and its generalizations. On the other hand, according to [317, Cap. 11] (and references therein) and [318], the schizophrenic patients (and also depressed and psychotic patients) are unable to conduct a correct syllogistic argument but able to perform a *weak syllogism* in the sense of E. Von Domarus (see [317, Cap. 11], [177] and [318-322]), which can be explained by the generalization and symmetry principles of I. Matte Blanco, taking back it to the metaphor paradigm ([319]): indeed, following [319], a typical weak syllogism is of the type «certain Indians are fast, the deers are fast, whence certain Indians are deers», that is to say, a schizophrenic patient reasons for identity of predicates and not for identities of subjects (or else exchanges the logical-grammatical status of subject and predicate, reasoning through a sort of primitive logic or paleologic - in agreement with Arieti), in accordance with the metaphor paradigm whom an easy example is «John is crafty, the fox is crafty, whence John is a fox»; the metaphor, on the other hand, is an essential linguistic paradigm also for normal individuals (see [324]). In conclusion, from what has been said above and from [330], by the ERP's analysis does not show anomalies in the mesoencephalic and rombhencephalic structures (like encephalic-trunk and thalamus ones) as well as we can say that the schizophrenic language has no anomalies of the language perception and decoding at phonological-morphological and syntactic levels; as regards this last level, the schizophrenic language does not show syntactic deficiencies as at first glance seemed to be, but instead it expresses an its own original and personal syntactic structure due to the schizophrenic characteristic to generate new or different experiential and linguistic worlds, corrects in its own form because of the absence of anomalies in the syntactic ERP. Instead, the schizophrenic language clearly shows, ever by ERP's analysis, difficulties in the contextual reintegration of the various processed phraseological meanings because these need (not so much therefore between the meaning of each word with another but) of a valid comparison with the social semantical context usually accepted and in which the phrases are generated; in short, to the schizophrenic

[50]In this regard, amongst others, three celebrated historical examples are given by G. Cantor, J. Nash and K. Gödel. However, for an interesting review of the relations between creativity and mental illness, see [327, Cap. 8].

patients creates an its own existential semantic (in the Binswanger's sense) isolated from that commonly used by the social community in which the linguistic elaboration has had place[51]. This further confirms the social alienation of the schizophrenic patient (it is a there-no-being-in-the-world), its problems at the semantic-pragmatic level and its lack of some reference point for their existential experiences: the unique possible reference point will be an anxious delirious[52] which will constitute the only its living reason. Hence, the schizophrenia has also constituted a valid paradigm to study creative personalities, leading to the common belief according which a very uninhibited personality is a fundamental element for creativity (even if it might also lead to some psychopathologic aspects) since it is freely leads on new associations and connections. The neuropsychological aspects are particularly important for us: according to modern perspectives, major attention is puts into the information processing in schizophrenic patients, in a certain sense reconnectable with what said at the end of section 8 about system theory; the schizophrenic patient is assumed to be invested by a very high number of informational inputs which does not adequately filtered and selected, in part due to the inefficiency of working memory (which plays a fundamental historical meaning of contextual comparison with past experiences and data). The schizophrenic patient is assumed to be interested by an altered information processing system: in particular, many functional aspects of long-term memory (except that of identification) are damaged, especially as regards the recall memory of images and words (see also [308-309]). In conclusion, in schizophrenia seem there be serious memory damages. Further notions about relationships between schizophrenia and mathematical reasoning shall be given in section 14.

The schizophrenic disorder is taken as basis for many psychoanalytic speculations (see, for instance, the use of this model as basis for the fundamental freudian work *On Narcissism: An Introduction* of 1914 - we shall return on this paper later). Taking into account the notable theories of S. Arieti, the consideration of the schizophrenic disorder is also coherent with this section: indeed, this Author (see [175, Cap. III] and [177]; see also [131]) has been a pioneer in the study of schizophrenia, whose theories has constituted a general model for psychotic disorders. According to this Author (see also [140, Cap. II, p. 89]), the schizophrenic thought, in the final fourth disease phase, have archaic and prelogical characteristics, and it is similar both to the primitive thought and to the unconscious thought of a normal person (in the schizophrenic patients, the unconscious seems to have became con-

[51] As we'll see, these considerations are important for a possible experimental validation the lacanian theory of psychosis.

[52] Since, there being such a large number of external stimuli which flow into it, the schizophrenic patient is no longer able to filter them, and so it is closes into itself taking the delirious as unique existential reference point, with an prisoner Ego, on which it build up all its existence and interprets the world (see [330-332]).

scious). The schizophrenic language makes use of paleosymbols, that is to say, symbols that do not belong to a collective codex but lies into a system whose referents are individuals, it is prelogical and characterized by a low level of abstraction; the latter forms the structure of the so-called freudian primary thought, distinct from the freudian secondary thought dominating in the formal-logical models of the waking thought above which Arieti locates a tertiary process as a result of the interaction between the above mentioned freudian processes culminating into the creative intuition[53]. In the schizophrenic disorder predominates mainly the first form of thought, that is reached at the end of a progressive teleological regression (according to the Arieti's terminology). Moreover, according to P. Federn and others (see [175, Cap. III] and references therein), the schizophrenia is an Ego's disease whose basic disorder is a sense of the Ego (or an experience of the Self) through which the Self and the external environment are normally distinct. To confirm the predominance of a social origins of the acute schizophrenic disease, it may be invoked some important researches by L. Bender (see [145, Cap. 5]) according which the pseudopsychopathic[54] schizophrenic children can be compared to the inmates with prison psychosis. On the other hand, G. Deleuze and F. Guattari (see [187]) have noted as the schizophrenic patients show a strong resistance to the œdipization process, that is to say, it escapes to any Œdipic or familiar reference; their disease is due to a (social) block of the desire's flow, whereas the paranoic patient desires this repression, identifying itself with the (capitalistic) State, whence it should exists a strict relation between the main schizophrenic symptom, the social retirement, and the Œdipus complex. On the other hand, some Authors assume the incest not as a real perversion but as a deviation of the impulse in the choice of the sexual object: this is not chosen out of the familiar nucleus (whence the origins of the socialization process) but internally to it. These last lucubrations may yield enough evidences confirming the fundamental importance of the incest prohibition (that it is an aspect of the more meaningful Œdipus complex) in the development of the social human behavior. On the other hand, following F. Héritier, a pupil of C. Lévi-Strauss (see [171]), the main consequence of

[53]These last considerations will be resumed when we shall talk later about the mathematical creative process.

[54]It has been seen as the main characteristic schizophrenic disorder is the social retirement whereas that characteristic of the psychopathy is the asocial behavior; further experimental observations have stated a certain coexistence of psychopathic and schizophrenic disorders (for instance, psychiatrists and geneticists have noticed that often it is possible to find psychopathic individuals in the families of schizophrenic patients). In this regard, L. Bender has defined a particular syndrome, called *pseudopsychopathic schizophrenia,* characterized by the symptomatic overlapping of psychopathic and schizophrenic disorders (see [145, Cap. 5]).

the incest prohibition is the exogamy law, and the ethnological studies confirms the fact that there exists a certain universal tendency to regulate the sexual relationships among close kin; moreover, other anthropological studies states the existence of a certain instinctive and natural aversion toward the incest[55], so that its prohibition not would be nothing but a cultural ritualization of this innate repugnance. Nevertheless, some Authors, like for instance M.K. Slater (see [183]), disbelieve in a real existence of proper incestuous phenomenon because of the same nature of the primitive societies in which the medium living age did not allowed the reaching of a mature sexuality of the sons respect to the brief life of the parents. Therefore, the main theory that cannot be rejected is the sociological finalistic theory due to C. Lévi-Strauss, according which the incest prohibition is at the basis of the origin of modern cultural and organized society against the savage tribes. According to Héritier and Lévi-Strauss, the primitive notions of identic and different are considered as stemming from a comparison between a symbolic vision of incest prohibition (related to the notion of difference) and the consubstantiality among the members of a tribe with their common totem[56] (related to identity notion). In such a way, the incest prohibition leads to the establish-

[55]The personal exigency which prevents sexual intercourses between close kin seems to be transmitted by means of mechanisms distinct from the biological ones although indirectly connected with them; these mechanisms are due to the particular ontogenetic organization of the human mind, to the different stratifications of the various logic and prelogic experiences and to the distinct structurations intercurrenting between assimilative primary aspects and secondary interpersonal ones. The rules whose are subject the human feelings represents the assumptions of the state of society.

[56]According to the totemic principles, there would been a substantial identity between the primitive clan and its totem, considering moreover the blood as a sacred symbol and the source of the community unifying the members of the same clan. Following a conjecture due to E. Durkheim, the blood of the own totem cannot be neither touched nor spilled, and it is particular dangerous in the form of menstrual blood of the own mother (thought to be the same of the totem one), so that the fear of contamination with the parental menstrual blood should have led toward the exogamy; also the defloration of its own future wife were delegated to a powerful and authoritarian figure (like a priest). Further, S. Ferenczi (see [85, Parte IV, Cap. I, p. 57]) has proved, from his children analysis, the existence of an identity between the father and the totemic animals as mythical repetition of the relative primitive representations. Finally, amongst other, we observe as, from the above interpretations of the totemic blood with its symbolic meaning, it will follow the future heated debate between consubstantiality proponents and transubstantiality ones (and other Christological and Trinitarian controversies) of the Scholastic Philosophy: see also section 14 for some other related remarks. On the other hand, the same Freud has pointed out the fundamental importance of totemism in the born of the religions as well as of the symbolic function: in particular, a symbol is not interpretable but only present into a relation (the relation man-divinity - see [87, IV conversazione, p. 111]). For a first study on the origins of totemism, see [111, Cap. 10].

ment of various exchange relationships and their regulation at every order, hence to the formation of the social structure. On the other hand, the incest is also incompatible with the same family life, destroying the unitary basic structure, because the necessary rituals of sexual seduction are in conflict with the hierarchy of familiar submissions.

The Œdipus complex, according to the freudian interpretation, falls into the above last discussions since it primarily denotes the strong remorse sense felt by the sons who killed their father (and also for the consequent fratricidal struggle). As a consequence of it, they decided to forbid to themselves the various women of the father clan, giving rise to the exogamy principle. Some ideas by F. Fornari (see [184] and [62, Cap. 10]) are coherent with the above Lévi-Strauss' considerations on the origins of culture from the incest prohibition: in fact, according to Fornari, the dissolution of childlike sexuality, the related amnesia and the incest denial, may be seen as the result of the cognitive development since the logic thought represses the omnipotence that feeds the incestuous wish.

To summarize, the net of social relationships determined by the exogamy principle (as a consequence of the first cultural norm, that is, the incest prohibition) realizes a largest social integration constituting the main aspect of the passage from the simian status to the human one, integrates the familiar nucleus and avoids the isolation of a clan respect to the others. With the incest prohibition and the consequent socialization process (already present in the primates) takes place the concept of exchange at first of women, then of material goods, till to the symbolic thought that allows the exchange of ideas and languages.

From the above discussions, emerges the importance played by the Œdipus complex and other similar ones[57], hence the more general importance of the role played by the myths in the formation and function of the human psyche (as confirms the fundamental work of C.G. Jung). According to [109, Cap. 10], following a positive tradition beginning from G.B. Vico (see the Proceedings of [152]; for the relations between Mathematics and Vico's epistemology, see [155, Cap. IX, § 6] and also [323]) until to E. Cassirer (see [185]) and C.G. Jung (see [8], [49], [76], [100-102] and [143]), the Myth is revaluated (respect to the negative consideration of the Greek Philosophy, especially by Plato and Aristotle) as an independent form of thought expressing the originality of think, so that must be considered on the same level of the rationality (compared to its own historical period). The myth-

[57]Following [62, Cap. 10, p. 307], S. Freud has considered the so-called *screening memory,* derived from his theoretical conclusions about the free association method and related to certain unconscious memories of more or less real incestuous events, but however related to mythical traces.

ical thought must not considered as opposed to the *Logos,* but preceding it: the myth is not only an initial explanation and a presentation of the reality external to the man, but (according to Jung) also a real explanation of interior psychodynamic events expressed in the universal language of the images (of the various archetypical complexual nuclei, called *mythologem*). This last thought by images do not corresponds to the known thought of the secondary processes, but it is intimately correlated to it (as we will see in the next sections). In the previous sections, we have mentioned the importance not only of the Œdipus complex, but of general mythical complexes based on the concept of *mythologem* in the sense of K. Kerényi (see [186] and also [93]). Again following [109, Cap. 10], it advocates the waiver of the primate of Œdipus complex in favor of a wider consideration also of the other great mythologems that in a vital manner there exist into the unconscious of our civility (collective unconscious), in order to reaches to a major knowledge of the human psyche. The essence and actuality of the Myth is strongly underlined by K. Kerényi in the second and last part of his fundamental book [93];.....(I parte del Kerenyi) according to this Author, the Myth is put as the intermediary between the past and the present ([93, I]), in a certain sense its essence being a something having to do with some form of elaboration of the reality ([93, IV]), and it is strictly related with the technological and political evolution ([93, VII, IX]). Following [94, Cap. XII, § 158], the Myth must be always considered as a precedent and an example respect to the (sacred or profane) actions of the human being and of its condition, that is to say, in general the myth is a precedent to the modes of the Real. It reveals an ontological and syncretic structure of the Real inaccessible to the superficial empirical-rationalistic understanding, and it cannot be in any case considered as a simple imaginary projection of a natural event.....(Eliade).

The role and function of the myth may be also invoked to explain the so-called *tarantism phenomenon* studied by E. de Martino (see [108]) and subsequently object of psychiatric research by G. Jervis (see [108, Appendice I]) and E. Giordano (see [200]): according to the first Author, this phenomenon is likely due to the influences of alienating cultural factors, whereas according to the second Author, the phenomenon must be explained as a form of superstition having its roots in the social backwardness that acts on the single through a degradation of the Individual when it enters into a given collectivity.

We conclude this section with the criticisms moved by G. Deleuze and F. Guattari to the Œdipus complex. These two Authors begin putting their own criticisms in [187] (see also [83, Linee di Psicoanalisi, Cap. 10] and [136]) in which, among other things, it starts from a consideration of unconscious as an entity whom main function is that of production, and not only of rep-

resentation, powered by the libido. According to *schizo-analysis* by Deleuze and Guattari (or science of desiring productions), it is "the paranoic father that œdipizates the son"; the unconscious is not centered around the family (as in the freudian theory) but it is in communication above all with the social field (as object of desire cathexis) which, in turn, determines the family; the desire is invested into the social community of which the family is only an its dependence. From a radical materialistic viewpoint, the subject is a *desiring machine* combined with other to form the various social institutions (called *social machines*) that, in the whole, forms a global social field crossed by the huge flow represented by the desire with its repression mechanisms.

12 Further critical remarks

In this section, we establish further remarks and considerations on what has been mainly said in the previous section 6. First, the two freudian topics should not be considered as opposed but complementary each other: the first topic unconscious-preconscious-conscious dates to 1900 while the second one Id-Superego-Ego dates to 1920. Following [132], the preconscious is mainly the place of memorization and verbalization processes, whereas the freudian Ego should be considered as a system of Ego formed by the Ego's Ideal and Ideal Ego; we have already introduced these last agencies in section 6 where, amongst other, it have been introduced the correlative Superego agencies by means of the action of a certain system of mythical complexes formed by all the primal phantasies (as constituting a phylogenetic heredity - see [28]) : here first we want to retake and study in deep such recalls.

From the extended interpretations of the Œdipus complex given in section 11, mainly emerges the twofold dialectical patriarchal and matriarchal mythologemic function. Further, by a deep reconsideration of the classical freudian works *Narcissism: An Introduction* of 1914 and, above all, *Psychology of the Masses and Ego's Analysis* of 1921, emerges a clearer definition of the agencies Ideal Ego and Ego's Ideal. Precisely, in the first, Freud analyzes the distinction between object libido and the Ego's libido: as regards the former, its maximal [minimal] value correspond to the loving [paranoic[58]] states, and this form of object cathexis is typical of the anaclitic modality of dependence by the object, whereas the diaclitic one does not have object dependence (and characterizes the narcissistic Ego's libido). Freud considers the object cathexis elaboration process as oriented towards real (extroversion) or imaginary (introversion) objects for anaclitic modality, or towards

[58]Freud considers as example the end-of-the-world imaginative ideas typical of certain paranoids patients.

itself for diaclitic one (both modalities being available, even in different measure, for each individual). Further, Freud distinguishes between a primary (childlike) narcissism from a secondary one: the first is characterized by a completely absence of any form of object relation and it is mainly predisposed during the intrauterine life (where there is an almost undifferentiation between the Ego and Id), while the second will characterizes the various subsequent Ego's identifications who have place during the childhood: from the first takes place the Ideal Ego agency whereas from the second takes place the Ego's Ideal.

These last considerations on the formation of the Ego's system will be in-deep retaken in the second 1921 paper in which the Author makes a careful study of the environmental and social influences on the Ego's formation. In fact, Freud first re-examines the main social psychological theories of the time, among which those of G. Le Bon, S. Sighele, W. McDougall, M.W. Trotter, G. Tarde and others, and after he consider the fundamental notion of identification among the members of a given primary group who show a mutual adhesion given by a common *Einfühlung* (assimilation of other sentiments) into the group leader as unique and common cathexis object, giving rise to the formation of the Ideal Ego (which represent the latter common object), and all that to the detriment of the (narcissistic) Ego's Ideal. Subsequently, Freud re-examines the formation of a social group considering it as the natural result of an innate gregariousness instinct according to M.W. Trotter from which the human being has become a cultural animal: these last considerations will be confirmed by the fundamental works of K. Lorenz, I. Eibl-Eibesfeldt, J. Bowlby and H. Haas according which there exist innate behavior modules in the human being[59], till to speak of a real *human imprinting* (see [130, Cap. XV] and [218, Cap. 7, pp. 184-187]). However, following C. Darwin, Freud starts from the animal gregariousness instinct to reach to the notion of primitive horde that he consider as the first nuclear model of human group; from a detailed study of this primite horde, Freud considered inseparable the individual psychology from the social one and from this historic-epistemological viewpoint he also considered a new interpretation of the analysis of Ego formation: exactly, he stated that the Ego undergone to a splitting under the identification forces coming from the various relationships of the Individual with different groups, from which it result the formation of two - in a certain sense antithetical - agencies, the already mentioned Ego's

[59]In particular, the studies of J. Bowlby have found confirms in the celebrated experiments conducted by H.F. Harlow in monkeys (see [216]), according which the premature total deprivation of the parental figure - above all, maternal - involves unavoidable and permanent perturbations of the social behavior of the infant (analogously to what takes place in the animal imprinting).

Ideal and Ideal Ego: various conflicts between them mainly generate the class of neurosis. However, the same Freud and his successors have no clarified the exact psychodynamical formation and the reciprocal relationships among the Ideal Ego, Ego's Ideal and Super-Ego (as observed by [68, Cap. 5]), except the considerable work of J. Lacan who has carry out a fundamental epistemological reconsideration of the above two mentioned freudian works to set up his psychoanalytic theory whose elements have been already mentioned in the previous section 9. In particular, J. Lacan re-examines (see [103, vol. 2]) the distinction between Ideal Ego and Ego's Ideal discussing the Lagache's work [40], starting from the notion of psychological field that every human being necessarily has and intended as set of the relationships of an Individual; through it the Individual is embedded into an antinomic dualistic position between the Ego's Ideal and Ideal Ego: the first, as model, is the result of a narcissistic identification toward the omnipotence, whereas the second, as aspiration, represents a form of submission to the omnipotence (of the power). In the relation of the Individual with the authority (the other), the Ego's Ideal leads the subject to the displeasure in accordance with the commandment of the authority, while the Ideal Ego, at risk to make displeasure, triumphs because of the pleasure who it feel in spite of the authority. According to O. Fenichel, the normality may be the result of a suitable arbitration function between these two agencies. According to Lacan, the Ego's Ideal is a symbolic formation which regards the unconscious coordinates, that is to say, it is a constellation of various images and identifications, that hypostasizes into this agency; the Individual, reduced to its most stupid reality, is however puts within a certain numbers of other individuals, in function of a common denominator which links them each other, doing to precipitate the Ideal Ego till to that miserable small leader which turns out to be the Ego's Ideal. Following [128, Lezione prima], narcissistically the Individual tries to find into the Ego's Ideal the confirm of its own Ideal Ego, that is to say, the (narcissistic) Ideal Ego tries to build up its own creature to have at disposition an image through which realizes itself, hence an its own model of Ego's to be achieved. The Ideal Ego of every individual always tries a higher, inflated image through which identified. This process takes place with a decentralization of the Ego: initially it is narcissistic and puts at the center of the world (the child Ego is omnipotent and always at the center of the situation) as Ideal Ego, while subsequently it begins to acquire the presence of the Other which causes the Ego decentralization toward the formation of the Ego's Ideal (of the Other); the Individual, along its ontoepigenetic evolution, will be characterized by an asymmetric dialogue between these two antithetic agencies, oscillating between the narcissistic predominance of its own figure and the recognition of the existence, the tolerance and the diver-

sity of the Other. Following [106, Cap. V], the distinction between the Ideal Ego and the Ego's Ideal is not present in the original freudian works but it is delineated almost contemporaneously by D. Lagache ([40]) and J. Lacan in the fifties, taking into account the previous 1932 work of H. Nunberg on the relations between the Ideal Ego and the formation of SuperEgo (from which it derives from the former) according which the Ideal Ego is an ideal of narcissistic omnipotence from which the Individual tries to move away but in which it aspires to return in psychotic states. Nevertheless, Lacan starts from the Freud-Jung debate on narcissism to establish, in his own way, an interpretation of the differentiation of these two agencies: exactly, the Ideal Ego is a narcissistic formation belongs to the imaginary register and who finds its origins in the mirror stage, whereas the Ego's Ideal is a symbolic formation able to organize the set of relationships of the subject with the others. The establishment of the dual relationship between these two agencies is denoted by lacanian algorithm O/o (or S/s) between the Other with uppercase O (the Significant S) and the other with minuscule o (the significance s): in such a way, Lacan re-establishes the Lévi-Strauss' splitting of the universality of the prohibition of incest given by the passage from the nature to culture by means of the opposition between the symbolic function given by the Father - representant of the culture and incarnation of the law - and the imaginary position of the Mother - dependent by the nature and forced (or convicted) to merge with the child as unique phallic object of a missing penis (from which it follows the disavowal mechanism, hence the symbolic function). From here, it follows the lacanian idea of the œdipus phase intended as passage from the nature to culture (lacanian œdipus passage). On the other hand, the human society is dominated by the primate of language (the Other, the significant), so that in the historic structuration of the personality of every Individual, the paternal pole occupies an analogous predominant position (name-of-the-father): the symbolic function of being Father is unthinkable without the category of the significant; therefore, the lacanian œdipus passage operates in the following manner: the Father, which is the incarnation of the significant S (and perched in his unique Ideal Ego), since he calls the child with its name, intervenes on it as deprivator of the Mother and, in so doing, he gives rise to the born of the Ego's Ideal (in the image of father's Ideal Ego). Therefore, the formation of Ego's Ideal (name-of-the-father) goes to the detriment of the formation of Ideal Ego and vice versa. Further, there exists a strict relation between the narcissism (hence the Ideal Ego) and aggressiveness according to Lacan (see [105, Cap. 1, § 1.5]):.....

Following [116, Vol. 2, Cap. 8, § 8.2] and references therein, it is possible to find further confirmations of our considerations about Ego's Ideal and

Ideal Ego: in particular, these Authors state that our epoch is dominated by narcissism and ideologies which are considered having common roots. These last have their psychoanalytic sources in infancy through the parental influences (in turn, deeply deep-rooted on their unconscious) which it insinuates themselves unconsciously and that will influence deeply on the subsequently psychic development of the child. These various acquired psychic contents might result to be confliction each other whose interactions may causes the various neurotic disorders above all of neurotic-obsessive type; their psychopathologic contents varies depending on the given historical period and related cultural institutions, but the forms remain equal (in accordance with the structural form invariance of C. Lévi-Strauss). The Authors in [116, Vol. 2, Cap. 8, § 8.2.1] consider an important clinical case (that of the patient Arthur Y) in which the German nationalsocialist view of the world has deeply influenced, in the sense clearly pathological, the psychic development of the patient which show a psychic structure similar to that of freudian Rat Man or that of the freudian Wolf Man which are the main psychoanalytic paradigms by means of S. Freud described the unconscious mechanisms of the neurotic-obsessive symptoms. These mechanisms are fundamental in understanding the transmission of the ideologies from one generation to another, from which emerges clearly the different roles played by the two agencies Ego's Ideal and Ideal Ego distinguishing between those belong to the group of material executors (that is to say, that of the active followers) or to the wider group of passive supporters (that is to say, the silent mass which adapts to every form of power) or at last to the group of victims. The family of Arthur Y had nazionalsocialist ideas and enthusiast supporters of A. Hitler which constituted the Ego's Ideal of the patient until to the late adolescence although initially his Ideal Ego were not that expected by the parents (who wanted adapt it to their common Ego's Ideal) causing the various neurotic disorders whom he suffered and that dampened every possible his positive vital sentiments. The patient told as he seen the world with the eyes' mother and not through his own Ideal Ego: the conflicts between the parental Ego's Ideal and the Individual Ideal Ego of the patient caused he psychic traumas among which enuresis and encopresis, annihilation anxiety and subsequent obsessive ideas. As regards the psychogenesis of the disorders of the patient Arthur Y, the Authors consider the various incompatible identifications mainly due to the internalization of the parental mentality which represents the first form of Ego's Ideal. Therefore, every group seems to have a proper Ego's Ideal (Super-Ego) whom the Individual may identify itself: therefore, the Ego's Ideal of the Individual starts its identifications with the first group who it comes into contact, that is to say, the family; this, in turn, will adapt its Ego's Ideal to the community whom it belongs, and so on, obtaining a cer-

tain inclusive chain of Ego's Ideal agencies which has been considered by O. Fenichel (see [182, p. 578]) and which is similar to the "onion structure" of the Ego according to Lacan (see [105, Cap. 1, § 1.2]). In [116, Vol. 2, Cap. 10, § 10.3], the Authors state that every Individual lives in a psychosocial reality whose subjective and objective components are mediated by the society, just through the multistructural Ego's Ideal.....

Following what said above, we first consider a phylogenetic unconscious composite structure in the jungian sense evolving according to a phylogenetic time inside which an individual unconscious (Id) of ontoepigenetic formation is formed according to an ontoepigenetic time by means of repression mechanisms experienced by the single subject. A preconscious structure (which may be led back it to the meadian Me and structured according to C. Lévi-Strauss) emerges first by physiological *sensation* and hence it has no psychological relevance until it is not processed by *perception* (perception-consciousness system): indeed, the former is a primordial elementary experience essentially operating at preconscious level whereas the latter is the main psychic activity in which operate personality elements like emotive conditions, learning, needs, etc, in organizing and structurate the sensitive experience according to the constitutional (like the nervous system structure) and acquired (like social-cultural experiences) factors. In the transformation process from sensation to perception a fundamental role is played by the cenesthesic system being the perception quite different from a simple addition of sensations because of the intervening of the above mentioned constitutional and acquired factors. After the perception, it take over *learning* processes consisting into a modification first of the perceptional content and subsequently of the behavior in dependence and function of the environment: the learning mainly derives from the relationships between the Individual and its environment again according to its constitutional and acquired factors. At last, after the learning, it takes over the *apprehension* through which takes place the object identification without any form of judgment, whence the *assent* by means of objectual cathexis giving rise to judgment processes. A fundamental role in the learning processes is also played by the conditional reflex mechanisms (according to the Russian school). In conclusion, a first form of the individual consciousness process is given by the sequence

$$\text{sensation} \rightarrow \text{perception} \rightarrow \text{learning} \rightarrow \text{apphrension} \rightarrow \text{assent}$$

the first three steps being those responsible of the formation of the perception-consciousness system (or preconscious, from the freudian topic viewpoint - see [28]), whereas the last two remaining are involved in the Ego's formation, that is to say, in the formation of the really consciousness function (or

current field of consciousness). The perception-consciousness system (or preconscious) is topically intermediate between the unconscious system and the conscious one, is dynamically governed by bound energy and by secondary process even if a clear-cut distinction is not absolute: indeed, some unconscious contents are modifiable by the secondary processes (like the phantasies) whereas preconscious elements may be manoeuvred by the primary process (like day-time dream residues); further, it may be correlated with the so-called *mental space* of an Individual as an archaic or primitive space which emotionally occurs (see [128] and [434]) and which cannot be related to the internal relations but refers to the external ones, to the external world and to relational movement with the Other. A fixed point of the freudian theory in that the main distinction between the unconscious and preconscious systems is given by the fact that the preconscious representation is closely linked to the verbal language, that is, to the word representation, and in this sense should be interpreted the lacanian conception according which the unconscious is structured as a language, which in our sense must be referred to preconscious instead of the real unconscious system. To this point, it is necessary to examine the psychoanalytic concept of representation and its variants.....

As already mentioned above, the freudian preconscious may be epistemological reconducted to the meadian notion of Me: following [75, Cap. IV, § 2] and [55, Cap. 3] (see also [205, Cap. V, § 9]), starting from the W. James' conception of Self into the two instances I and Me, C.H. Cooley (1908) were the first who showed the social nature of Self according which only through the social interaction the Individual develops the knowledge of itself and the sentiment of its own identity; he elaborated the notion of *looking glass self* that is to say, we understand that we are observing what the others shown to think of us, or the awareness of itself is due to what we see of ourself reflected from the others, anticipating the Lacan's mirror stage. Subsequently, G.H. Mead (1934) retaken these Cooley's arguments elaborating an explicit model of the human development. According to Mead, the Self does not exist at the birth but begin its development when its symbolic function takes place whom minimal requisite is the name assigned to it from the others which shall be used by the Individual with the use of the personal pronouns I, me, my; with these minimal linguistic capacities, it is possible to differentiate the Self and with the development of the language the Individual states an even increasing number of objectual relations: clearly, even in this case the meadian thought precedes the Lacan's one. The further development of the meadian Self depends by the interaction of the Individual with the various social groups whit which it enters into contact; according to Mead, this consciousness development takes place by means of the simple game and

the organized one respectively through which the Individual perceives a sequence of individual others and a global generalized other (the latter being constituted by the general group attitude given by the fact that the Individual internalizes contemporaneously and not sequentially the attitude of the all members of a group and this can takes place only detecting the common group attitude). Through the generalized other the social process influences the human behavior in a decisive manner. During the development of Self, two specific instances set in, precisely the I and the Me: the former represents the Self as subject whereas the latter represents it as object; the I is the response to the social situation (the attitudes of others) and is always unpredictable being presents to the consciousness only after that the response has takes place. The I characterizes the creative individual responses of the subject respect to the judgments and attitudes of others reflected by the Self in an organized manner to form the Me. The manifestation of the Self always implies the presence of the Other and for having a consciousness of itself (which lacks to the lower animals) an Individual must have internalized the attitude of the other to control (as feedback) of the action (as response elaborated by the I) which is going to do. Subsequently, it takes place a dialectical dialogue between the I and the Me where the latter tries to organize and to direct the activity of the former towards behavioral decisions which does not might to be made if the subject were into a social emptiness (and again we recover an antecedent of the lacanian thought). The dialectical interaction between the I and the Me may be conflictual and stressing also because the Me is not a monolithic and invariable entity but the confluence point of various contradictory, complex and ambiguous social expectations, giving rise to a mix of conformism and innovation, of impulsive and controlled responses. The central point of the above delineated meadian model essentially concerns the formation of the image of reality of an Individual by contraposition with our Me (and this point of view is also confirmed by researches of A. Giannini and M. Loprieno - see [440] and also [53, parte III, Cap. 4, p. 274] - where the Authors refer to the I instead of the meadian Me), so that if there is no reference to the Me then the Individual begin to feel experiences of emptiness and strangeness; the I needs of the comparison with the reality by means of the Me to reach a certain degree of independence from the instincts of the Id (which otherwise it shall takes the upper hand of the personality (see [53, parte III, Cap. 4, p. 276]). On the other hand, following [247, Cap. I], the personality develops through the institution of a relation of the type consciousness structure-universe structure, called *essential relation,* in which takes place a reciprocal and correlative structuration between the I and the external world, at the preconscious level, whom communication is mainly of linguistic nature; this relation is bidirectional in the

sense that the consciousness is made by means of the universe and, vice versa, the universe is made of meaningful contents (meanings) for the consciousness. Anomalies to the establishment of this essential relation are at the basis of dyslexia and of certain form of schizophrenia. Moreover, also the theory of identity of E.H. Erikson considers an Ego well organized in the framework of a social reality, within which coherently and continuously it develops through an integration of the past, present and future (see [205, Cap. V, § 10]). The above mentioned meadian I may correspond to the freudian Ego and hence formed by the two above discussed agencies Ego's Ideal and Ideal Ego: the first is formed in image and likeness (Lacan's mirror stage) of the meadian Me, while the second is formed by means of the usual freudian extended ontoepigenetic Ego's defense mechanisms (among which we also include the identification and individuation phenomena) compared to the unconscious acquisition of the first agency (which we basically might considers it coincident with the Me); in this sense, the vexata quæstio between the predominance of an innate or acquired nature of the human psyche may be quite reduced from this viewpoint since the former is explicated by the type and number of Ego's defense mechanisms adopted by the single Individual whereas the latter is manifested by the (unconscious - mainly, by means of pavlovian conditioned and unconditioned reflexes) acquisition of the social structure (through the formation of the meadian Me). Nevertheless, many elements induce us to believe in the existence of a third Ego's agency which we might call it *real* (or *transcendental*) *Ego*: among the motivations of its existence we recall (see [79, Cap. 12, p. 252]) the fact that the artistic and humanistic cultures (which cannot be reconducted to the action of the two above mentioned Ego's agencies) are considered as the highest aspirations of the Man in which it finds reasons of completeness, full manifestation of all its mental possibilities, interests and drives, along its life and work ethically conducted and commensurate with the technological and scientific cultures. Further, following [68, Cap. 7, p. 131], the freudian concept of morals may lead to certain contradictions: indeed, according to Freud, the morals takes place when the Super-Ego must regulates the Ego's requests taking also into account the Id's needs, generating moral anxiety, so that the more develops the consciousness, the highest the moral anxiety experienced; it is clear as this last conclusion is somewhat in contrast with the historic reality because the above mentioned morals concept do not corresponds to the philosophical one since the former is due to rigidity and severity of Super-Ego which most of the time oppresses the consciousness instead of help it to rise more. Therefore, the positive concept of morals cannot be reconducted to the Ego's Ideal agency (from which the Super-Ego arises, the source of a prohibiting negative morals) but it should be due to another higher form of Ego, for instance of

a type similar to that resulting from the jungian individuation process. The Real Ego might considered (see [128, Lezione Prima] and reference therein) the result of the natural teleological action of the Ideal Ego turns toward the reaching of a desired ideal and superior image of itself after the overcoming of the narcissistic principle of absolute and homogeneous identity (into itself), through the recognition of the existence of the other; doing so, the foundation of the really dialogue proposes the asymmetric true of every encounter where the Individual tolerates and accepts the diversity of the other discovering the reality of its basic loneliness characterizing the human condition (this being the main characteristic of the Real Ego); this anguished discovery may in part be removed by means of the humanistic and artistic contemplation as already said above. We may consider the formation of the two agencies Ideal Ego and Ego's Ideal along the kleinian schizo-paranoid position and the subsequent formation of the Real Ego along the kleinian depressive position; the meadian Me (corresponding to the Ego's Ideal) is the place of Super-Ego, which it may be a (freudian) paternal Super-Ego or a (kleinian) maternal Super-Ego (see [435]) and it should be structured mainly according to C. Lévi-Strauss' structural anthropology; further, the dichotomic formation of a paternal Super-Ego and a maternal Super-Ego may be for instance reconducted to the so-called *schismogenesis mechanism* of G. Bateson, or respectively to the dualistic contraposition between the Prometheus myth (regulated by the performance principle reducing the Individual to a passive producing unit) and the Orpheus-Narcissus one (mythological figures of the transgression of the order) - see [83, Linee di Psicoanalisi, Cap. 5, § 5.4]. A Super-Ego multistructure as induced by a preconscious structure (like the Meadian Me) is also considered by C.G. Jung (see [99, Vol. XVI, Part I, Chap. IX]) retaking a Lévy-Bruhl's consideration according which the Super-Ego is formed by various factors corresponding to the "collective representations" which Lévy-Bruhl posed as basic to the psychology of primitive man; the latter are general ideas and value-categories which have their origins in the primordial motifs of mythology, they governing the psychic and social life of the primitive man in much the same way as our lives are governed and moulded by the general beliefs, views and ethical values in accordance with which we are brought up and by which we make our way in the world. They intervene almost automatically in all our choice decision acts, as well as they being operative in the formation of concepts. With a little reflection, therefore, we can practically always tell why we do something and on what general assumptions our judgments and decisions they are based. For instance, the false conclusions and wrong decisions of the neurotic have pathogenic effects because they are as a rule in conflict with these premises (and this confirms how we have said about the origins of neurosis as due to

damaged relationships between the Ideal Ego and the Ego's Ideal). Whoever can live with these premises without friction fits into our society as perfectly as the primitive, who takes his tribal teachings as an absolute rule of conduct. These last Jungian considerations are very important to acquire the real structure of the preconscious Meadian Me, the place of Super-Ego structures.

The *Ego's triadic system* given by the Ego's Ideal, Ideal Ego and Real Ego includes part both of the jungian theory as regards the formation of the Real Ego through the individuation process and the three lacanian registers given by the imaginary order corresponding to the Ideal Ego, by the symbolic order corresponding to the Ego's Ideal, and by the real order corresponding to the Real Ego; moreover, from the just above mentioned psychic model, it emerges the fundamental importance played by the formation of the individual (or narcissistic) Ideal Ego respect to the Ego's Ideal (in image of the meadian Me) by means of the lacanian mirror's stage, hence the fundamental importance of the social-cultural background (represented by the meadian Me) in which the Individual is embedded: from here, the social psyche represented by the Ego's Ideal agency may be theoretically explained by means of the Individual Psychology by A. Adler (see [150] and also [149]), also particularly suitable to explain the relationships between the two fundamental Ego's Ideal and Ideal Ego agencies; indeed, following [83, Linee di Psicoanalisi, Cap. 2, § 2.3], the relationships between the Individual and its environment (which spans from the microsocial familiar environment to the macrosocial community one, in general following an inclusive chain similar to that of O. Fenichel - about the various forms of Superego - mentioned above) is one of the main research lines of adlerian psychology, as well as the inferiority complex. According to Adler, to avoid possible psychic disorders, it is necessary to give a particular education having the value of *social interest* intended as a metainstinct which is connate with the Individual but structured by the historical forms of its socialization (in that once again reconnecting to Lèvi-Strauss) which model the life stile that in the child begin to form around the first 4-5 years of life. To this end, a preeminent role is played by the maternal figure (or its substitute) through which are transmitted well-defined models of social interaction; nevertheless, beyond the hereditary and social-acquired character elements, the Individual has an its own active personal principle by Adler called the *creative self* which should be identified with the modality set with which the Individual build up its own attitude toward the life (hence it functionally is similar to the narcissistic Ideal Ego). Following [83, Linee di Psicoanalisi, Cap. 3], the jungian theory in a certain sense tries to conciliate many aspects of the freudian and adlerian theories by means of the theory of psychological types (duality between introvert and extrovert) considering

the following four fundamental psychological functions: thought, sentiment, sensation and intuition each of which is a manifestation of the libido, the first two being considered rational and the last two irrational; within the two introvert and extrovert types, we have eight functional psychic functions whose combinations give rise to the variety of human characters, according to the natural disposition of the Individual (Ideal Ego functions) and to the social-cultural context (Ego's Ideal functions). Often, in the combination of some of these functions, it is possible to have opposition and contrasts among them, leading to the various forms of neurosis which may be overcoming only by means of the occurrence of a further higher psychic function said *transcendental* (corresponding to the Real Ego formation of above) whom unifying and opposite overcoming activity is explained through the symbolic formation in the *individuation process.* This process takes place when there is an equilibrated and egalitarian distribution of the prevalence of each of the above mentioned psychic functions; the main final result of this process is the *symbol* from which C.G. Jung attains to the celebrated notion of *collective unconscious* as a form precipitate of the collective memory. Moreover, according to Jung, the symbolic formation is due to the psychic formation of the jungian *Self* (roughly, corresponding to our Real Ego) in which there is a particular interpenetration between conscious and unconscious.

At this point, in which we have seen as each of the main leading members of the psychoanalytic theory formulate an its own concept of Self (however, approximatively in correspondence among them), it is possible to consider the above discussed Ego's triadic system as unifying many psychanalytic theory of the Ego: from the adlerian one to the jungian and lacanian ones, all intended as completion of the initial freudian framework. However, as concerns this last point, we shall return on such a question at the end of section 14. Following [443, pp. 172-174] (see also [444, pp. 135-136]), the lacanian mirror's stage for the formation of the imaginary register (as discovery phase of the subject) has a biological foundation, that is to say, it must be intended in a biological sense.

13 Some notes on Historicism

This paper has been mainly conceived as justification of some principal aspects of the Collingwood's historicism already summarily remembered in section 1. To this end, in the previous sections we have tried to adduce some philosophical, anthropological and psychoanalytical considerations justifying these historiographical considerations, putting much attention on the possible existence of a psychic structure bearing all possible social determinants on the formation of the human psyche. In particular, it are not negligible certain psychanalytical considerations about Collingwood's historicism: indeed, following what said in [116, Vol. I, Cap. 1, § 1.3] about the understanding and the explain, it is mentioned a remarkable work by J. Klauber (see [189]) in which, starting from a rigorous analysis of certain epistemologic-foundational setting of Psychoanalysis, among other things he also states as R.G. Collingwood be was the first Author to propose the Psychoanalysis as Science of the Understand; further researches on this argument have been conducted by H. Home (see [190]) and C. Rycroft (see [191]). The Psychoanalysis provides notable tools for the various types of possible interpretations: indeed, following [37, Cap. 32, §§ 1-5], the Author reaches to a final chapter on the various possible types of interpretations after having analyzed, in the previous chapters 29, 30 and 31, the interpretation from the psychoanalytical viewpoint (understood as a technique consisting in realizing conscious the unconscious material); he schematizes the various types of possible interpretations by means of the following synoptic scheme

$$\text{Interpretation}\begin{cases}\text{historical interpretation}\\[2ex] \text{actual interpretation}\begin{cases}\text{transference interpretation}\\[2ex] \text{extratransference interpretation,}\end{cases}\end{cases}$$

being the actual interpretation the childlike one (and based on the conflict theory), in turn further classified by the transference theory (based on the common human tendency to repeat the past in the present). The Author underlines the importance of the historical dimension: according to M. Heidegger, the human being is time besides to being himself, that is to say, we are our past, namely in each our action we may to see represented our past, so that any human consideration must consider every Individual as a whole. Treating with the historical interpretation, necessarily we have to do with a certain *historical reconstruction.* It is a good thing to emphasize the fact that the just mentioned historical interpretation is intended in the individualistic sense by the Author, but, taking into account the discussions of the

previous sections of the present paper, we may extend this interpretation to a wider sociologic-historical interpretation, that is to say, related to the primary group whom the Individual belong. The transference is a fundamental psychoanalytic concept and it may have some no negligible influences in our historical context: according to [37, Cap. 32, § 4], it is no possible underestimate the transference phenomena due both to the environment context[60] and to the social group context in which the analyzed subject is inserted; the transference theory oscillates between two inseparable poles, that is to say, between the ahistorical field and the historicity of the subject. The transference theory puts into relation the present with the past of a subject: following some suggestions due to E. Servadio (see [86, Parte seconda, Cap. 9]), the transference, in the sense of S. Freud, is the unexpressed emotional charge that accompanies almost every human tentative of communications; it is one of the most primitive and universal human phenomenon, aimed to restore the lost primordial unity and to fill the initial empty between the Individual and the whole; it is fated to bridge the physical and mental gaps between human beings (when obstacles and frustrations seems insurmountable with the usual media), so that it is natural that it be accompanied by attempts to express the specific communication meaning through images, signs and symbols, often associated to a primitive language (but common to a given social group).

When one discusses of the social influences on the psychic human formation, it is no possible to avoid some mentions to the Soviet Psychological School, which, after 1930, considers the consciousness as the main object of study. For instance, L.S. Vygotskij and coworkers (see [131, Cap. II, § 8 and Appendices]) speak of a historicity of the psychic functions to mean the fact that these are not ahistorical entities but are the result of the influence of historic-cultural-social factors. According to A.R. Luria and A.N. Leontjev, the historic-social conditioning in the consciousness formation is one of the fundamental assertion of the Russian Psychology: in the child, do not evolves a preformed psychic structure, equal in every Individual, but there exists a certain psychic potentiality of genetic source (as, for example, the language[61] - to this regard, see the discussion of section 10) which will be different and will take the form (for example, as speech, intended as historic-social actuation of a language) in dependence of a given social-cultural context.

[60] In such a case, we talk about *acting out* type phenomena according which the subject cathexes its own desires into actions, instead to transform it into symbols which little by little will attain the consciousness (so that these type of psychic phenomena may be considered at the basis of symbolic process).

[61] This example is not fortuitous, because, following J. Lacan, the language has a fundamental psychic structural meaning.

According to A.N. Leontjev, the human being is the only living being having a complex neurophysiologic system of appropriation and assimilation by means of certain ontogenetic neoformations, called *functional systems,* and localized in the cerebral cortex (and object of neurophysiological research of P.K. Anochin and A.R. Lurija). The eminently historical appropriation and assimilation mechanisms, mainly operate through interactions of the human brain with the social-cultural environment via sensation, so that the biological hereditary properties do not determines the psychological capacities, which are substantially a social hereditary. Again according to Leontjev, the consciousness is the historic-social actuation of the psyche.....(Russian psychology).

From the viewpoint of natural sciences, K. Lorenz has already confirmed the need for studying an animal into its own natural environment if we wants to know its real behavior; further, it has been ascertained by the Biology (see [197, Cap. 2, II]) the fundamental importance played by the environmental influences on the human behavior in connection with its evolutive genotypic and phenotypic characters. Finally, J. Loeb has formulated a *theory of tropisms,* according which there exists a forced action (called *tropism*), towards the animal's behavior, instantly determined by field of forces (in this sense, the Loeb's theory resembles to the Lewin's field theory) present in the environment in which the animal stays (see [196]). However, we must stand quite careful to make easy generalizations and extrapolations from animal ethology to human one.

The Authors of [88] critically in-depth discuss the questions debated between the biological reductionism and culturalistic trends, trying to compare the related results with the intermediate unifying trend of interactionism. Nevertheless, none of these trends is considered more relevant respect to the remaining, each of which explaining a particular aspect of the vexata quæstio nature-culture (see above all [88, Cap. IX]).

Following the studies of the anthropologist E.T. Hall (see [92, Cap. XIV]), the Individual cannot separate itself from its own original culture, retaking some thesis formulated by C. Lévi-Strauss according which the culture is indwells in our unconscious[62] and without which it is no possible any relationship among human beings. The man and the complex of its exten-

[62]In this regard, the thought of P. Bourdieu (see [89, Cap. VIII]) is quite similar, since he asserts as the cultural and social institutions are symbolic reproduction of the ruling class by means of the so-called *habitus* that are essentially of unconscious nature (and which must be related to the structural unconscious elements of C. Lévi-Strauss). Following this last line of thought, we may be led to consider subsisting the Goldberg's thesis (see [203] and [88, Cap. V, pp. 156-159]) on unavoidableness of patriarchy, since from it derives any form of dominance.

sions (cultural and social institutions, cities, technologies and so on), forms a unique system of interrelations, which may be constructive or disruptive for certain verses. We have already mentioned above some principles of the fundamental structural anthropology of C. Lévi-Strauss, and here we confirm one of his important ideas, precisely that according which the origins of cultural and social institutions must be identified with certain unconscious structures (among which there are the myths). Following L. Fleck (see [198] and [112, Appendix, § 2]), it is no possible to consider (as made by the neopositivists) the *quæstio juris* (internal history) of a scientific theory completely divorced from its *quæstio facti* (external history) since every knowledge is always historically immersed into a determined cultural heritage which is a factor unavoidable from the knowledge process itself; the knowledge is not an individual process of a theoretical consciousness in general, but it is the result of a social activity, being the knowledge heritage already acquired due to a collectivity not reducible to an only one person.

The need for a historicist vision in Anthropology and Ethnology was strongly promoted by E. de Martino (see [58, Cap. 10]) in critical opposition to durkheimian school and to the functionalistic trend by B. Malinowski and A.R. Radcliffe-Brown, that de Martino collectively calls naturalistic trends. Ernesto de Martino criticizes to them a substantial use of positivistic methods which neglects the fundamental historical dimension characterizing such phenomena; he moreover resumes the main ideas of B. Croce, according which the scientific knowledge has only a technological and practical value whereas the real knowledge can only be historical, in the sense of *history of spirit* intended as conquest of theoricity levels and of self-awareness ever increasing; the only reality is the Spirit and the only manifestation of it is the History (see [142]). The demartinian positions however should not be confused with the German historicism of diltheyian and windelbandian-rickertian derivation, since the crocian-demartinian ones are oriented toward an historicist vision in the hegelian sense and to the diltheyian one for some aspects; as regards the former two positions instead we have a tentative to identify an equal methodological-cognitive statute between the Naturwissenschaften and the Geistewissenschaften[63] according to W. Windelband and H. Rickert, whereas such an epistemological community of methods does not subsist according to J. Dilthey (see [125, Vol. VI, Cap. VI, § VII]) . According to de Martino, it was necessary to attain a understanding philological reconstruction

[63]This line of thought will reach to the modern anthropologic interpretative trend in which, among other things, it is considered as fundamental element the symbolic function, typical of human beings (E. Cassirer), and the notion of *intersubjectivity* for many social elements (like practices, rituals, etc) according which these cannot be explained by means of individual psychic states or personal beliefs.

in the sense of G.B. Vico, where the understanding is intended as an idealistic understanding, that is to say, a remembering the historical moment in which began the given historical data under examination, until to reach to the demartinian concept of *presence* (in a certain sense, resembling the heideggerian *Dasein* but quite philosophically different by a more depth analysis - see [201]). By us, we however think that the historic thought of B. Croce has been misunderstood and underestimated by the positivist extremists: his ideas on moral and historical judgment may have interesting correspondences with our considerations, as well as other his ideas on historiography[64]

Since 1930, E. Fromm has pointed out (in [199]; see also [108, Appendice I, p. 290]) the need for to lead back the freudian investigation to the study of history and of the life objective conditions as the real sources of the standards of human behavior. Analogously, A. Riera Matute (see [202, I, § 1]) says that nowadays it is a common idea among psychologists to think that the social and cultural factors are determinants of the individual psychological conditions, and E. Fromm has been the one who introduced and developed this method of research, for the first time in the psychoanalytic literature ([199]).

P. Nora (see [192] and [193]) retakes the notion of *collective memory* (due to M. Halbwachs) as transmitted and constructed by a given social group, whereas J. Assmann (see [194]) speaks of *cultural memory* as a content of mythologems and symbols which are the genetic heritage of the representative forms of a social system (in a certain sense, following C. Lévi-Strauss). The relevance of collective memory in the present status of a society is considered as a fundamental historical exam by R. Bastide (see [251]), according which the classical freudian schemes are even valid, mutatis mutandis, for social-cultural and ethnic-anthropologic studies (see [146]).

All these discussions, I think, it should already be quite enough to justify a need for a historicist view also in Philosophy of Science, as it has already said by I. Lakatos according which «the Philosophy of Science, without History of Science, is empty, while the History of Science without Philosophy of Science is blind» (see also [27, Cap. I]). The historicist aspect is also traceable in the unavoidable ideological aspects present (after the kuhnian work) in the so-called scientific theories (see [89, Cap. VIII]) through, for instance, the imposition of certain paradigms officially recognized by the scientific community and that must be unquestionably accepted by their members. Such a question related to a common ideological acceptance of a paradigm by a

[64]Some ideas of B. Croce are critically and constructively resumed by some works of R. Cordeschi (see his Preface to [135]); according to this Author, as regards the history of Logic, there are neglected or abused entire sectors of idealistic historiography.

given social group (scientific or not) is also inherent to the historiography because, as noted by George Simmel (see [204] and [89, Cap. VIII]; see also [125, Vol. VI, Cap. VI, § VII] and [124, Vol. VI, Cap. VII, § 739]), a historic interpretation should refer to the construction of a model: to explain this point, we take a celebrated example discussed by the same Simmel, precisely the case study relative to the battle of Marathon. If one asks what were the causes of the Greek victory, according to Simmel it is no possible refer us to the individual behavior of every participant, but instead it is necessary to consider the fact that a certain Greek headman and a certain Persian headman have exercised a particular important persuasion role on their respective subordinates, so that it is more correct build up a credible image of a Greek warrior and of a Persian warrior in such a way to constitute an ideal warrior endowed with a conventional or abstract common psychology both to warriors and to the headman of each party. Hence, the correctness of these historiographical methods are further confirmed if we take into account of the existence of a given form of common social psyche (transcendent the individual one), just that considered by Simmel and assigned to each members of every party. This example explains the way of construction of a historical model in the sense of Simmel, according which the social psychology is the *a priori* of the historical sciences. The same ideas may be found in [18], where R. Aron exposes some his ideas on historical evidence and inference (some of which already discussed in the previous sections): for example, his discussion on the three most important element of a historical inference, namely historical comprehension, historical units and historical determinism[65], may be correlated with the Simmel's historical model.

For an important discussion on the existence of a metahistorical mind connected with the psychologic ontoepigenesis and phylogenesis, according to the main psychoanalytic exponents, see [7, Cap. 6], whereas for a non-orthodox viewpoint on History, Mythology, Sociological Anthropology and Psychoanalysis, see [234].

Following [220, Cap. I], the historicist viewpoint in psychology plays a role more important than the other disciplines; according to E.G. Boring, an expert psychologist can not do without a historical knowledge of its own discipline, whereas, according to E.A. Esper, states that the past is the only basis on which it is possible correctly set up each program of study. According to M. Wertheimer, the historic knowledge is useful from an epistemological point of view for unifying the various psychological theories or schools or for

[65] About the historical determinism, we briefly recall that B. Russell conceived the possession of the historical sense as a fundamental tool to predict the course of events (see [206, parte XIII]).

finding new relationships among these. Basically, there are two historical reconstruction methods: that personalistic and the naturalistic one. According to the *naturalistic* method, the scientist as person is not the unique one to can make a discovery or an invention since every innovation is seen as the result of the collective or social historic time (the so-called *Zeitgeist*) which reflects the leading or prevailing social-cultural models of thought of a given epoch that determine the acceptation or not of other, new theories; the scientific progress proceeds gradually by means of small and slow transformations without jumps or abrupt fractures. It is not the man the author of the history but it are the social institutions to form the man or else to accept or not its creations or conceptions also in scientific context. The naturalistic viewpoint is also confirmed by the case of simultaneous discoveries of the same things or much similar between them, conducted one independently by the other. Instead, the characteristics completely opposed to those of the naturalistic method define the *personalistic* one. Probably, the right and equilibrated viewpoint is that intermediate between these two, considering the great protagonists of the eponymy of the given Zeitgeist as the result of the personalistic elaboration of what has been made by its predecessors or precursors, chosen according to the rules and criteria of the social-cultural institutions of the Zeitgeist. Nevertheless, the Zeitgeist seems to have a major important role because, independently by the abilities of every man, if one does not reflect in the right manner the relative Zeitgeist in which it lives, then itself and its productions will be ignored or considered abnormal (in a certain sense, remembering the basic formative role played by the lacanian mirror stage in the consciousness process).

Finally, we conclude this section recalling some remarks on certain historicist aspects of mathematical philosophy of G. Frege, following [122, Cap. I] (see also [231]). According this Author, the mathematical entities constitutes a world of separated objects, not determinable space-temporally and not intuitable but, ultimately, ideal and ahistorical. In short, Frege consider an ontology of the abstract entities by means of the use of the historical method, putting in an intermediate position the mathematical entities between the sensitive objects and ideas (see [122, Cap. V]).

14 On the mathematical thought

The celebrated book of J. Hadamard (see [5]) represents one of the main studies on mathematical creativity and, as already said, in it has already been strongly underlined the fundamental importance of the unconscious work for the mathematical thought.

Before to expose further considerations on the role of unconscious on the mathematical thought, we resume, following [140, Cap. I] and [212, Parte III, Cap. III], the main concepts on some human psychic functions concerning us: namely, these last are the *perception,* the *memory,* the *ideation,* the *affectivity* and the *volition,* and we are mainly interested to the ideation since it is the main psychic conscious function concerning the mathematical reasoning. By means of the content of current and past perceptions, as fundamental material of the thought, it is possible to pass toward more complex entities, that is to say the *abstract concepts* (or *ideas*), through the ideation process. Putting into relationships among them the ideas, it is possible to construct the *judgments* which, in turn, put it into relationships among them, give rise to the *reasonings* which constitutes the higher expression of the ideation. Hence, the ideation built up through three faculties hierarchically overlapped: the abstraction faculty, the judgment faculty and the reasoning faculty.

The *abstraction* is first made possible by means of the association mechanism (like the association by contrast and by similitude, and so on) and the synthesis one, through which it is possible to pass from elementary abstractions to more complex other.

As well as the abstraction is a synthesis of representations, so the *judgment* is a synthesis of abstract concepts (or ideas), linked together by a formula of affirmation or of negation or of doubt.

Finally, the *reasoning* is a synthesis (or construction) of judgments because it consist in puts two or more judgments into relationship among them to obtain (by deduction or by induction) a new one, the conclusion. In order to be correct and valid, the reasoning must follow the rules of Logic and Criticism: the first consists in our mental ability, in part innate and in part improvable with adapted studies, to give to the ideation the schemes according which the various judgments can be correlated among them in such a way that the new derived judgment be valid and acceptable; the second, instead, aims not so much to the form (or technique) of the reasoning but to its substance, that is to say, it is another our mental ability, which consists in submit the new judgments, derived by each reasoning, to the control of the current and past (or experienced) reality, in order that be possible verifies whether these new judgments be coherent or not with these realities (in fact, not all that is likely is also true). It is remarkable to observe some considerations made by the Author in [140, Cap. I, pp. 29-30] as regards the unconscious: he states that it contains mnemonic traces, ideas and emotions surpassed, which may seems to be set for ever. It is just from this wide repository that it are constantly drawn the sources for the continuous psychic constructions who have places in the conscious field (like perceptions, ideas, emotions, etc) while other material is repressed. From it therefore orig-

inate all those psychic attitudes that seem come from our spirit, like from obscure and mysterious internal depth; so it provides the spontaneous and sudden decisions, the common intuitions and creative ones due to geniuses, the phantasy images, the dream material, and so on. The psychic processes analyzed so far, are mainly characterized by a state of psychic awareness, and it concern mainly the cortex areas (see [216, Cap. VII, p. 202]).

The human electroencephalogram (EEG) is different from that of the other animals for its variety of waves (see [216, Cap. IX, p. 277]): as concerns the ontoepigenetic history[66] of the EEG, this exam is mainly flat in newborns (though the EEG activity can be detected about three months before the birth - see [277, Cap. 6] - at low frequencies), begins to take shape around 18 months until to achieve its almost definitive adult type structure around 15-17 years (at high frequencies - see [277, Cap. 6]). It is possible to identify four main types of waves, namely the alpha waves, the beta waves, the delta waves and the theta waves[67]. According to [114, Cap. 21, pp. 292-293], [215, Cap. XXI], [115, Cap. 14] and [273, Cap. 7], during wakefulness the EEG reveals two fundamental types of electrical activities, the alpha and beta waves. The *alpha waves* have a frequency of 8-13 Hz and a voltage of 30-50 μV, and it occur mainly in the occipital zone but are also present in the parietal, posterior temporal and frontal zones; it are present in every awake normal subject but mentally (for example, not subjected to the resolution of a mathematical problem) and physically relaxed and not subjected to particular stimuli; it are no present along the sleep (except some of its fraction along the REM phase). The *beta waves* have a frequency of 13-40 Hz and a voltage of 5-10 μV; it are mainly present in the frontal and parietal (central) zones, are characteristic of an activation or alert (as, for example, an arousal one) state. The alpha activity vanishes, transforming into beta one, when the subject is undergo to a more involving activity (as, for example, to solve some mathematical problem): in this situation, the EEG is desynchronized likely because of the activation of the ascending reticular system (see [274]); moreover, the alpha waves have no place when the cortical zones are not connected with thalamus, so that it thinks that they are related with the aspecific thalamocortical system (see [114, Cap, 21, p. 293]). The *delta waves* have frequency of 0,5-4 Hz and an average voltage of about 150

[66]There exist important studies on the relations between this history and the intellectual evolution of the human being (see [277, Cap. 6]).

[67]Some Authors also consider a rare fifth type of waves called *gamma waves,* at very high frequencies of 40-50 Hz and supposed to be related to very intense mental activities, like excitation and alarm states (others consider such waves simply as particular beta waves of higher frequencies, whereas others consider them as related to the deepest unconscious states)). For recent reviews on this argument, see [278] and [279].

μV, characterizing the no REM deep sleep states, the electric activity of children, the psychomotor excitations and some pathological mental states; these waves appear also in animals whom has been separated the cortex from the thalamus, so that it seems independent from the activities of low cerebral zones. Finally, the *theta waves* have frequency 4-7 Hz and an average voltage of about 100 μV, also characterizing the no REM deep sleep states, the parietal and temporal zones of children, and certain strong emotional states of normal subjects (particularly in states of serious discontent and frustration). The delta and theta waves are also present in altered mental states. The ontogenesis of the EEG (see [215, Cap. XXI, pp. 347-349]) has a progressive development during the first seventeen years: at the birth, the EEG is characterized by a mixed delta and theta activity; from 3 to 12 months, it is dominant a delta activity with a subdominant theta activity and a slight beginning alpha activity in the parietal-occipital zones; from 2 to 5 years, it prevails a theta activity while the alpha activity becomes subdominant and prevailing in the parietal-occipital zones; finally, from the sixth year the electrical activity gradually becomes that normal (reaching steady states at around 17 years old), characterized by synchronized (like the delta waves[68]) and asynchronized (like the beta ones) phases[69] with the above described wave alternation. Hence, in summary, in the waking states, it records an asynchronous cerebral electric activity, whereas, when the subject is sleeping, the deepest the sleep the most synchronized the cerebral electric activity (with the exception of the REM phase - see [273, Cap. 7]).

The REM sleep is also characterized by structural and narrative content dreams (see [274]), where the events can be ordered in progression; its duration increase with the complexity of the cerebral system of the animal species: according to I.S. Beritashvilli (see [63, Cap. 17]), the REM sleep seems to be necessary for learning and for consolidation of memory. Further, the REM sleep is highly asynchronized (contrarily to the synchronized NREM sleep) despite a significant cerebral activity (the weakly or low frequency waves produced by this asynchronization for destructive interference, does not cause awakening). Finally, according to J. Jouvet (see [63, Cap. 17]), during the the REM sleep the brain is very active and is mainly interested by the receipt of endogenous medium-pontine activities (due to the so-called PGO/ponto-geniculo-occipital formations at the level of the occipital areas and of the mesencephalic reticular formation) that interest the

[68]Besides, these waves show an ipersynchronized function (see [214, Cap. 3, p. 86]).

[69]Roughly speaking, the synchronized [asynchronized] phase is characterized by the synchronized [asynchronized] or contemporaneous [sequential] functional activation of different cerebral zones (for more details, see [115, Cap. 14, § 14.1.1, p. 383]). As regards these last concepts, see also the end of this section.

major part of the cerebral structures; this complex activity does not take place according to casual mechanisms but it is regulated by a well-defined programm influenced by environmental and genetic bases, that is to say, it is phylogenetically set up. According to [215, Cap. XXI, pp. 350-353], the synchronization-desynchronization cerebral zones are located into the meso-diencephalic and rhombencephalic structures; for more information about these fundamental processes, see [275, Capp. 5-12].

Following [114, Cap. 21], the vigil waking states and mental concentration states are mainly characterized by asynchronous beta waves with voltage decrease and frequency increase[70], whereas the no vigil and relaxation states are mainly characterized by synchronous alpha waves which does not occur if the cortex areas are not connected with the nonspecific thalamocortical system; the beta waves also characterizes the REM sleep phases. According to E. Hartmann (see [289], [115, Cap. 14, §§ 14.1.2-4] and references therein), the sleep mainly consists of two phases according that prevails synchronous or asynchronous activity, respectively called *sleep S* and *sleep A* (the REM stage is included in this last), alternating each other, and having an important phylogenetic meaning since during along it has place a great synthesis of neuronal proteins and neurotrophins (like BDNF, NGF, etc) as well as fixation of memory and learning functions. As already said, the REM sleep is phylogenetically quite recent since it is larger in superior animals (like mammals and birds). Nevertheless, also the NREM sleep has its importance: during it, the brain is also active, comprising dreams not structured very well and with quite anxious and unpleasant contents (like nightmares), so that it is relatively likely that the content of these dreams comes from the deepest zones of human psyche (unconscious); moreover (see [115, Cap. 14, § 14.2]), the secretion of GH (growth hormones) takes place along the NREM phases (while the REM phases are correlated with the protein synthesis), whereas a further function performed by NREM sleep seems to be that of gives restoration periods from various forms of stress. Finally, following [115, Cap. 14, § 14.3.3], the somnambulism, night terrors and sleep-talking phenomena seem to be correlated to the NREM phases instead of REM one; furthermore, according to R.J. Broughton, the Individuals wake up during the REM sleep seem to be lucid, coherent and subsequently aware of this event, whereas those waked up during the NREM sleep seem to be confused, with poorly coordinated behavior and talking and forgetful of what happened. Nevertheless, although the antithetic function of the REM and NREM phases each

[70] It is possible the neocortical activations of certain very low frequency delta waves independently by subcortical structures, although such a type of waves also characterizes deep sleep states

other, these two sleep types cannot be separated without deleterious effects: for instance (see [115, Cap. 14, § 14.2.5]), the NREM sleep is quite deleterious if not integrated by a subsequent REM phase since it is supposed that one of the main function of the REM sleep be that to counterpoise the dangerous effects made by NREM phases on the memory formation; on the other hand, the content of REM phases come from the NREM phases, from which it follows their inseparability for a normal development of the human psyche. On the relations between these two sleep phases we'll return later.

Following [114, Cap. 19], all cortical areas have extensive afferent and efferent connections with the basal medium zones, namely with the limbic system, being the cortical activation necessarily induced by this last: in particular, the thalamus plays a fundamental role in the activation of cortical zones in such a way to form almost a whole system with these (speaking of a thalamocortical system). The prefrontal association area is essential for the actuation of mental processes of no brief duration and for the general elaboration of thought. The frontal area includes the so-called *Broca's area* deputed to the formation of language and strictly connected with the (dominant) Wernicke's area of the temporal lobe deputed to the acquisition and understanding of the language; on the other hand, the *Wernicke's area* is located in a confluence area of the parietal, occipital and temporal zones (mainly deputed to the sensorial interpretation) so that it can be considered as an area of functional integration (also by means of the so-called angular gyrus) of the functions performed by these zones, and for such motives it is considered as the site of the higher cerebral functions (like intelligence). An electric stimulation of this area in normal conscious subjects evokes quite complex mental representations, and this phenomenon is particularly evident when the stimulator electrode is inserted in correspondence of the connection areas of the thalamus; damages to the Wernicke's area provides a permanent strong demential status, the subject losing the read, computational and logic competence. For many years, there has been an afterthought about the role played by the frontal and prefrontal areas in the intellective performances, since they were considered as the main zones deputed to the human intelligence: instead, as said, the Wernicke's area with the angular gyrus, plays an more important role in this regard. Nevertheless, the wretched and wicked prefrontal lobotomy has pointed out some characteristic functions to whom are deputed the frontal and prefrontal areas; indeed, the unfortunate patients which have undergone such a treatment, although they have certain forms of concrete thought, nevertheless they show (see [73, Cap. 8, pp. 188-189] and [114, Cap. 19, pp. 268-269]): a) inability to think abstractly, symbolically and to resolve complex problems; b) inability to execute sequential and/or contemporaneous actions; c) inability to decompose into structural

parts and subsequently to effectuate a synthesis; d) inability to realize generalizations, similarities, analogies and part-whole relations; e) inability to make future projects and predictability; f) a social behavior which turned out inappropriate and without any form of ambitions; g) a normal ability in understanding and speaking the language but inability to follow any logic sequence of thoughts; h) a rapid change in humor and aggressiveness; i) a normal motor development but without a precise purpose. As we will see later, many of these inabilities characterize also the schizophrenic disorder. The variations in aggressiveness and the inappropriate social behavior are correlated to a injuries of the lower frontal zones connected to the cortex of limbic association (being the limbic system related to the control of the behavior). As regards what said at the remaining points, we remember that the association prefrontal areas are deputed to the elaboration of thought and seem to have the ability to retrieve information from the different cerebral areas and elaborates it towards more complex mental activities to achieve well-determined purposes; if the purpose includes a motor action, then it will be activated this, otherwise the mental processes will have the achievement of intellective analytic operations as result. The subjects having damages in the prefrontal areas are even able to think but incapacitated to proceed along a series of thought ordered according to a logic sequence, easily distracting from the central theme of the discourse; this last easiness to distraction implies a consequent loss of memory due to the fact that the mental representation of the event to be stored isn't sufficiently to long fixed in time. For our purposes, the prefrontal areas are the centers of expressions of the higher intelligence among which: 1) the ability to solve complex mathematical, legal and philosophical problems; 2) the predictability ability and to formulate a plan for the future; 3) decision-making ability and controls of own behavior according to the ethical principles; 4) coordination according to the reality principle. Nevertheless, the development of an arbitrary thought is a quite complex phenomenon involving the simultaneous activation of different cerebral zones, among which mainly the cortex areas, the thalamus and the limbic system (for a brief discussion of them, see [216, Cap. VII, pp. 194-202]), interrelated among them by well-defined cerebral structures as the corpus callosum[71], the anterior commissure, the angular gyrus, the reticular formation, the dorsal nucleus, the limbic cortex and so on; certain non-elaborated thoughts are mainly due to subcortical structures, precisely the limbic system and the hypothalamus. Following [114, Cap. 20], the limbic system and the hypothalamus are cerebral centers of the motiva-

[71] Amongst other, this bundle of nervous fibers is fundamental for the functional connection between the two cerebral hemispheres - see [107, Cap. 11, § 11.1].

tional, behavioral and mnemonic mechanisms; the hypothalamus is the main communication limbic structure with the lower structures of encephalic trunk and with the upper diencephalic and mesencephalic structures.

Other important limbic structures are the amygdala and the hippocampus. The first structure has various bidirectional connections both with the remaining limbic structures and with the temporal, parietal and occipital neocortical regions and it is considered deputed to the major part of subconscious functions; it is said that the amygdala is the "window" through which the limbic system sees the person in its relationships with the environment, that is to say, through him it is projected the present status of the subject into relationships both with the surrounding environment and with its psychic sphere, controlling the behavioral response of the subject according to the various circumstances. The second structure has many (mainly indirect) connections both with the major part of cortical areas and with the basic structures of the limbic system (like amygdala, hypothalamus, septum and mammillary bodies) and it plays an important role in learning and mnemonic registration: indeed, along the phylogenetic cerebral evolution, the hippocampus has developed from the olfactory cortex playing the role of decisional mechanism in selecting the various afferent signals, also through gratification and punishment mechanisms; if a determined signal is considered important, then it will be mnemonically stored, and damages to this structure obstacles the long time consolidation of the verbal and symbolic memories. However, the limbic cortex is the major cerebral sector deputed to the bilateral interconnections between the telencephalic structures and the subcortical limbic ones (see [114, Cap. 20, p. 287]).

At this point, it is possible to recall what said in [133] (and references therein). This article summarizes the main aspects of the creative process from the neuroscience viewpoint: according to the Authors, the sleep plays a fundamental role in solving creatively a new problem since it has been proved as there is a sort of continuity in reasoning from the vigil state to the sleep (mainly in the REM phase). Subsequently, it is discussed a real dialogue between the telencephalic cortex and the hippocampus that takes place mainly during the NREM (in which the information stored during the vigil state unidirectionally flows from the hippocampus to the cortex) and REM (in which the information elaborated along the NREM phases unidirectionally flows again from cortex to the hippocampus - during this phase, it is recorded an intense activity in many limbic areas) sleep phases: precisely, during the NREM phases (and, in particularly, in the deepest sleep parts characterized by synchronized activity), the flow of information recorded during the vigil state unidirectionally passes from the hippocampus to the cerebral cortex, which subsequently elaborated unidirectionally flow back toward the

hippocampus; at the awakening, the data repass to the prefrontal cortex triggering the insight. In this article is also discussed the mnemonic storage mechanism played by the prefrontal areas and the error control and choice mechanisms played by the anterior crawler cortex (which belongs to the limbic cortex): in particular, when one should choice among a series of possible alternatives, it has been observed the activation of this area of limbic system, mainly during the REM phase (in which, in general, it is activated all the phylogenetically old limbic and paralimbic systems - see [282]); according to [282], just the anterior crawler cortex warrants a continuity of reasoning along the sleep over those problems remained unsolved during the vigil state. Finally, the Authors discuss the role of insight during the vigil state (in which are involved the activation of the prefrontal cortex and of the hippocampus), reporting the known *Kekulé's insight* (1865): it at first consists (step 1) in the conscious formulation of the problem consisting in finding the resonant (and not that structural - see also the discussion at the end of section 14) formula of the aromatic compound, called Benzene C_6H_6, starting from six functional groups CH, hence in the acquisition of these data by the hippocampus; subsequently, during the sleep, these data are transferred to the cortex (step 2) along the NREM phase, then actively maintained in the prefrontal areas (step 3 - mental synthesis). Afterward, these data are analyzed by the limbic cortex, precisely, among different possible choices, it will be selected some of these by the anterior crawler cortex (step 4), and the resultant elaborated data will return at the hippocampus (step 5); finally, at the awakening, the last data pass to the prefrontal areas (step 6), triggering the insight. From this scheme, it follows the fundamental role played by the above mentioned dialogue between telencephalic neocortex areas and limbic/paralimbic structures (who are the two main areas known to mediate cognitive conflict, as confirmed by [283]). Further, since we have seen above as the REM and NREM phases are respectively characterized by asynchronized and synchronized waves, we may suppose that such an insight scheme is also valid for those vigil mental states characterized by an alternation of these type of waves (like in inattention states), from which it is also possible to presume the trigger of an insight considered as a basic form of every creative process[72].

So far, we have considered possible neurological mechanisms related to

[72]Further, in [77, Cap. 5, pp. 159-160], it are mentioned some ideas about creativity resuming the relative conception of "collision of ideas" by H. Poincaré and that of S. Arieti according which, as already said, the creative process is the result of a tertiary process as synthesis of a particular combination of the primary and secondary processes. The creative insight, as intended by these Authors, may be formulated in terms of synchronized processes. However, on these arguments, we shall return later.

the creative process: now, we expose some simple psychological considerations about this process. Following [133, Cap. 8], the creative thought[73] is dialectical opposed to the critical one, being both complementary but inseparable between them. The first type of thought often uses the method of free associations and it is inhibited by conformism, censorships, rigid formal education, pleasure principle; the second type of thought, instead, is hindered by the fear of to be aggressive, by the fear of eventual retaliations and by the overestimation of their own ideas and capacities (therefore, by the lack of modesty). The creative individual has a polyhedral and vivid personality, prefers the complexity to the simplicity and those male have an accentuated female component (in the jungian sense, that is to say, they have a strong anima) of its own psychic nature without to be effeminate (at this regard, see [226]). Following [97, Cap. 8], according to the social psychologist I. Taylor (1959), first, it is a mistake to consider the scientific creativity and artistic one as distinct; afterward, this Author gives five levels of creativity and the higher level (called *emergent creativity* level) is attributable only to single individuals and not to groups. Moreover, the environment is an influential factor for the creativity. Other Authors have developed some techniques to study the creativity process: among these, we recall the *brainstorming* technique due to A. Osborn (1957) and the system elaborated by W.J.J. Gordon (1961) and called *synectics.* According to J.P. Guilford (1956), the "intellectual factors" can be classified into two main categories, the "category of thought" and the "category of memory"; in turn, the thought category consists of three factors: the "cognition (or discovery) factors", the "production factors" and the "valuation factors"; again, the production factors should subdivide according to a "convergent" and "divergent" type of thought. The convergent (or reductive) thought, which operates through logical-deductive reasoning, implies a restriction of the range of the possibilities operating the choice of a unique solution to a given problem, whereas the divergent thought requires the production of the major number of possible solutions to a given problem. According to this Author, the divergent thought is an essential component of the creative thought, whereas the convergent one is more related to the critical thought than the creative one; moreover, the creative process must be supported by a suitable intellectual capacity of the individual which yet is subject to the influence of emotions and to how the people react respect to him. As regards this last point, E.P. Torrance (1963) has studied in deep the relations between creativity and environment, in particular highlighting the influence of conformism on creative individuals: he has

[73]Following [77, Cap. 4, pp. 131-132], the creative process is the result of a new and original combination of facts and ideas already known.

noticed the unavoidable choice who a creative boy must do when subject to a strong pressure toward the conformism: either make itself accept to the other mates (even at the cost of to be less creative and original) or alienate itself by the social group. Further, he has noticed that when the educational programs give more attention to the convergent thought, then a more discouragement toward a divergent thought is effectuated. Finally, according to C. Rogers (1959), a certain "creative clime" must be present in order to a creative process be possible: precisely, a certain psychological security must be guaranteed and a given emphatic understanding must be shown by the social community in which the creative individual, seen as a person bearer of unconditional value, must be free to express symbolically themselves without that be subject to valuations based on extrinsic and discriminative criteria.

In [154, pp. 598-604], it are exposed some conceptions of creativity from the philosophical, sociological and psycho-pedagogical viewpoints. All these agree in believing to be essential the role played by the social environment and by past experiences in influencing the creativity process; rather, from the sociological viewpoint (see, for instance, the thought of M. Weber), the structure of modern society seems to be in contrast with the development of the creative process due to its complex, bureaucracy and alienating structure: these last theses are, on the other hand, also confirmed by anthropological studies (as, for example, those made by A.L. Kroeber, E.C. Gray and L.A. White - see [228] and references therein). For the relationships between creativity and social-cultural contexts, see also [327]. Moreover, a certain negative influence of determined social structures on creativity process emerges also from the results of Rorschach's test: indeed, following [134, Cap. 3, § 4], an elevated number of banal responses (Ban) in the Rorschach's test is a sign of collective conformity and social adaptation, whereas a good number of original responses (Orig) is sign of creativity, originality and intelligence harmonically conjugated with a right social integration (instead, an its high number is indicative of an high narcissistic personality poorly socially integrated); in general, Ban and Orig are in inverse proportion each other, but the date who is very opposed to Orig is the responses at animal content (A) which measure the stereotyped thought; very high value of Orig with a poor Ban is indicative of a schizophrenic disorder. Often, the index Orig is proportionated also to the index of global responses (G) and to the index of human movement responses (M): the first is indicative of an ability to solve a question (or a problem) from a global (or synthetic) viewpoint, whereas the second is indicative of a propensity toward the intrapsychic live (introversion) and of a interior creative capacity. Following [134, Cap. 6], a higher intelligence is, among other things, characterized by high values of G, a discrete value of M, a high value of Orig and low values of A; a creative process

is characterized by a high number of M and Orig, and by a low number of A and Ban. Moreover, following [119, Cap. 9], if the deductive reasoning is the higher form of exact human reasoning (excluding some possible influences on it given by the semantic contents of its propositions), nevertheless there also exists an inductive reasoning which is mainly influenced by the common sense (hence, of social nature) since built up on the basis of probabilistic inference laws but often leading to logical errors (unlike the deductive reasoning) if not supported by an individual examination free by interpersonal distortions, and mainly due a wrong applications of the correct probabilistic laws; these considerations are also confirmed by what is said in [107, Cap. 7, § 7.4] according which the most part of inference activities made in the quotidian life is quite different from the Individual syllogistic deductions because the former are mainly based on mental models in which the necessary data for doing conclusions are not completely explicit (that is to say, it are not completely of rational or conscious nature), so that they must be necessarily based on the knowledge of the world that the Individual has, that is to say, on a set of specific knowledge concerning objects, individuals, facts and their relationships. Therefore, the consideration of incomplete knowledge means reasoning on the basis of facts of poor sure evidence and quite arbitrary: this necessarily implies expectations generated on the basis of further knowledge of stereotyped situations (drawn from the social context), to formulate hypotheses through induction, to reason through analogies; whence, we cannot speak of valid inference since we stay in the context of possible (or plausible) inductions. Further, this form of common reasoning is often conducted through the common language (and not through formal one) which is known to conduct towards unavoidable antinomies. Also in [70, Cap. 3] it is confirmed the existence of the so-called "belief bias effect", that is to say, distortion effects due to social beliefs, which lead to no valid inferences but having credible contents. This last type of reasoning hence may be reconnected to the existence of a Interpersonal Psyche often reasoning according to a heuristic logic (common sense) leading to mistakes which could be avoided by a quietly cogitated individual deductive reasoning; further, following the *set theory* by D. Uznazde (see [242]), this type of reasoning is a due to a first form of acquaintance of reality (more important also in the socialization), while the hypothetic-deductive reasoning (the higher one) is due to a objectivation process secondary to the first or else puts in a higher level set respect to the first.

Following [91, Cap. III] and [90, Cap. 4], the creativity is one of the fundamental human needs in which the man transcends itself, and it is only antithetic to the destructiveness (this last intimately connected with aggressiveness); further, E. Fromm examines the positive and negative influences

of the society on the human creativity in dependence of its structure. On the other hand, the Chapters VI and VII of [127] gives important ideas on creative process and its relationships with Mythology, from the orthodox freudian viewpoint: to this regard, E. Jones mentions the basic work of O. Rank on creativity (see [84]) saying that the creative process is mainly due to few fundamental and universal motives among other things correlated with the various aspects of incest and with the derivatives of Œdipus complex. The necessity of a particular empathy[74] between the author and its creation is underlined by several studies of the Psychology of Art (see, for instance, [126, Cap. 15] and [144, terza parte, Cap. 2]) where, amongst other, is also remarked the non-negligible presence of the aesthetic and evaluational sense as determined by the historical nature of the human being hence by the social conditions in which he lives, so that the artistic phenomenon is historically determined. For instance, following [126, Cap. 15], D. Katz has proved that the Greek-Spanish painter El Greco did not suffer of a some eye disease but if one want to understand (or interpret) the elongated faces and figures of his paintings, then it is no possible do not consider the particular mysticism which pervaded the relative Spanish historical period, the various social-historical conditions of the time, and so on. Finally, it is again recalled the role played by tension between the Ego's artist and his personality (see the above mentioned Neumann's considerations on creative process as the result of a tentative to overcome a certain neurotic distress) taking into account the fact that this Ego is always the result of the social determinants of the time, and this dialectic is unavoidable. The latter remarks are coherent with the psychic model explained in the previous section. All these statements may be also extended to the mathematical context: for instance, to this regard see [96], in which it is discussed in deep the relations between Mathematics and Art (see specially [96, Cap. I]). Finally, from a retrospective view of what said above, it emerges the unavoidable need of individual freedom from certain social (destructive - for the structural aggressiveness of many social groups) influences, so confirming the predominant importance of the Montessori's Method in Education (see [249] and [250]): the Montessori's Pedagogy is our main (experimental) point of reference for what has been said in this paper.

From these psychological considerations about the creative process we turn, mainly following [121] (based on work of I. Matte Blanco - see [151]), to some psychoanalytic considerations on the logic of unconscious from which it is possible to infer some important conclusions on the mathematical thought

[74]Besides, this circumstance related to the involving of emotive aspects in artistic phenomena it may be also witnessed by the so-called *Rubens-Stendhal syndrome.*

and its creative aspects. First, the preface of A. Ossicini to the work [121] draws the attention on the general epistemological aspects of the psychological sciences since the work of I. Matte Blanco is directed toward these, that is to say, he tries to establish fundamental correlation between the psychoanalysis and exact sciences. The work of I. Matte Blanco[75] is an original interpretative afterthought of the freudian theory through the methods of logic; he begin from the freudian characteristics of the unconscious, namely displacement, condensation, absence of time, substitution of the external reality with the psychic one (literal interpretation of the metaphor) and absence of mutual contradiction among the presentation of the various instincts. In particular, according to S. Freud[76], the common logic rules are no valid for the unconscious, that is, it operates according to another logic system: the first is characterized by being a classical, assertoric (not modal) logic founded on the material implication and having as fundamental laws the identity principle, the non-contradiction principle, the bivalent principle and the principle of the excluded third. Instead, according to the studies on schizophrenia by I. Matte Blanco, the fundamental principles of the unconscious are the generalization principle and the symmetric principle (see [121, Cap. I, § 2]) through which it carries out the primary process (whereas the secondary one concerns the modus operandi of conscious thought). Subsequently, through them, Matte Blanco tries to explain the previous freudian characteristics of unconscious (see [121, Cap. II]); in particular, he re-examine (see [121, Cap. II, § 2]) the classical freudian instances at the light of his principles. According to Matte Blanco, the conscious and unconscious are two different modes of being respect to the psychophysics unity of the man, asymmetric and in becoming the first, symmetric and static the second. Following [121, Cap. III], the symmetry and staticity characterizing the unconscious does not permit any finite-dimensional space-time idea and any sequential logic reasoning (which it need of asymmetry as we will see later), so that the asymmetric conscious thought seems to be the result of a sort of symmetry breaking of the symmetric unconscious world (recalling as the symmetry breaking mechanisms, according to the modern physics, are at the basis of every fundamental physical phenomenology); nevertheless, according to Matte Blanco, the becoming conscious cannot do without of the being unconscious, so that it

[75] Of which we give here only few hints, reserving us to study in deep the thought of this Author in its relationships with the Mathematics in another place.

[76] We recall as the above mentioned main unconscious logic mechanisms were deduced by S. Freud mainly by two his clinical case, precisely the case of the Rat Man (1909) and that of Wolf Man (1914-1915), from which Freud reached to the discovery of the neurotic-obsessive disorders (see [136]). Besides, from the Rat Man paper, Freud states some analogies between the neurosis mechanisms and the primitive mind (see [136]).

seems to be in a certain sense resolved the secular vexata quæstio concerning the Parmenides-Heraclitean dialectic between logic of being and logic of becoming (see also [260, Cap. 6, § 6.2]) since, according to this Author, the pair unconscious-conscious is inseparable. The symmetric thought is unthinkable without the asymmetric one, and the limit between normality and abnormality is given by the degree of penetration of these two modes of being each other. In [121, Cap. IV], it is discussed the Matte Blanco's notion of unconscious as infinite set, resuming the distinction between set and class typical of formal set theory. The unconscious do not distinguishes between partial and total object and, moreover, each element of an any set is conceived as having only human qualities: this last property is a fundamental epistemological assumption common to many theory of the history of human thought, even if Matte Blanco deduced it from psychoanalytic considerations; for instance, according to J. Piaget (see [229]), the animism is a fundamental step in the development of human intelligence and, following this hint, we may suppose that the abstract thought (typical of Mathematics) can have had important sources both from the disavowal mechanisms (to explain fetishism and certain psychotic mechanisms - see, for instance, [208, Cap. 19, § 19.10.3]) as regards the origins of symbolic thought and from the first example of the norm characters generalization (a juridical norm is valid for an indeterminate number of cases) and abstraction (a juridical norm concerns indefinite cases) typical of Roman Law as regard the origins respectively of the generalization and abstraction mathematical processes; these considerations may be used, for instance, to explain the passage from the arithmetical thought toward the algebraic one. On the other hand, we cannot also exclude certain relevant influences of the Triadic and Trinitarian Ontology (see [230, Cap. III]) in the sources of the conception of mathematical entity that, in turn, it may be to take again to the Heideggerian ontological difference to distinguish between the being and the entity returning to the difference between ontic truth (concerning the entity) and ontological truth (that it is a consideration of the being of the entity); this last consideration is coherent with the Matte Blanco's ones because, according to M. Heidegger, the being is undefinable since the definition remains on the ontic plane (or of the entity) and, in fact, according to Matte Blanco, the definition is possible only with asymmetric notions (corresponding to the entity) whereas the being is indefinable since it belong to the (unconscious) symmetric world and the act of defining is itself an asymmetric activity (see [121, Cap. III, § 2, p. 38]); therefore, the difference between the ontic truth and the ontological truth is indicative of the so-called ontological difference between the being and the entity, the place of its revelation being the Dasein.

In [121, Cap. IV] is also discussed the notion of infinite set in Mathemat-

ics in analogy compared to the symmetric mode of being of the unconscious, precisely with its property of indistinguishability between part and whole in the sense that they both have the same cardinality, this just being the first notion of infinite set according to R. Dedekind (that, among other things, has considered the notion of infinite set as a tool to explain the world of the human thought - see [121, Cap. IV, pp. 47-48, footnote 3]); again according to Matte Blanco, many other mathematical concepts (like that of limit) have their origins by the attempts to explain asymmetrically the properties of the symmetric. In [121, Cap. V] are explained some useful concepts on the notion of consciousness according to Matte Blanco: exactly, it cannot do without the asymmetric thought in the sense that a conscious act consists in a continuous establishment of asymmetric relations around the cathexis object; its activity is essentially analytic because it fundamentally subdivides every analyzed object into its constitutive components, unlike from an emotion which is a globally conceived symmetric sentiment. Nevertheless, the symmetric and asymmetric modes are inseparable because an entirely symmetric mode is typical of any state of loss of consciousness whereas a complete asymmetric mode is also impossible since it would imply a total absence of any cathexis object; every normal state varies within an interval including a right mixing of both these modes. Moreover, if we consider, for instance, a mathematical study, hence a full asymmetric thought, then there is always an unavoidable emotional involvement which may be described as an involvement of asymmetrical type[77]: therefore, although a certain human result - like a mathematical proof - may seem to be the result of a completely asymmetrical work, its production is never separated from an emotive component of symmetric nature. This last remark is fundamental for understanding the nature of a creative thought, returning us on it later to study in deep it, while here we observe only that this fact gives a line of overall consistency to the whole paper: indeed, since we have argued that there exists an unavoidable symmetric component in every asymmetric thought, then the Collingwood's historicism has also a certain reasonable sense respect to the considerations of the last sections, inasmuch it try to think back a given historical fact means re-enact the possible asymmetric path followed by the studied Author in (and with) our own symmetric (unconscious) modes, being a creative thought just of this type, that is to say, the result of a dialectical interaction of these two modes of the being. Further, according to Matte Blanco, the consciousness may think only three-dimensionally plus eventually the

[77]This phenomenon can be identified in many historical cases of fundamental creative innovation: for instance, the celebrated Einstein's theories as well as certain riemannian ideas have been mainly due to a given philosophical ideas, hence with a significant emotive participating.

fourth temporal dimension, so that the three-dimensional space seems to be the dimension of consciousness and imagination; the human thought thinks mainly by three-dimensional images, even abstract (confirming a supposition by J. Hadamard - see [5]). On the other hand, some consciousness contents are available only by means of the introspection which is an asymmetric phenomenon and hence, according to Matte Blanco, it has a precise characteristic: it does not concern never the instant in which takes place the introspection, but does concerns the immediately previous moments (hence, the past): again, it returns the relevance of the Collingwood's historicism as fundamental tool to interpret this retrospective introspection. The human thought exists only if it is reflected on itself, or else the most peculiar character of the thought is just this reflective quality (in accordance with our considerations given in section 13); the elusive character of the conscious thought is due to the fact that the real nature of the consciousness is located between the two modes of being, the symmetric and the asymmetric, so that each time that we try to think a conscious content, then we restrict ourself to the asymmetric mode completely excluding the inevitable symmetric components. In [121, Cap. VI], it is discussed the concept of emotion which plays a fundamental role for all psychic life, above all in the formation of thought, and describable by means of introspection; nevertheless, it is mainly (but not completely) a symmetric phenomenon (see [121, Cap. VI, p. 68]). Finally, in [121, Cap. VII], it is delineated one of most important notion of I. Matte Blanco, namely that of bilogic: according to this Author, the unconscious logic (or symmetric logic) is mainly based on the principle of symmetry and on the principle of generalization, and, as already said, it regulates the so-called mode on being symmetric. The latter is inseparable from the mode of being asymmetric, regulated by the bivalent logic (as said, the usual definitions are possible only with the asymmetric thought), and vice versa, that is to say, any human psychic manifestations is the result of interactions and/or cooperations between these two modes of being; this implies that any human reasoning is the result of the combination of the rules of two logic, that symmetric and that bivalent (or asymmetric), which, in turn, it are interpreted as components of a unique *bilogic.* Therefore, a human psychic phenomenon is a bilogic process which is a chain of symmetric and asymmetric subprocesses whose combination modes are a priori infinite. The emergence at the threshold of consciousness of a bilogic process is related with the concept of *Triad* by Matte Blanco: this last concept must be intended as a fundamental structure of the mathematical logic, according which it is the entity formed by two theoretical objects related each other by a third object called relation; from this point of view, it is also possible to relate historically this notion of Triad with that mentioned above concerning the Triadic and Trinity Ontol-

ogy, that is, we suppose the latter context as a possible source of the former. Matte Blanco thinks that the logic-mathematical structures are the applications of his structure of human psyche also taking into account his notion of bilogic process. The bilogic process has been analyzed in many therapeutical cases treated by Matte Blanco, both in normal and schizophrenic case; he has concluded that the normal thought has place in a context of logic causality, whereas the schizophrenic one (which permit us to throw a look within the unconscious) the thought seems to follow an acausal principle (and in that it is possible to reconnect to the paper *Synchronicity: an acausal connecting principle* (1952) by C.G. Jung and W. Pauli - see also [12]). Finally, in [121, Cap. VII, § 2], it are summarized other very interesting analysis on the bilogic structure in schizophrenic patients according to the studies conducted by I. Matte Blanco: for our purposes, it is simply enough to observe as the schizophrenic thought continuously uses the symmetric and generalized principles in its reasonings and these, from the formal (or mathematical) viewpoint, correspond to an impossibility to institute the so-called *axiom of specification* (or *separation*) of the formal set theory, according which (see [236, Cap. 1, Section 1]), if A is a set and $p(x)$ is a statement for each x of A, then there exists a set B such that $y \in B$ if and only if $y \in A$ and $p(y)$ is true[78], and in such a case we write $B \doteq \{y; y \in A, p(y)\}$. The schizophrenic patient is unable to use such a fundamental axiom, hence it is also unable to construct the Boolean algebra $\mathcal{P}(A)$ given by all subsets of an arbitrary set A (to which every complete and completely distributive Boolean algebra is isomorphic, by means of the theorems of A. Tarski - see [237, Cap. V, § 2] - and other representation theorems like those of M.H. Stone), because of the almost total uses of symmetry and generalization principles in its reasonings. On the other hand, according to the just mentioned Stone's representation theorems (see [237, Cap. V, § 2] and [238, Cap. I]), the two-element Boolean algebra $\mathbf{2}$ (following Halmos' notations) with support set $\{0, 1\}$ is isomorphic to a Boolean algebra of the type $\mathcal{P}(A)$ for some set A (like the set of all maximal ideals of $\mathbf{2}$, that is to say, its maximal spectrum), and since $\mathbf{2}$ is the mathematical structure which formalizes the propositional calculus (that is to say, it is its *propositional algebra* - see [236, Cap. 6] and [260, Cap. 4]), then it follows that a schizophrenic patient is unable to construct such an algebra[79], that is to say, it is unable to perform a rigorous syllogistic

[78] $p(x)$ is true [false] means that x has [does not have] the property expressed by the statement p, supposing that every element of A has or does not have such a property.

[79] From this formal viewpoint, it is possible to reconnect with what has been said at the end of section 7 about a presumed analogy relation between the Bateson's notion of double blind and that of B. Russell and A.N. Whitehead type theory, since the latter is just related to the difference between the notions of set and class, hence to formal conceptual

inference (which is the general element of **2**); this explain, amongst other, the difficulties to perform a makes sense reasoning by a schizophrenic patient. On the other hand, following [258, Cap. 24], the neural networks may interpret as logic networks according to the McCulloch-Pitts neuron model (see [268-269]). Now, if we recall that the two-valued Boolean algebra **2** is fundamental in formally describing the logic of sequential and combinatorial digital circuits (see [239, Cap. 11, § 11.4,d], [257], [241, § 2.3] and also [240, Articolo XII], [239, Cap. 11]), in which in turn it is possible to distinguish an asynchronized logic and a synchronized one, for which result to be inadequate the boolean algebras (but it is necessary to institute other logical-algebraic structures - see [280] and [281]) for the former and adequate the boolean structures for the latter: therefore, from this simple remark it is possible perhaps to deduce further speculations between the neurocognitive brain properties and neural networks[80] (see above all [257]). Moreover, we remember as the original motivations of the same George Boole work entitled *An investigation of the laws of thought* (1854), in which he introduced this algebra structure (see [107, Cap. 2, § 2.1.2]), were due to the attempts to analyze formally the laws of logic considered as a result of human thought. On the other hand, in [107, Cap. 7, § 7.3], it is confirmed as many people reasoning according to an incorrect inference that, at the light of what said above, may be explained (following Matte Blanco) through the unavoidable presence of the symmetric thought together to the asymmetric one, that is to say, by means of the bilogic process. In [107, Cap. 7, § 7.3.1] it is discussed the structure of a syllogistic inference of the type $A \Rightarrow C$ considered as the main logic tool of reasoning: it is considered, according to the mental models theory (see [164]), as formed by the action of three inseparable phases, the construction, the integration and the verification; the *construction* consists in the interpretation of the premises (relatives to A), namely, the reasoning Individual build up, for each premise, a mental model representing the state of things that every premises describes; the *integration* consists in the coherent integration of these various models into a unique integrated model (for instance, individuating one or more so-called intermediate terms B between the extremal terms A and C) for the syllogistic conclusion (relatives to C), while the *verification* consists in the epistemological analysis of the validity of the reached conclusion (for instance, by means of the popperian falsification method, constructing suitable counterexamples). Often, the integration phase comprises the institution of possible effect-cause links between the two

problems relatives to $\mathcal{P}(A)$. However, these type of questions will be in-deep resumed in another place.

[80] Which it will be retaken in another place.

extreme terms and the establishment of these relations is mainly a creative activity since it is not based on pre-constituted laws. On the other hand, following [120], a *conditional enunciate* is an enunciate of the type «if A then C» where A are the initial assumptions (like, for example, an enunciate or a conjunction or a set of enunciates) considered as axioms of a certain theory, whereas C is the conclusion. Commonly, in the conditional enunciates of the type $A \Rightarrow C$, A are the hypotheses whereas C is the thesis. Not every conditional enunciate is a theorem, since by *theorem* we intend a conditional enunciate in which C is a logical consequence of A, that is to say, if in every interpretation of the formal language in which are formulated A and C, then C is true whenever C is true, and in such a case we write more specifically $\vDash A \Rightarrow C$; hence, in every theorem, the conditional enunciate $A \Rightarrow C$ means that this syllogistic inference is valid, namely it is true in every interpretation. This lead us towards the syntax independently by the semantics (which studies all the possible interpretations). From here, we are naturally conducted to the notion of proof of a theorem of the type $\vDash A \Rightarrow C$ which is the search of the chain (called *derivation*) of formal passages everyone constituted by a elementary conditional enunciations through which it is possible to deduce C from A: hence, it is formally explainable as the search of a series of intermediate terms $B_1, ..., B_n$ such that the proof is formed by the chain $A \Rightarrow B_1 \Rightarrow ... \Rightarrow B_{n-1} \Rightarrow B_n \Rightarrow C$ explicable by means of the correct application of logic rules. The search of a proof is a fundamental creative process considered as a transcendental mental function in searching of the structure of being: the existence of almost one derivation of C from A for a given theorem $\vDash A \Rightarrow C$ is guaranteed by the well-known Gödel's completeness theorem (1930): this theorem has mainly a psychological function because it do not suggest any operative indication on the search or individuation of the proof strategy and one of its possible derivation, which confirms the nature prevalently creative of it. On the other hand, considering what has been said above (for example, remember the Kekule's insight[81]), it is therefore plau-

[81] In fact, following [133], the final structure formula of the Benzene emerged by the unconscious data elaboration of the limbic structures, recognized by the rational functions of the prefrontal areas. To be more precise, some recent historiographic studies by J. Wotiz and S. Rudofsky (see [245]) have pointed out as some previous works of A. Laurent, known to A.F. Kekulé, had already provided a possible compatible cyclic structure to Benzene, making apparently (as we'll see soon) legendary the Kekulé's dream. Nevertheless, the scientific and historical reality is quite different since A.F. Kekulé were aware of the necessity of having a cyclic structure for the benzene (on the basis of previous works of other chemists) but he did not sure of the relative distribution of chemical covalent bonds in it. Following [246, Cap. 37], Kekulé dreamed a «rotating snake biting its tail» - not casually, representing the symbol of knowledge (according to Jung) and, more specifically, the continuous creation and completeness resulting from the union of opposites (see [225, Cap.

sible to think that the long unconscious work in finding a proof (mentioned amongst others by J. Hadamard and H. Poincaré) is due to the (indivisible and homogeneous unity or) syncretic character of unconscious which mainly has a unifying character impossible to the asymmetric (or conscious) thought.

The history of logic starts with the history of the concept of *logos,* being roughly speaking the logic intended as the science of the expressed thought; at the beginnings, there weren't distinction between philosophical and scientific logic which will become even more evident as evolving the reflection on the distinction between the thought reality and the external one, nonexistent in the first syncretic forms of thought (typical of primitive mind in which the thought reality and the external one were coincident). The psychological syncretism is a primitive form of perception and thought which indicates a sense-perceptive and cognitive modality of the global type, indistinct and undifferentiated. It has been resumed by many psychologists (among which E. Claparède, J. Piaget, H. Wallon) and also correlated with the egocentric thought: indeed, often the creativity is also amenable to the activity of the (narcissistic) Ideal Ego. It is mainly characterized (in the childhood) by attempts to conciliate judgments contrasting among them, so that we also suppose that it take place in the kleinian depressive phase, representing a high creative moment which will play a fundamental role in the future mental evolution of the child: in fact, the analytical aspect of the asymmetric (or rational) thought may be taken back to the kleinian schizo-paranoid phase in which the object is divided into its (good and bad) partial parts, subsequently integrated into a total object in the depressive phase (if it takes place); on the other hand, taking into account the fact that the kleinian schizo-paranoid-depressive sequence is indispensable to recognize the objects as thinkable entities (see [62, Cap. 5, pp. 101-104]), then the activation of these alternating kleinian phases could be retraced (or considered as the corresponding psychoanalytic interpretative counterpart) in

13]) if it is at the uroboric state, that is, when it is biting its tail - which must be interpreted as indicative of the so-called π-*electronic delocalization* of the aromatic ring connected with the resonance phenomena characterizing the exact benzene structure: in fact, the Kekulé's work consisted, above all, in giving two (of the five required - the remaining three will be given by M.J.S. Dewar and others) resonant formulas and in anticipating the fundamental notion of electronic delocalization and resonance. Yet, in the same Kekulé's story (see, for example, [248]), it is outlined the fundamental importance to the insight given by dreams, provided however that the resulting materials shall be rigorously treated by the rationality: see also [225, Cap. 1] for other interesting evidences of the importance of dreaming for useful insight in Physics. In [133], it are mentioned further celebrated examples of insight: amongst others, we recall those of the mathematician S.A. Ramanujan, of the musician G. Tartini, of the celebrated writer R.L. Stevenson, the resolution of the basic problem of his sewing machine by E. Howe, the insight that led the neurophysiologist O. Loewi to the discovery of the neurotransmitter acetylcholine (the same Loewi said that the many scientific discoveries or inventions are due to the unconscious), the insight of H. Hilprecht to decipher the Nebuchadnezzar stone inscription in 1863, the formulation of the periodic table by D.I. Mendeleev in 1869, etc.

the standard procedure of a derivation of C from A (see [120]) which starts with an initial consideration of the elements of A, transforming them, sectioning them and subsequently recombining them in a new syntactic form until to reach to build up C. It perhaps may be thought as deriving from the religious syncretism which were aimed to unify rites and beliefs of different religions to form a unique composite religion. This phenomenon is typical of primitive peoples in which were particularly frequent the contacts among various ethnic groups; such a phenomenon is spontaneous or reflected. In particular, the reflected form tried to find a compromise (often, of political nature) between different aspects of the various religions giving rise, among other things, to particular entities called *Triads, Ogdoad, Ennead,* etc. on the one hand and to form of Theocrasy on the other. At this regard, we have above supposed, other that already recalled before as regards its role in socialization process (see [199]), a certain role played by the entity *Triad* in the born of the abstract concept of one of the most elemental and important mathematical entity, that of univalent functional relation (A, B, f) or $A \xrightarrow{f} B$: indeed, to the function f from the domain set A to the codomain B, we do correspond the role of the Holy Spirit of the Trinity according which God (corresponding to the entire entity $A \xrightarrow{f} B$) is unique in its own nature and triune in the Persons of the *Father,* of the *Son* and of the *Holy Spirit*; there exist three Persons, equal in all their essential attributes and distinct, but only one and identical divine nature[82]; the Father (corresponding to A) is the principle and the archetype of every perfection and the eternity, the Son (corresponding to B) is the immanent and subsistent thought of the former, representing also the infinite perfection of it and the equality, while the Holy Spirit proceeds from both and links them into an eternal exchange of love, being also of the same divine nature of the Father and Son (see also [225, Cap. 18]); hence, to the notion of Trinity (which is a particular Triad) will correspond the notion of univalent functional relation, so that to the mythological Ogdoad, Ennead, etc. will correspond the notion of general multivalent relation. Again following [225, Cap. 1], another important possible role played by the concept of Trinity in Science is outlined: precisely, the Author states that this notion has played a fundamental role in the born of the physical-mathematical notion of three-dimensionality which were implicitly and almost

[82] As regards the substance of these three Persons, there have been secular controversies on the consubstantiality or transubstantiality of them, questions which have been already mentioned in section 11 as regards the possible first sources of the symbolic thought from the totemism. The egalitarian and not hierarchical position in which lie these three Persons leads to hypostatic problems: for instance, the infinite God is an entity so close to its creatures that, for their salvation, the second trinitarian person - the Son - it is incarnated and became human being while continuing to be God, the result of incarnation being Jesus Christ, the Man-God, perfect God and perfect Man, came into the world to our salvation and to reveal the love of the Father for us. Other hypostatization problems concerning the Incarnation regard also the union of the Divine Nature with the Human Nature into the Person of the Verb (which has therefore a theandric nature). In all these theological speculations it is possible to glimpse eventual sources of symbolic and abstract thought.

unanimously assumed as a unconsciously acquired hypothesis: Keplero did regard this hypothesis as due to the Christian Trinity. On the other hand, if we analyze the historical roots of religious syncretism then it emerges a basic common characteristic: its origins initially date from the Sumerian-Akkadian culture and, in general, from the Middle East one, till to the Hellenistic era, which it are the same historical places from which it is possible to identify the sources of the scientific thought (including the mathematical one - see [243, Vol. I]). However, these last very interesting historical questions (which find partial confirmations in the work of the Russian philosopher P.A. Florenskij on possible relations between the Holy Trinity and the Mathematics - see [261] and [262]) will be retaken and in-deep studied in another place (and for an interesting critical jungian examination of the relationships and comparisons between the western and eastern cultures and symbolisms, see [219]). Finally, considering what has been said in section 12 about the Ego's triadic structure, from the jungian theory we may deduce a further meaningful correspondence between the triadic structure of the Holy Trinity and the Ego's triadic structure: indeed, C.G. Jung identifies the figure of Christ (hence, the Holy Trinity) with the archetype of Self (in the jungian sense, hence as the result of the individuation process) in the place of the collective unconscious; from the Ego's triadic structure of section 12, to the Ego's Ideal should correspond the figure of the Father, to the Ideal Ego should correspond the figure of the Son, while to the Real Ego should correspond the unifying figure of the Holy Spirit; overall, the Ego's triadic structure, hence the jungian Self, should correspond (according to Jung) to the Christ archetype, therefore to the Holy Trinity. Hence, the jungian collective unconscious would be fundamental place in which it is possible a tension toward a unification between the human and the divine, confirming the very semantical composite nature of the collective unconscious in which take place all the aggregation and unification phenomena already mentioned in the previous sections when we have talked about the Lévi-Strauss' structural unconscious (already there puts into correspondence with the jungian one).

Therefore, when one conduct a logic derivation of a mathematical proof, we follow a bilogic process made by symmetric steps (having unifying and creative character in finding the various intermediate terms $B_i \quad i = 1, ..., n$) and asymmetric steps (in applying the necessary logic tools and rules for the various partial syllogistic inferences $B_i \Rightarrow B_{i+1}$) - these two inseparable types of thought having to be analyzed as regards their degree of contemporaneous presence taking into account what has been said above as concerns the discussion on synchronous or asynchronous waves. Hence, the Matte Blanco bilogic process may be considered as the most suitable candidate in trying to explain a creative process, whence it follows the unescapable role played by unconscious (or symmetric) thought in finding a new mathematical proof (which is not otherwise rationally deducible - for instance, by means of generalization, analogy, extension, reductio ad absurdum, etc), specially as

concerns the emotive aspects involved in it; the unavoidable presence of symmetric thought aspects also explains why, in certain cases, the new proof of a theorem is never perfect in its first form[83] but it shall reach its perfect and correct form after the subsequent correction of some initial imperfections.

In [5], J. Hadamard has pointed out as the major part of mathematical insight takes place through images and not by means of verbal processes: his conjecture is now confirmable by the *double codex* theory of W. Bucci (see [270-271] and [116, Vol. 1, Cap. 5, § 5.4]) according which, starting from the ideas of A. Paivio (see [116, Vol. 2, Cap. 5, § 5.1]), there exist two equal rank codices, that verbal and the non-verbal one: the mature thought may be placed in both these codices, being the non-verbal codex that appointed to the emotional functions and to other holistic type thoughts working by synchronous information by means of parallel multiple channels (hence following a synchronous logic). The brain perceives and work out the reality simultaneously by means of both codices and they are continuously in reciprocal communication through bidirectional connections and continuous referential links. The thought by images is the primary and specific expression of complex emotions like desires, beliefs, expectations and other holistic sensorimotor experienced, representational and mathematical contents and others, which cannot be verbally expressed. It is clear as the Bucci's double codex theory may be correlated with the Matte Blanco's bilogic process.

15 Some epistemological considerations

As already said in [7, Cap. 1], many psychological theories have their origins from a particular internal introspection of the given Author (at least, this is the case of S. Freud, A. Adler, C.G. Jung and J. Lacan, to name a few) turns toward itself, the external world and the various social groups with which it enters into contact. It is clear as the psychosocial model that it deduces may be statistical insignificant from the viewpoint of statistical sampling theory; further, the Author may take only relegated aspects of the psychological reality who it tries to study. Only a historical and historicist view may give us confirmations or not of its speculations, or else its improvements, by means of a retrospective view of its theory, for example explaining certain related phenomena already occurred. Moreover, following this methodological principle, a even more complete model can be obtained trying to add up more models together to form a more complete and extended model according to

[83] See the recent example given by the creative proof of the last Fermat's theorem by A. Wiles which has had need of some corrections in order that it be correct; nevertheless, this does not detract anything to the exceptional creative work of A. Wiles (see [253]).

the Feynmann's principle mentioned at the beginning of section 6.

For an interesting epistemological viewpoint on the scientific framework of psychoanalysis, see also [290], in which the Author considers it as a natural science.

Note. For a brief but organic exposition of the thought and works of the main exponents of Psychology, see [195] (from which we have taken much information about the psychological thought of many cited Authors). Moreover, each time that a freudian (or jungian) work is mentioned, we refer to [148] (or [99]).

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