



# The Theme of the Self and the Relationship Between Psychoanalysis and Neuroscience

Giorgio Mattana<sup>1,2</sup>

<sup>1</sup>Italian Psychoanalytical Society (SPI), Rome, Italy

<sup>2</sup>International Psychoanalytical Association (IPA), London, United Kingdom

## Email address:

giorgio.mattana@virgilio.it

## To cite this article:

Giorgio Mattana. The Theme of the Self and the Relationship Between Psychoanalysis and Neuroscience. *American Journal of Psychiatry and Neuroscience*. Vol. 9, No. 4, 2021, pp. 189-200. doi: 10.11648/j.ajpn.20210904.19

**Received:** November 29, 2021; **Accepted:** December 23, 2021; **Published:** December 29, 2021

---

**Abstract:** The theme of the Self helps to enlighten the relationship «by difference» between psychoanalysis and neuroscience. They in fact investigate human subjectivity by different methods, conceptual and linguistic systems. The psychoanalytical models of the Self as the experience that everyone has of himself and the psychoanalytical models of the Self as a set of representations within the Ego, easily converge towards a unified theory of subjectivity. The comparison with the main neurobiological models of the Self shows that the aim of founding this theory to a neurobiological ground encounters great empirical and logical difficulties. This highlights the limits of the program of the reduction-identification of psychoanalytical with neurobiological concepts, based on finding correlations «point-by-point» between the two disciplines. The «correlationism» driving the comparisons between psychoanalysis and neuroscience subtends the neurobiological foundation of psychoanalysis and its ontological and methodological subordination to neuroscience. The relationship between the two disciplinary areas proposed in this work is based instead on the principle of the difference of perspectives and of the complexity of reality. It substitutes the aim of the reduction-identification of psychoanalytical with neurobiological concepts with an epistemological pluralism promoting their dialectical confrontation in sight of the continuous deepening of the knowledge of human subjectivity.

**Keywords:** Complexity, Ego, Epistemological Pluralism, Neuroscience, Psychoanalysis, Reduction-Identification, Self, Subjectivity

---

## 1. Introduction - Between Postmodernism and Positivist Nostalgia

The theme of the Self lends itself to demonstrating how the relationship between psychoanalysis and neuroscience needs to be framed within a complex, articulated and pluralist vision of the levels of description of reality, thus giving up the idea of absolute truth and of a definitive explanation, accepting the multiplicity of approaches and points of view. This epistemological pluralism is certainly in line with the «postmodern» attitude, which underlines the perspective and contextual character of every cognitive activity, but not necessarily with its more radically sceptical or nihilistic currents, which are moreover susceptible, in a sort of paradoxical rebound, to evoking an improbable positivist

nostalgia (Hautamäki, 2018; Coliva, Pedersen, 2017) [1, 2]. At the centre of such an approach is the complexity of the relationships between different disciplines and the existence of specific validation criteria for each of them, since each has its own conceptual, linguistic and operative system appropriate to understanding the specific object in question, a system that is unyielding to those of other disciplines. From this perspective, interdisciplinary relationships serve to deepen the complexity, articulation, stratification of reality and consequently the relativity of knowledge, which is notably different from relativism, since within each discipline there exist precise criteria of adequacy and referentiality. And they also serve to limit «disciplinary narcissism», the pretence of a branch of knowledge of being above others and being the bearer of absolute truth and the definitive explanation, without understanding that the knowledge of one reaches a limit, but also a necessary integration, in the

knowledge of the other (Rovelli, 2020; Candiotta, Pezzano, 2019) [3, 4].

It is fundamental for psychoanalysis to know the material bases of the mind, the complexity of the structure that creates it, which cannot be grasped directly from it, being placed in a different descriptive level, and to know that such a level is neither the only nor the last one, otherwise it risks falling back into an empirically unsustainable spiritualism *sine materia*. Likewise, the descriptive level of psychoanalysis cannot be grasped directly from neuroscientific examination: to get to know an individual's personality, there is no way other than observing and/or interacting with him/her, on a common level or within an analytical setting. Using neuro-imaging techniques to observe the individual's cerebral functions will certainly increase the knowledge of the material bases of his/her mind, but this mind's characteristics will anyway be identified using criteria independent from the neuroscientific examination. Each of the two disciplines reaches a limit in the theories and concepts of the other, deriving from other modalities of observation and from another conceptual and linguistic system of codification of knowledge, but at the same time neither can exist without the other. In fact, they investigate a partial reality, linked to the type of approach or «cut-off» applied, which by definition can only exclude what is not part of it and require its integration and completion.

It is my opinion that the presence in contemporary psychoanalysis of various theoretical models, not yet transformed into an organised multiplicity, with a clear identification of the reciprocal compatibilities, incompatibilities and overlaps, of the areas of major or minor theoretical validity and therapeutic efficacy, can favour addressing other disciplines in search of any order and/or certainties that might be lacking in one's own (Mattana, 2020) [5]. While in favour of interdisciplinary dialogue with the other main sciences of the mind, such as neuroscience and cognitive psychology, I believe that such an approach would be the expression of an outmoded epistemological approach, resorting to perhaps an unsatisfactory solution. The comparison between psychoanalysis and neuroscience can be fruitful and stimulating for both sides on condition that it is a level comparison between disciplines which approach the subject from different points of view, with different observational, linguistic and conceptual systems. Regarding the relative, perspective and contextual character of truth, the return of the positivist ideal of a single and absolute truth seems at times to stand out as a counterpoint to the «postmodern» emphasis on the multiplicity of approaches. This is the impression which can sometimes be gained from the renewed interest of psychoanalysis in neuroscience, from research into memory systems to recent developments regarding mirror neurons, consciousness and the Self.

The most fitting epistemological framing of the relationship between the two fields rather assumes an idea of interdisciplinarity which is neither methodologically nor ontologically reductionist, and starts from the conviction that the comparison between disciplines, if one accepts a

complex, «stratified» and ultimately unlimited vision of reality, must not so much imply a sort of positivistic hierarchy of the sciences, and much less aim at the reduction of the constructs of one in favour of those of the other, but rather tend towards a constantly greater awareness and deeper understanding of the differences. This allows psychoanalysis to identify a «third way» between the *a priori* rejection of interdisciplinary comparison, always indicative of a weak identity, leading to closure and defensive entrenchment, and the uncritical, unconditional adhesion, equally indicative of underlying identity fragility, to the constructs and theories of another discipline in the illusory search of certainty regarding one's own.

## 2. The Self as an «Axiom» in Psychoanalysis

I will illustrate this perspective in relation to the theme of the Self, recently at the centre of interdisciplinary studies and debates focused on the psychoanalysis/neuroscience comparison and aimed at identifying intersections, harmonies and convergences around a concept as elusive and fleeting as it is fundamental and essential for our discipline. The theme of the Self or of the subject, of its essence, genesis and structure, has passed through the history of Western philosophy from Plato, advocate of its ontological independence from the body, to Augustine and Descartes, who, following the legacy of Plato identified it with the soul of Christian tradition. Hume decreed its ontological non-existence, dissolving the Cartesian subject in a «bundle of perceptions», without however managing to explain in a satisfactory manner the genesis of the sentiment of the Self or of the unity of experience, thus opening the way to Kant's «I think». After the period of absolute idealism, with the hypostatization of Kant's transcendental subject and the idealistic reduction of existence to thought, reflections on the Self regained a non-metaphysical dimension. If on the one hand the «continental» thinking from Nietzsche to Heidegger, from Foucault to Derrida, merging into the «postmodern paradigm», strongly contributed to weakening the image of the subject, of its cohesion and unity, bringing it back to a collection of social and linguistic practices, on the other hand analytical philosophy of the mind, developed through contact with cognitive science and neuroscience, has cast radical doubt in some cases on its very existence.

To such contributions must be added that of psychoanalysis, since if the notion of the Self refers to human subjectivity in its interior and relational dimension, insofar as psychoanalysis can be considered a profound examination of the latter, such a concept, however ambiguous and difficult to define it may be, can only be considered one of its central premises. The Self, which as I will seek to show is a fundamental «moment» of subjectivity that can as a primary approximation be identified with it, is therefore an «axiom» of psychoanalysis, contributing in an essential way to defining it as a discipline and to outlining its theoretical and

clinical functional limits. It is always a Self/subject that is more or less cohesive, evolved and organised, or split, disassociated, fragmented or embryonic that psychoanalysis addresses; a subject, it must be underlined, that does not coincide with self-consciousness. It is of such an «entity» that psychoanalysis predicates affects, representations and fantasies, narcissistic, symbiotic or fusional experiences, which it would not make sense not to consider inherent to «someone», regardless of their level of development, solidity and self-consciousness. What would be the point of talking about an affect, a representation or a fantasy if they were not «of» someone, if they did not belong to someone in a primary, essential way, whether they are aware of it or not, whether they are aware or not of being their «owner»?

It is beyond the scope of this work to provide a systematic acknowledgement of the various psychoanalytical concepts of the Self: I will limit myself to those which in my opinion are among the most interesting attempts to formulate an explanatory theory of the genesis and structure of subjectivity. Subsequently, starting from these models, I will concentrate on the one I propose to define the connection «by difference» between the psychoanalytical and neuroscientific conceptualizations of the Self, the one which I consider to be the most epistemologically valid formulation of the relationship between these two fields of knowledge. Such a perspective is that of a dialectic integration of the points of view, where every discipline reaches its own limit and at the same time elaborates its own specificity in relation to the other, a definite alternative to that of searching for simple interdisciplinary convergences or validations. My intention is thus to demonstrate that the relationship between the two fields in relation to the Self cannot be based on the search for «perfect» or «point-by-point» correlations, which in fact requires the objective of a neuroscientific validation of psychoanalysis, but involves a problematic, complex relationship, implying the necessity of the link and at the same time the non-reducibility and assimilation of the two perspectives.

### 3. Two Theoretical Approaches

Starting from the Freudian Ego, ambiguously and creatively hovering – as Laplanche affirms (Laplanche and Pontalis, 1973) [6] – between the designation of an application of the psychic apparatus and that of the subjective experience of oneself, the construct of the Self is implicitly or explicitly at the basis of the theory and clinical practice of psychoanalysis. A detailed reconstruction can be followed under the heading «Self» (Schlesinger *et al.*) in the *IPA Inter-Regional Encyclopedic Dictionary of Psychoanalysis* online (in progress) [7], one of the main reference points of the study which follows below. Freud used the term «Ego» as much to indicate the impersonal concept of the second topography, consisting of a collection of interlinked functions of structuring, integration, adaptation and defence (1923, 1926) as, according to the use of the term preceding the elaboration of the structural model, to refer to the subjective

experiential Self, to the understanding that the individual has of himself/herself (1914, 1917, 1930, 1940a, 1940b) [8-14], occasionally using the term also to describe the personality considered as a whole. This leads to the observation according to which the translation of the German *Ich* into the English Ego by Strachey led to the dominance of one meaning, that of the impersonal concept of the psychic apparatus, over the other, that of the experiential Self, widening the consistency of the term at the cost of semantic richness (Laplanche, Pontalis, 1973; Kernberg, 1982) [6, 15]. According to Kernberg [10], this robbed the Self of the metapsychological attention it deserved.

Not so different is the position of Klein (1935, 1946) [11, 12], who often uses the terms «Ego» and «Self» interchangeably, although she uses the former more often to indicate a structure of the mind and the latter to refer to the experience of the subject and to the contents of his/her fantasies about him/herself. Moreover, she seems to ascribe a more active role to the Ego, as the creator of the processes of introjection and projection, while the Self takes centre stage in the description of the relationship with the object. In the treatment of schizoparanoic and depressive positions, respectively characterised by dominance of anxiety in relation to the subject or the object, references to the Self tend to be more common than to the Ego. Klein (1959) [13] also intends the Self as referring to the entire personality, comprising both the Ego and the Id, conceiving of the Ego as the organisational part of the Self.

Following on from these considerations, psychoanalytical thought develops along two distinct lines of theory, based respectively on the theorization of the Self as the experience of oneself and on the Self as an intrapsychic representation within the Ego, understood as the core and original source of subjectivity. Both these perspectives have valid motivations, consistent in illustrating fundamental elements of the concept: in the first case, the intimate personal experience that the subject has of himself/herself; in the second, the «reflexivity», «self-representation» or «self-perception» involved in such experiences. As Jervis (1989) [14] observes, the experiential and non-substantialist meaning of the concept sometimes tends to be overlapped by an «objective» or «structural» one which can raise some perplexity. This second, more questionable meaning, contrary to what he seems to suggest, appears not only in the first line of research, but also emerges here and there in the second. In as much as it refers to a hypothetical integrated collection of functions, the «structural» sense of the Self, according to Jervis [14], tends to be confused with the more precise, defined one of the Ego, finding relative justification only in reference to the immaturity of the infantile psychic apparatus. However, even in this case, going more deeply into such considerations, it becomes difficult to avoid the impression of a certain terminological redundancy, since the functional immaturity of the infantile mind could be just as effectively expressed by the immaturity of the Ego, without infringing Occam's recommendation not to multiply the «entities» beyond what is necessary.

Jervis [14] furthermore notes the spiritual and metaphysical interpretations of the «structural» concept, the tendency to reify the Self in a sort of «psychic totality» which contains within itself the concepts of the structural model. This results in a construct that is vague and fundamentally «pre-psychoanalytical» or even «anti-psychoanalytical», not very plausible from an epistemological perspective and open to the risk of being spiritualistically hypostatized in a sort of secularized soul (*ibid.*). In line with these observations, the meanings of the Self which will be addressed here will therefore be the subjective experiential one and the representational one, leaving aside the «structural» one, including its spiritual and metaphysical declinations. As long as there is no confusion between the experiential Self and the «structural» one, one can certainly share Gabbard's opinion (1992) [20] stating that the two approaches to the concept are both legitimate and complementary. It is however important to underline that they are neither equivalent nor interchangeable on a theoretical level, but need to be integrated in a specific manner through the inclusion of the «experiential» one in the «representational» one. It is not within the scope of this work to offer a systematic reconstruction of the two approaches, but simply to highlight their distinctive features, identifiable in some representative models, with the aim of showing how they converge towards a unified theory of the Self and how this theory is difficult to trace back or reduce in a linear fashion to the neuroscientific perspective.

#### 4. The «Phenomenological-Experiential» Self

To the first tradition of thought belong those authors who have made the Self, the subjective experience which the individual has of him/herself, the centre of their model, distancing themselves progressively from the Freudian structural concept. They have often refrained from giving it an explicit definition, presuming it in fact to be a primitive concept, non-derivable and in a certain way self-evident. Fairbairn (1952) [21] proposes an entirely relational model, alternative to the drive theory and to the structural concept of the psychic apparatus, founded on the ups-and-downs of the Self in relation to the object. He still refers to the Self with the term «Ego», following the Freudian use prior to the second topography, but will later admit that the term «Self» would have been more suitable. Fairbairn formulates a theory of development and psychopathology in which the Ego, understood as the Self, is present from birth and the libido is object-seeking. From the start, the Ego or Self defensively internalizes the exciting and frustrating aspects of the object, splitting into a «central» Ego or Self linked to the good object, a «libidinal» Ego or Self linked to the exciting and over-promising object, and an «antilibidinal» Ego or Self linked to the frustrating object. Unlike the «subsidiary» Ego or Self (libidinal or antilibidinal), the central Ego or Self is also in relation to the real object «preserved» thanks to the

creation of «bad» internal objects (the exciting and the frustrating). This is the «basic endopsychic situation» at the origin of personality and psychopathology, outlined within a theory in which the experiential and «structural» aspects of the Self, not by chance still denominated «Ego», clearly tend to be confused.

Winnicott (1965, 1971) [22, 23] is the first author to explicitly base his model on the Self, which he believes emerges from experiences of non-differentiation and unintegration, which, thanks to maternal holding, evolve towards that feeling of «going-on-being» that is at its base. With the progress of the integrative processes, passing through the phase of illusion, the «survival» of the object and the progressive reduction in maternal holding, there emerges the «True Self», which environmental shortcomings, traumatic intrusions and pressures to adapt can to various degrees push towards the «False Self». Winnicott is rather vague in characterising the «True Self», defining it above all in opposition to the «False Self», like an inborn potential which is at the origin of creativity and the feeling of being alive and real, in relation to the unconscious, primary processes and dreams. He adheres to the structural model of the mind, but does not attempt to locate the precise site of the Self inside the psychic apparatus, nor in particular to define its relationship with the Ego, limiting himself to suggesting a reciprocal implication for the two terms. Environmental strengthening of the Ego promotes the experience of the «True Self», which in turn favours the Ego's organizational adaptation to the environment [17]. According to Pontalis (1977), Duruz (1985) and Jervis (1989), Winnicott's concept of the Self is fundamentally experiential and phenomenological, but not without that ambiguity which could leave it open to misunderstandings in a «structural», if not spiritualist or «para-religious», sense (Jervis) [24, 25, 19]. The position of Greenberg and Mitchell (1983) [26] is significant proof of this, since it interprets Winnicott's Self in a purely «structural» sense.

Kohut (1971, 1977, 1984) [27-29] elaborates a theory that significantly overlaps Winnicott's, getting progressively further away for the Freudian structural model and placing the Self at the centre of his model, based on narcissistic needs, selfobjects, mirroring, idealizing and twinship transference, fragmentation anxiety and narcissistic rage. Moreover, Kohut avoids giving a definition of the Self and states that he considers its essence unknowable, with a declaration of agnosticism which seems at the same time to suggest a tendency towards reification. This is the conclusion reached by Eagle (1987) [30] and others, who consider his notion of the Self excessively vague and confused, in particular due to the insufficient distinction between his experiential and «structural» interpretations.

Alien to such ambiguity is Stern (1985, 1989), who, together with authors such as Emde (1990) [31-33], bases his ideas within a conceptual framework strongly influenced by empirical research, also distancing himself from the structural model and refuting the hypothesis of primary narcissism. Stern explores the genesis of the Self within the

primary relationship, which he believes to be present from the first day of life, and proposes a developmental sequence involving five separate senses of Self, chronologically successive and all present in the fully developed experience of the Self. Central is the role of «amodal perception», the ability to transfer perceptive patterns from one sensorial modality to another, allowing the newborn child to recognise itself as different from the object. From three months of age, the infant begins to form a sense of «emergent self» or «bodily self», consisting of the sensation of being able to move and act, of physical cohesion, of having temporal continuity and of deriving pleasure or displeasure from experience. This is followed by the «core self», «subjective self», «verbal self» or «categorical self», and «narrative self», on a scale of increasing complexity leading to the fully unfurled experience of adult subjectivity.

Bollas (1987, 1989) [34, 35] proposes an interesting development of the Winnicott model, developing the concept of «idiom», which has progressively substituted that of the «True Self». The idiom has an «aesthetic» nature and identifies with the style and particular or specific elements of a person, that which means a person is – and is perceived as – unique and distinct from everyone else. The idiom is an innate potential that develops through the use of the object, a process which the object can contribute to or oppose in varying measures. Bollas quite clearly seems to refer to the idiom as an experience and so places it within the «phenomenological-experiential» concept of the Self. Even so, in characterising it as a «historic kernel» in the infant's instinctive ego arrangement [29], there still hides some allusion to a possible «structural» interpretation.

Bromberg (1998, 2006, 2011) and Mitchell (1991) [36-39], together with other authors on relational matters, join in following the tradition of Sullivan and continue the «postmodern» deconstruction of the traditional unitary subject, considering the unitary Self to be a mere self-representative illusion for defensive purposes. Given the inevitable and ubiquitous presence of dissociative processes due to the presence of rejected «not-me» states, Bromberg hypothesises a multiplicity of states of the Self as a physiological phenomenon, considering the psychopathology a simple radicalization of the situation and ascribing its seriousness to the level of depth, non-integration and disharmony between the various states of the Self.

## 5. The «Representational» Self

The second line of thought starts from the conceptualization by Hartmann (1950) [40], who deals with the theme of the intrapsychic process leading to the experience of the Self, proposing an explanatory theory of great interest. Separating the two meanings of the Freudian Ego, Hartmann proceeds to revise the Freudian definition of narcissism as the investment of the Ego, proposing vice versa to consider it as the investment of the Self. He introduces a distinction between the Ego as a psychic concept or substructure of personality, the Self as the whole person,

including the body and the psychic apparatus, and the representations of the Self as unconscious, preconscious and conscious representations of the bodily and mental Self in the system of the Ego.

Hartmann's concepts were then developed by Jacobson (1964) [41], who elaborates the precocious forming of the representations of the Self and of the object; she too identifies the former with unconscious, preconscious and conscious intrapsychic images of the bodily and mental Self in the Ego. Nevertheless, the theory of a «psychophysiological Self» of the origins introduces some perplexity as regards its total support of the «representational» interpretation of the concept (Jervis [19]). Along the same lines, Mahler (Mahler *et al.* 1975) [42] elaborates on the creation of the representations of the Self and the object from an evolutionary point of view, integrating clinical experience and empirical observation. In her theory of the process of separation-individuation, from pre-separation autism to symbiosis, differentiation, practicing, rapprochement and object constancy, there can however still be noted some wavering between the concept of the Self as representation and as «structure», as can be clearly deduced in Greenberg and Mitchell [26].

Such uncertainty seems to have been overcome by Kernberg [15], who in some ways brings to fruition the attempts by Jacobson and Mahler to incorporate the object relation theory into the psychology of the Ego, proposing a model in which the Self is conceived of as the result of the integration of its multiple representations contained within the Ego. Such representations are related to representations of the object and follow an evolutionary line, moving from a state of non-integration or split between the idealised or persecutory representations of the Self and the object to a tolerance of ambivalence, a unitary vision of the object and an integrated sense of the Self or «normal Self». More recently Kernberg (2015) [43] has attempted to connect the Self to an «ascending» neurobiological perspective which leads from the subcortical nuclei to the cortex, corresponding to the progression from a state of splitting through rising levels of integration. To which end, not without the reappearance of some ambiguity between representation and «structure», he introduces the concept of the homeostatic «proto-Self», which evolves into the «core Self», allowing collocation in space and time, and the stable, mature «concept of Self», which can include autobiographical memory and develops into the «linguistic Self», «mental Self» and «social Self».

Pontalis [24] underlines the illusory nature of the unity of concept of the Self, which risks disguising the inevitability of conflict, the alterity of the unconscious, the irreconcilability of representations, the multiple transformations of drives and the multiplicity of identifications. In other words, the unity of the Self contradicts the complexity of the articulation of psychic reality just as it is reflected in the Freudian structural model, the differences between the various psychic instances and their unyielding conflict. Nevertheless, through a series of clinical reasoning, Pontalis illustrates the usefulness of the

concept of the Self and of the relative theories of Hartmann and Kohut in relation to narcissism and subjectivation problems. Pontalis agrees with Winnicott that the Self is the guardian of the feeling of existing and believes that as long as the experience of the Self is possible, the constitution of an Ego is necessary, despite how rudimentary it may be.

The Grinbergs (1975), after an accurate revision of the line passing from the Freudian concept of the subject to Klein and Segal, to Hartmann's fundamental distinction between the Ego and the Self and to Jacobson's consequent concept of the representation of the Self, propose their theory on the basis of Wisdom's model (1961) [44, 45] of nuclear and orbital introjections and projections, in conjunction with Jacobson's representations of the Self and of the object. The Ego as an instance of the second topography includes the unconscious fantasy of the self within the Ego. It corresponds to the nucleus in Wisdom's model and contains Jacobson's representation of the Self. The Non-Ego is within the Self and includes the orbital of Wisdom (internal objects, the Superego and the object representations of Jacobson). The Self includes the Ego and the Non-Ego. It is the totality of the person, including the body with all its parts, the psychic structure with all its parts, the link with internal and external objects and the subject as opposed to the world of objects. Successively the authors propose the concept of «feeling of identity» as a result of the interrelation of three types of «integration links»: «spatial» (integration of different parts of the Self), «temporal» (continuity between different representations of the Self in time) and «social» (relation of different aspects of the Self with objects). The emotional experience of identity is here defined as the subject's ability to feel him/herself despite the succession of internal and external changes.

Bolognini (1991) underlines the differences between the Self and the psychic apparatus's components according to the structural model. The Ego is defined, in agreement with Laplanche and Pontalis [46, 6], as the nucleus of consciousness and a bundle of mental functions, organiser of defences, the agency mediating between external reality, Id and Superego. The Self is the set of representations concerning the person him/herself as the object (potential or actual) of his/her own subjective experience. Unlike the Ego, Id and Superego, which are dynamic components of the psychic apparatus, the Self is a content of the apparatus in the same way as the representations of objects. It has a complex location: various and often conflicting representations of the Self are distributed in the Ego, the Id and the Superego. Consequently, the Self appears to be partly conscious and partly unconscious.

## 6. The Conditions for a Unified Psychoanalytical Theory of the Self

Provided they are considered in light of the progressive abandon of any substantial reference to any «structural» concepts, the «phenomenological-experiential» and

«representational» lines of approach to the Self seem to be characterised by a parallel evolution and to be complementary. In both cases, the tendency towards reification and hypostatization actually seems to be gradually diminishing, with a move towards an ever greater epistemological clarity and plausibility. From this point of view, «experiential» models can be considered fundamental in centring attention on subjective experience, elaborated in all its multiple dimensions and in its complex evolutionary dynamics. «Representational» models, by contrast, address the central question of the «reflective», «self-perceptive» or «self-representational» character of such an experience, i.e. modalities through which the experience of Self is lived as one's own. And just as there is no opposition in principle between the two lines of theory, nor is there any between the different concepts within the two of them, as long as both of them investigate successive aspects of the same phenomenon with an adequate degree of application. The two lines of theory move forward in parallel towards a continuously wider, more articulate understanding of the complex phenomenon of subjectivity, through a succession of models with no incompatibility of importance between them and which could therefore be combined into a unified theory. Nevertheless, this does not mean that the two positions are equivalent to each other, nor that they can simply be swapped on a theoretical level. The «phenomenological-experiential» line relates to the «representational» one as the particular relates to the general: the experience of Self is nothing more than a representation of the Self, or better, the multiple dimensions of the experience of Self are nothing other than a complex and more-or-less integrated set of representations of the Self.

From this perspective, the models of the Grinbergs and Bolognini [44, 46], again in their essential outlines, are still among the most advanced in psychoanalytical theorisation about the Self, since in the most suitable way they take into account its phenomenology exactly as it has so far been illuminated by psychoanalytical clinical work. They constitute the most elaborate expression of that «metapsychology of the Self» whose absence had been noted by Kernberg [15]. The Grinberg model allows for the most extensive, deepest articulation of the representation of the Self within the Ego, while Bolognini's takes another step forward, placing the origin of its multiple representations also in the Id and Superego, giving an even clearer account of the multiplicity of states of the Self to which contemporary clinical work is witness. The experience of Self, even more so if complex and multiple, in fact requires a similarly complex and multiple representational structure to be experienced by the subject as his/her own: this regards its constituent, fundamental «reflective», «auto-representational» or «self-perceptive» nature. From this perspective, the experience of the Self can be considered a fundamental moment in a process of construction of the subjectivity originating in the Ego and – in Bolognini's vision – in the Id and Superego. The construct of the Self is therefore essential to, but not coextensive with, subjectivity,

which represents a wider «movement» including the Self and involves other structures of the mind hypothesised by psychoanalysis. These are not of interest here in as much as they may be related to the drive paradigm or the relational paradigm, but they are of interest as «kernels» of subjectivity which express the perspective of psychoanalysis in examining the mind, to ascribe to the level of description adopted, which is neither single nor absolute, but which defines it in an essential manner compared to other disciplines.

It is worth noting the convergence of the theory I am proposing here with the «classic» intuitions of the psychologist James (1890), recently re-proposed by three philosophers of the mind as part of a «constructivist and realist» vision of the Self, which they consider to be close to attachment theory and object relation theory. Di Francesco *et al.* (2016) [47, 48] distinguish between two aspects of the Self: the «process of the Self» (in James' terminology, the «I») and the product of this process, which is the «representation of the Self» (in James' terminology, the «Me»). The «Me» is constantly updated by the «process of the Self» and is firstly bodily; the highest point of development of this construction process is the «narrative Self». What they outline is a constructivist and developmental vision of the Self, distinguishing between the Self as an interminable process of «objectification» (the «I») and the Self as the multidimensional representation continually updated by this process (the «Me»). Di Francesco *et al.* [47] retrace subjectivity to self-consciousness, identifying one with the other totally, from the simplest forms to the most evolved, linguistic, cultural and narrative ones. The «missing link» in this stimulating treatment is undoubtedly unconscious subjectivity which is at the base of the psychoanalytical approach, as much as regards the drive perspective as the relational one. Psychoanalysis, overcoming the reductive identification of the Self with self-consciousness, demonstrates that subjectivity includes a fundamental unconscious dimension, related to a subject that represents itself in relation to its objects in a highly varied manner.

## 7. The Uncertain Neurobiological Destiny of the Self

I will now offer some brief considerations regarding some neurobiological concepts of the Self, concentrating firstly on the thesis of the «disintegration» of the subject, believed by some authors to be the logical consequence of the ever deepening knowledge of the structure and functioning of the brain. While for psychoanalysis the Self is an «axiom», the actual condition of its very existence and theoretical-clinical function, from a neuroscientific point of view, the existence of the Self is anything but an established, indisputable fact. There exists an authoritative school of thought according to which at a cerebral level, the Self literally «dissolves», substituted by modules, structures and circuits that are highly

specialized, often widely autonomous and independent, operating in a parallel and widespread manner. The major proponent of such «nihilism» towards the subject is Dennett (1991) [49], a philosopher of the mind particularly close, above all in recent years, to neuroscience. Although he is not primarily a reductionist, as regards the Self Dennett is close to the radical field of materialism which is «eliminativism», supported in an early period with logical-conceptual argumentation by Feyerabend (1963) and Rorty (1970) and then with empirical argumentation, based on neuroscientific research, by the Churchlands (1986, 1989) [50-53].

Here is the passage unanimously considered to be the most representative of Dennett's dissolution of the Self: «In our brains there is a cobbled-together collection of specialist brain circuits, which, thanks to a family of habits inculcated partly by culture and partly by individual self-exploration, conspire together to produce a more or less orderly, more or less effective, more or less well-designed virtual machine, the *Joycean machine*. (...) This virtual machine, this software of the brain (...) creates a virtual captain of the crew (...)» ([49] p. 228). This is the philosopher Di Francesco's comment (2002): «Dennett thus denies that a *deeper* part of the mind (the core Self) observes, understands and refers something of the contents to another part (...) The «captain» would therefore not be a unitary individual (...) The *illusion* of this virtual subject's continuity and coherence would come from a peculiarity of our species, that of «weaving», «stringing» but also «spinning» a Self (...) we are not the producers, but the product of these stories» ([54] pp. 229-230 [*my translation*]). To such an «illusion» Dennett counters with his theory of «multiple drafts», on the basis of which in every part of the brain, at one and the same moment, what happens is a multiplicity of «content fixations», some of which become conscious, imposing themselves time after time on others in the complex activity of planning, correction and control of the organism's projects.

Dennett's elimination of the subject is echoed by the neuroscientist Gazzaniga (1998), who provocatively affirms that «psychology itself is dead» ([55] preface p. 21), in the sense that any possible «point-by-point» non-correspondence between psychology and neuroscience would impose the «elimination» of any psychological concepts that are not mirrored in the reality of the brain. In this regard, Gazzaniga [55] proposes the hypothesis, also highly controversial, of an «interpreter», an automatic and unconscious mechanism present in the left-brain hemisphere which creates the illusion of a subject that is the protagonist and agent of his/her biography, thus dissolving one of the fundamental notions of the vision of mankind rooted in our culture. «Whether or not the interpreter exists – writes Di Francesco – what is important is the eliminativistic moral which Gazzaniga draws from the discovery that the brain is not a homogeneous system, but is actually composed of specialised centres (dedicated to language, vision, movement, sensitivity, etc.) further subdivided into a myriad of «agencies» which preside over the carrying out of evermore specific duties (from the recognition of faces to the distinction between animate and

inanimate, to the calculation of relative size of objects, to the recovery of childhood memories, and so on)» ([54] pp. 233-234 [*my translation*]). Naturally, integration phenomena are possible, but these too are entrusted to largely autonomous, independent modules and circuits.

On the same line of thought is Metzinger (2004) [56], whose basic thesis is that the Self, the subject or the Ego, terms which he uses interchangeably, do not correspond to any reality at a cerebral level, since vice versa we are dealing with a representation – this is the essence of his thinking – to which there is no corresponding object. So also in this case, no centre of the person, no cerebral site where «everything converges», but rather a rooted, useful and reassuring fiction, that of a subject, a captain, a «boss», a spectator in the Cartesian theatre, according to the various definitions given to it, produced by mental activity thanks to a «transparent» representation, i.e. that is not perceived as such and therefore gives the illusion of the reality of the represented object. At the heart of Metzinger's theory is the «phenomenal model of the Self», or rather that particular representation or representational process with which he identifies the Self.

Dennett's theory of consciousness, which is actually a theory of self-consciousness and of the Self with which it is totally identified, and subordinate to Gazzaniga and Metzinger's views, appears to be offered certain empirical support by the model of the «global neuronal workspace», originally proposed by Baars (1988, 1997) and then elaborated by Dohaene (2014) [57-59]. This model distinguishes two distinct neurocomputational spaces in the brain, the first of which consists of cortical modules specialized in the treatment of a specific type of information, such as those related to colour or movement. These neural modules compete with each other to access a second «global neuronal workspace», consisting of a set of widely distributed cortical neurons with long-distance connections, particularly dense in the prefrontal, cingulate and parietal regions. When one of these subsystems reaches the «global neuronal workspace», the information it elaborates, such as data related to the perception of the external world, to internal events such as mental images or interior monologues, or to events of a somatosensory and proprioceptive nature, is transmitted to a bundle of executive conceptual and emotional systems which use them to draw inferences, formulate judgements or take decisions. This transmission creates a global cerebral availability which is experienced as consciousness; this would appear to be compatible with Dennett's concept of «content fixations» which from time to time «take power» in the brain.

This «nihilistic» or «eliminativist» line, which claims the inexistence of cerebral correlatives of the Self, something which tends to be deduced by its illusory character, is countered by various interesting formulations that on the contrary propose a neurobiological basis for it, identifying it with a series of cerebral structures and processes. Damasio (2010) [60] proposes a theory regarding its origin starting from the «Protoself», situated at the level of the superior brainstem and consistent with the mapping of an organism's

base physiological conditions, the origin of those «primordial feelings» that represent the first embryo of subjectivity. At a second level, there is the «core Self», linked to action and coinciding with the sensations evoked at the level of the «Protoself» by encounters with objects, the presupposition of a representation of the Self as distinct from the environment. At the third level the «autobiographical Self» appears, based on memory, language and interpersonal relationships, an expression of the fully developed adult human self-consciousness. Fundamental to this vision is the moment-by-moment mental «mapping» of the organism's internal conditions, the surrounding environment and the mental activity of other areas of the brain.

Panksepp (Panksepp and Biven, 2012) [61], claiming priority over Damasio, puts forward the hypothesis that the primary core of the Self resides at a subcortical level, where the basic emotional-motivational systems, which mankind shares with other mammals, are rooted. Although it lies within a less developed model than Damasio's, in that it is not specifically dedicated to the genesis of the Self, this is a further contribution to the revision of what Solms (2017) [62] defined as a «cortico-centric fallacy», consistent to the idea that consciousness and self-consciousness stem from the reading of subcortical activity by the cortex, the site of language and rational thought. Panksepp and Davis (2018) [63] illustrate the limits of a «purely neocortical» concept of the Self, furthermore underlining how the «core Self» is superimposed in mankind by an «autobiographical Self» or an «autobiographical sense of self» whose maximum elaboration undoubtedly happens at a cortical level. Preceding the «core Self» is the «Protoself», which the authors describe in a manner remarkably similar to how the same term is used by Damasio, consisting of the ability to respond to the metabolic requirements of the organism, promote spontaneous physical movements and distinguish implicitly between the Self and the non-Self.

By contrast, undoubtedly based on the role of the cortex is the concept of the Self proposed by Edelman (1989, 1992) [64, 65] through his theory of two different forms of consciousness. «Primary consciousness», which we presumably share with some other animals that do not have linguistic capacity, is the immediate awareness of events, without any sense of being a person with a past and a future. «Higher-order consciousness» requires the recognition of one's own actions and feelings, and implies a sense of personal identity and of its continuity over time. It is specifically human, dependent on language, allowing the «categorization» of the processes of primary consciousness, and is rooted in the cortex: it can be defined as the «consciousness of being conscious».

Northoff and Bermppohl (2004) and Northoff (2016) [66, 67] propose a model based on Cortical Midline Structures (CMS), a series of phylogenetically ancient cortical structures, closely interrelated to each other and characterised by analogous patterns of links with other regions of the brain. This complex, articulate network overlaps the Default Mode Network (DMN), a neural network which includes

prevalently cortical regions that become active during resting conditions, understood as moments of relative freedom from stimuli, associated with introspective activity, the recovery of autobiographical memories and planning imagination. Together, CMS and the DMN are considered to be central to the phenomenology of the conscious Self, on the basis of research that shows selective activation in tasks such as differentiating between self- or hetero-referential character attributes. However, the Self is not only identified with «stream of consciousness» (Schaefer and Northoff, 2017) [68] and also includes relevant unconscious components, described as automatic and sub-personal processes in principal inaccessible to conscious reflection, even deeper than the psychoanalytical unconscious, a good number of which can be represented by «embodied cognitions».

## 8. The Difficulty of a Neurobiological Foundation for the Psychoanalytical Self

I will now propose a series of «empirical» and theoretical arguments to demonstrate the difficulty of a neurobiological basis for the psychoanalytical concept of the Self, just as I have hypothesised that it might be obtained by integrating the «experiential» and «representational» lines of elaborating the concept. The first area to consider is «empirical», since it concerns the specific characteristics of the neurobiological models of the Self compared to each other and to different components of psychoanalytical theory. The second area to consider is theoretical, in that it concerns the difficulties and logical and conceptual paradoxes of research into the correspondence between such models considered as a whole and the psychoanalytical conception.

### 8.1. «Empirical» Arguments

While of course the psychoanalytical concept of the Self has at its core the unconscious dimension, the neurobiological theories considered almost invariably make the Self coincide with self-consciousness, with the exception of Northoff's model (Schaefer and Northoff [68]) which, however, precisely by being the exception, is dissonant compared to the others, moreover referring to a sub-personal unconscious very distant from the psychoanalytical concept. This is a not insignificant difference which brings the neurobiological concepts of the Self closer to the traditional vision of the subject as self-conscious, capable of autobiographical narration, leaving open a very wide gap compared to the psychoanalytical concept of the subject.

The second consideration concerns the notable lack of homogeneity among the various neurobiological theories of the Self considered, which makes it difficult to identify a unitary concept to which the multiple – but fundamentally convergent – psychoanalytical concepts of subjectivity can be connected. On the one hand, there actually exists a still highly influential «neurobiological nihilism» of the Self, supported by authors such as Dennett, Gazzaniga and

Metzinger, to whom can be added the cognitive scientist Minsky (1986) [49, 55, 56, 69], who states that at a cerebral level such a construct has no correlative. On the other hand, there have been various recent neurobiologically-based attempts to extrapolate a concept of the Self, in turn proposing versions which are, however, in marked contrast to each other. In fact, there are contrasting «cortical traction» models, such as those of Edelman, Northoff and Bermpohl, Northoff, Baars and Dehaene – moreover also compatible with the «nihilist» programme – and «subcortical traction» models such as those of Damasio, Panksepp and Biven and Panksepp and Davis [64-67, 57-61, 63]. As a whole, there is a notable lack of homogeneity and they do not seem to offer a definitive basis for comparison for that concept of the Self as a complex of conscious and unconscious representations within the Ego and other structures of the mind which emerges from the synthesis of the various psychoanalytical concepts.

A third consideration concerns the notable difficulties in offering a «point-by-point» neuroscientific summary – the only one which makes sense from a «foundationalist» perspective – of the psychoanalytical concept of the Self for each of the illustrated neurobiological models considered individually. I am referring to the undeniable hiatus between the rich, complex psychoanalytical articulation of the concept and its different – and differently conceived – cerebral correlatives. The Self/object unities, the representations of the Self and the object in the Ego, the Id and the Superego, the representations of the Non-Ego and internal objects, nuclear and orbital introjections and projections, understood as foundation stones and distinctive traits of the psychoanalytical perspective of elaboration of the concept, seem to be very difficult to find in a non-generic manner at the level of the various neurobiological models considered. Being able to pinpoint «neural correlatives» for each of these representations and processes currently appears to be more of a utopia than a realistic prospect, while any conviction that they will be identified in the future is a kind of leap of faith in the possibility of neurobiologically «validating» psychoanalysis, which actually has very little that can be considered scientific.

### 8.2. Theoretical Arguments

The main objections to a neurobiological basis for the psychoanalytical concept of the Self remain in any case logical-conceptual ones. The first of these concerns the difficult question of whether the structure itself of such a concept can in principle be represented at a neurobiological level. This requires a deeper logical-conceptual examination of the «empirical» problem of finding equivalents of the Ego (as well as the Id and the Superego) and of the Self at a cerebral level. It is doubtful that such a problem can be resolved by a «simple» advance in neurobiological knowledge, since it highlights a limit of «principle» of such knowledge in accounting for the fundamental «reflective», «self-representational» or «self-perceptive» character of the experience of the Self. In the theory I have outlined the

phenomenon of the Self is the result of the process of «objectification» in which the subject represents him/herself to him/herself, of that «movement» in which the subject makes him/herself the object of his/her own experience. From this perspective, the Self is the Ego itself – as well as the Id and the Superego – which presents itself by making itself the object of its own experience. From this «reflective» movement, as in the case of intentionality, either one negates its existence, or one recognises it as a fundamental mental phenomenon, but with extremely difficult and perhaps impossible identification at a physical-neurobiological level. In fact, here «reflexivity», «self-perception» or «self-representation» are invariably considered as «hetero-representation» or «hetero-perception». These are rendered in spatial relationships, where «reflexivity» is lost and the representation is always the representation of another, in relation to a structure or a process which another observes or «reads».

The second difficulty concerns the theory that implicitly underpins the attempt itself to establish psychoanalysis through neurobiology. Despite the repeated claims of antireductionist faith, the «correlational» paradigm orienting research into convergence between psychoanalysis and neuroscience contains one of the fundamental assumptions of «identity theory», namely the most accomplished contemporary formulation of the reductionist concept of the mind/brain relationship (Mattana, 2017, 2020; Di Francesco *et. al.*, 2017; Nannini, 2002; Paternoster, 2002 [70-74]). According to this theory, mental states and processes are «identical» to (i.e. they are nothing other than) cerebral states and processes, and the possibility of demonstrating a «perfect» or «point-by-point» correlation between one set and the other, i.e. that every mental phenomenon has a cerebral equivalent, is the basic premise of such a reduction-identification. In fact, the search for «neural correlatives» of psychoanalytical constructs encounters great difficulty in placing itself within a framework of Cartesian dualism, nowadays considered unsustainable by the majority of experts. The existence of ontologically distinct and interacting *res cogitans* and *res extensa* furthermore assumes a fundamental difference in content between the mental and corporeal orders. It implies not only the action of one «substance» on another, as when the intention to carry out a movement leads to a particular neural activation, but also that such an intention starts within an autonomous mental space in a way that is totally independent of cerebral function. And an analogous reasoning holds for the action of the brain on the mind: exactly the opposite of what the «correlational» paradigm expects.

Excluding Cartesian interactionism, as much regarding its classic version as its no less improbable 20th-century re-edition [67], the objective of finding «point-by-point» correlations between the psychoanalytical and neuroscientific concepts can only imply the following two alternatives, both of which fall within the materialistic framework of the contemporary debate. The first consists of a sort of «epiphenomenal» psychophysical parallelism, to be clearly

distinguished from the classic psychophysical parallelism passing from Malebranche and Leibniz through to Wundt. Assuming the ontological autonomy of the mind from the body, this in fact encounters objections that are partly analogous to those which the evermore in-depth demonstration of the dependence of the mind on the brain raises against Cartesian dualism (Di Francesco [49]). There therefore remains the possibility of an «epiphenomenal» parallelism, on the basis of which the mind is nothing more than a pallid reflection, a faded shadow, a sort of replica of cerebral activity, but lacking in ontological consistency and causal efficacy. The Self of psychoanalysis, understood as a conscious and unconscious mental phenomenon, from this perspective would be a sort of secondary reality or a «certified copy» of a more fundamental neurobiological reality, the only decisive one in explaining subjective experience and behaviour. It would be difficult to avoid the question of the meaning of such a construct and the complex theorization concerning it, if the «true» reality and the «true» explanation were to be found at a neurobiological level.

In the perspective of a «point-by-point» mind/brain correlation, the second alternative would therefore appear much more reasonable: that of a global reduction of the psychoanalytical Self to the neurobiological level. With the ontological reduction-identification of the mind with the brain established, there would logically follow the epistemological one of psychoanalysis and the other disciplines of the mind with neuroscience. No added value in the psychoanalytical theory of the Self, no loss of knowledge in its neurobiological translation: if all «has» a «neural correlative», it becomes rather difficult, given the low plausibility of the alternatives, not to conclude that everything «is» a «neural correlative», according to the classic dictates of «identity theory».

## 9. Conclusion: The Relationship «by Difference» of Psychoanalysis with Neuroscience

The «correlationism» orienting this comparison between psychoanalysis and neuroscience clearly implies the thesis of the ontological and methodological primacy of the latter, in turn based on the reductionism of «identity theory». While convinced that it is very unlikely that the classic problems of the essence of the mind and the mind/brain relationship can be resolved exclusively through empirical argumentation, since observations and experiments are often interpreted in the light of theoretical-philosophical options which precede them, I still believe it to be useful at this point to recall the initial considerations on the relationship between psychoanalysis and neuroscience. They are posited on a principally epistemological level and imply abandoning those ontological-essentialist affirmations related to the nature of things, following an epistemological pluralism and a corresponding «stratified», complex and in the final analysis inexhaustible concept of reality. It is true that this implies a

sort of «Kantian» metaphysics related to the elusiveness of «things-in-themselves», but more as a regulatory ideal inferred from the «postmodern» awareness of the relative and contextual character of knowledge than as a «forceful» affirmation on the essence of reality.

Within this outline, psychoanalysis appears as a discipline with a method of investigation and a conceptual and linguistic system that are particular and unyielding. They are suitable in describing a level of reality that cannot be reached with other methods and systems; from this point of view, a hypothetical neurobiological basis for psychoanalysis would lead to an unacceptable loss of knowledge. The Self of neuroscience, within the limits of the possibility of verifying such a construct at a neurobiological level, is another thing from the Self of psychoanalysis, the two being neither «isomorphic» nor superimposable, neither from an empirical nor a logical-conceptual point of view. Following this line of thought, it is desirable that the relationship between psychoanalysis and neuroscience can evolve from the «correlational» paradigm and from the objective of a «point-by-point» correspondence between the psychoanalytical and neurobiological «realities» towards enhancing the values of the differences and a dialectic comparison between the two disciplines. Psychoanalysis reaches a limit, but also a necessary integration, in neuroscience, which perceives a level of reality that it could not perceive encountering in turn a limit and an integration in psychoanalysis. The relationship between the two fields, more than a relationship of convergence, harmony or correspondence, could therefore be defined as a relationship «by difference», based on the continuous and multilateral deepening of the inexhaustible theme of the mind and subjectivity.

## References

- [1] Hautamäki A. (2018). Viewpoint relativism. A new approach to epistemological relativism based on the concept of points of view. Cham, Springer, 2020.
- [2] Coliva A., Pedersen N. (2017). Epistemic pluralism. Cham, Palgrave Macmillan.
- [3] Rovelli C. (2020). Helgoland. Milano, Adelphi.
- [4] Candiotta L., Pezzano G. (2019). Filosofia delle relazioni. Genova, Il melangolo.
- [5] Mattana G. (2020). Il confronto fra modelli e la scientificità della psicoanalisi. Riv. Psicoanal., 3, 739-749.
- [6] Laplanche J., Pontalis J. B. (1973). The language of psychoanalysis. New York, Norton.
- [7] Schlesinger G., Groisman R., Maestro S. (eds). «Self». In: IPA Inter-Regional Encyclopedic Dictionary of Psychoanalysis (in progress). <https://online.flippingbook.com/view/544664/322/>.
- [8] Freud S. (1923). The ego and the id. SE 19: 1-66.
- [9] Freud S. (1926). Inhibitions, symptoms and anxiety. SE 20: 75-176.
- [10] Freud S. (1914). On narcissism: an introduction. SE 14: 67-102.
- [11] Freud S. (1917). Mourning and melancholia. SE 14: 237-258.
- [12] Freud S. (1930). Civilization and its discontents. SE 21: 57-146.
- [13] Freud S. (1940a). An Outline of psychoanalysis. SE 23: 139-208.
- [14] Freud S. (1940b). Splitting of the ego in the process of defence. SE 23: 271-278.
- [15] Kernberg O. F. (1982). Self, ego, affects, and drives. J. Amer. Psychoanal. Assn. 30 (4): 893-917.
- [16] Klein M. (1935). A contribution to the psychogenesis of manic-depressive states. In: The writings of Melanie Klein, vol. 1. London, Karnac & The Institute of Psychoanalysis, 1992.
- [17] Klein M. (1946). Notes on some schizoid mechanisms. In: The writings of Melanie Klein, vol. 3. London, Karnac & The Institute of Psychoanalysis, 1993.
- [18] Klein M. (1959). Our adult world and its roots in infancy. In: The writings of Melanie Klein, vol. 3. London, Karnac & The Institute of Psychoanalysis, 1993.
- [19] Jervis G. (1990). Significato e malintesi del concetto di «Sé». In: Ammaniti M. (ed.) La nascita del Sé. Roma-Bari, Laterza.
- [20] Gabbard G. O. (1992). Psychodynamic psychiatry in clinical practice. Washington, American Psychiatric Press.
- [21] Fairbairn W. R. D. (1952). Psychoanalytic studies of the personality. London, Tavistock Publications Limited.
- [22] Winnicott D. N. (1965). The maturational process and the facilitating environment. Studies in the theory of emotional development. London, The Hogarth Press and The Institute of Psychoanalysis.
- [23] Winnicott D. N. (1971). Playing and reality. London, Tavistock Publications.
- [24] Pontalis J. B. (1977). Tra il sogno e il dolore. Roma, Borla, 1988.
- [25] Duruz N. (1985). I concetti di narcisismo, Io e Sé nella psicoanalisi e nella psicologia. Roma, Astrolabio, 1987.
- [26] Greenberg J. R., Mitchell S. A. (1983). Object relations in psychoanalytic theory. Cambridge, Harvard University Press.
- [27] Kohut H. (1971). The analysis of the self. New York, International Universities Press.
- [28] Kohut H. (1977). The restoration of the self. New York, International Universities Press.
- [29] Kohut H. (1984). How does analysis cure? Chicago and London, University of Chicago Press.
- [30] Eagle M. N. (1984). Recent developments in psychoanalysis. A critical evaluation. New York, McGraw-Hill.
- [31] Stern D. N. (1985). The interpersonal world of the infant. A view from psychoanalysis and developmental psychology. New York, Basic Books.
- [32] Stern D. N. (1990). La nascita del Sé. In: Ammaniti M. (ed.) La nascita del Sé. Roma-Bari, Laterza.

- [33] Emde R. N. (1990). Gli affetti nello sviluppo del Sé infantile. In: Ammaniti M., Dazzi N (eds.) *Affetti. Natura e sviluppo delle relazioni interpersonali*. Roma-Bari, Laterza.
- [34] Bollas C. (1987). *The Shadow of the Object. Psychoanalysis of the unthought known*. London, Free Association Books.
- [35] Bollas C. (1989). *Forces of Destiny. Psychoanalysis and human idiom*. London, Free Association Books.
- [36] Bromberg, P. M. (1998). *Standing in the spaces. Essays on clinical process, trauma, and dissociation*. New Jersey, Analytic Press.
- [37] Bromberg, P. M. (2006). *Awakening the dreamer. Clinical journeys*. New Jersey, Analytic Press.
- [38] Bromberg, P. M. (2011). *The shadow of the tsunami. And the growth of the relational mind*. New York, Routledge.
- [39] Mitchell S. A. (1991). Contemporary perspectives on self: towards an integration. *Psychoanal. Dial.* 1 (2): 121-147.
- [40] Hartmann H. (1950). Comments on the psychoanalytic theory of the ego. In: Hartmann H. (1964). *Essays on ego psychology*. New York, International Universities Press, 1964.
- [41] Jacobson E. (1964). *The self and the object world*. New York, International Universities Press.
- [42] Mahler M., Pine F., Bergman A. (1975). *The psychological birth of the human infant. Symbiosis and individuation*. New York, Basic Books.
- [43] Kemberg O. F. (2015). Neurobiological correlates of object relations theory. The relationship between neurobiological and psychodynamic development. *Int. Forum Psychoanal.* 24 (1): 38-46.
- [44] Grinberg L., Grinberg R. (1975). *Identidad y cambio*. Buenos Aires, Editorial Nova.
- [45] Wisdom J. O. (1961). A methodological approach to the problem of hysteria. *Int. J. Psychoanal.* 42 (3): 1961.
- [46] Bolognini S. (1991). Gli affetti dell'analista: analisi con l'Io e analisi col Sé. *Riv. Psicoanal.* 2, 339-371.
- [47] James W. (1890). *The principles of psychology*. New York, Dover Publications.
- [48] Di Francesco M., Marraffa M., Paternoster A. (2016). *The Self and its Defences – From Psychodynamics to Cognitive Science*. London, Palgrave Macmillan.
- [49] Dennett D. C. (1991). *Consciousness explained*. Boston-Toronto-London, Little, Brown and Company.
- [50] Feyerabend P. K. (1963). Materialism and the mind-body problem. In: Borst C. V. (ed.). *The mind/brain identity theory*. New York, Macmillan, 1970.
- [51] Rorty R. (1970). Mind-body identity, privacy, categories. *The review of metaphysics* 19 (1): 24-54.
- [52] Churchland P. S. (1986). *Neurophilosophy*. Cambridge (MA), The MIT Press.
- [53] Churchland P. M. (1989). *A neurocomputational perspective. The nature of mind and the structure of science*. Cambridge, MIT Press.
- [54] Di Francesco M. (2002). *Introduzione alla filosofia della mente*. Roma, Carocci.
- [55] Gazzaniga M. S. (1998). *The mind's past*. Berkeley, University of California Press.
- [56] Metzinger T. (2009). *The ego tunnel. The science of the mind and the myth of the self*. New York, Basic Books.
- [57] Baars B. J. (1988). *A cognitive theory of consciousness*. Cambridge, Cambridge Univ. Press.
- [58] Baars B. J. (1997). *In the theatre of consciousness: the workspace of the mind*. Oxford, Oxford Univ. Press.
- [59] Dehaene S. (2014). *Consciousness and the brain. Deciphering how the brain codes our thoughts*. New York, Viking.
- [60] Damasio A. (2010). *The self comes to mind. Constructing the conscious brain*. New York, Pantheon Books.
- [61] Panksepp J., Biven L. (2012). *The archaeology of mind. Neuroevolutionary origins of human emotions*. New York, Norton & Company.
- [62] Solms M. (2017). «The unconscious» in psychoanalysis and neuroscience: an integrated approach to the cognitive unconscious. In: Craparo G. and Mucci C. (eds.). *Unrepressed unconscious, implicit memory, and clinical work*. London, Karnac.
- [63] Panksepp J., Davis K. L. (2018). *The emotional foundations of personality. A neurobiological and evolutionary approach*. New York, Norton & Company.
- [64] Edelman G. (1989). *The remembered present. A biological theory of consciousness*. New York, Basic Books.
- [65] Edelman G. (1992). *Bright air, brilliant fire. On the matter of the brain*. New York, Basic Books.
- [66] Northoff G., Bermpohl F. (2004). Cortical midline structures and the self. *Trends in cognitive sciences* 8 (3): 102-107.
- [67] Northoff G. (2016). *Neuro-philosophy and the healthy mind. Learning from the unwell brain*. New York, W. W. Norton & Company.
- [68] Schaefer M., Northoff G. (2017). Who am I: The Conscious and the Unconscious Self. *Front. Hum. Neurosci.* Published online Mar 17. doi: 10.3389/fnhum.2017.00126.
- [69] Minsky M. (1986). *The society of mind*. New York, Simon and Schuster.
- [70] Mattana G. (2017). Psicoanalisi e filosofia della mente: il problema mente/cervello e il rapporto con le neuroscienze. *Riv. Psicoanal.* 1, 75-94.
- [71] Mattana G. (2020). L'irriducibilità della psicoanalisi e la relazione con le neuroscienze. *L'inconscio. Rivista Italiana di Psicoanalisi e Filosofia*, 10, 103-126, dicembre 2020 DOI: 10.19226/162.
- [72] Di Francesco M., Marraffa M., Tomasetta A. (2017). *Filosofia della mente. Corpo, coscienza, pensiero*. Roma, Carocci.
- [73] Nannini S. (2002). *L'anima e il corpo. Un'introduzione storica alla filosofia della mente*. Roma-Bari, Laterza.
- [74] Paternoster A. (2002). *Introduzione alla filosofia della mente*. Roma-Bari, Laterza.