



Unconscious: Psychoanalytic Perspective

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Abstract

Neuropsychanalysis is a young discipline that developed in the last 20 years. One leading proponent was Mark Solms followed by others like Eric Kandel, Heinz Boeker, and Georg Northoff. A central issue in neuropsychanalysis, as in psychoanalysis, is the concept of the unconscious. This can be understood in various ways of cognition and, relying on Jaak Panksepp, affect and emotion. The unconscious has been associated with traumatic memories in psychoanalysis; neuropsychanalysis extends this by associating unconscious traumatic memories with memories in the sensorimotor system of the body rather than the cognitive functions of the brain. This suggests convergence between neuropsychanalysis and embodied cognitive science as it is also illustrated by a case report whose implications for the transference between analysand and therapist are pointed out. It is concluded that neuropsychanalysis can draw on many fields including neuroscience and embodied cognitive science to sharpen and more detail the concept of the psychoanalytic concept of the unconscious.

As you know, we have never prided ourselves on the completeness and finality of our knowledge and capacity. We are just as ready now as we were earlier to admit the imperfections of our understanding, to learn new things and to alter our methods in any way that can improve them. (Freud, SE. XVII, p. 159)

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6.1 Personal Introductory Remarks

The unconscious is still the central concept of psychoanalysis, one reason why the fifteenth Joseph Sandler Research Conference in Frankfurt was devoted to the topic: *The Unconscious: A bridge between psychoanalysis and cognitive neuroscience*. The publication of the main papers (Leuzinger-Bohleber et al. 2017) is one source of the following chapter (Sect. 6.2). Mark Solms, an expert on Freud's neuroscientific papers and founder of the International Society for Neuropsychoanalysis, summarized the state of the art of the dialogue between psychoanalysis and the neurosciences on "the unconscious" and its consequences for psychoanalysis. Therefore, I will summarize his main theses in Sect. 6.4. A second source for discussing a contemporary understanding of the unconscious was the conference of the IPA "Exploring Core Concepts: Sexuality, Dreams, and the Unconscious" in 2011 (Sect. 6.3). Finally I have been involved in the interdisciplinary dialogue with Rolf Pfeifer, an expert of embodied cognitive science for almost 30 years. Therefore, I will illustrate that the concept of embodied memories might enrich the ongoing struggling for understanding the "unrepresented" in contemporary psychoanalysis (Sects. 6.5 and 6.6).

6.2 The Unconscious in Dialogue Between Psychoanalysis and the Neurosciences¹

As is well-known, in Freud's time psychoanalysis was characterized as "the science of the unconscious mind." In the last 100 years, many other disciplines, among them cognitive science, have studied nonconscious mental functions. What are the differences between the conceptualization of "the unconscious" in psychoanalysis and in cognitive science? Is the core thesis of psychoanalysis still plausible, namely, that unbearable impulses and fantasies from the past and present are banished into the unconscious, from whence they continue to shape feelings, thoughts and behaviors in unknown ways? And is such an understanding of the unconscious still central for helping patients in contemporary psychotherapy?

For many authors, like the Nobel Prize winner, Eric Kandel, Sigmund Freud's dream has become a reality in recent decades: he never gave up the hope that developments in the neurosciences might someday contribute to a "scientific foundation" of psychoanalysis. He abandoned this attempt, his "Project for a Scientific Psychology" (1895), due to the obvious limitations of the neurosciences of his time (see Kaplan-Solms and Solms 2000), subsequently defining psychoanalysis as a "pure 'psychology' of the unconscious." As Kandel (1998, 1999, 2006) and many others point out, however, the developments in the neurosciences, such as neuroimaging techniques (MEG, EKP, PET, fMRI, etc.), open a new window for psychoanalysis to the non-psychoanalytic scientific world. Kandel is passionate about this vision:

¹The following chapter is based on a former publication by Leuzinger-Bohleber and Solms (2017).

6.2.1 The Necessity to Investigate Psychoanalytic Treatments by Neuroscientific Methods

He is convinced that psychoanalytic treatments must show their effectiveness also in studies applying methods of contemporary neurosciences. He certainly is right in one respect: if psychoanalysis could show that its treatments influence the brain's functioning, this would tremendously heighten its acceptance as a treatment method in medicine and the mental health systems. Several groups of researchers presently engage in such studies (see Chap. 20).

6.2.2 Neuropsychanalysis

Kaplan-Solms and Solms (2000, 2003) have developed the so-called clinico-anatomical research method for investigating patients with brain lesions using clinical psychoanalytical techniques. In different countries interdisciplinary research groups using this method work systematically with patients with localized brain lesions (see Röckerath et al. 2009; Leuzinger-Bohleber et al. 2015; Leuzinger-Bohleber and Kächele 2015). Their findings are broadly relevant for studying the ancient mind-body problem in new and fascinating ways (see, e.g., Damasio 1999; Sacks 2007 and many others).

The first volume of the international journal *Neuropsychanalysis* was published in 1999; leading psychoanalysts and neuroscientists published their studies on emotion and affect, memory, sleep and dreams, conflict and trauma, conscious and unconscious problem-solving, etc. The International Society for Neuropsychanalysis, founded in 2000 by Mark Solms and others, organizes annual congresses of the Society on such topics around the world.

It seems undeniable that an exchange between psychoanalysis and neuroscience is most promising for both parties. The neurosciences have developed objective and exact methods to verify complex hypotheses on human behavior, while psychoanalysis can contribute the necessary rich knowledge concerning the meanings and motivations of psychic processes and can therefore direct interesting questions at the neurosciences.

6.2.3 Psychoanalytical Conceptual Research and Some Epistemological Remarks

Another field of research, mentioned by Eric Kandel, is psychoanalytical conceptual research, a specific and genuine psychoanalytical research field. As was discussed in several papers at the fifteenth Joseph Sandler Research Conference in Frankfurt in March 2014 mentioned above, the interdisciplinary dialogue fertilizes clinical psychoanalytical work in an indirect way (see Leuzinger-Bohleber et al. 2017). Results from neuroscientific studies will never be able to tell a clinical psychoanalyst how to cope with a certain analysis and in a certain psychoanalytical

situation. The psychoanalytical treatment technique and intuition are something fundamentally different than the further development of concepts and theories. Therefore, the exchange between the knowledge base of psychoanalysis and the neurosciences always takes place at the level of concepts and theories, never at the level of concrete clinical interactions (see, e.g., Leuzinger-Bohleber 2015). Nevertheless for the further development of psychoanalysis as a scientific discipline, an openness and an attempt to achieve “external coherence” (C. Strenger) of psychoanalytical concepts with the knowledge of neighboring disciplines are inevitable. Psychoanalytical concepts and theories should not be in uncritical contradiction with the current knowledge in other scientific disciplines. Perhaps surprisingly many of the central psychoanalytical concepts of Sigmund Freud have indeed proven to be “externally coherent” with modern neuroscientific understanding of the same complex psychic processes. Some of them can even be understood more precisely and deeply. On the other hand, we also have to discuss some critical points in our theorizing and modify or even rethink of some of our psychoanalytical concepts and even central concepts as “the unconscious”, in the light of modern neuroscience (see, e.g., Solms 2013, Northoff in this volume).

From an epistemological point of view, we have to take into consideration that the dialogue between psychoanalysis and the neurosciences is still relatively new. Therefore, some of the possibilities of this dialogue are overestimated or even idealized. Besides, according to personal experiences in a common endeavor of 20 psychoanalysts and neuroscientists, studying memory, dreams, and cognitive and affective problem-solving in a joint research project in 1992–1998 (supported by the Köhler Foundation, Darmstadt, Germany), while fascinating and innovative, is challenging and complicated for both sides (see Koukkou et al. 1998; Leuzinger-Bohleber et al. 1998).

We often don't speak the same language, apply different concepts in analogous terms, and often identify with divergent traditions in science and in philosophy of science. Much tolerance and stamina is needed to achieve an intensive exchange of ideas enabling us to reach new intellectual frontiers: to crack up former understandings and concepts and resist idealizing tendencies to expect “solutions” for unsolved problems in our own discipline from the other foreign one, which—like a white screen—attracts projections and projective identifications. To take new findings of the other discipline means to undergo uncertainty and unease; it is painful to leave aside “certainties” and false beliefs developed in your own field. Going through a period of uncertainty and unease is inevitable, a must for a productive and constructive dialogue reaching beyond a rediscovery of already established disciplinary knowledge. The comparison of models developed by both disciplines in order to explain their specific data collected by specific (and very different) research methods is linked to complex and sophisticated problems of philosophy of science and epistemology. The well-known danger of the eliminative reductionism of psychic processes onto neurobiological processes or the consequences of a transfer of concepts, methods, and interpretations from one scientific discipline onto another, without reflecting them, need to be prevented.

Therefore, we cannot agree completely with the passionate conviction of Eric Kandel that modern neurosciences really can save the future of psychoanalysis. On the one hand, we share his view that curiosity and openness toward scientific

developments, neurosciences included, are a must for innovation and creativity. In order to remain a “Wissenschaft” of the mind, psychoanalysis must refresh and further develop its concepts and theories, showing again and again that psychoanalytic theories are “externally coherent” (Strenger 1991) with the state of art of other disciplines, e.g., the neurosciences. In this sense, the future of psychoanalysis as a productive “Wissenschaft” depends on openness toward contemporary neurosciences.

However, we must carefully avoid “categorical mistakes” (see, e.g., Leuzinger-Bohleber and Pfeifer 2002; Leuzinger-Bohleber 2015). The data of the neurosciences are on a completely different level than those of psychoanalysis, aiming to understand and decode meanings of unconscious psychic functioning of human beings. Epistemologically, psychoanalysis is a “specific science” (Wissenschaft) with a specific methodology suited to investigate its specific research object (unconscious conflicts and fantasies) and its specific scientific quality criteria. Psychoanalytic research method has contributed a large body of knowledge and cannot be replaced by any other one, including neuroscientific ones (see Chap. 20 in this volume). Michael Hagner (2008), a philosopher of science and historian, who investigated how the visualization of processes which takes place in the interior of our bodies and brains is influencing our thoughts, fantasies, and emotions as well as our culture in general, stated:

“There is a distinction (in studies on imaging techniques) between disordered thinking from mathematical problem-solving, ... those first memories of childhood experiences, of the last quarrel with one’s life partner or the conflicts with parents, of erotic dreams about the most exciting love relationship. As is well-known, in the twentieth century it was primarily psychoanalysis which was to first single out such phenomena for research. The biographical detail, intimacies and concealed layers this discipline retrieved will doubtless never be matched by screening the brain...

This shift [from psychoanalysis to neuroimaging, L-B] could lead to circumstances in which the multiplicity and relevance of the life of the mind are measured primarily by the methods of visualization. The price for such a development consists in the fact that: the investigation into the deeper connections, the explanation, listing, narration, and evaluation, in short, historical, scientific textual linear thought is displaced by a new, image-based, “superficial way of thinking” (ebd.). The consequence of this shift with respect to the sciences of man is that the analytic depth of former forms of thought, for which psychoanalysis may be considered representative, will be replaced by the superficial insight of neuroimaging. Human understanding is thus relegated to the status of an excrescence of material forms of representation.... (p. 278f.) (See also Chap. 20 in this volume)

6.3 Conceptualization of the Unconscious in Contemporary, Pluralistic Psychoanalysis

As we all know, Freud effectively contributed the third largest insult to mankind by discovering “the dynamic unconscious.” He shocked us with the insight that none of us are “masters of our own mental houses”; we are driven by libidinal and aggressive drive impulses and unconscious fantasies derived from them. In every one of

his works, Freud warned not to deny these unconscious powers. Only in acknowledging their effectiveness can we guarantee a wise handling of them. Turning our backs and negating the unconscious not only leads to psychic illness, it also enhances the danger of uncontrolled outbreaks of drives and threatens human cohabitation and culture.

Throughout its history of more than a century, psychoanalysis has differentiated itself as a science with 12,000 members of the International Psychoanalytical Association in terms of its central concepts such as “the unconscious” to the point of a “plurality of theories,” and the question arises: Does “a psychoanalysis” exist at all? Don’t we have to speak of “many psychoanalyses?” While modern ego psychology-oriented psychoanalysts such as New York’s Fred Pine (2011) still refer to the “dynamic unconscious” as the product of fended off impulses and drives, which are to be examined by psychoanalysis, others (e.g., Giuseppe Civitese (2011) from Pavia) define a continuum of the conscious and unconscious, with reference to Bion. The unconscious does not protrude via, for instance, slips of the tongue into the symptoms of the conscious; rather every conscious process is accompanied by an unconscious process. Based on neuroscientific findings and experimental psychological research on unconscious forms of information processing, Werner Bohleber (2010) also goes by the notion of a *non-repressed unconscious* and differentiates it from the “dynamic unconscious” and a “creative unconscious.” Jorge Luis Maldonado from Brazil (2011) on the other hand firmly believes in the concept of the dynamic unconscious and the psychoanalytic structural theory, which distinguishes psychoanalysis from other disciplines examining hidden, nonconscious information processing. Finally, based on Jacques Lacan, Miguel Kolteniuk Krauze (2011) from Mexico City advocates two dimensions of the unconscious as a system of “primary repression, which is characterized by its inertia and lack of symbolization capabilities and a secondary repression which is characterized by the primary process and its fate. Hence André Greens approach concerning the preservation of the drive dimension” (p. 2).

All of these authors were keynote speakers at the IPA Conference 2011 in Mexico City, themed “Exploring Core Concepts: Sexuality, Dreams, and the Unconscious.” This short summary of the diverging views is able to illustrate how the plurality of theories is a characteristic of the prosperity of modern, international psychoanalysis as a discipline which has always been concerned with highly complex clinical phenomena and has strived to decode conscious, preconscious, and unconscious inner workings in joint efforts with patients. When referring to psychoanalysis as a scientific discipline, which just like any other science puts its findings up for a critical discussion in the non-psychoanalytic community, we must always continuously refurbish the lenses of this kaleidoscope in order to recognize commonalities as well as differences to individual conceptualizations of the unconscious and to enable fruitful discussions. This is a prerogative for any innovative advancement in psychoanalysis as an internationally acclaimed science.

6.4 Which Concepts of “the Unconscious” in Psychoanalysis May Remain Unchanged, Which Have to Be Modified or Even Been Dropped by Neuroscientific Finding?

Mark Solms (2017) discussed these questions extensively and even tried to approach a first integration of contemporary psychoanalytical knowledge on unconscious conflicts and fantasies on the one hand and neuroscientific findings on the other hand. Therefore, I am referring to his considerations in the following section:

6.4.1 Most Mental Processes Are Unconscious

Since Freud’s description of unconscious mental functioning, many studies from experimental and development psychology have strengthened his conviction:

that at any given moment consciousness includes only a small content, so that the greater part of what we call conscious knowledge must in any case be for very considerable periods of time in a state of latency, that is to say, of being psychically unconscious. (Freud 1915, p. 167, quoted in Solms (2017), p. 17)

Bargh and Chartrand (1999) estimate that consciousness plays a causal role in only 5% of cognition. Intensively discussed were, e.g., the experimental neurophysiological studies by Libet (1985) which demonstrated that voluntary motor acts are initiated at the supplement motor area before a subject becomes aware of the decision to move. This discovery has initiated an intensive and controversial discussion on the “free will,” in German philosophy. This debate takes up the abovementioned irritation due to the “third largest insult to mankind” postulated by Freud that mankind not even is the master of his own home but determined in all his (conscious) decision by unconscious motivations, drives, longings, and unsolved conflicts of his past.

6.4.2 Unconscious Processes Are Automatized Cognition

In the 1920 Freud mentioned in several papers that not only psychic conflicts are kept in the so-called dynamic unconscious but that many secondary processes are unconscious as well (see, e.g., Freud 1923). However, up to present, controversial discussions focus the concept of the dynamic unconscious, in other words, the psychoanalytical core thesis, that unsolved psychic conflicts and fantasies determine—without the knowledge and control of the human subject—emotions, thoughts, and actions in the present. Only very few cognitive scientists (e.g., Ramachandran 1994; Anderson et al. 2004 and Pfeifer and Bogard 2007) try to connect Freud’s dynamic unconscious with contemporary neuroscientific findings. Most cognitive psychologists and scientists postulate that the unconscious is a repository of automatic and automatized information processing and behavioral capacities (see, e.g., Kihlstrom 1996).

6.4.3 Conscious Is Endogenous

In contrast to cognitive neuroscientists, many researchers in the field of affective neuroscience as, e.g., Jaak Panksepp (1998), don't limit their studies on the investigation of cognition but also include affective processes associated with them. "What Freud called the "id" is the principal object of study in affective neuroscience (Solms and Panksepp 2012)" (Solms 2017, p. 18). On the other hand, these researchers disagree that the "id" is mainly connected with the unconscious localized in basic structures of the brain (brainstem). Therefore, Solms talks about the "conscious id."

On this view, consciousness derives from the deepest strata of the mind, it is inherently affective, and it is only secondarily "extended" (to use Damasio's term) upwards to the higher perceptual and cognitive mechanisms that Freud described as the systems Pcpt.-C., and Pcs. In other words, it is the *higher* systems that are unconscious in themselves. They borrow consciousness via associative links from the lower system, not the other way round..... There is a clear contradiction here. The pleasure principle cannot simultaneously be a bottom-up force and a top-down sensory offshoot of the cortical layer. (Solms 2017, pp. 21, 22).

6.4.4 Affect Is Always Conscious

Solms illustrates this thesis, e.g., by the famous example of a child which was born without neocortex and thus blind and deaf (Shewmon et al. 1999). However, these children are capable to show (and probably experience) feelings. Therefore, affects are always conscious.

As we have discussed in several papers, affects—according to concepts of "embodied cognitive science"—have the function to simplify complex (embodied) perceptions and enable a spontaneous (unconscious) evaluation of these perceptions in order to initiate prompt reactions of the subject. To give just an example, if a teacher of a class with small children wants to cross a street with a lot of traffic and sees a boy waving with a fascinating toy on the other side of the street, he immediately feels intensive fear or anxiety because he unconsciously recognizes immediately the danger that children could run over the street; the (conscious) emotional reaction, fear, enables him to react promptly and to hold back the children from running over the street! His emotional reaction (fear) is thus an immediate evaluation of a complex situation of acute danger which enables a functional reaction much earlier than a cognitive analysis of the situation would allow (see, e.g., Pfeifer and Leuzinger-Bohleber 1986; see Sect. 6.4).

6.4.5 Not All Consciousness Is Declarative

Solms is referring to the work of Edelman (1993) and his differentiation between primary and secondary consciousness.

Freud's usage of the word "consciousness" typically refers to secondary consciousness, that is to awareness given various namely by different theorists, such as "declarative" consciousness, "reflective' consciousness," "áccess' consciousness," "áutnoetic' consciousness," "éxtended' consciousness," "higher-order" thought, etc. Primary consciousness, by contrast, refers to the indirect, concrete, phenomenal stuff of sentience. As we have seen, Freud was dimly aware of this distinction, but he did not think through the implications. (Solms 2017, p. 26)

Analogous arguments can be derived from the dialogue with embodied cognitive science, as we have discussed in several papers (Leuzinger-Bohleber and Pfeifer 2013; Leuzinger-Bohleber 2015, also see Sect. 6.5). All these just mentioned different categories of memory (declarative, reflective, extended, higher-order thought, etc.) are focusing a so-called "descriptive level" of memory functions. They do not describe the "explanatory level" which means the mechanisms of the brain which determine memories. In contrast embodied cognitive sciences have developed a very different conceptualization of memory which is essential for understanding unconscious and conscious memory processes. All experiences, from the very beginning on, are influencing sensomotoric coordinations and thus unconscious memories. Therefore, e.g., traumatic events are unconsciously remembered already in the very first months of life not only when declarative memory is determined. Susan Coats and Theodore J. Gaensbauer (2009) illustrated this thesis by impressive case examples with children who had experienced severe trauma already during the first year of life (see Sect. 6.5). These experiences have an unconscious influence on later affects, behavior, and fantasies and only may become conscious by the interpretative work of child psychoanalyst as, e.g., Agneta Sandell, illustrated in a case example with a 2-year-old child (see Sandell 2014).

6.4.6 The Systems, CS, and PCS Are Unconscious in Themselves

As Solms elaborates, these new conceptualizations of mental functioning have important implications for psychoanalysis. As mentioned above most of the psychic processes are unconscious.

Thinking is necessary only when problems arise. This (the problem) generates the conscious 'presence' of affect and, thereby, attention to the object of perception and cognition. (or embodied memories as mentioned above, MLB). However, the whole purpose of the reality principle (of learning by experience) is to improve one's predictive model: that is, to minimize the chances of surprise - to solve problems - and thereby to minimize the need for consciousness. The classical model, therefore, is again turned on its head. (Solms 2017, p. 28)

6.4.7 Repression Is Premature Automatization

Solms tries to integrate all this new knowledge into a "metapsychology of repression" (p. 29 ff.). He refers to the neural process of reconsolidation by which

previously consolidated memories are made labile again through reactivation of the consolidated memory traces. For Solms repressed memories are prematurely consolidated solutions:

“that is, non-solutions- predictions that constantly give rise to prediction errors. Hence the ever-present threat of a “return of the repressed” which gives rise to neurotic symptom formation.... The tragedy of repression (or premature automatisa- tion) is that it renders childish solutions immune to updating, Hence the central task in psychoanalytic therapy is to de-automatise, to render conscious once more, to permit reconciliation to take place, and then to automatise better solutions.” (Solms 2017, p. 30) (see also Solms and Friston 2014).

6.4.8 Conclusions

Solms (2017) summarizes his attempt to integrate psychoanalytical and neuroscien- tific findings on the unconscious in the following conclusion:

This review of Freud’s metapsychology of ‘The Unconscious’ in relation to some findings of contemporary cognitive and affective neuroscience suggests that his model is in need of major revision:

1. The core processes of the system *Ucs.* (the processes that Freud later called ‘id’) are not unconscious. *The id is the fount of consciousness*, and consciousness is primarily affective. I therefore propose that *the Ucs. and the id are different mental systems, and that they should be located separately.*
2. The primary consciousness generated in the id is of a different kind to that gener- ated in Freud’s system *Cs.* Freud’s systems *Pcpt.-Cs.* And *Pcs.* are concerned primarily with what is now called secondary or ‘declarative’ consciousness.
3. The systems *Pcpt.-Cs.* and *Pcs.* (the systems that Freud later called ‘ego’) are *unconscious in themselves*; and by inhibiting the id *they aspire to remain so.* They inhibit the id in order to supplement stereotyped instincts with learning from experience. Unsuccessful instinctual predictions generate affective con- sciousness (prediction error; free energy) which can only be tamed through thinking (problem solving).
4. The ego systems borrow consciousness as a compromise measure, they *tolerate* consciousness, in order to solve problems and resolve uncertainties (to bind affect). Once a realistic solution is found for an id demand, however, the *raison d’être* of consciousness disappears. *Then a memory-trace arises instead of con- sciousness.* This is ‘Nirvana’.
5. The system *Ucs.* includes all such automatized predictions. This system is not the id; the *Ucs.* is hived off from the ego. The ‘dynamic’ part of the *Ucs.* is sim- ply the part of it that malfunctions, that causes prediction errors (causes affect; re-awakens the id). The dynamic (‘repressed’) part of the *Ucs.* therefore *tends to re-attract consciousness.* This is the threat of the ‘return of the repressed.’
6. The task of psychoanalytic therapy is to connect the affect (the ‘free energy’ of the id) generated by prediction errors (by ‘surprises’ in reality) with the illegiti-

mately automatized predictions that gave rise to it (the ‘repressed’ in the *Ucs.*). This enables the individual (the conscious ego) to *think* its way through an unsolved problem once more, and then to *reconsolidate* (to re-automatize in the unconscious ego) the memory traces in question. Conscious thinking is thus a temporary state, located half way between affect on the one hand (problems) and automatized behaviour (solutions) on the other. (pp. 31, 32).

In the last two sections of this paper, I would like to mention another attempt to use knowledge from cognitive neurosciences for widening the psychoanalytical understanding of unconscious mental functioning. It is the struggle for a new understanding of the “unrepresented” by applying concepts from the field of so-called embodied cognitive science.

6.5 The “Dynamic Unconscious” and the “Unrepresented”: Embodied Memories and the Unconscious

Generations of psychoanalysts since Freud have concerned themselves with the way in which repetition of unconscious fantasies and conflicts in transference can be rendered a healing process of remembering. This primarily involves symbolically (unconsciously) represented and repressed memories or relationship patterns. However, psychoanalytic theories on the unconscious have focused for quite some time on psychic material present in the analytical relationship in other ways. Levine et al. entitled their anthology “Unrepresented States and the Construction of Meaning” (2013, in honor of André Green) and focus on the question of the search for meaning in the unrepresented from a contemporary psychoanalytical perspective. With his broadly received concept of “dead mother,” Green (2007) described the early identification with an absent mother leading to a withdrawal cathexis and thus to a disappearance of the inner representation which, in the transference relationship, can be perceived by the analyst as an empty, negative hallucination of the object, “a representation of the absence of representation” (Green 1999, p. 196, quoted from Reed 2013, p. 39). Reed (2013, p. 29 ff.) points out that this negative hallucination of the object leads to an emptiness rather than a representation of the lost object—an empty mirror, which, with these patients, is always there—but which is frequently observed in the analysand’s extreme reactions to separation from the analyst.

Green is concerned with the process of de-objectification, namely, the obliteration of representation. Other psychoanalysts, by contrast, focused on the psychic material of patients, which had only insufficiently, if at all, gone through the processes of symbolization. Dominique Scarfone (2013, 2015) presented a conceptual integration of different forms of psychic representation and their various psychoanalytic conceptualizations. He compared Pierce’s sign theory to Freud’s conception of primary and secondary processes; Lacan’s theory of the real, the imaginary, and the symbolic; Wilfred Bion’s beta and alpha elements; Jean Laplanche’s infantile sexual theories and their decoding in analytic discourse; and Pierra Aulangier’s

concept of the primary, such as “primary violence,” which entered the stage (“mise-en-scène”) and that could ultimately open up the discourse on secondary processes: a brilliant example of contemporary conceptual research.

In several papers we have pursued another path by drawing on several studies in the field of basic research, more specifically, embodied cognitive science and the cognitive neurosciences, so as to show that these disciplines offer first explanations for this clinically important phenomenon, such as the analyst’s spontaneous inspiration, which represents an initial central step to understanding hitherto unrepresented psychic material, and which is capable of making psychoanalytic processing accessible (Leuzinger-Bohleber 2015). Hence, this should provide new perspectives on familiar concepts, such as “scenic understanding” (Argelander, Lorenzer), “hearing with the third ear” (Reik), “cracking up” (Bollas), or the “now moments” by the Boston Change Process Study Group. Furthermore, aspects of current discourse on intersubjective psychoanalysis and on enactment are touched on, as well as further understanding of countertransference around the bodily sensations of the analyst.

In the psychoanalytic model of representation and in the computer metaphor derived from “classic cognitive science,” memory and recollection were for a long time understood as processes whereby (statically) retained knowledge was transformed from long-term memory to short-time memory and called up into a current problem-solving situation. We still find comparable thinking in some textbooks in clinical psychology. Aristotle’s famous example comparing memory to a wax tablet into which experiences etch themselves appears to live on. This (erroneous) idea of memory has also entered popular language usage: “we call up saved knowledge” or “we search for forgotten names in memory” (much like the search for an object in a wardrobe).

According to various views in embodied cognitive science, today’s memory can no longer be understood as comparable to a computer, as storage disk with statically stored content from which information can be “retrieved” in a present situation. What patients expected from the analyst are new, existential, and important relationship, not an unconscious “statically entrenched” representation of former relationship to traumatizing object unconsciously reactivated, as had been understood, for example, in reference to the model of representation in classical psychoanalysis (cf., e.g., Karl Menninger’s triangle of insight 1958). Memory is a function of the entire organism, the product of complex, dynamic, recategorizing, and interactive processes, which are invariably “embodied.” “Embodied” not only means “non-verbal”: memory arises by way of a “coupling” of reciprocally influential sensoric and motoric processes. This “coupling” is biologically implemented through neuronal maps embedded in the organism’s sensomotoric system. Thus, Clancey (1993) defined memory as the ability to coordinate neurological process and to categorize sensoric and motoric processes, as these occurred in an analogous earlier situation.

To summarize the essential theses of embodied cognitive science on unconscious and conscious mental processes:

1. Biological systems are self-organized and develop “intelligent” bodies, namely, structures in which they interact with the environment by way of sensomotoric coordinations without central regulation.

2. Learning always simultaneously occurs sensomotorically (in the body) and in the brain (in neuronal networks). Thus, learning always is mostly unconscious—only a very small portion of the learning processes becomes conscious.
3. Learning, problem-solving, and memory are thus no longer functions of a “saving in the brain” but invariably the product of complex, self-regulated, and sensomotoric coordination.
4. Psychic processes, such as “unconscious memories” or affects and fantasies evoked in a certain situation, are “constructed” between subject and environment in the here and now of a current interaction: consequently, thinking, feeling, and action thus arise only interactively; the subject cannot learn in an insular quasi autistic capsule and further develop itself; it requires interaction with the environment.
5. Similarly, such categories that constitute the basis of all learning and understanding do not develop by retrieval or modification of stored knowledge. They are automatically brought forth by sensomotoric coordination (spontaneously “constructed”).

Since this is decisive for our subject of understanding that which is non-represented, “unconscious” in contrast to “conscious,” one experiment should be cited: if we give a 1-year-old child a red rubber ball in one hand and in the other a brown chocolate bar, it will put both in his mouth several times though prefers the chocolate bar no later than after two or three attempts; through sensomotoric coordinations—the learning by doing—it has formed categories without an adult having to explain it to him, namely, without the aid of cognitive schema: the brown, long-shaped object tastes good, one can eat it, and although one can bite the round object, it does not taste good and one cannot eat it! And yes, at some point the mother will remark: “and, does the chocolate taste good?” from which point on the child also associates the linguistic concept with his self-constructed categories. As this example indicates, the concept of embodiment provides a solution for one of the central problems of developmental psychology, namely, the early prelinguistic, (unconscious) acquisition of categories and, finally, also symbols and language.

6. The concept of “embodiment” is thus radically “historical,” as psychic processes in the present always take place as the product of sensomotoric coordinations analogous to those in the subject’s idiosyncratic past: the past inevitably impacts the present and future—that is, for the most part, unconsciously.
7. In that each new experience further develops sensomotoric coordinations, earlier experiences are permanently rewritten. Hence, the “historic truth” can never be reconstructed “one to one” on the basis of specific behavior in the present. Put more bluntly: this is the subjective part of all psychic experience. And yet, in the sensomotoric coordinations, past real experiences are retained “objectively” (“embodied”) and can be measured, in principle, with the aid of neurobiological methods. For this reason, psychic experience, such as memory, always receives a “subjective” as well as an “objective” side. (For further details, see Leuzinger-Bohleber et al. 2017, p. 145 ff.)

6.6 Present in the Body, But Not Represented: Embodied Memories and Trauma—A Case Example²

A further controversy concerns memories of very early, traumatic experiences. As Fonagy (2010) emphasizes, implicit memory assumes a key role in the mediation of post-traumatic symptoms. Relatively primitive structures of the nervous system, such as amygdala and the hippocampus, presumably participate in the mediation of the memory of these experiences. According to Fonagy, traumatic memories are decontextualized via the sensory system in the form of synesthetic perceptions, smells, tastes, or visual images and cannot be conscious in cases in which they are not provided with new significance. From a psychoanalytic perspective, initially it may well be useful that a traumatic experience is not in consciousness. However, it continues to exert an effect unconsciously and thus determines current thought, feelings, and actions undetected.

According to Olds and Cooper (1997), the 2-year-old human hippocampus is immature in contrast to amygdala, which is completely developed by this time. Hence, very early childhood anxieties are stored in the “emotional memory” of the “immature” amygdala-integrated circuits and are barely accessible to (adult) conscious verbal narrative. These theses would appear to contradict the findings of Rovee-Collier (1997, 1999) and Rovee-Collier and Cuevas (2009), namely, that infants from 23 months on can already form a declarative explicit memory. Hence, there was no developmental phase in which only procedural implicit memory emerged. The formation of memory is a very diverse, complex, and variable process including feelings, motifs (one’s own and foreign), anxieties, and conflicts and which takes place very early on in life. Gaensbauer (2002, 2011) holds a comparable view, showing, by way of impressive clinical examples, that at the age of 2 and 3, children already remember extremely traumatic events that took place in their first year of life (e.g., the shooting of their father). With the aid of the concept of “embodied memories,” the Freudian thesis can be supported that early and earliest memories deposit themselves “in the body” (cf. also, among others, Leuzinger-Bohleber 2008; Leuzinger-Bohleber et al. 2014).

Therefore, as discussed in Sect. 6.5, I am postulating that embodied memories are always “kept in the body” and are often unconscious sources of “irrational,” “inadequate” feelings, thoughts, and actions of patients who are seeking treatment. To understand these unconscious embodied memories often proves to be indispensable for achieving a psychic transformation of severely traumatized patients, as I would like to illustrate by the following case example.

As outlined above, in many cases traumatic experiences can only be fragmentarily recollected or else dissociated entirely from current consciousness. In psychoanalytic therapy, they repeat themselves in enactments and other manifestations of transference. Formerly, this memory of traumatic experience has been explained by way of a model of representation in which, due to excessive arousal, traumatic experiences are not integrated but incompletely represented or even only registered. Contemporary

²The case example was published in Bohleber and Leuzinger-Bohleber (2016).

interdisciplinary research results are now available following radical rethinking on the conception of memory and recollection. In this section I will try to illustrate how this new conception is able to offer an alternative explanation of the way traumatic memories function and their understanding in psychoanalytic treatment.

As summarized in Sect. 6.5, inspired by biology and the life sciences, embodied cognitive science currently understands human organism—and the human psyche—as being in an ongoing (embodied) state of change involved in constant dynamic processes of interaction with the environment in which a continuous process of recategorizing experiences occurs. Memories of earlier situations unconsciously determine present thought, feelings, and action, though not in the sense of stored knowledge in analogy to a computer or static memory traces. In contrast memories are products of dynamic, complex constructions in the here and now. In the sense of embodiment, sensorimotor coordinations in the present always operate in an analogue manner as was the case in earlier situations. The similarities between a current and a past situation are not perceived cognitively, e.g., by cognitive pattern matching, but by similar complex information gained by different senses (auditory, visual, olfactory, touch, smell, etc.) and actions of the body (characterized as sensorimotor coordination in embodied cognitive science). Through such sensorimotor coordination, memories and categories are constructed automatically as self-regulating process of learning by doing (Dewey), in other words, by means through coordinating information from sensory channels and connected (motor) actions of the body. Memories resulting sensorimotor coordination thus provide orientation in a new situation.

Another field of research is important for understanding social interaction in general and transference relationships in particular. Recent studies have illustrated the decisive role of the so-called mirror neuron system, which enables human beings to identify immediately with the observed behavior and the mental state of others (see, for instance, Gallese (2013)). In the analytic context, this means that during interaction with the analysand, analogue sensorimotor coordinations take place within the analyst as in the analysand implying that unconscious processes of immediate identification are occurring. These processes bring forth categories of understanding—automatically, spontaneously, and unconsciously—which are connected with the analysand's unconsciously occurring memory processes from earlier, important relationship experiences. In the case of traumatized patients, these are recurring memories of psychically unbearable experiences of over-flooding, extreme powerlessness, desperation, pain, panic, and fear of death. By identifying with the analysand's ongoing sensorimotor coordination and the construction of memories of the traumatic experiences, the analyst immediately (unconsciously) understands the traumatic psychic reality of the patient. And yet, at the same time, the extreme quality of traumatic experiences mobilizes his own spontaneous defense, thereby hindering becoming conscious of that which is perceived.

The following example serves to illustrate these conceptualizations:

Hardly had I opened the door before Ms. M. stormed in across the threshold. She clasped my hand feverishly, pressing it between hers in a peculiar and sexually stimulating manner while at the same time stepping up very close to me, thus

encroaching on my normal sense of bodily intimacy: “Well, hi there. . . I’m so glad to have the opportunity to speak with you.” Intuitively, I took two steps back, immediately perceiving a forceful, negatively emotional reaction combined with an aversive physical response: “What an overwhelming woman! I find this too much. She’s really coming too close for comfort. . . Why did I offer her an appointment? Will I ever be able to send her away? Evidently, she is very needy.”

Then she asked for the toilet and left the door wide open. Only once she was seated in the chair opposite me did I become aware of her pretty, girlish face as it strove to maintain a permanent social smile and of her beautiful female form, which she apparently sought to conceal beneath loose-fitting jeans and a frayed, plain pullover. Though in her mid-40s, she rather looked like a 60-year-old woman. She had already informed me over the telephone that her family doctor had recommended she seek out psychotherapeutic help. She was ill and suffered from burnout syndrome with attendant heavy depression.

As mentioned, the first (conscious) thoughts occurring to me, “What an overwhelming woman,” and “I find this too much!” clearly contained both the perception of an overpowering quality of the patient’s trauma-induced psychic reality, as well as my own defensive reactions.

When treating traumatized patients, it often takes considerable time before the traumas suffered can be understood in greater depth and observed in detail in the transference relationship itself. Over the course of therapeutic interaction, (new) sensorimotor coordination develops which, in patients, successively constructs memory of the holding function of the new analytic object. Among the well-known, most enduring experiences of severe traumatization is the complete breakdown in the basic trust of a helping object. As is generally known, connected with this are the unconscious convictions and phantasies wherewith the affected person ascribes guilt to himself for the traumatic event to which it is connected. Thus, initially, traumatized patients will once again continually repeat this inner truth in the transference, before gradually limiting its validity following alternative relationship experiences in the psychoanalytic treatment. The unconscious memories of the traumatic relationship experiences cannot be erased and are thus repeated time and again in the analytic relationship. At the same time, however, alternative sensorimotor coordinations (i.e., expressed metaphorically, alternative neuronal paths) can be constructed successively which is, in turn, connected to the (new) categories, security, reliability, understanding, and survival which characterize the analytic relationship. The old recategorization processes (of a basic mistrust in the object and the self) run parallel and disconnected alongside the new ones, which form in the analytic relationship for considerable time. Only once new recategorizations have led to more or less stable categories, such as trust, security, etc., do the two paths in sensorimotor coordination (the neuronal maps according to Edelman 1987) connect with one

another. This is the precondition for the possibility of traumatic experience being reexperienced directly in the analytic relationship. This is also a precondition for creating significant associations in the analyst's mind as initial keys for finally understanding the specific detail of the trauma. These associations may initiate a therapeutic process of recollection and of understanding the trauma and ultimately open a process for working through these complex processes which may be illustrated briefly by the following clinical example:

Only in the third year of psychoanalysis did the significance of the aforementioned scene in the first interview reveal itself. The intrusive behavior outlined repeated itself in the analytic treatment in numerous variations. One day prior to the following psychoanalytic session, I found Ms. M.'s behavior intensely irritating. She appeared unannounced at one of my lectures, seating herself in the first row. During the subsequent session, I had been listening to Ms. M. for about 10 min: when explaining how, prior to his death, her uncle had recounted her youthful impatience when waiting for him in front of his studio, my immediate association was that her uncle had sexually abused her.

MLB: Could it be that what you remember is that the impatience and the visits to your uncle were yours, indeed, that you actively sought to be close to him, because it was, perhaps, too painful for you to think that your uncle abused your yearning for your father and had thereby transgressed the borders of intimacy? [To my great astonishment, she replied:]

M: Naturally, we shared affections—but I enjoyed it. When he touched my breasts, I finally felt myself to be an attractive young woman.

This example illustrates the way in which the first spontaneous and still theory-free association of sexual abuse in the analyst can only form once some degree of trust has developed in the analytical relationship.

The subject sexual abuse disappeared from the sessions for some considerable time, though brutally sexualized scenes increasingly appeared in Mrs. M's dreams. I again sought to establish a connection to this.

MLB: You were already in your adolescence when you visited your uncle and can probably remember the experiences. Some time ago, you explained how you and your uncle shared affections. Could it be that you are reluctant to think about further details of what had occurred between you and your uncle?

Ms. M. reacted vehemently to this question. She went to the toilette and vomited. In subsequent sessions, it gradually became possible for her to talk about memories of the coitus experiences with her uncle that had been marked by violence. Disgust, loathing, and repugnance showed themselves: the acting out of the overwhelming, traumatic experiences gave way to a successive memory and verbalization.

Ms. M. blamed herself for these events: "I was so in need of love and affection. Little wonder my uncle responded to this." Only gradually was she able to admit that this really concerned a matter sexual abuse, which had exercised a huge influence on her sexuality as a woman. "When visiting my uncle as a

13-year-old, I would always rush into the studio and initiate our sexual adventures: It was me who wished to be the emancipated, unconventional person, not him. I found it good.”

Only then did I understand that the scenes during the first interview outlined previously contained unconscious embodied memories of her traumatic experiences with her uncle: she had also literally overrun and overwhelmed me in the first interview and had “come too close for comfort.” However, although at the time of the assessment interview I had unconsciously understood the traumatic psychic reality of the patient (by means of the aforementioned identification processes), at that time it was not possible to decipher precisely these unconscious memories of Ms. M. in enactment: only once I came to know the analysis much better, and would frequently experience the intrusive infringements in the transference relationship directly, and had established a sustained analytic relationship to her, did the decisive association (sexual abuse) occur to me.

I had clearly hit the mark. It now transpired that Ms. M. had been sexually abused by her uncle between the ages of 13 and 20. And yet it was only during the sustained psychoanalytic relationship, by way of new memories of brutal scenes that she was finally able to admit that these were sexual assaults and that it was not a case of voluntary “emancipated,” “happy” affairs, which she had initiated. Only the secure and empathetic analytic relationship enabled her to gain painful insight into how destructive the effects of these experiences had been for her and that they had contributed substantially to the fact that she had until now never been able to allow herself a constant, affectionate, as well as passionate love relationship.

My association (sexual abuse) facilitated, for the first time, the expression in language of that which had hitherto been present in her body but not been represented and to thus initiate a process of working through in the transference relationship. Although the limits of this article place constraints on a more detailed discussion, it ought to be mentioned here that—as the concept of embodied memories postulates—Ms. M.’s traumatic experiences were repeatedly overwritten. Thus, over the course of the fourth year, the dreams ultimately led to a further, unexpected discovery: with her adolescent experiences of sexual abuse, Ms. M. had been subject to additional unconscious embodied memories of the brutal rape of her mother by Soviet troops and which Ms. M. had observed as a 3-year-old; These were traumatic memories that, in late adolescence, had also unconsciously induced her to engage in several dangerous sexual adventures that led to seven abortions within the space of 10 years. The unconscious feelings of guilt triggered by this, among others, determined her depressive breakdown, as became clear only later during psychoanalysis.

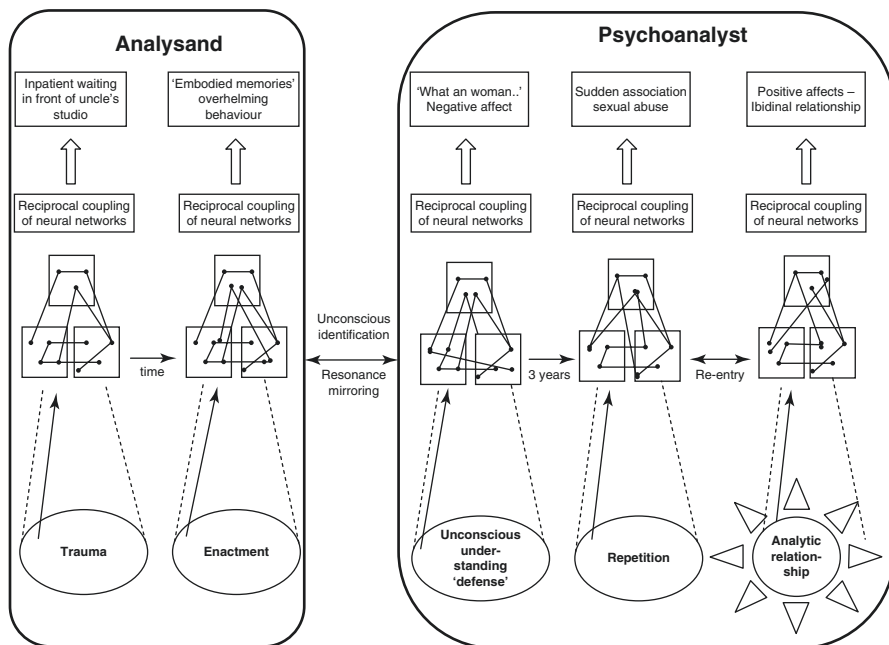
Ultimately, these embodied memories were also closely connected with traumatic experiences of separation from her mother, who suffered from severe postpartum depression after she had received news that her husband was miss-

ing at the Russian front. She was no longer able to care for her baby and was obliged to put her in care for several months. Incidentally, embodied memories of these early separations were likewise contained in the initial scenes mentioned at the outset: the manner in which Ms. M. had pressed my hand between hers not only had a sexually stimulating character but, as we later came to understand, were a way of literally holding on to me and of not losing me. “Will I ever be able to send her away? She seems to be so needy,” were, at that time, the categories of understanding that spontaneously occurred and formed within me, and with that—in retrospect—I already then understood the early trauma of separation, but—also due to my own defense reactions—was not yet able to decipher in detail.

With respect to the theory of treatment, the focus on new theories of memory as based on research in the life sciences may influence psychoanalytic attitudes insofar as they sensitize one’s own sensitive (embodied) bodily responses. Furthermore, the aforementioned insights in psychoanalysis over foregoing decades—which lead to both an exclusive work with transference and to an exclusive (mostly intellectual) reconstruction of the (traumatic) life history of the analysand, which do not lead to a sustained therapeutic change—have experienced a new interdisciplinary support by way of the concept of embodiment (see section 6.5....). On the one hand, the psychic processes of the patient invariably depend on his current interaction with meaningful others (e.g., in the transference) and are thus consequently invariably intersubjective. On the other hand, current experiences are always determined by sensorimotor coordinations formed in the subject’s idiosyncratic (biographic) past. In this sense, the individual’s distinctive history is embodied because sensorimotor coordinations emerge in the earliest relationship experiences and, as mentioned, continually (causally) determine presently occurring psychic processes in relationships. Above all, in the psychoanalyses of severely traumatized analysands, it is indispensable to approach the distinctive life and trauma history, the historical reality of the trauma, in spite of the fact that it is never possible to discover the historical truth of the trauma in a one-to-one sense. Although life-historical events—retrospectively speaking—are repeatedly rewritten and adapted to the present, these rewritings still retain the core of their historical truth.

Thus, the process of discovery and of understanding embodied memories in the psychoanalytical relationship and the working through of the traumatic experiences in transference enable analysands to overcome dissociative states and fragmentations of the self and the inner objects and to regain some basic trust in a helping object. For analysands, as for Mrs. M., this means improved psychic integration and delimitation of the destructiveness of trauma.

The following graph illustrates an embodied, “unconscious” interaction between analysand and psychoanalyst as discussed above.



6.7 Summary and Outlook

Contemporary psychoanalysis is in a state of pluralism of concepts and research approaches. Therefore, a great intellectual effort is necessary to discuss which parts of central psychoanalytical concepts, as the unconscious, are in need for changes and modifications and which ones of them still can be considered to be plausible and “true.” In the limited frame of this chapter, only a few of the ongoing discourses have been summarized focusing particularly the field of neuropsychology and embodied cognitive science. I am convinced that these interdisciplinary exchanges have opened new doors for the conceptual development of psychoanalysis as well as for clinical practice as was illustrated with an extensive case example.

However, due to epistemological and methodological arguments, I cannot agree completely with the passionate conviction of Eric Kandel (2009) that modern neurosciences really can save the future of psychoanalysis. But I am unambivalently sharing his view that curiosity and openness toward scientific developments, neurosciences included, are a must for innovation and creativity. In order to remain a “Wissenschaft” of the mind, psychoanalysis must refresh and further develop its concepts and theories, showing again and again that psychoanalytic theories are “externally coherent” (Strenger 1991) with the state of art of other disciplines, e.g., the neurosciences (see e.g. Böker and Seifritz 2012; Leuzinger-Bohleber and Weiss 2014). In this sense, the future of psychoanalysis as a productive “Wissenschaft,” in my eyes, depends on openness toward contemporary neurosciences.

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