

*The rooting of the mind in the body: New links between attachment theory and psychoanalytic thought*

*Abstract*

The paper examines the complex relationship between psychoanalysis and attachment theory. A brief narrative review of the psychoanalytic literature as it concerns attachment theory and research and the attachment literature as it pertains to psychoanalytic ideas is presented to demonstrate an increasing interest in attachment theory within psychoanalysis. Some of the difficulties which attachment theory faces in relation to psychoanalytic ideas are traced to its links to the now dated cognitive science of the 60's and 70's. The second generation of cognitive neuroscience seeks neurobiologically plausible accounts where the links with brain and body are seen as shaping mind and consciousness. Mind/consciousness is increasingly seen by cognitive scientists as 'embodied', emerging from or serving the needs of a physical being located in a specific time, space and social context. This idea lies at the core of much psychoanalytic thinking that has consistently affirmed the rootedness of symbolic thought in sensory, emotional and enacted experience with objects. The paper argues that these advances in our understanding of the way affects organize the mind and provide an embodiment to cognition offer the opportunity to forge powerful links between the hitherto separate domains of attachment theory and psychoanalysis. The paper presents some speculations about the nature of language that emphasize the origin of internal working models and of representations in general in early sensorimotor and emotional experiences with the caregiver. It is argued that language and symbolic thought may be phylogenetically and ontogenetically embodied, built on a foundation of gestures and actions and are thus profoundly influenced by the experience of early physical interaction with the primary object. Finally the clinical and research implications of these ideas are discussed.



### *Acknowledgments*

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*Introduction*

It has been widely held by psychoanalysts that there is something wrong with attachment theory. Following the publication of John Bowlby's paper in the 'Psychoanalytic Study of the Child' (Bowlby, 1960), leading psychoanalytic developmentalists were quick to point to the limitations of attachment theory – its mechanistic, non-dynamic quality and its misrepresentation of psychoanalytic ideas (Freud, 1960; Schur, 1960; Spitz, 1960).

Opposition to attachment theory for once united the warring factions of the British Psychoanalytical Society (Grosskruth, 1986), and many major figures contributed to this opposition (e.g. Engel, 1971; Hanley, 1978; Kernberg, 1976; Rochlin, 1971; Roiphe, 1976).

The common theme of these critiques has been that by requiring that theoretical constructs be measurable and focusing on observable behavior rather than on drives and unconscious fantasy, attachment theory drastically reduces the explanatory power of psychoanalytic observations and misses the point of its theory. Attachment theorists could have taken issue with some of the criticisms, but were also perhaps spurred to address the issue and have certainly helped to bridge much of the original gulf. For example, Bretherton's work on internal working models shows that internal, symbolic processes are not ignored or under-emphasized in attachment theory (Bretherton, 1987; 1995). Similarly, Kernberg's criticism (Kernberg, 1976) that Bowlby did not take account of the internal world, and neglected "instinct as intra-psychic development and internalised object relations as major structural organisers of psychic reality" (p.121) was perhaps an overstated criticism, particularly in the light of Bowlby's own emphasis on constructs such as the internal working model (Bowlby, 1969, Chapter 17) and Bowlby's translation of the psychoanalytic concept of

the internal world into the terms of “environmental and organismic models” (Bowlby, 1969, p.82). The psychoanalytic critiques of attachment theory were sometimes based on misapprehension, sometimes perhaps prejudiced, or poorly informed about the empirical observations that this body of ideas has generated.

The same criticisms can equally well be applied to early attachment theory representations of psychoanalytic ideas. Bowlby maintained a blinkered attitude to psychoanalysis. Probably hurt by the hostile psychoanalytic reactions to attachment theory, his generalizations on the psychoanalytic model bear the hallmarks of straw figures (e.g. Bowlby, 1973, Chapter 22; 1980b, p.310). Thus, just as psychoanalysts sometimes tended to misread attachment theory and find it wanting in depth and explanatory power, so Bowlby and other attachment theorists selectively focused on the weakest aspects of the psychoanalytic corpus. There have of course always been major figures who have consistently bucked this trend (Bretherton, 1987; Eagle, 1995; 1997; Emde, 1999; Hauser, 2002a; Holmes, 1993; 1997; Lichtenberg, 1989; Main, 2000; Main & Hesse, 2001; Shane et al., 1997; Slade, 2000b). The relationship between the two disciplines deserves to be reexamined in the light of changes in both, and new developments in other relevant fields, during the intervening years.

#### *The change of status of attachment theory*

The status of attachment theory within psychoanalysis seems to have changed over the last 20 years. A simple bibliometric study offers evidence for this. Between 1970 and 1974, Bowlby was cited in about 8 articles per year in the psychoanalytic journals included on the PEP CD-Rom. This increased steadily to 29 in the final period (1995-2000). This steady increase in interest is also reflected in the changing tone of the commentaries on Bowlby's work. The definitive review of the first volume of “*Attachment and Loss*” by George Engel

in the *International Journal of Psychoanalysis* (1971) was thorough but extremely negative: “despite Bowlby’s inexact treatment of psychoanalytic theory and the logical fallacies that follow, and his misapplication of general systems theory, this is still an important book for psychoanalysts... Unfortunately Bowlby fails as an expositor leaving the reader the task of identifying what has germinal value for psychoanalysis (Engel, 1971 p.193).” Gregory Rochlin (1971) is even more dismissing: “The enormous difficulties encountered in attempting to understand the nature of a child's earliest relationships, especially with his mother, are never better illustrated than by Bowlby's efforts. His relinquishing of Freud for Melanie Klein's theories of infant psychology years ago furthered his disappointment. His recent turning to studies of primates and control systems in the hope that this will be a more rewarding direction may content him but it will disappoint his reader. Bowlby can convince only if one grants his broad suppositions, is willing to overlook the important distinctions between infants and young primates, and accepts the notion that circuitry between living organisms and robots have little to distinguish them” (p. 506).

Ten years later, when *Volume III* of the Trilogy appeared, the reviews were more respectful and interested. Sol Altschul, reviewing for *JAPA*, whilst still uneasy about Bowlby’s alternative terminology, accepts that: “Bowlby has contributed much to our views of the child’s relationships and the profound effects that loss and separation have on the child’s welfare and development as well as the importance of attachment behaviour throughout life” (Altschul, 1984 p218). In *The Psychoanalytic Quarterly*, Isidor Bernstein concludes that: “in sum, this is a scholarly work that has much of value for all interested in the effects of loss on all family members” (Bernstein, 1981, p422). In their appraisal of John Bowlby’s work, Pearl King and Eric Rayner (King & Rayner, 1993) commented on the book’s importance in discrediting the cruel belief that children do not mourn. It may seem to us implausible that psychoanalysts could ever doubt that children mourn. Yet, less than a

decade before the publication of *Volume III*, Humberto Nagera in a much quoted paper, expressed the surprising view that: “mourning as defined by Freud (1917) and as observed in the adult is not possible until the detachment from parental figures has taken place in adolescence” (Nagera, 1970, p.362).

Perhaps, with the rise of the relational approach in the US over the past two decades, attachment theory found increasing acceptance. Sandra Buechler (1997) reviewing a 1995 summary volume on the clinical implications of attachment research entitled her review: “*Attachment theory as a secure base for psychoanalytic explorations*”. The review draws out 12 points of contact between relational psychoanalytic theory and attachment theory including that both theories see emotional problems as the result of interference with the innate potential for interrelatedness, seeing the recognition of patterns of relating as crucial for diagnosis and treatment, and seeing the meaning of behavior in terms of its interpersonal function. However, reservations remain and sometimes dominate evaluations of Bowlby’s contributions. Michael Brearley (1995), reviewing Jeremy Holmes’ book, *John Bowlby and Attachment theory* writes: “Bowlby’s maps are those of the researcher showing broad geological formations on a continental scale, while analysts, in their daily work at least, are concerned with the detail of the lived human life and need maps of a different projection, of built-up areas..... Bowlby conveys an impression of human nature as rather more benign than the experience of most analysts would suggest, and of the therapeutic relationships as less prone to perverse and destructive attitudes” (p. 1072). Five years earlier Karen Gilmore (Gilmore, 1990) writing about Bowlby’s last attachment book, “*A Secure Base*” strikes a similar note: “To this reader, Bowlby's own contribution is obscured by these comparisons [with psychoanalytic theory], since his theory offers neither an alternative metapsychology nor a true developmental psychology; moreover, it fails to address the pivotal role of conflict in mental life, the cornerstone of psychoanalytic theory” (p. 496).

These critiques highlight a real and fundamental disparity between attachment theory and psychoanalytic ideas. Attachment theory is limited from a psychoanalytic perspective in that it sidesteps sexuality, sees aggression as secondary to more fundamental motivations, arguably offers mechanistic models of conflict, is moot on unconscious fantasy, is reductionistic in its focus on a handful of empirical paradigms (eg the Strange Situation and the Adult Attachment Interview) that provide broad classifications which lose the subtlety and detail of the original material, and offers a limited framework to scaffold clinical work. Given Bowlby's concerns with unconscious defenses against memories of traumatic separation and loss, and the detailed work of other attachment theorists on other defenses which unconsciously structure the developing personality and capacities for relating, it would be wrong to claim that attachment theory does not concern itself with 'the dynamic unconscious'. There is however little attention paid to the qualitative differences between conscious, preconscious and unconscious experience by attachment theorists, and the psychic contents that are assumed to be most formatively defended against are not focused on drives and their derivatives and ensuing conflicts but on the development of the self and the self in relation to another.

#### *Changes in psychoanalytic ideas*

Notwithstanding continuing reservations, the move towards greater interest in attachment theory by psychoanalysts is striking. Psychoanalysis has become more pluralistic and accepting of differences and this could in itself have led to greater acceptance. However the change also probably reflects some underlying changes in psychoanalytic thinking. (1) There may be an increasing acceptance by psychoanalysts of the formative nature of the child's social environment. This is perhaps because psychoanalysis deals more than before with those who have experienced serious deprivation (e.g. Downey, 2000; e.g. Spurlock, 1970).

We are therefore increasingly confronted by the psychological consequences of disturbed or abusive parenting much more common in such conditions.

(2) Concern with the actual social environment from psychoanalysts was also driven by an increasing interest in infant development as a legitimate way of explaining differences in adult behaviour. While not uncontroversial (see e.g. Green, 2000; see e.g. Wolff, 1996), the emergence of neuroscientific data over the past decade from both animal and human work (e.g. Francis et al., 2003; e.g. Meaney & Szyf, 2005; Parker & Nelson, 2005; Teicher et al., 2002), demonstrating the profound impact of early experience on brain development, and in turn directly on social and emotional development, highlighted the common interests of psychoanalysts and attachment theorists in infant-parent relationships and the emergence of emotion regulation (Coates, 1998; Stern, 1995; Tronick, 2004).

(3) More specifically, a range of psychoanalytic orientations, particularly self-psychology (e.g. Shane et al., 1997) and the British Independent Group (Fairbairn, 1952), have opted for an implicitly dialectic (Hegelian) model of self development. Mother's mirroring function naturally links to Ainsworth's concept of maternal sensitivity (Ainsworth et al., 1971). A deeper appreciation of the contribution of the attachment relationship to the creation of an 'agentive self' was probably further encouraged by the increasing acceptance of Bion's (1962) description of the emergence of thinking capacity within infant-mother interaction. We have tried to show how psychoanalytic theories of thinking, as well as affect regulation and self development, can in fact be empirically demonstrated through research on parent-infant interaction, the attachment narratives of adults including those with personality disorders, and longitudinal research tracing the links between them (e.g. Fonagy et al., 2002).

(4) As the object relations model moved to replace ego psychology as a dominant international psychoanalytic paradigm, so the attachment theory emphasis on an autonomous need for a relationship came to be embraced by a majority.

(5) The acceptance of a general systems (Von Bertalanffy, 1968) or schema theory (Piaget, 1967) of relationship representation strongly favored by Bowlby (1980a) has been gradual in psychoanalysis. Its implicit acceptance followed powerful conceptual advances by Joseph Sandler (Sandler & Rosenblatt, 1962) and Edith Jacobson (1964) and more recently, by Mardi Horowitz (Horowitz, 1992), Joseph Weiss (Weiss et al., 1986), Dan Stern (1985) and many others.

(6) We have already touched on the relationship context of the emergence of mental functions such as emotion regulation, the capacity for symbolization, and empathy. Starting with the work of Spitz (1965), but later Robert Emde (1988a; 1988b), Lou Sander (1987), Ed Tronick (2001), Karlen Lyons-Ruth (Lyons-Ruth & Jacobovitz, 1999) in the U.S. and Donald Meltzer (Meltzer, 1975), Margaret Tustin (1981), Anne Alvarez (1992), and Peter Hobson (2002) in the U.K., the notion that psychic functions reflect the complexity of internalized primary object relationships gained general acceptance. This notion, although present in Bowlby's theory, was also energetically pursued by Alan Sroufe (1996), Inge Bretherton (1991) and Mary Main (1991). Related to this is our own work on mentalisation (Fonagy et al., 2002) that potentially links attachment theory to classical psychoanalytic notions such as linking ('Bindung') (Freud, 1900), the depressive position (Klein et al., 1946), alpha function (Bion, 1962), some of the suggestions of the Ecole Psychosomatique de Paris concerning the thinking of psychosomatic patients (Marty, 1990), and the distinction between belief and knowledge elaborated by Ron Britton (Britton, 1995).

(7) A further powerful force bringing modern psychoanalysis and attachment theory closer, particularly in the United States, has been the increased emphasis on hermeneutics in the conceptualization of both psychoanalytic theory and the aim of the psychoanalytic process. In the work of some writers, such as Donald Spence (1984) and to a lesser extent Roy Schafer (1992), narrative truth and coherence of meaning became a legitimate goal of

treatment. This suggestion for a realignment has had its critics (e.g. Fonagy, 1982; e.g. Sass & Woolfolk, 1988). But subtly, the hermeneutics theme became prominent in psychoanalysis as an implicit part of a number of changes of emphasis in clinical thinking over the past decades (see Holmes, 1998). For example, the move away from focusing on repression and favoring of vertical splits in clinical accounts highlights that it may be the continuity of consciousness rather than the recovery of the repressed that is established through psychoanalytic therapy (Segal, 1982; Steiner, 1994). The focus on the ‘here-and-now’ transference and skepticism about uncovering a repressed actual pathogenic past (Sandler & Sandler, 1984) also allows more common ground with attachment theory where coherence of narrative is the hallmark of security of attachment (Main, 2000).

(8) The psychoanalytic theory of motivation has undergone a considerable shift in the post-war years. The move from drives as the central concept of motivation to affect as the primary motivator has been accepted by most object relations clinical accounts (Akhtar, 1992; Kernberg, 1982; Kohut, 1982; Sandler, 1989). Attachment theory also moved from principally being concerned with physical proximity of the caregiver to a fundamental concern with the regulation of emotional states (Slade, 2000a; Sroufe, 1996). In this context Sandler made a particularly integrative contribution in the late 1960s and early 1970s by placing the ‘background of safety’ at the centre of the psychoanalytic theory of motivation (Sandler, 1960a). In a later paper Sandler made an explicit link between his concept and that of Bowlby’s secure base principle (Sandler, 1995).

(9) The emphasis on real current experience (including this aspect of the relationship with the analyst), interweaving with the exploration of fantasy, is a noticeable shift in our understanding of the curative processes in therapy. Perhaps classically Hans Loewald (1960) but also Donald Winnicott (1962) and even earlier Sandor Ferenczi (1922) illuminated our

understanding of the mutative aspects of new experiences provided by therapy. This of course was always an aspect of John Bowlby's (1988) position.

(10) Related to this, is the growing interest in attachment theory based measures amongst those psychoanalysts who have pioneered the path of empirical research in our field. The work of Stuart Hauser (Allen et al., 1996; Hauser, 2002b, 2004) and Otto Kernberg (Clarkin et al., 2004a, 2004b) are good examples of eminent psychoanalytic scholars whose theoretical horizons stretch considerably beyond attachment theory, yet who moved closer to attachment ideas in order to benefit from a unique combination of psychometric discipline and sensitivity to dynamic unconscious issues.

(11) From our point of view a less welcome change that has facilitated the increased acceptability of attachment ideas is the reduced emphasis on infantile sexuality as the predominant explanation of psychological disturbance. A quantitative search of the psychoanalytic database has demonstrated that sexual terms such as names for anatomical parts and psychosexual theoretical concepts are both significantly less frequently used now in psychoanalytic explanations than they were three decades ago (Fonagy & Target, in preparation). Thus, for example, the Oedipus Complex is often seen in metaphorical and conceptual rather than literal terms. Psychoanalysis to some measure has been desexualized (Green, 1995) Stein, 1998 #453]. While bringing psychoanalysis closer to attachment theory, the metaphoric reworking of psychosexually focused formulations alongside the reduced emphasis on drive states risks diminishing what is uniquely valuable about the psychoanalytic approach. We have tried elsewhere to show that psychosexuality can have a unique place even in an attachment-based theory of self development (Fonagy & Target, in preparation)

### *Epistemological issues*

Notwithstanding the more positive view of attachment theory among psychoanalysts, whether this was driven by pluralism or shifts within the implicit core of psychoanalytic thinking per se, attachment theory has not become one of the many schools of psychoanalysis and is not, for example, covered in the training programme of the British Psycho-Analytical Society.

Bowlby was as we have said dissatisfied with much analytic theory. Primarily, this was because psychoanalysis did not use what he saw as logically relevant and productive scientific discoveries. But this, as King and Rayner (King & Rayner, 1993) pointed out: “carried little weight with many psychoanalysts who were exclusively devoted to the clinical one-to-one context” (p.1827). There was also evidently too much that was new in his approach: psychoanalysts considered him “not really one of us” (Anthony Storr, *the Lancet*, Feb 1990). The issue is not whether Bowlby’s ideas fit the current predominantly clinical mode of psychoanalytic writing. It is self-evident that they do not. It seems to us that Bowlby’s status as being either inside or outside psychoanalysis depends more on the value we attach to extra-clinical information in sculpting and testing clinical and developmental theory within psychoanalysis. Bowlby is ‘one of us’ if we consider that psychoanalysts should keep space in their thinking for knowledge that derives from systematic observation of infant development, for a socio-biological orientation, for epidemiology, for neuro-scientific research findings and the clinical implications of these.

The claim here is that the key difference between attachment theory and psychoanalysis is not to be looked for at the level of substantive assertions concerning infancy, childhood or adult relationships. Elsewhere, we tried to show (Fonagy, 2001) that there is sufficient overlap between mainstream psychoanalytic models and attachment theory to be considered ‘psychoanalytic’. The incompatibility between attachment theory and psychoanalysis is more

at the level of epistemic assumptions than content. While Bowlby placed himself in a position to be forced to change with the development of knowledge in neighboring sciences (Bowlby, 1979; 1981), psychoanalysis, for good or ill, has (at least in the past) isolated itself from such ongoing feed-back, except when clinical experience challenges its presuppositions<sup>1</sup>.

Bowlby's epistemic position brings obligations with it. Bowlby's theory was based on the cognitive developmental science of 25 years ago and needs revisiting. Some core assumptions of psychoanalysis have markedly changed, diminishing somewhat the incongruence between attachment theory and psychoanalysis. Perhaps more urgently, advances in the sciences to which Bowlby's ideas are coupled dictate a reconsideration of the points of contact between attachment theory and psychoanalysis and this is the subject of this essay. We will review the advances in cognitive science and show that the need for reconsideration is principally because these 'new ideas' turn out to be far from new within a psychoanalytic context.

#### *Cognitive science in the 1960s*

Attachment theorists lean on cognitive science but the cognitive science currently extensively used by attachment theorists is an outdated perspective. A brief overview of the history of cognitive psychology may be helpful at this point. The psychology which influenced John Bowlby and has guided attachment theory ever since emerged perhaps 50 years ago, a reaction to the excesses of behaviourism. Whilst Bowlby was frequently accused of being a "behaviourist", his contribution was the forging of a link between psychoanalysis and an anti-behaviorist cognitive psychology.

The emergent realization of the 1960s was that a science of mind could be created to deal with aspects of human function outside the realm of behavioural explanation, such as speech and language, thinking and problem solving. Cognitive psychology concerned itself with a description of mental structures that could be inferred on the basis of experimental

observations. The term cognitive psychology was coined by Ulrich Neisser in 1967 (Neisser, 1967). The epistemological links to a positivist behavioural science were overriding, but conceptually cognitive psychology conquered the territory forbidden to behaviourists, inner mental events. This was achieved by adopting a powerful metaphor of the mind as an information processing mechanism. Implicitly, the brain was hardware and the mind software. The software could be studied independently, in a non-reductionist way, by broadly applying a general systems theory framework to it (Von Bertalanffy, 1968). The powerful metaphor separating brain and mind into “hardware” and “software” processes (Gardner, 1985; Winograd & Flores, 1986) permitted cognitive scientists to generate models of information processing and then seek confirmation of the reality of these models through experiments, computer simulations, and electrophysiological and more recently magnetic resonance brain studies. Computational models in cognitive science assume that cognitive processes are rule-based manipulations of symbols representing the external environment (Newell, 1991). Experimental cognitive psychology establishes correspondence between performance (behaviour) and the hypothetical constructs of mental mechanisms. Computer simulation studies explore the possible internal characteristics of these mechanisms and their coherence (Johnson-Laird, 1983). This general information theory model was the promising bridge to science that Bowlby chose in his mission to rescue psychoanalysis, but analysts appropriately saw it as in many ways dehumanizing, clinically irrelevant and incompatible with some fundamental psychoanalytic ideas.

Bowlby, particularly in the last volume of his trilogy (Bowlby, 1980a), and attachment theorists who followed him, explicitly linked his motivational theory to this, then predominant position in cognitive science rooted in the computer metaphor. Thus, a central concept of attachment theory is the Internal Working Model (IWM), a representation of the self in metaphorical conversation with the other (Bretherton & Munholland, 1999) where

information processing biases built up from expectations rooted in past experience determine the tone of the conversation. This, as Miriam Steele (Steele, 2003) pointed out, links it closely to Sandler's model of role-responsiveness (Sandler, 1976). The child comes to be able to use this representational system to predict the other's attitude or behavior in relation to the self in a given situation. Secure attachment is the firm expectation of distress being met by comforting. But beyond this, because secure attachment facilitates the emergence of psychic structures linked to emotion, the entire representational system is likely to be more stable and coherent with a history of generally secure attachment experiences. Attachment theorists, as they came to focus more on older child and adult manifestations of the working of the attachment system, sought measurements of attachment from drawings (Main & Cassidy, 1988) and narratives (Main, 2000) rather than proximity-seeking behavior. This was heralded as the 'move of attachment theory to the level of representations' (Main et al., 1985). Current research work on the IWM as a representational structure has to a large extent been driven by the emergence of the Adult Attachment Interview technique (Cassidy & Shaver, 1999; George et al., 1985; Main et al., 1985). The AAI elicits representations of self, attachment figures and implicit strategies for regulating emotional arousal. Thus a schema-oriented general systems model of the internal world - most consistent with the information processing metaphor - remains at the core of the attachment theory model.

#### *Emerging criticisms of the computer analogy*

Major shortcomings of the computer analogy based approach to studying subjectivity are well recognized in cognitive psychology but less so in psychoanalysis or amongst attachment theorists. This may have a bearing on the wariness with which current attachment theory is still regarded by psychoanalysts. First, as Bruner (1990) pointed out, the initial concern of cognitive psychologists with meaning was obscured by an ever-increasing focus on the details of a formalist and functionalist model of mind. In the cognitive science

computer metaphor, meaning is introduced by the programmer, but in human cognition it is the hardware underlying sensations, actions, and feelings that generate meaning. Second, models of information processing link various hypothetical processes (modules) with arrows that in reality are heuristic devices and we do not know whether it makes any kind of sense to model the functioning of mind in terms of separate, distinct and divisible systems. Third, consciousness and the study of genuinely emotionally invested cognitions turned out to be quite difficult to explore experimentally. It generated an empirical data base that sometimes appeared to lack relevance, generalizability and face validity. Fourth, the predominant computer model which created an artificial explanatory gap between mind as a process and brain as a mechanism, unsurprisingly fitted poorly with emerging knowledge about how the brain works. Fifth, traditional cognitive science fails to explain how we progress developmentally from having a theory of a person's mind to experiencing that intention in a way that generates a reaction to it (what has been called the mind-mind problem Jackendoff, 1987).

The model of mind assumed by attachment theorists is consistent with the important discoveries of the first generation of cognitive psychology, but this approach has been supplanted by a number of recent developments collectively called "embodied cognition" or "enactive mind". These include: (1) the increasing use of introspection as a research method, (2) a keen interest in the understanding of emotion as organizer as well as motivator of behavior, (3) rapidly advancing brain imaging technology that made cognitive neuropsychology into a brain as well as a mental science and led to increasingly functional cognitive accounts, (4) a move away from reified laboratory studies and an interest in ecological approaches to cognition. The focus has shifted from what are in effect disembodied abstractions (e.g., algorithms in a digital computer) to "embodied cognition" in which the meanings of things in the environment are formed from experiences of acting on

them. These changes in cognitive science are of course all in the direction of increasing its relevance to psychoanalytic theoreticians and clinicians and imply changes for attachment theory. If these developments are followed through, if attachment theory changes along the path dictated by changing cognitive science, a conceptual integration of attachment theory into a psychoanalytic frame of reference may be more likely.

### *Embodiment in psychoanalysis*

The increased possibility of such an integration is due to the fact that the idea of ‘embodied cognition’ is hardly new to psychoanalysis and is arguably one of its fundamental assumptions. The whole idea of the mind comprehensively only expressing itself through bodily referents was there in Freud’s aphorism: The ego ... is first and foremost a body-ego (Freud, 1923 pp. 26-7).

Susan Isaacs in her classic paper *The Nature and Function of Phantasy* (Isaacs, 1943) writes: “The first mental processes, the psychic representatives of bodily impulses and feelings, i.e. of libidinal and destructive instincts, are to be regarded as the earliest beginning of phantasies. In the mental development of the infant, however, phantasy soon becomes also a means of defence against anxieties, a means of inhibiting and controlling instinctual urges and an expression of reparative wishes as well... All impulses, all feelings, all modes of defence are experienced in phantasies which give them mental life and show their direction and purpose” (p82). Thus Isaacs, anticipating recent developments in cognitive science, suggests that symbolic thought emerges out of a multilayered sensory emotional and enacted experience with the primary object. Bodily experiences for Isaacs are determining of defences as well as representations of libidinal and aggressive drives. Crucially, phantasy of the infant is seen as shaping the representations as well as being given shape by them.

In Isaacs' view, wishes and representations are experienced as impulses towards (or memories of) bodily actions. "when the child shows his desire for his mother's breast, he experiences this desire as a specific phantasy—I want to suck the nipple'. If desire is very intense (perhaps on account of anxiety), he is likely to feel: 'I want to eat her all up'" (p. 82). The wished impulse is felt as completed action, as fulfilling itself. Throughout this key paper, Isaacs emphasizes that mental experience (the wish) "does not stop at mere picture but carries him onto what he is, in detail, going to do with the desired object" (p. 83). In particular Isaacs places emphasis on how introjection and projection are based on the phantasized action of moving things inside or outside the body and, by implication, it is the (phantasized but experienced) actions that give meaning to mental maneuvers. The process of symbol formation and what she calls reality thinking is inherently bound up with the unconscious phantasies associated with that which is represented, which will always be in terms of bodily action or interaction. Presciently, she notes how language use continues to reflect underlying action oriented phantasies: "...reality-thinking cannot operate without concurrent and supporting unconscious phantasies. E.g. we continue to 'take things in' with our ears, to 'devour' with our eyes, to 'read, mark, learn and inwardly digest' throughout life" (p. 94). Ultimately, every aspect of the functioning of the ego is seen as arising from a specific form of unconscious phantasy.

Isaacs was perhaps most explicit in her emphasis on the embodiment of cognition, but the implicit theory of cognition of most psychoanalytic writings is rooted in the notion of embodiment. Thus, Phyllis Greenacre writing about the development of her work on anxiety noted that the erotisation of the function of thinking is a possible sequel of early trauma (Greenacre, 1960). Ten years earlier, Willi Hoffer (1950) writing about the development of the body ego, linked the beginning of ego formation - including perceptual activity, motor control, the functioning of memory, reality-testing and the synthetic function of the ego – to

aspects of the bodily functions of the infant. For example, the function of memory is linked to finger sucking.

The ideas suggested in this paper represent a development of a scholarly tradition going back to these and other classical contributions to psychoanalysis. The suggestions that follow cover similar territory but with linguistics rather than psychoanalysis as a starting point. Yet the rootedness of mental structures in early sensory and affective experience is perhaps most evident in the psychoanalytic encounter and is arguably at the heart of psychoanalytic clinical work. We would like to link this psychoanalytic tradition with a new emerging approach to the study of human cognition, with clear implications for the way we conceive of attachment relationships and the theoretical framework that surrounds it.

### *The second generation of cognitive science*

As stated above, there are limitations to the model of mind assumed by attachment theorists, and cognitive science has responded to these with a number of recent theoretical developments collectively called “embodied cognition”, “enactive mind” or “second generation cognitive science”<sup>ii</sup>.

The second generation of cognitive science differs from the first primarily in seeking accounts that are neurologically plausible in addition to being consistent with observed behavior (Lakoff & Johnson, 1999; Varela et al., 1991). In contrast to the 1980s model of the mind as an abstract, symbol-generating system, the mind is increasingly seen by cognitive scientists as ‘embodied’ (Clark, 1997, 1999; Thompson & Varela, 2001; Varela et al., 1991). Thus any separation between cognition and physical manifestations at the level of brain, bodily sensations or actions, is an artifact of the cognitivists’ computer metaphor which implies that cognitive processes can be independent of the body, just as software exists more or less independent of hardware. In general, it is the link of brain and body that generates

mind and consciousness. Emotion, mood and motivation act in concert with cognition, primed by evolution to ensure the survival of the person as a whole. Meaning is acquired because cognition is ‘embodied action’ (Clark, 1999). “Cognition depends upon the experiences that come from having a body with various sensorimotor capacities”, and “perception and action are fundamentally inseparable in lived cognition” (Varela et al., 1991, p. 173). This emphasis on ‘core consciousness’ as the foundation of our basic sense of self, which is seen as emerging at the interface between bodily signals and signals from the outside world, brings cognitive science and psychoanalysis into close alignment (see also Damasio, 2003).

A second aspect of the embodiment approach in cognitive science is the emphasis on the sense of having an extended self. This connects a perception of self with one’s environment, culture and history. Moving from the physical experience of being in and part of a world, the template extends to incorporate the construction of an autobiography and engagement with historic cultural narratives. Psychoanalysis in its most classical formulations in Freud (e.g. Freud, 1913) and in the work of Ferenczi (1930) and Roheim (1949) did not shrink from such conceptual leaps. The increasing recognition of the embodiment of mind, faces us with real questions about the socio-biological context of highly conflicted attachment-related thoughts and feelings, and how these might map onto pervasive unconscious anxieties in both adult and infant evident in the clinical situation but largely ignored by traditional attachment research. For example, the work of Hrdy (2000) helped us understand that a critical precondition of the mother’s capacity to bond with her infant was the availability of social support, “allo parents”. This is rooted in biology as the physical resources required for the mother’s and her newborn’s survival exceed the resources that she is physically capable of generating. Thus one of the least comprehensible forms that human destructiveness can take, maternal infanticide, is rational and more common when family support is unavailable to the

mother of the newborn. Only if she kills her infant to save herself do her genes have a chance of surviving to the next generation, through having another baby in a more supportive context. To understand phenomena like this we have to see the mother's biological self as extending to her social environment. The importance of social support acquires biological as well as unconscious meaning and significance beyond the availability of a sustaining environment. In this sense of course second-generation cognitive science recognizes that while the survival of the physical body motivates the emergence of mind, the physical limits of the body do not accurately define the individual's consciousness.

The mind is experienced as extending both in time and place into the social world, culture and history. It is recognized that we cannot dissociate our social understanding from the social experiences that led to the emergence of that understanding (Hobson, 2002). In the approach outlined by Hobson (2002) we see how babies, exposed to repeated social interactive experiences, develop mental representations of that individualized social world that enable them to cobble together an ever more complex social cognitive apparatus. This in turn creates the possibility for increasingly complex social experiences in an iterative process of social cognitive growth. Thought or cognition is then the mental traces left by these recursive experiences (Varela et al., 1991).

Finally, the understanding of others through what we have called the Interpersonal Interpretive Function (IIF) (Fonagy, 2003), that helps individuals anticipate the purposes and intentions of intimate others, turns out at root not to be an abstract cognitive capacity, but rather an emotional experience linked to the perception of others through what analysts have described as identification and projective identification and in cognitive science is referred to as simulation theory. An interesting recent neuroimaging study illustrates the intriguing nature of this process (Singer et al., in preparation). Using fMRI, these researchers assessed brain activity in volunteers while they experienced painful stimulation, and compared it to

that elicited when they observed their partner receiving the same pain. In the experiment the participant is administered mild electric shocks whilst in the fMRI scanner. Predictably, this is associated with activation at specific sites in the brain. Surprisingly, two of the six areas of the brain involved in the experience of pain to the self were also activated when a loved one was exposed to the same painful event, but not when a stranger is subjected to similar treatment. Activity in anterior insula (AI) and rostral anterior cingulate cortex (ACC), were common to the "self" and "other" conditions suggesting that the affective component of pain alone, and not its sensory representation, that provides the neural substrate for empathetic experience. Crucially, anterior insula (AI) and anterior cingulate cortex (ACC) activation correlated with individual empathy scores. Intriguingly, the same area of the brain is activated when an individual experiences social rejection. In a study involving a social game, subjects who believed themselves to have been 'rejected' by their fellow players manifested anterior cingulate cortex activation to the extent that they felt rejected in the game (Eisenberger et al., 2003). Of course, feeling for someone and being sensitive to their rejection are two sides of the same coin of Freud's classical models of narcissism (Freud, 1914).

The way we experience thoughts, including attachment-related thoughts and the cognitive structures that underpin these, may be seen as linked to physical aspects of early infantile experience. Since the mind never properly separates from the body, the very nature of thought will be influenced by characteristics of the primary object relation. The substantive shift in the embodied cognition approach is that mental representations as described in computational models of the mind may be seen as proxies for the actions that generated them and for which they stand (Lakoff & Johnson, 1999; Thelen & Smith, 1994; Varela et al., 1991). The origin of symbolic representation is thought to be in biologically significant action tied to survival and adaptation. Such actions are steeped in somatosensory experiences,

salience, and are perceptually guided. The symbol is a proxy for these elements of the action. Thus implicit in the use of a symbolic representation is the history of bodily and social experience of actions related to that symbol (Fónagy, 2000).

Attachment immediately takes center stage once we recognize the physical origins of thought. Human thinking is not well characterized as governed by logical rules, but rather by the internalization of action sequences and analogies (Johnson-Laird, 1983). It has been suggested that all thinking depends on non-conscious metaphors. Much of this work is based in the study of semantics and language use. Lakoff and his colleagues (Lakoff, 1987, 1997; Lakoff & Johnson, 1999; Lakoff & Turner, 1989) have pointed out that metaphors are not simply linguistic expressions, but reflect what they call ‘underlying conceptual mappings’. For instance, Lakoff maintains that metaphoric descriptions of close relationships, eg ‘our relationship has arrived at a dead end’, ‘our marriage is on the rocks’, or ‘we are going through a rough patch’, all derive from a single underlying conceptual metaphor of ‘a relationship is a journey’ – movement through life with an other person. Lakoff claims that these conceptual metaphors represent a key part of the architecture of mental life.

Other linguists agree. Ivan Fonagy wrote: “Metaphors are not merely convenient economies for expressing our knowledge; rather, they **are** our knowledge and understanding of a particular phenomenon in question.” (Fónagy, 2000 p. 680). “In their mode of operation, metaphors rely on preconceptual and magical thinking, and often show traces of myths” (Fónagy, 2000 p. 679). The power of metaphors, and also their limitations, lie in their connection with and dependence on an underlying embodied set of basic affective categories and inferential schemes such as the infant’s experience of warmth at the breast of the mother and the manner in which contingent interaction with her creates a sense of self-mastery and well being (Fonagy, in press; Fonagy et al., 2002).

### *Attachment and embodied cognition*

Thus Bowlby's internal working model mechanism may be seen as prototypical of a now discredited disembodied information processing approach (Lindsay & Norman, 1977). By repudiating the theory of instincts, attachment theory ended up avoiding dealing with how bodily sensations and experiences could become symbolic tools. The suggestion is that effective interpersonal interaction requires intuitive and overlearned reactions that are inadequately modeled by traditional cognitive psychology. Embodied cognition makes the evolutionary adaptive function of cognition the main focus for study. Bowlby's original ideas were also guided by Darwinian principles, but his theory forged an alliance with cognitive science, with surprisingly few and increasingly weak links to evolutionary biology towards the last third of his work. Attachment theorists have been far too concerned to demonstrate the universality of three or four patterns of mother-infant attachment across cultures. The same criticism could be made of the universalistic claims of some aspects of psychoanalytic theory. The more fundamental question is what the evolutionary purpose of attachment might be and how this purpose is achieved in different cultural contexts. This allows cultural differences to be comprehensible within a model that is still universal. It was left to Jay Belsky (1999) and others to update attachment theory with modern evolutionary biology. We now see insecure patterns of attachment as adaptations that maximize the chances of the survival of the infant to reproductive maturity despite adverse conditions for child-rearing. Crying when comforted may bring vital resources when individual attention is a rare commodity. Bowlby was right that it is not the hunger and nurturance that provides the evolutionary key. The drive for the process of bonding is the experience of the infant's body (his movements) as allowing him to control the caregiver's responses (Watson, 2001). This is primarily a physical, sensory-motor experience. Bowlby argues that the mind is never totally free of its primordial generating forces (Bowlby, 1969). In this sense

attachment theory may be closer in spirit to the emerging neuroscience approach of embodied cognition than it is to traditional cognitive psychology. Attachment turns out to be more firmly embedded in the interface of bodily and environmental context than was the cognitive science of the 1970s. Cognitive neuroscience, psychoanalysis, and new attachment theory, can come together in the foregrounding of feeling and the confluence of thought, bodily states and action.

If Bowlby were seeking his inspiration from the cognitive science of the late 1990s, he would probably not see attachment experiences as generating an abstract system of expectations and as separate from the body and the world. Instead of an ‘expectation’, attachment security could be seen as generating a group of properties of experience (such as a feeling of emotional reassurance in the presence of a particular person) that emerge from and serve the needs of a person in a specific time, place, and social context. Expectations are disembodied abstractions (like algorithms in a digital computer). In contrast to this, attachment as an “embodied cognition” would be based on the meanings of things in the environment that are formed from experiences of acting on them. Expectations apply to everything, yet we know that some things in the environment are inherently more important because they can be acted upon. Attachment and the breast must be more closely connected than Bowlby assumed. The baby acts on the mother and her breast. The breast would be seen to mean for a baby an accumulation of all his experiences of doing things to it and it doing things to him. In this vein, attachment experience is more to do with the basic dispositional *affect* state of security, or safety as our mentor Joseph Sandler (Sandler, 1960b; 1995) described it, rather than the epistemic state of ‘expectation’, as the key organizer of interpersonal relationships in infancy and beyond. Effective relating requires intuitive and overlearned reactions and these are inadequately modeled using concepts from traditional cognitive psychology (such as schemata, expectations and cognitive distortions).

Thus, attachment behaviors (actions) lie at the origin of attachment representations, and these symbolic representations contain within them vestiges of sensations and predispositions that make the unconscious emergence of attachment experiences an immediate reality for most psychoanalytic patients in relation to their analysts. Engagement in an analytic process (as in any intimate relationship) is subjectively in part a physical experience that is described metaphorically as close, holding, containing, attuned, or just attached. These terms all indicate a physical sense of what it means to enter a psychologically trusting relationship. The experience of analytic intimacy would not have meaning without the backdrop of physical sensation evoked by the action language of metaphor. But the embodiment of thought has powerful implications for the nature of our understanding of all aspects of thinking in the context of attachment.

Returning to the theme of this paper we suggest that advances in our understanding of the way affects organize the mind offer us the opportunity to create closer ties between the previously separate domains of psychoanalysis and attachment theory. We intend to illustrate this possibility with an admittedly speculative example of the application of the embodied cognition approach that highlights how the quality of attachment security might be studied through language, with the help of a focus on the body and physical action as the origin of all symbolic function. We suggest that advances in our understanding of the way metaphors might organize the mind offer us the opportunity to forge powerful links between the hitherto separate domains of psychoanalysis and attachment theory. The following example illustrates that if the implications of the embodiment of mind are taken into account, taking an attachment theory approach need not foreclose consideration of the centrality of unconscious mental experience.

*The implications of embodiment for an action oriented theory of communication and thinking*

Attachment research, in its alliance with an abstract non-embodied cognitive science, under-rated bodily experience and now needs to return more systematically to physical experiences of attachment or at least the metaphoric twilight zone between the two, which psychoanalysis has long inhabited. This is not an argument for a neo-Reichian body-oriented psychotherapeutic perspective. Rather, we suggest that the way we experience cognitions (expectations, beliefs about others, etc), including attachment-related cognitions and the cognitive structures that underpin these are linked to physical aspects of early infantile experience. Since the mind never properly separates from the body, perhaps more profoundly, the very nature of thought, the very nature of adult symbolic processes, will be influenced by characteristics of the primary object relation. This is completely compatible with the descriptions of the relationship between phantasy and symbolization offered by Isaacs and Greenacre (see above) and offers a layer of linguistic speculation to the developmental suggestions described in the psychoanalytic literature.

Dual coding of language: phonation

Our starting point is with the source of Lakoff's conceptual mappings or metaphors. Where do Lakoff's conceptual metaphors come from? A helpful distinction was drawn by Ivan Fónagy is based on a hypothesized duality of language as a coding system (Fónagy, 1980; 1983). In agreement with the structuralist linguistics of Ferdinand de Saussure, Fónagy accepts that the primary coding system in language arbitrarily connects signifiers (the sound of the words) with the signified (the concept designated). Their substance completely vanished: "it is impossible that the sound, as a material element belongs to language", declared Ferdinand de Saussure ([1916] 1976: p. 164). Language ('langue' in Saussurean terms, 1976 (1916): 25 ff.; or Grammar (according to Chomsky's nomenclature, 1956:16 ff.)

is the system which, following arbitrary conventions, creates and places into sequence expressively neutral 'non-marked' speech sounds. So if it is all based on convention and arbitrary rules, is there room for the influence of affect and physical sensation which embodied cognition implies?

Well, according to Fónagy there is a second coding system in language that communicates affective content and gives depth to the experience of language. The two levels are easy to illustrate. The Russian linguist, Stern (in Vygotsky, 1962) distinguished between the conventional (dictionary) meaning of a word and the far more personal or individual sense of words. Dictionary meaning is arbitrary, regulated by grammar and reflects little except the history of communications within a culture. By contrast the accumulation of individual experience is reflected in the sense of words – experience lived during the course of its acquisition and initial use. The sense cannot be codified into a dictionary definition and represents the accumulation of physical (emotional, bodily) experiences in association with a specific idea or word.

A simple example (borrowed from Klin & Jones, in press) will illustrate the distinction. The noun “Mother” is adequately defined as: “A woman who conceives, gives birth to, or raises and nurtures a child and holds a position of authority or responsibility in relation to him or her”. By contrast the sense of the word mother depends entirely on the person’s actual and fantasied, probably mainly physical, experiences with a mother or mother-like figure, a combination of affects and sensations parts of which may be conscious while other aspects might be outside awareness. Regardless of whether the ‘sense’ of a concept is conscious, it is likely to be more influential in determining action in relation to “mother” than the dictionary meaning of the word. Klin and Jones contrast the computer semantics represented by the dictionary definition and meaning of the word, with human semantics that map a person’s cumulative experiences in terms of a unique set of sensations, feelings and wishes linked to

events that involve the concept concerned. It is 'sense' as opposed to meaning that is embodied and encoded through experiences of the physical body.

In line with the embodiment perspective of cognitive science, Fónagy (2000) claimed that many conceptual metaphors may be understood in terms of this second, embodied, physical experience based coding system built into language by its evolutionary history. This coding system perhaps reaches back to the origin of human language as gesture. This idea echoes G.H Mead's (1934) phylogenetic propositions concerning the emergence of symbolic systems from gestures<sup>iii</sup>. The communicative gesture is condensed action and is only partly performed, the intended action is hinted at. The action is represented by communicative gesture in a more condensed form, according to the *pars pro toto* principle, by parts of the body, both conspicuous and mobile, such as the arms and hands (e.g., waving away), or by head movements (e.g. rapid shake of head to get rid of a thought) and facial mimicry (e.g., grimaces). The origin of symbolization is the moment when the gesture maker learned to anticipate the response of the other to his or her gesture, (if he should wave his hand this will mean to the other 'go away').

But hands and head were needed for other things. Fónagy speculates that at a certain point of evolution (probably more recently than previously thought) mental states came to be expressed by means of vocal mimetics - laryngeal and oral -, and their audible products: tonal movements and sound-images. Some clear traces of this remain 'fossilized' in language development. Across cultures, the preverbal child pointing to an object beyond his reach, will frequently accompany the gesture with the vocalisation 'iii'. In making this sound he thrusts his tongue forward, as if using it to point and reach (Reffler-Engel, 1972). In this way symbolic bodily gestures became vocal (e.g., inflected sounds, speech-like vocalizations) possibly to leave the hands and other parts of the body free for work and gradually the symbolic communication system of human language evolved.

But the phylogenetic traces of the vocalization of bodily gestures can still be found in language. The distant preverbal past is still present in live speech. To convey emotional or attitudinal meaning, the second firmly embodied coding system modifies or 'distorts' the ideal (neutral) speech-sounds, generated by the Grammar. The nature of the phonetic distortion will be dictated by the gestural content of the articulatory movement. Thus, whilst sequences of phonemes are generated according to essentially arbitrary rules, expressivity is a modification of the product of these, following iconic (*pars pro toto*) principles of similarity between the oral gesture and its bodily counterpart. Laryngeal and oral mimicry is an internal and condensed form of bodily gesture. Forwarding of the tongue in joy represents a symbolic approach, a friendly attitude (a sort of 'coming to meet'). In speech which expresses joy, sounds will be distorted by a slightly exaggerated forwarding of the tongue. Pronouncing the word "Welcome!" with the tongue towards the front or the back of the mouth will express quite different degrees of sincerity. The receiver of the communication, outside of awareness, 'decodes' the oral gesture of approach and interprets the mood of the communicator to be friendly or less genuinely pleased to meet one!

Pronunciation that evokes a feeling is distorted relative to standard, grammatical pronunciation in the direction of depicting an expressive gesture (also called iconicity). Preconsciously, the sound heard evokes the physical gesture which is entailed in the creation of the sound. Oral gesturing plays a central role in the verbal expression of emotions and emotive attitudes. In tender speech articulation is smooth, suggestive of a stroking movement, the transitions are more gradual, hinting at an even, gentle touch. The tongue is moved closer to the world outside in the expression of positive feelings, such as tenderness and joy, and withdrawn away from the object towards the back of the oral cavity in the expression of negative attitudes, such as anger, hatred or contempt. Oral mimicry is particularly striking in the case of the rolled apical /r/ pronounced in anger. The tongue, strongly erect, resists the

pressure of out-flowing air; deflected from its initial position it resumes the erect state four or five times as the phoneme is pronounced in anger, whereas in neutral speech it vibrates only twice. In gentle loving speech the speech organs relax, in speech reflecting tension they tense, in anxious speech they tremble and in angry speech the tongue moves forward in spasmodic movements that looks like punching. Thus phonation is embodied, the sound is created by physical action which is unconsciously decoded as a gesture.

Similarly, intonation may have a shape that reminds the listener of a gesture. But we shall see that gesture language exists at all levels of language: phonetic, syntactic and semantic rule transgressions are evocative because they are not products of a deficient output but are governed by a universal iconic apparatus of gestures or actions, of a primordial grammar that enables the speaker to express preconscious and unconscious mental contents. Fónagy maintains that this is a primary code for non-conscious communication and carries information that could not be conveyed by means of the conventional grammar of any language. Secondary messages generated by the primordial grammar are integrated into the primary grammatical message. The two messages whose structural and semantic divergence represents a chronological distance of perhaps a hundred thousand years, constitute a dialectic unity which characterizes all natural languages.

Evidence for this elegant model comes from the universality of the metaphoric experience of sounds. How do we explain that adults and normal hearing and deaf children unanimously conceive the /r/ as a male and the /l/ as a female sound? Or why are sounds that have little or nothing in common such as the vowel /i/, the liquid /l/ and the bilabial nasal /m/ consistently associated with sweet taste? A partial answer to the first question may be that the rolled apical [r] has an erectile character, the [l] may be its polar opposite. The case of the sweet [i], [l] and [m] may require a different embodied account: the sensation of lip closure linked with a simultaneous lowering of the uvula, in the creation of an [m], as well as the palatal glides [l]

and [j] may activate infantile "procedural" memories (Clyman et al., 1991) of physical experiences at the breast repressed or inadequately encoded and relegated to the realm of the unconscious. As Daniel Stern (1994) pointed out the total multimodal sensual event of feeding is probably experienced within a single sensory envelope. As a consequence, the original stimulus (lip contact) encapsulates within it the memory trace of sweet taste: the taste sensation associated with feeding. We envisage a cross-modal transfer, analogous to synthaesthesia, from the auditory/kinesthetic-interoceptive modality of sound creation to the visual experience of gross body movements, the modality of gestures (pretend actions).

#### Clinical illustration<sup>iv</sup>

Sam, a boy of seven, came to analysis because he was under-performing and being bullied at school and because he could not separate from his mother with whom he still shared a bed. His mother suffered from severe and chronic depression but was devoted to Sam. At times, however, she found his dependent behavior intolerable and exposed him to the full force of her rage. Paradoxically, Sam seemed terrified in case his self-assertion might be mistaken for anger and thus trigger his mother's fury. He sought further refuge in an infantile role and, in his early sessions, spoke with a baby voice and a pronounced lisp. He also frequently dribbled, expressed a strong wish to be a six-month-old baby girl, and depicted himself as a precariously positioned "rock-a-bye-baby". As his fears of being abandoned were discussed, his babyishness, including his lisp, improved.

His lisp, however, returned dramatically in one session which he started by announcing: "We had a bad dweam". In a fraught session, which included his running out of the consulting room when the possibility of his anger with the analyst was raised, it eventually emerged that in his dream he strangled and eventually killed a monkey. Empathising with his wish to be a good boy who never got angry and who would rather strangle the part of himself that may be seen as mischievous, the analyst was able to raise

with Sam his fear of death, of being murdered and his wish to kill himself. As these topics were raised, his lisp completely disappeared and Sam revealed that his mother often called him "my little monkey".

It is important to comment that throughout the session the analyst had no conscious awareness of Sam's pronunciation or changes in it. Yet he sensed Sam's retreat from his assertive, masculine self under the terror of potential attack in both the transference and in his primary object relationship. Only after the session, in the course of supervision, did he become aware of the distortion of Sam's articulation which involved the lowering of muscle tension and deliberate limpness of Sam's speech musculature. What can this analysis teach the clinician? As everyone else does, analysts sense (rather than know) their patient's mood and judge the emotional tone (the atmosphere) of the session. The judgment of the analyst relies almost exclusively on the speech of the patient, as the patient's facial expression remains by and large outside his field of vision.

#### Dual coding of language: Action at a semantic level

Unconscious sensitivity to oral mimicry (the gestures of the tongue and larynx) is just one example of the dual coding of language based on physical gesture. Fónagy demonstrated that at all levels of language, beyond the phonemic and the prosodic, including the semantic and syntactic, we can detect a form of visual thinking that could be a residue of gesture language. Both linguists, Fónagy and Lakoff, claim that metaphors can express preconscious content through a visual language of gesture. Thus 'holding on to an idea' can suggest an image of the reflexive grip of the baby holding onto his mother, but we are not conscious of any such connection. Fónagy also emphasizes the inverse of this process, that by evoking through metaphor the mental action of, say, holding on to an idea, we might at a dynamically unconscious level, re-experience some of the embodied safety of early secure infant-mother bonding. This then gives a metaphorical meaning to cognitive acts, perceived unconsciously

at the level of the body. Fonagy claims that all abstract cognitive operations have a sense in which they also unconsciously express physical action. Often it is the unconscious signification and not the conscious logical justification of the mental operation that provides the key motivation. What makes the act of holding on to an idea dynamically unconscious in Fónagy's view is that the person who wishes not to let go of a belief is defended against awareness of the extent to which this gives expression to a fear of the loss of the object. Fónagy does not suggest that this is invariably the case, either in the use of the metaphor or in the act of cognition (persisting in an idea) that expresses the metaphor. Nevertheless, he suggests that the existence of this gesture language coding system permits the expression of unconscious repudiated intent through the motivated use of not just language but also forms of thinking, via a non-conscious momentary re-experience of an infantile bodily state.

The claim of Lakoff and Fonagy, based on the embodiment notion also seen in cognitive neuroscience as well as in psychoanalysis, is that all mental acts are metaphorical and through that metaphor have physical as well as abstract meanings. The action of the thought carries metaphoric unconscious meaning. When we 'grasp an idea' we may experience a feeling of wellbeing or 'goodness' because unconsciously we reunite with the primary object. When we 'grope for a meaning' at the level of gesture we find empty space where a warm body should be and the affect state generated is one of vacuum or emptiness. When we 'seize on an idea' we in a real sense jump on top of it and thus feel excited and triumphant like a toddler claiming his omnipotent control. The mental act of 'resistance' may not simply be counter-cathexis or repression but an expressive gesture of pushing away something unwanted. As analysts we are aware of this when we feel hurt in the countertransference by our patients' 'rejection' of our ideas. In fact all psychological mechanisms of defence can be seen as gestures, expressing meaning beyond the goal that they aim at achieving. Denial entailed in a phrase such as 'I can't see what you mean' in the gesture language of metaphor

expresses a deliberate shutting of one's eyes to an aspect of physical reality. When John Steiner (1993) writes about a refuge in the mind that describes a particular type of pathological organization he describes the mental act of a group of patients who huddle in uncomfortable mental positions to attain a sense of security, however illusory.

While the above emphasizes common ground between the influence of infantile experience on cognition from perspectives of psychoanalysis and writers such as Lakoff representing contemporary cognitive science, we need also to be mindful of differences and incompatibilities.<sup>1</sup> As gesture language is procedural and based on implicit cognitions, it is invariably non-conscious. What is descriptively unconscious can become dynamically so when it is charged with the task of conveying ideas that are consciously unacceptable in a specific context. This non-conscious system rooted in infantile sensory experience has great potential to be used in this way. This is not to say that the system is there solely to re-present infantile experience; rather that the gesture language can communicate the affective tone of current experience. At certain times and in certain contexts, the meanings expressed by such means can represent a counterpoint to consciously intended meanings and thus be put to use by unconscious communication.

The suggestion of an unconscious gesture language existing embedded within a language system defined by social convention is inherently limited from a psychoanalytic standpoint in that it lacks the dynamic quality that consideration of conflict, wish and phantasy offer. Two consequences follow: First, that the model as outlined provides a representational process that is highly likely to have a role in communicating unconscious phantasy, because it is an intrinsically non-conscious process which only becomes dynamic when communications at the gestural level are in conflict with communications at the level of conscious content. In other words, the model has the potential of being relevant to psychoanalysis but is not a fully

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<sup>1</sup> We are grateful to one of the reviewers of this paper for highlighting this point for us.

psychoanalytic model. Second, the model as it is stated does not explain how unconscious processes such as infantile phantasies or childhood unconscious wishes, defences etc affect the emergence of this example of an embodied cognitive process. Thus one may speculate about the possibility of more intimate connections to themes of central psychoanalytic concern, such as specific types of sensory experience eg libidinal investment in erogenous zones, but these are neither explicit nor obvious. For example, it is highly likely that libidinal investments in body parts will modify the ways that sensorimotor experience is encoded, say related to the mouth of an infant, but it is by no means clear how this might affect communication mediated by labial gestures, although there is a considerable amount of speculation about this (Fónagy, 2000).

### *Clinical implications*

#### The embodiment of attachment styles in language

Of specific concern for attachment theorists are the mechanisms for creating continuity between infancy and adulthood. Longitudinal research in this area has yielded results that are staggering. Secure attachment in infancy is powerfully associated with adult attachment narratives (Hamilton, 2000; Waters et al., 2000; Weinfield et al., 2000). Accurate prediction across 17 years of development! Notwithstanding this remarkable continuity, particularly in the presence of negative life events, we should reconsider Bowlby's view that infant-mother and adult-adult relationships could be similar in quality because both may be viewed as secure base relationships, and that mental representations of secure base experience could to a large measure replace psychodynamic structures as mechanisms of developmental continuity and change. In the light of the embodiment hypothesis one could argue that patterns of attachment do not simply manifest in high-level abstract structures such as coherence of thought. Perhaps more markedly experience in infancy manifests itself in the way that we

perform metaphorical, virtual actions on our own thoughts and beliefs or mental life in general. Because abstract thought evolves from a bodily state, it should not surprise us that cognition inevitably retains a link to the physical (bodily) acts from which it originates at the level of unconscious meaning and metaphor.

Let us take adult attachment narratives as an example. Attachment in adulthood consists of characteristic patterns of cognitions (Hesse & Main, 1999; Van Ijzendoorn, 1995). These do indeed, as has been suggested, originate in infancy. The current view links attachment insecurity to the violations of Grice's conversational maxims (Grice, 1975), which was Mary Main's brilliant and powerful discovery. The connection between 'logic and conversation' in Grice and the experience of attuned care in infancy cannot be direct. While the transgenerational consistency of attachment is well demonstrated (Fonagy, Steele et al., 1993) the reason why characteristics of mother's narration and the infant's pattern of attachment should correlate is not well understood (Van Ijzendoorn, 1995). While there is highly imaginative and intriguing work under way specifying maternal behavior that disrupts the normal emergence of attachment behavior in the infant (e.g. Lyons-Ruth, 2003), how infantile attachment patterns make their way into characteristic linguistic structures is more mysterious.

Based on the change of emphasis in theorization about cognition in general and the metaphoric underpinning of language in particular, we suggest that the narrative structures that are characteristic of different patterns of insecure attachment (Main, 2000) may reflect at the level of metaphoric gestures prototypical experiences of infancy, both secure and insecure. They are characteristic of infancy however in a visual metaphoric sense. An individual whose history of attachment is one of avoidance of the caregiver in a strange situation upon reunion is likely to become dismissing of attachment relationships in adulthood, as evidenced by the apparent carelessness with which he or she describes

attachment relationships. Yet there is far more to this than association by content, as often similarly structured dismissing narratives do not carry dismissing content. The constant is a barrenness of the narrative, an emptiness in relation to the mental world of the people who populate the individual's thoughts cannot fail to strike the rater. Phrases, such as "I don't know", "I can't remember", "It was just normal" tend to crop up in response to questioning about early childhood experience. It is the attitude towards mental life, the derogation of thinking and feeling itself, that is most striking about dismissing adult attachment interviews. It is the embodied gestures expressed with thought that reveal insecurity. Inability to recall might characterize avoidant-dismissing attachment narratives not simply because of the psychic pain of remembering or the lack of value placed on past relationships. At the metaphoric level there is a physical gesture of reaching out and finding nothing substantive or particular, the experience of not being able to retrieve an idea – not being able to get hold of the feeling or thought from the past. The gesture of the dismissive thought is one of not needing and turning away -- the very physical gesture of the avoidant infant upon reunion with the caregiver. The overvaluing of one's unsubstantiated thoughts and opinions are the hallmarks of the narcissistic structure of idealization in one type of Dismissing (Ds1) transcripts. Failing to resolve contradictions in a narrative (talking about one's mother as caring and then giving an example of obvious neglect) is a gesture of unconsciously preventing the connection of two things that belong together.

Similarly, the resistant pattern of attachment of infancy, characterized by an exaggeration of distress to ensure care, in the Main and Goldwyn coding system is linked to preoccupied state of mind in relation to attachment usually involving anger or passivity. The common markers include unfinished, run-on, entangled sentences. The gesture that is expressed is one of needing to hold on, yet not being satisfied. Losing track of the interview question, rambling onto irrelevant topics is a mental gesture that expresses a feeling of being lost or

perhaps the very act of losing. Loss is also expressed at gesture language level by both listener and speaker feeling lost in the narrative. “Sorry, I lost my thread... what was the question again?” Anger, aimed at involving the interviewer is a hallmark of a subcategory of such interviews. At the level of mental gesture the narrative hints at both at hitting and pulling, not letting go, weaving a tangled web of complaint around the attachment figure, struggling and pushing away yet preventing the possibility of separation.

Secure narratives have their own cognitive-gesture language. Grice’s conversational maxims are all about ensuring that speaker and listener each know where they are in relation to the other, with no risk that they will disappear from each other’s sight. Expectations are fulfilled. There is a satisfying sense of completion or roundedness to narrative at all its levels. Sentences are complete, they are simple and they *hold* the listener’s interest. The gesture is indeed one of secure holding, of knowing what is expected, and the expected happening and allowing itself to become known. At the same time there is a freedom for the listener to form their own associations and their own point of view, equivalent to the way in which an infant in a secure relationship can be seen to move freely between ‘refueling’ with the parent and the exploring the world, as Mahler beautifully described (Mahler, 1968).

There is no claim of innovation here. The aim of making these speculative points is not to create a rival coding scheme. In fact, the coding scheme seems to reflect an unconscious awareness on the part of its creators about how infantile attachment experience is reflected in adult narratives through the metaphoric structure of language. At that level, the experiences of infancy are depicted by the way we manipulate our minds to create mental gestures that recall the formative moments of the earliest years.

### The language of psychoanalysis

Of course as psychoanalysts we have been using this language (sometimes with some embarrassment) since the beginning. Metaphorical aspects of the architecture of mental life

are not new to us. Yet perhaps we do not often consciously consider the instinctual implications of these mental gestures. An unconscious aspect of all therapeutic interchange is how we manipulate our patients' thoughts and ideas. The act of linking together ideas in the course of the most superficial analytic work, at an unconscious level, may be experienced as joining parts of the self together. Asking patients to explore ideas, find alternative meanings, look behind and elaborate the immediate association are mental actions with meaning at the level of gesture – for example, there is the implication of discarding, throwing away as well as finding in the action of finding hidden meaning. Irrespective of the content of our interpretation, the formal, logical structure of our comments on our patients' thinking connects to deeply buried meanings pertaining to the bodily experiences of the first years of life, antedating language by months if not years. This happens in ways that we neither understand nor can follow no matter how hard we might try. Many have wondered at various times in the history of psychoanalysis how a purely language-based therapeutic process can possibly reach experiences that are so profoundly preverbal as not to be represented in autobiographical memory at all (Fónagy, 1999). Our speculation here is that through the gesture language of metaphoric cognition we may activate deeply buried experiences, not necessarily closely tied to the material that we appear to be discussing at the level of content.

How can this happen? Maybe this occurs not just through the content of our words. Fónagy elaborates his model far beyond the gesture language of metaphor. Prosodic expressions when looked at as melodic movements turn out also to be expressive because of the bodily states and movements of holding, pushing away or even hitting that they invoke. 'The content carried by prosodic features is non-conceptual. It reflects emotions and attitudes of varying complexity, the 'primal kernel' that is inaccessible to language.' (Fónagy, 2000, 136-7). Even more deeply unconscious are syntactic structures that convey meaning by allusion to gesture and body state. The poetic form of enjambement (run-on lines) may be

pressed into the service of many different meanings. A quantitative analysis of the occurrence of run-on lines in the work of a number of poets demonstrates how content-specific these structures are. It may serve to establish connections between mental objects. In the work of a specific poet (Rilke) the emergence of this structure is linked to a real lost love. In the conclusion of Andrew Marvell's poem 'To His Coy Mistress' the last sentence runs across two lines: 'Thus, though we cannot make our sun / Stand still, yet we will make him run.' Here, because of the line break, at the prosodic level the sun has been arrested, accomplishing a covert wishful denial of what must be reluctantly acknowledged at the conscious level (ie that time is fleeting and love will not last forever).

#### Revisiting psychoanalysis and attachment

We are suggesting that psychoanalysis and attachment theory can come together in the domain of embodied thought. Psychoanalytic clinical and theoretical appreciation of embodied thinking goes back to the origins of the discipline. Within psychoanalysis the awareness of embodied thinking has previously been focused on bodily actions connected with oral actions: sucking, biting, digesting, excreting; sexual actions such as penetration, castration; aggressive actions such as attacking, hitting, emptying and so on. They are thus related to the instinctual behavior linked to the drives previously of most interest to psychoanalysts. Attachment theory of infancy can be helpful in decoding the unconscious meaning of some of the other formative experiences, experiences of intimacy and security, depicted in the gesture language discernible in the structures of thought. We are attached to ideas because by becoming attached to them we can re-experience the bodily qualities of early bonding. Embodied cognition allows for the expression of both libidinal feelings and attachment feelings, and a range of other unconscious concerns (relational concerns, self experience, and so on), through gesture, language, adherence to a belief, and so on, which

gives expression to affect which is currently felt. This cognition and expression hints at the continuity of developmental structures at the unconscious level, but this is not through linear causation but through evocative echoing of a current feeling state.

Our attitudes to scientific theories may be as much unconscious expressions of infantile patterns, and as deeply coloured by the embodiment of mind, as commonplace phrases or ‘gestures of thought’ in the adult attachment interview. Abstract thought and logic take us only so far in understanding the history of our science. Figurative and analogical structures of thought are helpful in understanding why we sometimes just cannot let go. If the attachment system is activated and we feel insecure at the bodily, core level, we have particular difficulties in allowing our minds to explore freely. We hold on ever more rigidly to beliefs and knowledge that we might in a different frame of mind be able to see as flawed, partial or in need of revision.

### *Conclusions*

The present paper has aimed to do more than to offer a review of the relationship between psychoanalytic ideas and attachment theory. The key points we covered can be summarized as follows: (1) There was a fundamental concern on the part of psychoanalysts that Bowlby too rapidly moved away from the body and the unconscious mind, towards a narrowly defined relational construct, that of attachment. (2) In one sense they were right; following the *Weltanschauung* of emerging cognitive science Bowlby moved too hastily towards the abstract structures of mind without body, ‘software’ independent of ‘hardware’, and thus presented attachment theory as too far separated from its roots in the emotional core in the human infant in states of distress. (3) Changes in cognitive science call for at least a partial review of some attachment ideas, seeing the brain as more continuous with the mind and seeing the mind as ever reflecting its bodily origin. We are increasingly aware that the brain is the organ of the mind and disorders of the mind are also disorders of the brain. We see that

attachment relationships have a unique brain representation, and empathy or sensitivity depend on the effective functioning of specific brain centers. Considerable evidence is accumulating that disorders of the capacity to form relationships with one's infants or in adulthood can be characterized meaningfully at the level of brain activation. (4) But showing that relationships can be specified at the level of brain activation in no sense explains the phenomena we are concerned with: the subjective experience of relationships. Yet the abandonment of a cognitive science that separated body and mind, in favour of one where mind is seen as embodied, brings into relief aspects of subjectivity which traditional cognitivists and attachment theorists have missed but to which generations of psychoanalysts have been sensitive: primary process thought or metaphorical/concrete thinking. (5) The nature of thought and its intimate links with metaphor serve as an example of this physical instantiation. Metaphor is arguably based on a physical logic, the creation of new meaning through pointing to the physical symbol of gesture. (6) In addition to being understandable in terms of an underlying, non-conscious structure, we assume that metaphoric thought expresses dynamically unconscious ideas. (7) Attention to these unconscious meanings can shed light on the nature of relationships that are enacted through the use of language, not just at the level of linguistic metaphor per se but also the metaphoric use of syntax, prosody and phonation. (8) We wished to draw attention to the way style in speech, thought and relationships may be determined by an underlying unifying coding system of embodied images or procedural memories of experiences rooted in bodily experience. We have suggested that both styles of speech and cognitive structures themselves may be seen as examples of embodiment. Mental manipulations or movements of thought can be metaphoric or unconsciously expressive of infantile experience just like any product of mind. This may be a fruitful area for the new generation of attachment researchers and clinical psychoanalysts to explore more fully in the context of studies of attachment related narratives or language

within the consulting room. (9) In agreement with classical psychoanalytic contributors, we have speculated that cognitive structures themselves may be seen as examples of embodiment. Mental manipulations or movements of thought can be metaphoric or unconsciously expressive of infantile experience just like any product of mind. (10) A speculative application of these ideas is the consideration of the nature of scientific controversy in general and perhaps even the controversy that arose between attachment theory and psychoanalysis.

Attachment theory under the influence of neuroscience will perhaps now return to the body which psychoanalysis has never left. The two domains may move increasingly close to each other and perhaps in a few years attachment theory will return to the fold of psychoanalytic ideas as psychoanalysis reestablishes its position as the premier neuroscience of subjectivity. But that is for the future. Our modest plea in this paper is that both as scientists and as clinicians we should try to remain aware of the unconscious significance that we attach to the way we think, including the way we think about new ideas - including of course the ideas presented here.

## References

- AINSWORTH, M. D. S., BELL, S. M., & STAYTON, D. J. (1971). Attachment and exploratory behaviour of one year olds. In H. R. Schaffer (Ed.), *The origins of human social relations*. New York: Academy Press.
- AKHTAR, S. (1992). *Broken Structures: Severe Personality Disorders and Their Treatment*. Northvale, New Jersey: Jason Aronson.
- ALLEN, J. P., HAUSER, S. T., & BORMAN-SPURRELL, E. (1996). Attachment theory as a framework for understanding sequelae of severe adolescent psychopathology: An 11-year follow-up study. *Journal of Consulting and Clinical Psychology*, 64, 254-263.
- ALTSCHUL, S. (1984). Attachment and Loss, Vol. 3. Loss, Sadness and Depression. *J. Amer. Psychoanal. Assn.*, 32, 216-218.
- ALVAREZ, A. (1992). *Live Company: psychoanalytic psychotherapy with autistic, borderline, deprived and abused children*. London: Routledge.
- BELSKY, J. (1999). Modern evolutionary theory and patterns of attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications* (pp. 141-161). New York: Guilford.
- BERNSTEIN, I. (1981). Attachment and Loss, Vol III: Loss, Sadness and Depression: A review. *The Psychoanalytic Quarterly*, 50, 418-422.
- BION, W. R. (1962). *Learning from Experience*. London: Heinemann.
- BOWLBY, J. (1960). Grief and mourning in infancy and early childhood. *Psychoanalytic Study of the Child*, 15, 3-39.
- . (1969). *Attachment and Loss, Vol. 1: Attachment*. London: Hogarth Press and the Institute of Psycho-Analysis.

---. (1973). *Attachment and Loss, Vol. 2: Separation: Anxiety and Anger*. London: Hogarth Press and Institute of Psycho-Analysis.

---. (1979). Psychoanalysis as art and science. *International Review of Psycho-Analysis*, 6, 3-14.

---. (1980a). *Attachment and Loss, Vol. 3: Loss: Sadness and Depression*. London: Hogarth Press and Institute of Psycho-Analysis.

---. (1980b). Epilogue. In C. M. Parks & J. Stevenson-Hinde (Eds.), *The Place of Attachment in Human Behaviour* (pp. 301-312). New York: Basic Books.

---. (1981). Psychoanalysis as natural science. *International Review of Psycho-Analysis*, 8, 243-255.

---. (1988). *A Secure Base: Clinical Applications of Attachment Theory*. London: Routledge.

BREARLEY, M. (1995). John Bowlby and Attachment Theory. *Int. J. Psycho-Anal.*, 76, 1071-1073.

BREHERTON, I. (1987). New perspectives on attachment relationships: Security, communication and internal working models. In J. D. Osofsky (Ed.), *Handbook of Infant Development* (pp. 1061-1100). New York: Wiley.

---. (1991). Intentional communication and the development of an understanding of mind. In D. Frye & C. Moore (Eds.), *Children's theories of mind: Mental states and social understanding* (pp. 271-289). Hilldale, NJ: Lawrence Erlbaum.

---. (1995). Attachment theory and developmental psychopathology. In D. Cicchetti & S. Toth (Eds.), *4th Rochester Symposium on Developmental Psychopathology on 'Emotion, Cognition, and Representation'* (pp. 231-260). Hillsdale, NJ: Erlbaum.

BREHERTON, K., & MUNHOLLAND, K. A. (1999). Internal working models in attachment relationships: A construct revisited. In J. Cassidy & P. R. Shaver (Eds.),

*Handbook of Attachment: Theory, Research and Clinical Applications* (pp. 89-114). New York: Guilford.

BRITTON, R. (1995). Psychic Reality And Unconscious Belief. *International Journal of Psychoanalysis*, 76, 19-23.

BRUNER, J. (1990). *Acts of Meaning*. Cambridge: Harvard University Press.

BUECHLER, S. (1997). Attachment theory as a secure base for psychoanalytic exploration. *Contemporary Psychoanalysis*, 33, 157-161.

CASSIDY, J., & SHAVER, P. R. (Eds.). (1999). *Handbook of attachment: Theory, research and clinical applications*. New York: Guilford.

CLARK, A. (1997). *Being There: Putting Brain Body and World Together Again*. Cambridge, MA: MIT Press.

---. (1999). An embodied cognitive science? *Trends in Cognitive Sciences*, 3, 345-351.

CLARKIN, J. F., LEVY, K. N., LENZENWEGER, M. F., & KERNBERG, O. F. (2004a). The Personality Disorders Institute/Borderline Personality Disorder Research Foundation randomized control trial for borderline personality disorder: Progress report. Paper presented at the Annual Meeting of the Society for Psychotherapy Research, Rome, Italy.

---. (2004b). The Personality Disorders Institute/Borderline Personality Disorder Research Foundation randomized control trial for borderline personality disorder: rationale, methods, and patient characteristics. *J Personal Disord*, 18(1), 52-72.

COATES, S. W. (1998). Having a Mind of One's Own and Holding the Other In Mind: Commentary on Paper by Peter Fonagy and Mary Target. *Psychoanal. Dial. Psychoanalytic Dialogues*, 8, 115-148.

DAMASIO, A. R. (2003). *Looking for Spinoza: Joy, sorrow, and the feeling brain*. New York: Harvest Books.

DOWNEY, W. T. (2000). Little Orphan Anastasia. *Psychoanal. Study Child*, 55, 145-179.

EAGLE, M. (1995). The developmental perspectives of attachment and psychoanalytic theory. In S. Goldberg & R. Muir & J. Kerr (Eds.), *Attachment theory: Social, developmental and clinical perspectives* (pp. 123-150). New York: Analytic Press.

---. (1997). Attachment and psychoanalysis. *British Journal of Medical Psychology*, 70, 217-229.

EISENBERGER, N. I., LIEBERMAN, M. D., & WILLIAMS, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, 302(5643), 290-292.

EMDE, R. N. (1988a). Development terminable and interminable II. Recent psychoanalytic theory and therapeutic considerations. *International Journal of Psycho-Analysis*, 69, 283-286.

---. (1988b). Development terminable and interminable. I. Innate and motivational factors from infancy. *International Journal of Psycho-Analysis*, 69, 23-42.

---. (1999). Moving Ahead. *International Journal of Psychoanalysis*, 80, 317-339.

ENGEL, G. L. (1971). Attachment behaviour, object relations and the dynamic point of view. A critical review of Bowlby's Attachment and Loss. *International Journal of Psycho-Analysis*, 52, 183-196.

FAIRBAIRN, W. R. D. (1952). *An Object-Relations Theory of the Personality*. New York: Basic Books, 1954.

FERENCZI, S. (1922). The further development of an active therapy in psychoanalysis, *Further Contributions to the Theory and Technique of Psychoanalysis* (pp. 198-216). London: Karnac Books, 1980.

---. (1930). *Notes and fragments, II*. New York: Basic Books, 1952.

FONAGY, I. (1980). *Les Metaphores en Phonetique*. Ottawa: Didier.

- . (1983). *La Vive Voix. Essais de Psycho-phonétique*. Paris: Payot.
- . (2000). *Languages within language: An evolutive approach*. Amsterdam: John Benjamins.
- FONAGY, P. (1982). Psychoanalysis and empirical science. *International Review of Psychoanalysis*, 9, 125-145.
- . (1999). Memory and therapeutic action (guest editorial). *International Journal of Psycho-Analysis*, 80, 215-223.
- . (2001). *Attachment theory and psychoanalysis*. New York: Other Press.
- . (2003). The development of psychopathology from infancy to adulthood: the mysterious unfolding of disturbance in time. *Infant Mental Health Journal*, 24(3), 212-239.
- . (in press). The mentalization-focused approach to social development. In J. G. Allen & P. Fonagy (Eds.), *Handbook of mentalisation based treatments*. London: Wiley.
- FONAGY, P., GERGELY, G., JURIST, E., & TARGET, M. (2002). *Affect Regulation, Mentalization and the Development of the Self*. New York: Other Press.
- FONAGY, P., MORAN, G. S., EDGCUMBE, R., KENNEDY, H., & TARGET, M. (1993). The roles of mental representations and mental processes in therapeutic action. *The Psychoanalytic Study of the Child*, 48, 9-48.
- FONAGY, P., STEELE, M., MORAN, G. S., STEELE, H., & HIGGITT, A. (1993). Measuring the ghost in the nursery: An empirical study of the relation between parents' mental representations of childhood experiences and their infants' security of attachment. *Journal of the American Psychoanalytic Association*, 41, 957-989.
- FONAGY, P., & TARGET, M. (in preparation). A genuinely developmental theory of sexual enjoyment and its implications for psychoanalytic technique.
- FRANCIS, D. D., SZEGDA, K., CAMPBELL, G., MARTIN, W. D., & INSEL, T. R. (2003). Epigenetic sources of behavioral differences in mice. *Nat Neurosci*, 6(5), 445-446.

FREUD, A. (1960). Discussion of Dr.Bowlby's paper (Grief and mourning in infancy and early childhood), *The Writings of Anna Freud* (pp. 167-186). New York: International University Press, 1969.

FREUD, S. (1900). The interpretation of dreams. In J.Strachey (Ed.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 4,5, pp. 1-715). London: Hogarth Press.

---. (1913). Totem and Taboo. In J. Strachey (Ed.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 13, pp. 1-162). London: Hogarth Press.

---. (1914). On narcissism: An introduction. In J.Strachey (Ed.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 14, pp. 67-104). London: Hogarth Press.

---. (1923). The ego and the id. In J.Strachey (Ed.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 19, pp. 1-59). London: Hogarth Press.

GARDNER, H. (1985). *The mind's new science: a history of the cognitive revolution*. New York: Basic Books.

GEORGE, C., KAPLAN, N., & MAIN, M. (1985). The Adult Attachment Interview. Unpublished manuscript, Department of Psychology, University of California at Berkeley.

GILMORE, K. (1990). A secure base. Parent-child attachment and healthy human development. *Psychoanalytic Quarterly*, 59, 494-498.

GREEN, A. (1995). Has sexuality anything to do with psychoanalysis. *International Journal of Psycho-Analysis*, 76, 871-883.

---. (2000). What kind of research for psychoanalysis? In J. Sandler & A.-M. Sandler & R. Davies (Eds.), *Clinical and Observational Psychoanalytic Research: Roots of a Controversy* (pp. 21-27). London: Karnac.

GREENACRE, P. (1960). Regression and Fixation—Considerations Concerning the Development of the Ego. *Journal of the American Psychoanalytic Association*, 8, 703-723.

GRICE, H. P. (1975). Logic and conversation. In R.Cole & J.Morgan (Eds.), *Syntax and Semantics: Speech Acts* (pp. 41-58). New York & I Academic Press.

GROSSKRUTH, P. (1986). *Melanie Klein: Her world and her work*. New York: Knopf.

HAMILTON, C. E. (2000). Continuity and discontinuity of attachment from infancy through adolescence. *Child Development*, 71(3), 690-694.

HANLEY, C. (1978). A critical consideration of Bowlby's ethological theory of anxiety. *Psychoanalytic Quarterly*, 47, 364-380.

HAUSER, S. T. (2002a). The Future of Psychoanalytic Research. *Journal of the American Psychoanalytic Association*, 50, 395-405.

---. (2002b). The future of psychoanalytic research: turning points and new opportunities. *J Am Psychoanal Assoc*, 50(2), 395-405.

---. (2004). Creative alliances: enhancing interfaces between psychoanalysis and research. *J Am Psychoanal Assoc*, 52(2), 385-391.

HESSE, E., & MAIN, M. (1999). Second-generation effects of unresolved trauma in nonmaltreating parents: Dissociated, frightened, and threatening parental behavior. *Psychoanalytic Inquiry*.

HOBSON, P. (2002). *The cradle of thought: Explorations of the origins of thinking*. Oxford: Macmillan.

HOFFER, W. (1950). The development of the body ego. *The Psychoanal. Study Child*, 5, 18-24.

HOLMES, J. (1993). *John Bowlby and attachment theory*. London: Routledge.

---. (1997). Attachment, autonomy, intimacy: Some clinical implications of attachment theory. *British Journal of Medical Psychology*, 70, 231-248.

- . (1998). The changing aims of psychoanalytic psychotherapy: An integrative perspective. *International Journal of Psychoanalysis*, 79, 227-240.
- HOROWITZ, M. J. (1992). *Person Schemas and Maladaptive Interpersonal Patterns*. Chicago: University of Chicago Press.
- HRDY, S. B. (2000). *Mother nature*. New York: Ballentine Books.
- ISAACS, S. (1943). The nature and function of phantasy. In M. Klein & P. Heimann & S. Isaacs & J. Riviere (Eds.), *Developments in Psycho-Analysis* (pp. 67-121). London: Hogarth Press (1952).
- JACKENDOFF, R. (1987). *Consciousness and the computational mind*. Cambridge, MA: MIT Press.
- JACOBSON, E. (1964). *The Self and the Object World*. New York: International Universities Press.
- JOHNSON-LAIRD, P. N. (1983). *Mental models: Towards a cognitive science of language, inference and consciousness*. Cambridge: Cambridge University Press.
- KERNBERG, O. F. (1976). *Object Relations Theory and Clinical Psychoanalysis*. New York: Aronson.
- . (1982). Self, ego, affects and drives. *Journal of the American Psychoanalytic Association*, 30, 893-917.
- KING, P., & RAYNER, E. (1993). John Bowlby (1907-1990). *Int. J. Psycho-Anal.*, 74, 1823-1828.
- KLEIN, M., HEIMANN, P., ISSACS, S., & RIVIERE, J. (Eds.). (1946). *Developments in psychoanalysis*. London: Hogarth Press.
- KLIN, A., & JONES, W. (in press). Embodied psychoanalysis? On the confluence of psychodynamic theory and developmental science. In L. Mayes & P. Fonagy & M. Target (Eds.). London: Karnac Books.

- KOHUT, H. (1982). Introspection, empathy and the semi-circle of mental health. *International Journal of Psychoanalysis*, 63, 395-407.
- LAKOFF, G. (1987). *Women, Fire and Dangerous Things: What Categories Reveal About The Mind*. Chicago: University of Chicago Press.
- . (1997). How unconscious metaphorical thought shapes dreams. In D. J. Stein (Ed.), *Cognitive Science and the Unconscious* (pp. 89-120). Washington, DC: American Psychiatric Press.
- LAKOFF, G., & JOHNSON, M. (1999). *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*. New York: Basic Books.
- LAKOFF, G., & TURNER, M. (1989). *More Than Cool Reason: A Field Guide to Poetic Metaphor*. Chicago: University of Chicago Press.
- LICHTENBERG, J. (1989). *Psychoanalysis and Motivation*. Hillsdale, New Jersey: Analytic Press.
- LINDSAY, P. H., & NORMAN, D. A. (1977). *Human Information Processing*. New York: Academic Press.
- LOEWALD, H. W. (1960). On the therapeutic action of psycho-analysis. *International Journal of Psycho-Analysis*, 41, 16-33.
- LYONS-RUTH, K. (2003). Dissociation and the parent-infant dialogue: a longitudinal perspective from attachment research. *J Am Psychoanal Assoc*, 51(3), 883-911.
- LYONS-RUTH, K., & JACOBOWITZ, D. (1999). Attachment disorganization: Unresolved loss, relational violence and lapses in behavioral and attentional strategies. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment theory and research* (pp. 520-554). New York: Guilford.
- MAHLER, M. (1968). *On human symbiosis and the vicissitudes of individuation*. New York: International Universities Press.

MAIN, M. (1991). Metacognitive knowledge, metacognitive monitoring, and singular (coherent) vs. multiple (incoherent) model of attachment: Findings and directions for future research. In C. M. Parkes & J. Stevenson-Hinde & P. Marris (Eds.), *Attachment Across the Life Cycle* (pp. 127-159). London: Tavistock/Routledge.

---. (2000). The organized categories of infant, child and adult attachment: Flexible vs. inflexible attention under attachment-related stress. *Journal of the American Psychoanalytic Association*, 48(4), 1055-1096.

MAIN, M., & CASSIDY, J. (1988). Categories of response to reunion with the parent at age 6: Predictable from infant attachment classifications and stable over a 1-month period. *Developmental Psychology*, 24, 415-426.

MAIN, M., & HESSE, E. (2001). Attachment narratives and attachment across the lifespan. *Journal of the American Psychoanalytic Association*, 48.

MAIN, M., KAPLAN, N., & CASSIDY, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), *Growing Points of Attachment Theory and Research. Monographs of the Society for Research in Child Development* (Vol. 50, pp. 66-104). Chicago: Chicago University Press.

MARTY, P. (1990). *La Psychosomatique de l'Adulte*. Paris: Presses Universitaire de France.

MEAD, G. H. (1934). *Mind, self and society*. Chicago: University of Chicago Press.

MEANEY, M. J., & SZYF, M. (2005). Environmental programming of stress responses through DNA methylation: life at the interface between a dynamic environment and a fixed genome. *Dialogues Clin Neurosci*, 7(2), 103-123.

MELTZER, D. (1975). *Explorations in Autism: A Psycho-Analytical Study*. Strath Tay: Clunie Press.

NAGERA, H. (1970). Children's reactions to the death of important objects - A developmental approach. *Psychoanalytic Study of the Child*, 25, 360-400.

NEISSER, U. (1967). *Cognitive psychology*.

NEWELL, A. (1991). *Unified theories of cognition*. Cambridge, MA: Harvard University Press.

PARKER, S. W., & NELSON, C. A. (2005). The impact of early institutional rearing on the ability to discriminate facial expressions of emotion: an event-related potential study. *Child Dev*, 76(1), 54-72.

PIAGET, J. (1967). *Biology and Knowledge*. Chicago: University of Chicago Press, 1972.

ROCHLIN, G. (1971). Review of Bowlby, J., *Attachment and Loss*: Attachment. *Psychoanalytic Quarterly*, 50, 504-506.

ROHEIM, G. (1949). Psychoanalysis and anthropology. In D. Harin (Ed.), *Personal Character and Cultural Milieu* (pp. 565-588). Syracuse: Syracuse University Press.

ROIPHE, H. (1976). Review of J Bowlby, *Attachment and Loss*. II: Separation, Anxiety and Anger. *Psychoanalytic Quarterly*, 65, 307-309.

SANDER, L. W. (1987). Awareness of inner experience: A systems perspective on self-regulatory process in early development. *Child Abuse & Neglect*, 2, 339-346.

SANDLER, J. (1960a). The background of safety. *International Journal of Psycho-Analysis*, 41, 191-198.

---. (1960b). The background of safety, *From safety to superego: Selected papers of Joseph Sandler* (pp. 1-8). London: Karnac, 1987.

---. (1976). Countertransference and role-responsiveness. *International Review of Psycho-Analysis*, 3, 43-47.

---. (1989). Toward a reconsideration of the psychoanalytic theory of motivation. In A. M. Cooper & O. F. Kernberg & E. S. Person (Eds.), *Psychoanalysis: Toward the Second Century* (pp. 91-110). New Haven, CT: Yale University Press.

---. (1995). On attachment to internal objects. Paper presented at the The clinical implications of attachment: The work of Mary Main, London, UCL.

SANDLER, J., & ROSENBLATT, B. (1962). The concept of the representational world. *The Psychoanalytic Study of the Child*, 17, 128-145.

SANDLER, J., & SANDLER, A.-M. (1984). The past unconscious, the present unconscious, and interpretation of the transference. *Psychoanalytic Inquiry*, 4, 367-399.

SASS, L. A., & WOOLFOLK, R. L. (1988). Psychoanalysis and the Hermeneutic Turn: A Critique of Narrative Truth and Historical Truth. *Journal of the American Psychoanalytic Association*, 36, 429-454.

SCHAFFER, R. (1992). *Retelling a Life: Narration and Dialogue in Psychoanalysis*. New York: Basic Books.

SCHUR, M. (1960). Discussion of Dr. John Bowlby's paper. *The Psychoanalytic Study of the Child*, 15, 63-84.

SEGAL, H. (1982). Early Infantile Development as Reflected in the Psychoanalytical Process: Steps in Integration. *International Journal of Psychoanalysis*, 63, 15-22.

SHANE, M., SHANE, E., & GALES, M. (1997). *Intimate Attachments: Toward a New Self Psychology*. New York: Guilford Press.

SINGER, T., SEYMOUR, B., O'DOHERTY, J., KAUBE, H., DOLAN, R. J., & FRITH, C. D. (in preparation). Feeling Another's Pain Involves the Affective but not Sensory Components of Pain.

SLADE, A. (2000a). The development and organisation of attachment: Implications for psychoanalysis. *Journal of the American Psychoanalytic Association*, 48, 1147-1174.

- . (2000b). The Development and Organization of Attachment. *Journal of the American Psychoanalytic Association*, 48, 1147-1174.
- SPENCE, D. (1984). *The Freudian Metaphor*. New York: Norton.
- SPITZ, R. (1965). *The first year of life*. New York: International University Press.
- SPITZ, R. A. (1960). Discussion of Dr. John Bowlby's paper. *The Psychoanalytic Study of the Child*, 15, 85-94.
- SPURLOCK, J. (1970). Social Deprivation in Childhood and Character Formation. *J. Amer. Psychoanal. Assn.*, 18, 622-630.
- SROUFE, L. A. (1996). *Emotional development: The organization of emotional life in the early years*. New York: Cambridge University Press.
- STEELE, M. (2003). Attachment, actual experience and mental representation. In V. Green (Ed.), *Emotional Development in Psychoanalysis, Attachment Theory and Neuroscience: Creating Connections* (pp. 86-106). Hove: Brunner-Routledge.
- STEINER, J. (1993). *Psychic Retreats: Pathological Organisations in Psychotic, Neurotic and Borderline Patients*. London: Routledge.
- . (1994). Patient-centred and analyst-centred interpretations: some implications of 'containment' and 'counter-transference'. *Psychoanalytic Inquiry*, 14, 406-422.
- STERN, D. N. (1985). *The Interpersonal World of the Infant: A View from Psychoanalysis and Developmental Psychology*. New York: Basic Books.
- . (1995). *The Motherhood Constellation: A Unified View of Parent-Infant Psychotherapy*. New York, N.Y.: BasicBooks.
- TEICHER, M. H., ANDERSEN, S. L., POLCARI, A., ANDERSON, C. M., & NAVALTA, C. P. (2002). Developmental neurobiology of childhood stress and trauma. *Psychiatr Clin North Am*, 25(2), 397-426, vii-viii.

THELEN, E., & SMITH, L. (1994). *A Dynamic Systems Approach to the Development of Cognition and Action*. Cambridge, MA: MIT Press.

THOMPSON, E., & VARELA, F. J. (2001). Radical embodiment: neural dynamics and consciousness. *Trends Cogn Sci*, 5(10), 418-425.

TRONICK, E. Z. (2001). Emotional connection and dyadic consciousness in infant-mother and patient-therapist interactions: Commentary on paper by Frank M. Lachman. *Psychoanalytic Dialogue*, 11, 187-195.

---. (2004). Why is connection with others so critical? Dyadic meaning making, messiness and complexity governed selective processes which co-create and expand individuals' states of consciousness: The assembling of states of consciousness and experiential impelling certitude from the messiness of age-possible meanings of emotions, actions and symbols. In J. Nadel & D. Muir (Eds.), *Emotional Development*. Oxford, England: Oxford University Press.

TUSTIN, F. (1981). *Autistic States in Children*. London: Routledge & Kegan Paul.

VAN IJZENDOORN, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117, 387-403.

VARELA, F., THOMPSON, E., & ROSCH, E. (1991). *The embodied mind: cognitive science and human experience*. Cambridge, MA: The MIT Press.

VON BERTALANFFY, L. (1968). *General System Theory: Foundations, Development, Applications*. New York: George Braziller.

WATERS, E., MERRICK, S. K., TREBOUX, D., CROWELL, J., & ALBERSHEIM, L. (2000). Attachment security from infancy to early adulthood: a 20 year longitudinal study. *Child Development*, 71(3), 684-689.

WATSON, J. S. (2001). Contingency perception and misperception in infancy: Some potential implications for attachment. *Bulletin of the Menninger Clinic*, 65, 296-320.

WEINFELD, N., SROUFE, L. A., & EGELAND, B. (2000). Attachment from infancy to early adulthood in a high risk sample: Continuity, discontinuity and their correlates. *Child Development*, 71(3), 695-702.

WEISS, J., SAMPSON, H., & AND THE MOUNT ZION PSYCHOTHERAPY RESEARCH GROUP. (1986). *The psychoanalytic process: theory, clinical observation, and empirical research*. New York: Guilford Press.

WINNICOTT, D. W. (1962). The aims of psychoanalytic treatment, *The Maturation Processes and the Facilitating Environment* (pp. 166-170). London: Hogarth Press.

WINOGRAD, T., & FLORES, F. (1986). *Understanding computers and cognition*. Norwood, NJ: Ablex Publications.

WOLFF, P. H. (1996). The irrelevance of infant observations for psychoanalysis. *Journal of the American Psychoanalytic Association*, 44, 369-392.

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<sup>i</sup> An astute reviewer pointed out that this should not be thought to apply to all psychoanalytic authors and mentioned numerous distinguished colleagues by name whose work offers clear evidence that they consistently paid attention to advances in the neurosciences, psychiatry and psychology. Sadly, the very fact that it is possible to attempt to list such contributors supports our point, namely, that retaining the link between psychoanalytic scholarship and advances in pertinent neighbouring scientific disciplines is a notable characteristic in our field rather than something to be absolutely assumed about all contributors.

<sup>ii</sup> A very accessible introduction to these ideas can be found in the chapter by Ami Klin and Warren Jones in their chapter to the book edited by Linda Mayes,

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Mary Target and I celebrating the renewal of interest in an empirically rooted developmental psychoanalysis (Klin & Jones, in press).

<sup>iii</sup> Compare Susan Isaacs' (1948) description of how in neurotic symptoms, 'ill people revert to a primitive pre-verbal language, and make use of sensations, postures, gestures and visceral processes to express emotions and unconscious wishes or beliefs, i.e. phantasies.' (p. 84)

<sup>iv</sup> For a full clinical report on this case the reader is referred to an earlier paper (Fonagy, Moran et al., 1993). The case was PF's and supervised by Mrs Anne-Marie Sandler.