

A therapist's circumspect self-exposure for damaged patients with impaired capacity for mentalization, both explicit and implicit affirmation, and finally "facilitative strategies", which include those forms of social and communicational processes that serve to enable a satisfactory working alliance, all have their places in a psychoanalytic treatment (Castonguay & Beutler, 2006; Gabbard & Westen, 2003, p. 836). These auxiliary practices, which are cognitive and largely language-based, and the primary elements such as the centrality of the therapeutic relationship outlined above, are also highlighted by the Task Force of Division 12 of the American Psychological Association and the North American Society for Psychotherapy Research as principles of therapeutic change in their comprehensive review, *Principles of Therapeutic Change that Work* (Castonguay & Butler, 2006).

Having outlined what psychoanalysts propose happens in the consulting room to promote therapeutic action and change and begun to consider whether or not this might be realised through technological mediation, we will now turn to the recent contributions that neuroscience has made to widen and deepen our understanding of communication between therapist and patient.

CHAPTER FIVE

From the first laboratory: neuroscience connections

No enquiry into the nature of the mechanisms of communication in the consulting room, much less the forms it might take when mediated through a technological device, can ignore the recent attention that psychoanalysts are giving to the non-verbal aspects of practice and the underlying neuroscientific hypotheses and research. There is a body of neuroscience and cognitive science that is of great interest to psychoanalysts wishing to find some sort of explicative bridge between daily clinical experience and theoretical inheritance. While there are a number of competing explanatory models in neuropsychanalysis, they share many commonalities that are useful for thinking about possible communicative processes.

Freud said that "the ego is first and foremost a bodily ego" (1923b, p. 26). Winnicott wrote that if a baby reaches a state in which it has a sense of wholeness, then it is "living in the body" (Winnicott, 1975b, p. 264). Yet, as Jacobs (1994) points out, although Freud was historically a perspicacious observer of his patients' non-verbal behaviour, he did not develop this area of his analytic work, and his theories advanced more in relation to verbal communication. As psychoanalysts have become increasingly interested in non-verbal communication, what Grotstein (2005) calls "body rhetoric", they have begun to

study and synthesise information across various fields of study, including infant observation, cognitive psychology, and neuroscience (e.g., Buccì, 1994, 2000, 2002; Lyons-Ruth, 1998; Nahum, 2002; Olds, 2006; Pally, 1998; Schore, 2010, 2011; Stern et al., 1998; Westen & Gabbard, 2002a,b).

Neuroscience, itself, has had a paradigm shift in the last two decades. No longer is Cartesian mind-body dualism regarded as a model, with the body considered as peripheral to the understanding of the nature of the mind. Rather than the mind being considered an independent entity, it is dependent upon emotions emanating from the body, as well as movements and actions (Clark, 1998, 1999b; Damasio, 2005; Lakoff, 1995; Sheets-Johnstone, 1998).

Certain implications for our vision of ourselves are clear. We must abandon the image of ourselves as essentially disembodied reasoning engines, and we must do so not simply by insisting that the mental is fully determined by the physical, but by accepting that we are beings whose neural profiles are profoundly geared so as to press maximal benefit from the opportunities afforded by bodily structure, action, and environmental surroundings. Biological brains are, at root, controllers of embodied action. Our cognitive profile is essentially the profile of an embodied and situated organism. (Clark, 1999b, p. 14)

The nature of the human mind is determined by the form of the human body, and properties of cognition, emotion, and consciousness are shaped by properties of the body. This view has been called "embodied cognition" (Wilson & Foglia, 2011, para.1).

Lakoff, in his innovative co-authored book *Metaphors We Live By* (Lakoff & Johnson, 2003), suggests that rather than being a purely linguistic construction, metaphor is conceptual, embodied, and central to the development of thought. "Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature" (p. 3). He claims,

We are neural beings. Our brains take their input from the rest of our bodies. What our bodies are like and how they function in the world thus structures the very concepts we can use to think. We cannot just think anything—only what our embodied brains permit. (Brockman, 1999)

For example, we speak metaphorically using human spatial concepts: "The stock market is *up*"; "Prices are going *down*". Lakoff and Johnson

argue that our proprioceptive experience, our bodily position in space, informs the construction of language via metaphor. The metaphorical process moves from a more concrete concept rooted in the physical and interactive body to the target of a more abstract concept. In the metaphor that "life is a journey," for instance, the conceptualisation of life involves our assumptions about the concrete experience of journeys: we are embodied beings who move through the world intentionally. Life is the corresponding abstract concept being elucidated by our physical experience of journeying. Metaphors are linked to our sensorimotor experience. The regularity with which different languages use the same metaphors has led to theories that they are computed neurally via circuitry connecting the sensorimotor system with higher cortical areas of the brain (Lakoff & Johnson, 2003, pp. 254–259). The body is the source of meaning and the development of thought. "The mind is embodied, in the full sense of the term, not just embrained" (Damasio, 2005, p. 118).

An emerging trend within the field of embodied cognition is the recognition that action and perception are linked. As will be discussed below, with reference to the philosophers Merleau-Ponty and Heidegger, perception requires an active organism. To quote Gallagher from *How the Body Shapes the Mind*:

Conscious experience is normally of an intermodally seamless spatial system . . . One of the important functions of the body in the context of perception and action is to provide the basis for an egocentric [body-centered] spatial frame of reference. Indeed, this egocentric framework is required for the very possibility of action, and for the general structure of perceptual experience. The fact that perception and action are perspectively spatial (for example, the book appears to my right or to my left, or in the center of my perceptual field) is a fact that depends precisely on the spatiality of the perceiving and acting body. (Gallagher, 2005, p. 59)

Perception, and the sense of "being-in-the-world" (Dreyfus, 1991) depends on interaction between the subject and the environment, and also relates to our body position and functions: "the awareness of the environment derives from how it reacts to our movements" (Riva et al., 2006).

In *Descartes' Error*, neuroscientist Antonio Damasio (2005) argues that emotions themselves are embedded in the body and have a direct

connection and influence on everyday reasoning and conscious decision-making. They arise in the body before one experiences a conscious feeling. He proposes that emotions such as pain and pleasure form the basis for an organism's rationality, which are body-based and survival oriented.

Recent cognitive models variously termed subsymbolic (Bucci, 1997), connectionist (Westen & Gabbard, 2002a,b) and parallel distributed processing (Rumelhart et al., 1986, cited in Westen & Gabbard, 2002a) emphasise the fact that most information processing takes place simultaneously in multiple parallel channels, largely outside conscious awareness. This implicit domain does not have the form of verbal language, and in addition to visual images, it includes images and perceptions in other senses. It is related to experiences such as intuition, empathy, and emotional communication between individuals (Bucci, 2002; Westen & Gabbard, 2002a).

While an in-depth exploration of contemporary cognitive models is beyond the scope of this book, I feel it is crucial to stress the significance of the conclusion of this ongoing research as it applies both to psychoanalysis and, particularly, to the conducting of psychoanalysis via technology. Much of cognition is unconscious. Emotions are communicated via facial movement and bodily movement, in nuanced ways that might require bodies actually being together to perform. Intersubjective relating involves an embodied interaction, that which the French philosopher Merleau-Ponty would call "intercorporeity", communication between two bodies: "it is precisely my body which perceives the body of another, and discovers in that other body a miraculous prolongation of my own intentions, a familiar way of dealing with the world" (Merleau-Ponty, 1962, p. 354; see also, Gallagher & Roy, 2011).

Vittorio Gallese (2006), a professor of neurophysiology and social neuroscience at the University of Parma, borrows the word "intercorporeity" from Merleau-Ponty to describe his theory of embodied simulation, which is automatic, non-conscious, and prelinguistic.

Mirror neurons and embodied simulation

In the early 1990s, a new class of premotor neurons was discovered in the macaque monkey brain. It was found that the neuron fired both

when the animal acted and when it observed the same action performed by others (for a full explication of this research, see Callicott et al., 1996; Rizzolatti et al., 1996). Neurons with similar properties were later identified in humans (Gallese et al., 2007), where the neuro-observation of an object-related hand action caused an automatic activation in the observer of the same neural network that was active in the person performing the action.

The discovery of these neurons caused great excitement in both the cognitive neuroscientific and psychoanalytic communities. Experimental research by Marco Iacoboni at the UCLA Brain Mapping Center suggested that the observations of actions embedded in contexts yielded a significant signal increase, indicating not just action recognition, but an understanding of the "why" of the action: action intention (Gallese et al., 2007). For example, mirror neurons could indicate, by means of the area of the brain they fired in, whether a person observed picking up a cup from a table was intending to drink from it or clear it away. This led them to hypothesise that mirror neurons might be the basis for helping the human to understand the actions and intentions of other people, including the human capacity of empathy. Iacoboni explained in an interview,

When you see me perform an action—such as picking up a baseball you automatically simulate the action in your own brain... When you see me pull my arm back, as if to throw the ball, you also have in your brain a copy of what I am doing, and it helps you understand my goal. Because of mirror neurons, you can read my intentions. You know what I am going to do next... and if you see me choke up, in emotional distress... mirror neurons in your brain simulate my distress. You automatically have empathy for me. You know how I feel because you literally feel what I am feeling. (Blakeslee, 2006, p. C3)

Gallese and colleagues (2007) use the term "embodied simulation" to describe

a mandatory, nonconscious, and prereflexive mechanism that is not the result of deliberate and conscious effort aimed at interpreting the intentions hidden at the overt behavior of others... It uses the outcome of simulated actions, emotions, or sensations to attribute this outcome to another organism as a real goal-state it is trying to bring about, or as a real emotion or sensation it is experiencing. (p. 143)

Note that Gallese and co-authors have included emotion and sensation in their description and suggest that this is not achieved by "analogy" (the *conscious* generating of the imagined or predicted mental states of the other, their desires, feelings, and beliefs), but by a direct *non-conscious* experience consisting of a shared body state.

According to this hypothesis, when we confront the intentional behaviour of others, embodied simulation, a specific mechanism by means of which our brain-body system models its interactions with the world, generates a specific phenomenal state of "intentional attunement" ... by means of embodied simulation we do not just "see" an action, and emotion, or a sensation. Side by side with the sensory description of the observed social stimuli, internal representations of the body states associated with these actions, emotions, and sensations are evoked in the observer "as if" he or she were doing a similar action or experiencing a similar emotion or sensation. (Gallese et al., 2007, p. 144)

Gallese and colleagues (2007, p. 145) use Meltzoff and Moore's (1977) studies of newborns merely hours old who were capable of initiating adult mouth and tongue movements, not in a reflexive way, but in a responsive way that matches the observed behaviour of another. The newborn was able to translate visual information into motor information in a process Meltzoff called "active intermodal mapping", which is not limited to any one form of interaction, visual, auditory, or motor. Gallese and colleagues (2007) relate this capacity to the existence of shared neural sensorimotor networks which form the basis of intersubjective processes similar to Winnicott's (1971a) concept of "affective attunement". Infant researchers such as Stern (1985) and Stern describe, respectively, presymbolic and early symbolic forms of intersubjectivity that predate the theory of mirror neurons. Their observations suggest that the infant recognises correspondences between his/her action and that of another. Mirror neurons may be seen as an underlying biological counterpart to their theories of infant perception (Beebe et al., 2005).

There are varying responses to the research on mirror neurons. Some researchers hail their discovery as the key to our humanity, including our powers of empathy, language, and culture. Others are far more cautious, reminding us that we are in the very early stages of mirror neuron research and suggesting that they are embedded in a

complex network of brain activity (Jarrett, 2013; Klinner & Lemon, 2013). James Klinner and Roger Lemon (2013), neuroscientists at University College, London write in a balanced review of research thus far,

For us, the discovery of mirror neurons was exciting because it has led to a new way of thinking about how we generate our own actions and how we monitor and interpret the actions of others. This discovery prompted the notion that, from a functional viewpoint, action execution and observation are closely-related processes, and indeed our ability to interpret the actions of others requires the involvement of our own motor system. (p. 1057)

What is important here is the concept that our ability to understand the intentions and actions of others is at least in part an implicit embodied experience.

Naturally, these findings have significance and implications for psychoanalysis, where the unconscious dialogue between the analyst and patient is pivotal to the therapeutic action. Gallese and co-authors propose that based on the findings related to mirror neurons and embodied simulation, virtually any interpersonal interaction would create an unconscious "induction" in each participant of what the other is feeling (p. 148). While this implicit resonance is not therapeutic in itself, it could certainly contribute to an empathic understanding between therapist and patient, leading to the therapists' "metabolising" of the patient's affective expression (Bion, 1970). The findings might have implications for transference-countertransference processes, as well as such mechanisms as projective identification. Finally, Gallese and colleagues point out that while the mirror system and embodied simulation may be hardwired into the body, there are a wide range of individual differences in the ways that those capacities are realised, in both mother-infant and patient-therapist relationships. If the relationship is "good-enough", then the underlying neural system enables the mother/therapist, like Winnicott's mirroring mother, to respond to the baby/patient with empathic understanding, which helps the patient to establish an authentic sense of self.

Memory systems

Along with the shift of perspectives on cognitive processing, there has been a re-examination and new definition of memory. Two kinds of

memory, explicit and implicit, with very different features and neural substrates have been described (Westen & Gabbard, 2002a). Explicit memory consists of episodic memory, including the autobiographical recollections, memories of life experience, and generic memory, which is all conscious memory that is not autobiographical, including semantic memory, learnt information, and theory.

Implicit memory is observable in behaviour (for example, typing on a keyboard or playing the piano), but not consciously brought to mind. There are two kinds of implicit memory: procedural, the type of memory that allows people to remember how to ride a bicycle or tie their shoes without consciously thinking about the process, and associative memory. Associative memory, to which we do not have conscious access, consists of the ability to learn and remember implicitly the relationship between unrelated items.

While the action of explicit memory in the consulting room may be familiar (both members of the therapeutic couple remember details of the patient's life, dreams, past sessions, etc.), both forms of implicit memory have equal significance to therapeutic practice. It could be suggested that the transference, itself, is an unconscious enactment of procedural memory (Clyman, 1991). Freud wrote, in "Remembering, repeating, and working-through",

... the patient does not *remember* anything of what he has forgotten and repressed but *acts* it out. He reproduces it not as a memory but as an action; he *repeats* it, without, of course, knowing that he is repeating it ... the patient does not say that he remembers that he is repeat-be defiant and critical towards his parents' authority; instead, he behaves in that way to the doctor. (1914g, p. 150)

It has been suggested by the Boston Change Process Study Group (2010) that forms of procedural memory are connected with the implicit knowledge of relating. Procedural or implicit memory is embodied, non-verbal, and emotional. They describe an implicit procedural knowledge that specifically involves knowing about interpersonal and intersubjective interaction, in addition to implicit procedural memory of performing actions such as riding a bicycle. Associative memory gives us the unconscious means to find connections in patients' narrative material. Again, both forms of implicit memory are unconscious and instantaneous processes. Memory has implications for the experience of the thread of continuity in

psychoanalytic treatment, the possibility for relational connection, and the holding of the other in mind.

The theme of memory as it relates to the use of technology first came up for me in a curious way. In conversation with peers who were using computers for treatment, we noticed that technologically mediated sessions were easy to forget. Highly experienced practitioners who rarely, if ever, had forgotten a co-present session found it difficult to remember a scheduled screen session: "I was working in my office and checked my emails. Only then, when I saw his [the patient's] email asking where I was did I realise I had completely forgotten him session. This has never happened to me before. I felt terrible about it," says one colleague. "If I had not had the computer on and heard the Skype ring tone, I would have missed the session," adds another.

We wondered why so many of us had these completely uncharacteristic lapses. We can speculate about the impact of a co-present experience *vs.* a screen experience on the memory. Is there something about being present in a shared environment, with a rich exchange of multi-sensory communication, which is more memorable than two-dimensional images on screens? Certainly, remote workers have encountered the "out of sight, out of mind" phenomenon, even when they have experimented with leaving a screen open in the office all the time, so that the absent person can be referred to or chatted with "as if" they were really present. Scott Hanselman, a remote worker with Microsoft, went so far as to design a mobile "embodied social proxy", which he also calls a "crazy webcam remote cat thing" (Hanselman, 2010). He explains,

... the idea is that you want a physical stand-in for yourself. Sure, people can call me and contact me in any of a dozen ways, and honestly, it's one click at Microsoft. I'm on the address list, I'm on chat, and I've even got a 5-digit phone extension. I've done all this and more to integrate into headquarters. However, out of sight, out of mind is really true. *People subconsciously or not like to associate something physical with you.* (2010, my italics)

Hanselman's embodied social proxy increased his fellow workers' attention and rapport with him. The fact of its physical presence improved their interpersonal relationships: he was no longer so completely "out of sight, out of mind". But it was not just the physical presence that was important. After all, he had previously appreciated

on a stationary screen that was always on and made him constantly available for chat and consultation. What was different was the mobility of this contraption, in which he was "embodied". He could control his proxy's physical movements in three-dimensional space within the remote location, and that made a more abiding impression on his colleagues.

The embodied experience of acting and moving in space is connected to learning, mental processing, and memory. Movement and the three-dimensional qualities of physical co-presence may make a greater and more lasting impact on our memories. Researchers have found that the experience of more complex movement, such as handwriting as opposed to typing, not only improves cognitive abilities, but also affects memory. "There is something really important about manually manipulating and drawing out two-dimensional things we see all the time", says Karin Harman James, Assistant Professor of Psychology at Indiana University, who led an MRI study on the affect of handwriting on learning and memory (Bounds, 2010). Significantly for clinicians doing screen-to-screen treatment, she is referring specifically to transforming that which we experience in two dimensions to a physical experience in three dimensions and how it affects our brains.

Other research points to the hand's particular relationship with the brain when it comes to constructing thoughts and ideas. Dr Virginia Berninger, a professor of educational psychology at the University of Washington, notes that the hand and finger movements involved in writing activate vast regions of the brain involved in thinking, language, and memory. In contrast, typing, the pressing of identical-looking keys, does not affect the brain in this complex way (Bounds, 2010). The richer our embodied experience of acting and moving in space, the more profoundly it affects our perceptions, consciousness, and memory.

Is our experience of two-dimensional screen relations attenuated in such a way as to make less of an impact on our memories? For some analysts, remembering a screen-to-screen session itself presents a problem:

It is more difficult to remember and internalise Skype sessions . . . I took really copious notes. It's not really how I work [in a shared environment]. It helped me to stay on track and keep it somehow, not just

in note form, but in me, it was a way to stay with [the patient] . . . especially during long silences, when I felt I might come unmoored. I don't have a problem with that in person, but with a machine, I'm thinking, writing, something like "long pause; I'm thinking x, y, z", was a way to stay connected with him.

This analyst compensates for the difficulty in retaining two-dimensional screen sessions by introducing a sensorimotor component, a way to interact physically with his environment rather than making an internal representation of his environment, like a photograph. Memory, as well as learning and cognition, is inextricably connected to our three-dimensional audio-visual, tactile interactions with our surroundings and using a pen and paper enhanced this analyst's perception and recall of the session.

The three scientists who won the 2014 Nobel prize in Physiology and Medicine, John O'Keefe and May-Britt and Edward Moser, suggest that navigation, knowing how to find one's way in physical space, is intimately related to the way memories are created and stored (Moser & Moser, 2014). They discovered place cells and grid cells, two types of neurons in the brain that enable us to navigate our environment. These cells, which have been dubbed an inner "GPS", give animals and humans the survival skills necessary to find their way through the physical world, knowing where they are, where they have been, and where they are going. The scientists suggest that the same neural systems and algorithms support both physical travel and the mental travel of memory (Buzsáki & Moser, 2013, p. 130). "Essentially, while your brain is making mental maps to help you navigate, it is also overlaying memories—experiences, smells—onto those maps" (Moser & Moser, 2014, p. 2).

The cells connected with navigation and the cells connected with memory are both located largely in the hippocampus region of the brain. "Place and memory are intimately related," says University of Pennsylvania computational psychologist Michael J. Kahana. "Space forms a powerful context in which our memories are encoded . . . That's why this model of how the brain maps the world is so important to who we are as human beings" (Healy, 2014, par. 10). We have seen that when we link movement to experience, we remember it better. If "Memory is deeply and physically connected to our perception and encoding of space" (Moser & Moser, 2014, p. 4), then it is possible that sitting stationary in front of a screen and engaging with

a two-dimensional image does not as actively involve those neurons that are engaged when travelling to a session or moving through space in a consulting room.

Episodic memory, explicit autobiographical memory (that is, related to words) is far more fragile and less reliable than implicit memory, which is non-verbal and seated in the body (Clayton et al., 2007). It might be that not having all the cues and implicit communication of a body-to-body relationship affects what we are able to absorb and retain, if that which is embodied and implicit underpins memory.

Those analysts who start work in a shared environment and transfer to computer-mediated treatment, or who continue to meet co-presently with their patients intermittently while also using technology, observe that their memories of working in a shared environment with their patients better enable them to continue a sensitive connection with them in a technologically mediated communication. Anna, a London analyst, speaking of a patient who had moved abroad, refers to it as "an inner template being laid down".

I had to carry over the quality of knowing her for real as opposed to virtual . . . the quality of being with her in the room had a three-dimensional quality to it and a plastic quality . . . which allows the unconscious to communicate itself. You could almost say that it is a fourth dimension that works between us in that real situation, and in the screen-to-screen [situation] we were both working hard to try and use every ounce of what we knew about that. That is what I would think she was doing, as well as I.

Implicit and explicit memory of co-presence, being bodies together, might help the therapeutic couple to bridge the relational gap. Research needs to be done to examine and evaluate memory processes as they carry over from embodied relational encounters to technologically mediated encounters, and as they affect the thread of experiential continuity between screen-to-screen sessions.

*Between the lines: implicit factors
in the psychoanalytic process*

For almost two decades, the members of the Boston Change Process Study Group (BCPSG) have been exploring and attempting to define

the mechanisms of change in psychoanalytic therapy (BCPSG, 2007, 2008; Lyons-Ruth, 1998; Nahum, 2002, 2008; Stern et al., 1998). Basing their thinking on both infant observational research and experience¹ in adult therapy, they have applied a developmental perspective to clinical material. They have identified two realms, or "domains", of human interaction: that which is implicit and that which is explicit or "reflective-verbal" (Nahum, 2008). Implicit interaction is not primarily language-based, and neither is it normally translated into symbolic form, while explicit interaction involves the transformation of experience into verbal expression.

They describe implicit experience as rooted in the body and cite the concept of the "embodied mind" as the domain from which the verbal/explicit emerges.

Movement and language (although different modes) are largely integrated during evolution and ontogeny. One cannot think or feel or imagine or have sensations without the direct participation of one's body. Conversely, to move or to act is inherently an expression of mental intention. (Nahum, 2008, p. 134)

Implicit processing begins at birth and continues throughout life. This implicit processing informs the moment-to-moment exchanges that occur in all relating, including psychoanalysis and psychotherapy. It is not replaced when language appears; neither is it inevitably converted to language later in development. It is not necessarily more primitive than the reflective-verbal domain and continues to grow alongside it, when that stage has been reached. It is intuitive and based on action and affect rather than language and symbol. It is not conscious, but not repressed. In development, language is intrinsically grounded in implicit relational experience (BCPSG, 2007). The BCPSG distinguishes it from non-verbal:

The implicit can be revealed through verbal as well as nonverbal forms of interaction. However, the implicit aspects of meaning are not in the content of the words themselves. The implicit meaning exists, so to speak, *between the lines* . . . (BCPSG, 2007, p. 851 my italics)

In their seminal paper, "Non-interpretive mechanisms in psychoanalytic therapy: the 'something more' than interpretation", Stern and colleagues (1998) suggest that implicit relational knowing is part of

"the shared implicit relationship", the area of overlap in each partner's implicit knowledge about their relationship. They define it as implicit procedural knowledge (as in procedural memory, above, such as riding a bicycle or playing tennis), non-symbolic, and outside conscious verbal experience. It specifically involves knowing about interpersonal and intersubjective relations: how to "be with someone" (Stern, 1985).

It is an intuitive sense, based on one's history . . . based on affect and action, rather than word and symbol . . . By design, everything that the pre-verbal infant knows about interactions with others is contained in his implicit knowledge. Implicit knowing also makes up the majority of what we, as adults, know about social interaction, including transference. (BCPSC, 2007, p. 845)

Clinically, implicit relational knowing is significant in making up what the analyst and patient know of what is in the other's mind, and the current state of their relationship. The shared knowing may remain implicit, or it may be made conscious through interpretation. If the implicit relational knowledge is transformed into explicit conscious knowledge, it is not the same as making the repressed unconscious conscious. The BCPSC describe a developmentally informed model based on processes in which implicit knowledge can lead to long-lasting therapeutic change. This model involves what they call "moments of meeting" in which something new is created in the mutual analytic relationship which alters the intersubjective environment, resulting in new behaviour and experiences (Stern et al., 1998).

A detailed analysis of the above process can be found in the BCPSC's paper, "Forms of relational meaning" (2008). The relevant foundations of the BCPSC's theory are summarised as follows. Like Gallese (2006), they discuss intention, and assign it significance as "the fundamental psychological meaning" (Nahum, 2008). Intentionality is the sense of acting, or being acted upon, toward a goal, or construing that an other is similarly acting or being acted upon. They describe sequences of intentions as giving motivated human behaviour coherence and meaning, whether they are encountered in actions or in language. All phases of an intention—its formation phase, its execution, and its aim—comprise "the intention unfolding process". The "intention unfolding process is a nonsymbolic process—representation

of motivated experience that is grasped implicitly" (Nahum, 2008, p. 129). This intuitive grasp of one's own or another's intention is linked to physical experience, action, and emotion. The most rudimentary form of this concept could be connected with Gallese's research into mirror neurons. The intention unfolding process, which happens in seconds, is dynamic, unpredictable, and widely distributed in the body. We are embodied beings and language is deeply interwoven with movement and gesture. Intentions can be expressed and read both implicitly and explicitly. The verbal version of the intention unfolding process is grounded in the non-verbal implicit domain. It is the intuitive perception of that totality which allows us to comprehend the dynamic embodied meaning of a communication (Nahum, 2008, pp. 142–145).

Philosophers such as Heidegger and Merleau-Ponty also believed that the experience of existing is centred on intentionality, and that intentionality is embedded in an embodied experience of the world (Riva et al., 2006). "It is the relationship of embodied, intentional experience and action toward a situation which constitutes embodied being-in-the-world" (Beck, 1976, quoted in Meissner, 1998a, p. 90). Merleau-Ponty connected the embodied experience of existing and acting in space with the capacity to move through space, thus continually changing our perceptive and proprioceptive experience of the world (Meissner, 1998a). Meissner, applying Merleau-Ponty's philosophy to psychoanalysis, writes,

Motility becomes a form of intentionality in the sense that it substitutes the possibility of action for the Cartesian *cogito*. Motility is not simply the handmaiden of consciousness, the transportation vehicle for consciousness; rather like perception, it is part and parcel of our presence in the world. They are both forms of intentionality which meet the world as embodied presence articulated through space and time. (1998a, p. 91)

Sheets-Johnstone (2011) suggests that we discover our selves and the world through the "primacy of movement", proposing that our embodied consciousness leads to embodied concepts and representations as well as kinaesthetic ones. Following the theories of embodied cognition, corporeal and kinaesthetic images are activated as we speak: we are embodying our words. Indeed, research into gesture

that accompanies speech finds that the gesture we use to accompany speech does not require either a model or an observer, but seems integral to the speaking process itself. It suggests that these gestures might reflect, or even facilitate, the thinking that underlies speaking (Iverson & Goldin-Meadow, 1998).

The BCPSG proposes that our language flow is embedded in our bodies and formed by implicit relational knowing, which informs its meaning. They submit that in the consulting room, the analyst/patient hears the verbal message and gathers the underlying implicit experience that engenders the words, and feels the difference between the two. The listener grasps a "gestalt" and must then, in an act of reflection, make a whole meaning of this gestalt (Nahum, 2008). This process comprises three steps of the "intention unfolding process".

1. The intention is implicitly experienced.
2. A verbal version of this implicit experience is rooted in the non-verbal mental/body concepts contained in the implicit domain.
3. There is an inevitable disconnection between the implicit and the verbal, which needs to be considered and embraced as part of the "gestalt" of the communication (Nahum, 2008, p. 145).

The gestalt of the implicitly experienced intention, the verbal version of this implicit experience, and the unavoidable disconnection between the two, is communicated as a whole in the intention unfolding process.

Communication is the vehicle of relationship. Communication conducted in our most intimate relationships, based on developmental observation of infants, contains a significant implicit component, arguably equal or carrying more weight than the explicit component. Both the implicit and explicit domains of human communication are embodied, and our sense of self and embodied experience of existing is dependent on intentionality, moving and acting in space. Much of the intricate interaction between analyst and analysand does not receive explicit verbal focus, making procedures of the shared implicit relationship crucial in the process of therapeutic change. Technologically mediated therapeutic communication is inherently two-dimensional, with narrowed and differently processed sensory communication, and with limits on the potential of moving and acting in a shared space. Can it act as a sufficient conduit for the complexity

of this implicit component of communication that lies at the heart of our deepest relational transactions, and from which explicit communication emerges?

The right brain and implicit processes

Concurrent with the BCPSG's research into what constitutes change in psychoanalysis, Allan Schore also focuses his extensive work on the role of implicit affective processes in effecting psychotherapeutic change (2005, 2010, 2011; see www.allanschore.com/index.php for a full review). He highlights the central role of implicit cognition, implicit affect, communication, and affective regulation in the psychotherapeutic model with particular attention to right brain unconscious mechanisms. A psychoanalytic pioneer in integrating a substantial amount of interdisciplinary evidence, Schore cites current neuroscientists in asserting that the right hemisphere of the brain gives birth to the implicit self, the framework of the human unconscious (2005, 2011). He suggests, as does the BCPSG, that the therapist manoeuvres through the moment-to-moment affect-laden therapeutic interaction "not by left brain explicit secondary process cognition, but [by] right brain implicit primary process affectively driven clinical intuition" (2011, p. 75). He stresses that access to these right brain implicit processes by both patient and therapist is essential for effective treatment.

As the BCPSG describes the implicit domain as continuing to grow and develop alongside the reflective-verbal/explicit realm throughout life, Schore depicts the early-forming implicit self as also continuing to develop, although functioning in qualitatively distinct ways to the later-forming conscious explicit self.

Locating this implicit realm lateralised in the right brain, Schore argues,

in addition to *implicit cognition* (right brain unconscious processing of exteroceptive information from the outer world and interoceptive information from the inner world) the implicit concept also includes *implicit affect, implicit communication*, and *implicit self-regulation*. (2011, p. 77)

Schore quotes neuroscientists as contending that the right hemisphere is centrally involved in "maintaining a coherent, continuous and

unified sense of self" (Devinsky, 2000, quoted in Schore, 2011). While the left brain mediates most linguistic, conscious, explicit, secondary process behaviours, including explicit analytic reasoning, the right brain is crucial for wider aspects of communication, including free association and reverie, mediated by a "relational unconscious" (Schore, 2011 p. 78). This would include clinical intuition, which Schore considers a major factor in therapeutic effectiveness.

Schore offers a model of implicit communications within the therapeutic relationship, involving right-brain-to-right-brain transference and countertransference communications, representing interactions of the therapeutic couple's unconscious primary process systems. While secondary process communication is conveyed explicitly by words, in the relationship, is communicated non-verbally. This non-verbal communication can include body posture and movements, gesture, facial expression, tone of voice, and speech rhythm (Dorpat, 2001, p. 451). Schore adds,

In light of the fact that the left hemisphere is dominant for certain aspects of language but the right for emotional communication, I have proposed the psychotherapy process is best described not as "the talking cure" but "the communicating cure". (2005, p. 840)

This "communicating cure", involving both mind and body, comprises a wide range of implicit non-verbal actions that might require co-presence to be conveyed and comprehended.

Using interdisciplinary studies from infant research and neuroscience (i.e., Brancucci et al., 2009; Minagawa-Kawai et al.; Papoušek, 2007), Schore suggests that the implicit relational processes that occur in mother-infant interaction and in the consulting room are transmitted in psychobiological exchanges.

During spontaneous right brain-to-right brain visual-facial, auditory-prosodic, and tactile-proprioceptive emotionally charged attachment communications, the sensitive, psychobiologically attuned caregiver regulates at an implicit level, the infant's states of arousal. (2011, p. 79)

Throughout life "the neural substrates of the perception of voices, faces, gestures, smells and pheromones, as evidenced by modern neuroimaging techniques, are characterised by a general pattern of

right-hemispheric functional asymmetry" (Brancucci et al., 2009, cited in Schore, 2011). Schore proposes that relational information is transmitted non-consciously and intuitively, through many psychobiological channels that are dependent on right-brain functions laid down during the formation of early attachment processes and continuing as a mode of communication throughout life.

These implicit psychobiological exchanges affecting attachment processes are what underlie the establishment of the therapeutic alliance. Research by neuroscientists Jean Decety and Thierry Chaminade describes right-brain operations as essential for interpersonal relating. These are the same ones that are specifically utilised in the therapeutic alliance:

Mental states that are in essence private to the self may be shared between individuals. . . . It is interesting to note that our ability to represent one's own thoughts and represent another's thoughts are intimately tied together and may have similar origins in the brain. . . . Thus it makes sense that self-awareness, empathy, identification with others, and more generally intersubjective processes, are largely dependent upon the right hemisphere resources, which are the first to develop. (Decety & Chaminade, 2003, p. 591)

Schore theorises that fast, spontaneous transference-countertransference communication of embodied emotion at a preconscious-unconscious level illustrates right brain-to-right brain non-verbal exchange between patient and therapist. This is analogous to BCPSG member Karlen Lyons-Ruth's description of relational processes "occurring" at an implicit level of rapid cueing and response that occurs too rapidly for simultaneous verbal transaction and conscious reflection" (2000, pp. 91-92).

He goes on to explain that this "dyadic psychobiological mechanism" allows for the detection and communication of unconscious affects. He connects Freud's description of "evenly suspended attention" to the operation of the right hemisphere of the brain which employs a broadly focused global perception and conceptual scope, rather than the left hemisphere of the brain, which is associated with a narrow local focus and conceptual scope (Förster et al., 2008, p. 592; Schore, 2011, p. 84).

On a moment to moment basis the therapist must both remain psychobiologically attuned to the patient in a state of right brain

evenly suspended attention and at the same time access an intuitive, fast, emotional, and effortless right brain decision process to navigate through the stressful intersubjective context. (Schoore, 2011, p. 88)

Schoore connects right brain implicit processes to clinical intuition, which is "expressed not in a literal language but is 'embodied' in a 'gut feeling' or an initial guess that subsequently biases our thought and inquiry" (2011, p. 88). He describes it as "an affectively charged embodied cognition that is adaptive for 'implicit feeling or knowing,' especially in moments of relational uncertainty" (2011, p. 89). It is in these very moments of uncertainty in the consulting room that the process of therapeutic change can take place in a patient (see also Stern et al., 1998) if the therapist is able to "implicitly and subjectively be with the patient . . . during affectively stressful moments when the 'going-on-being' of the patient's implicit self is dis-integrating in real time" (2011, p. 94).

Schoore points out that (clinical) intuition presents itself in the form of kinaesthetic sensations, feelings, images, and metaphors, which are all properties of right brain processes.

Here the solution, which has an emotional quality, is revealed, but in a veiled nonverbal form . . . in contrast to the left brain's deliberate, conscious analytical search strategies, the right brain generates the subjective experience of insight, whereby a novel solution is computed unconsciously and subsequently emerges into awareness suddenly. (2011, p. 89)

The rapid, non-conscious use of clinical intuition, rooted in an embodied experience and communicated to the patient in a moment of attunement, can create deep structural change in the patient. Schoore posits, "the implicit functions of the emotional right brain are essential to the self-exploration process of psychotherapy, especially of unconscious affects that can be potentially integrated into a more complex implicit sense of self" (2011, p. 94). He stresses the clinical and theoretical necessity of understanding the implicit psychobiological right-brain system, contrasting it to existing studies of explicit action in the consulting room:

Just as studies of the left brain, dominant for language and verbal processing, can never elucidate the unique nonverbal functions of the

right, studies of the output of explicit functions of the conscious mind in verbal transcripts or narratives can never reveal the implicit psychobiological dynamics of the unconscious mind. (2010, p. 179)

The unconscious dialogue between analyst and patient is being described through infant observation and cognitive neuroscience as implicit and rooted in the body. In addition, to move is inherently an expression of mental intention (Nahum, 2008). Whether one is referring to the BCPSG's concepts of implicit relational knowing, or Schoore's models of implicit right-brain-to-right-brain communication, both models suggest that the therapist manages the moment-to-moment movement of the therapeutic relationship by "implicit primary process affectively driven by clinical intuition" (Schoore, 2011). Neuroscientists, such as Callese (2006), describe the direct unmediated experience of a shared body state via "intentional attunement", so that we are hardwired to respond with empathic understanding.

While technologically mediated treatment clearly can be utilised for the left-brain "analytical search strategies" that Schoore describes above, the function of all relationships also depends on moments of right-brain insight, underpinned by non-verbal, embodied, sensation-based perception. The intensely focused effort analysis describe of "peering at the screen" when doing technologically mediated treatment recalls the function of the locally focused left hemisphere of the brain. This narrowed scope of perceptual and conceptual focus might be at the expense of the operation of the right brain's holistic scope of attention that Schoore connects to evenly suspended attention.

Can this right brain communication, based on finely nuanced, non-conscious information such as gestures, smells, and pheromones, be conveyed through technologically mediated communication? Can "the communicating cure" which is so richly expressed through such kinaesthetics as posture, gesture, facial expression, as well as speech rhythms, patterns, and the subtle transmission of as-yet unidentified cues be digitally carried?

The evolutionary currency of all relationships, mother-infant, lovers, and therapist-patient, involves two bodies together. Children cannot be parented, much less conceived, from screen-to-screen interaction. How much physical togetherness does a therapeutic relationship need, and how much of a sense of togetherness can technology provide?