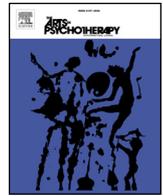




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# The Arts in Psychotherapy

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## My psychobiological life story

I began my life's project as the study of self-awareness, of the activities felt in 'me' with an active human body exploiting several inquisitive senses addressed to conceive the outside world, when I was an undergraduate in Auckland in the 1950s. I was guided by leading teachers in plant ecology (Valentine Jackson Chapman) and animal ethology (Andrew Packard), learning how very different living creatures grow and move imaginatively to benefit their vitality with support from the present environment, how they exploit James Gibson's 'affordances' offered in their world as their particular way of life.

In 1956 I made a trip to the Medical School in Dunedin. I was not enrolled in a course, but was invited to sit in at discussions on the physiology of self-regulation with Prof. Archie MacIntyre. He suggested that I could follow my curiosity about how a brain can know the present world as a place for action by enrolling in the brilliant psychobiology team at the California Institute of Technology led by Roger Sperry, whose work I did not know. I applied to CalTech and was accepted as a PhD candidate to study how skilled split-brain surgery, dividing the cerebral cortex, could discover nerve systems of a cat or monkey that direct body movements with their sense of sight to move with skill and learned discrimination. My study proved there were two 'layers' of visual awareness for use of the present world; 'ambient' of the layout and happenings of the whole situation, and 'focal' to see detailed elements ready for exploitation with selective manipulation, or to make informative signals for social communication. The *ambient* was subcortical, in the brain stem; the *focal* exploited distinctions recorded in the forebrain cortex. This theory of how context and content give what the father of neuroscience Charles Sherrington (1906, 1955) called a *proprioceptive* (felt inside my body) and *exteroceptive* (picture of what is outside me) of the *Self As Agent* proved helpful for understanding how linguistic syntax and prosody of *Persons In Relation* (see Macmurray, 1959, 1961) guide the acquisition of semantic detail – from infant in shared games of exploration into fluency with a culture's speech and writing. Now we know, from the work of Antonio Damasio and others that the subcortical brain inspires the prospects of action and collaboration with a rich array of feelings, including special complex ones for aesthetic and moral control of life in intimate and creative social relations (Damasio, 2003, 2018).

I have spent the rest of my life thinking how prospective awareness of moving might develop from the anticipations of actions and awareness of the embryo and fetus before birth, on to maturity – and now, on to old age. My approach to the story of life and its music has really not changed in more than 60 years.

I was with Sperry's famous team from 1957 to 1962. With my wife Lee, I went from Pasadena to learn the latest physiology of movement with Jacques Paillard in Marseille. That is where our first son was born in June 1963. The pioneer in educational psychology, Jerome Bruner of the Harvard Institute of Cognitive Psychology, visited Paillard's group,

and he was interested that I was using high speed film, at 40 frames per second, to analyse complex bimanual skills of baboons, and that I was very interested in the subtle movements of my baby son. He was cleverly sharing feelings with his mother or me with expressions of his face, eyes and voice, and with hand movements combined with directing his looks that showed curiosity for grasping as well as emotions of curiosity and pleasure.

I eagerly accepted when Bruner suggested Lee and I with son David should join him at Harvard to help redirect the study of language-based 'cognition', to consider how observation of infants' preverbal intelligence and its communication might be the bedrock for more sophisticated stories. He transformed the aim of the Cognitive Studies Center which was set up by Noam Chomsky, George Miller and Bruner in 1960, to discover the rules of language and literature. The new aim became to make detailed examination of how infants engage with the purposes and feelings exhibited by a responsive adult. Martin Richards and I compared a young infant's acts of orientation and expression directed to an attractive object with those he or she made with a person, especially the familiar person of their mother. Clearly awareness for 'doing with a thing' was different from 'communicating with a person'. This was recorded in Bruner's report on the work of the Center in his Heinz Werner Lecture, *Processes of Cognitive Growth: Infancy*, in 1968. Our findings supported a new psychology of the special human gifts of action-with-feelings for shared experience and cultural learning.

At Harvard, as a doctoral student in Bruner's group, I recorded how a baby's eyes and head move in precise synchrony to look at, or track, an object of interest, expressing the baby's sense of self. In looking, a baby's measured steps or saccades made consistent rhythms that were the same as those of an adult scanning a picture. By six months the infants had developed efficient binocular depth perception, and by precisely moving their eyes and head together they could track a slowly moving object smoothly, without saccades, which is a skill that requires a mental prediction of the object's path and its velocity. Tracings I made of infants, one or two months old, reaching out to touch or grasp objects were regulated in elegant patterns with rhythms that were close to those of an adult reach-and-grasp (Trevarthen, 1974). There were innate rules of self-conscious vitality in human beings who were very different in body size and breadth of knowledge.

This 'motor intelligence' of the baby ready for engaging with things to be seen and grasped in the world was astonishing. But even more remarkable were the body movements of communication with attention directed to an interested mother. These were creative, prosocial and mutually regulated. They included delicate face expressions of emotion, like a smile or a scowl, deliberate eye-to-eye contact, 'prespeech' movements of the lips and dramatic gestures of the hands (Trevarthen, 1979). These movements of a conscious self can only have a desired effect if they are sensed sympathetically by another human being. And,

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the baby could take the lead, in the 'dialogue'. They were not simply imitating the expressions of their mothers. They wanted a cooperative engagement of their interests and feelings to discover new ideas.

We made films at 16 frames per second, week by week, with five infants and their mothers from two to six months of age. We compared how each infant behaved towards the mother herself, and to a suspended toy presented by her. The room was a quiet studio surrounded by heavy curtains, with subdued lighting. A camera was aimed to take a full-face view of the whole baby, and a mirror placed behind the baby gave a head and shoulders view of the mother. We filmed the mother and infant enjoying intimate chat, undisturbed.

A 'conversation' between 12-week-old Jody and his mother, in which the baby clearly led the engagement, was an eye-opener. This leading by the baby was confirmed by further micro-analysis of the body movements of infants of the same age when they were communicating with their delighted mothers. Infants rarely imitated the mother in these 'proto-conversations'. They had their own stories to tell, and the mothers followed the plot with confirming and encouraging expressions.

Both the child and the mother are born learners, and they enjoy communicating their learning, motivating each other.

I saw the same intimacy of inventive communication in two-month-olds, and called it 'primary innate intersubjectivity' (Trevvarthen, 1979). With Penelope Hubley and other bright young colleagues I observed how developments in infants' 'readiness to learn' transformed the purpose and productivity of communication with mothers through the first year and to the threshold of language, generating collaborative learning of tasks and rituals in 'secondary intersubjectivity' (Hubley & Trevvarthen, 1979; Trevvarthen & Grant, 1979; Trevvarthen, Murray, & Hubley, 1981). Infants and mothers built a rich companionship in experience and playful discovery, quite distinct from the attachment John Bowlby showed was essential for nourishment, support and protection of the infant's immature body with attention to feelings of safety and comfort.

While I was working in Harvard I had the great advantage of having contact with medical scientists who were working to change the care of infants by appreciating the strengths of human nature, not only their fragility and dependence on maternal nutrition and affectionate protection and care. Both gave importance to the inventive playfulness of the baby from birth. T. Berry Brazelton, whose work was encouraged by Bruner, used his sensitive play with newborns immediately after birth to demonstrate to the mother and father how interested the baby could be in his gentle teasing with an attractive object, which was followed closely with signs of pleasure. This led him to develop a neonatal assessment program which detected 'touchpoints' for affectionate sharing of new skills in moving and perceiving. These can be used to guide treatment of motor and emotional disorders. Daniel Stern, trained in psychoanalysis, saw that young babies were more sensitive of adventurous play with their mothers than Sigmund Freud had appreciated. Stern explained the growth of the parent-child relationship as a maturation of inventive movements with their growing 'vitality dynamics' (Stern, 2000, 2010). Stern was a keen dancer and fully appreciated how music and dance transmit the impulses of human liveliness.

From the outset I was aware that a young baby and a mother were experiencing the same rhythms of movement and the same modulations of intensity to express feelings of enjoyment of success, or apprehension of a mistake. This led to an appreciation of the key role of what Stephen Malloch and I later called 'Communicative Musicality' in our sharing of life's adventures (Malloch & Trevvarthen, 2009; Malloch, 1999). Recordings by film or the new TV technology led to description of age-related changes in the motor controls and the social sensitivity of our baby subjects, including a demonstration of shame when a 7- to 9-month-old is approached by a stranger. Currently I am exploring the significance of this manifestation of a 'conscience' animated by interpersonal values of 'pride' and 'shame'.

The following two quotes from Adam Smith in the 18<sup>th</sup> Century

outline a theory of these forms of 'innate sympathy', one moral, the other artistic or aesthetic.

"When I endeavour to examine my own conduct, when I endeavour to pass sentence upon it, and either to approve or condemn it, it is evident that, in all such cases, I divide myself, as it were, into two persons; and that I, the examiner and judge, represent a different character from that other I, the person whose conduct is examined into and judged of. The first is the spectator, whose sentiments with regard to my own conduct I endeavour to enter into, by placing myself in his situation, and by considering how it would appear to me, when seen from that particular point of view. The second is the agent, the person whom I properly call myself, and of whose conduct, under the character of a spectator, I was endeavouring to form some opinion. The first is the judge; the second the person judged of. But that the judge should, in every respect, be the same with the person judged of, is as impossible, as that the cause should, in every respect, be the same with the effect." (Smith, 1759/1984, p.182; Smith, /, 1984; Smith, 1759/1984, p.182)

"After the pleasures which arise from gratification of the bodily appetites, there seems to be none more natural to man than Music and Dancing. In the progress of art and improvement they are, perhaps, the first and earliest pleasures of his own invention. ... Without any imitation, instrumental Music can produce very considerable effects... : by the sweetness of its sounds it awakens agreeably, and calls upon the attention; by their connection and affinity it naturally detains that attention, which follows easily a series of agreeable sounds, which have all a certain relation both to a common, fundamental, or leading note, called the key note; and to a certain succession or combination of notes, called the song or composition. ... Time and measure are to instrumental Music what order and method are to discourse; they break it into proper parts and divisions, by which we are enabled both to remember better what has gone before, and frequently to foresee somewhat of what is to come after: .... the enjoyment of Music arises partly from memory and partly from foresight." (Smith, 1777/1982, p.187; Smith, /, 1982; Smith, 1777/1982, p.187).

A closely similar appreciation of the life of inner musicality, and its use in beautiful performance to tell stories is expressed by the philosopher, Susan Langer, who said:

"There are certain aspects of the so-called 'inner life'—physical or mental—which have formal properties similar to those of music—patterns of motion and rest, of tension and release, of agreement and disagreement, preparation, fulfilment, excitation, sudden change, etc." (Langer, 1942, p.228)

After the work of Bruner's group began, there was a revolution in appreciation of the spontaneous creativity of animal movement and its development by exploring prospective control of its effects or uses. A major event was the publication in 1967 of the English translation of the book by the Russian psychologist Nikolai Bernstein on *The Co-ordination and Regulation of Movement*, which describes his proof by detailed analysis of the distribution of forces throughout the motor system of the body so complicated sequences of action could be performed with little or no waste of energy. He created the theory of consciousness as the prediction of moving well in any field of awareness. This denied Pavlov's theory of learning by conditioning of reflex reactions to elemental stimuli. New ideas for action arise by modification of imaginative programs of moving, and these may be communicated to another moving being who appreciates the signs of prediction as the 'narrative' of the movements.

The advances of descriptive research aided by measurements and pictures of infants' movements in communication and when they are investigating objects, which were published in the 1960s and 70s were summarised in the comprehensive book edited by Margaret Bullowa which she called *Before Speech* (Bullowa, 1979). Among the most

original and significant contributions was a chapter by Mary Catherine Bateson, an anthropologist and linguist, who summarised her studies of mother infant communications as demonstrating cooperative behaviours she called 'protoconversations', which led to the development of speech (Bateson, 1979).

In 1971 my wife and I moved with three sons to Scotland as I joined the Psychology Department at the University of Edinburgh. It was being transformed under the headship of David Vowles and by Margaret Donaldson and her students whose work was published as the historical book *Children's Minds* (1978), into the leading developmental psychology department in Europe, in honour of which I have remained occupied with developments in infancy and pre-school childhood. With an enthusiastic team of students and collaborators from different countries making cross-cultural comparisons, including Lynne Murray, Penelope Hubley, Kenneth Aitken, Giannis Kougioumtzakis, Jon-Roar Bjørkvold, Emese Nagy, Jonathan Delafield-Butt, and many others, this work, which included experiments to prove first that newborn babies can both imitate and ask to be imitated, and secondly how sensitive a young infant is to breakdown of sympathetic engagement in proto-conversational dialogue, has clarified universal foundations of a wide variety of historical traditions for companionship in invention.

The primacy of the poetry of human body movement, and of the rich values of passion and commitment that are invested in arts of drama with music and dance (Dissanayake, 2000), as well as in crafts of manufacture and rituals of creative celebration has been made clear. The findings have immediate application in education, from pre-school or nursery to training in mathematics and use of language at secondary school, and expertise in Humanities and Sciences at University (Trevarthen, 2012). They are employed by what Bruner calls *The Culture of Education* (Bruner, 1996).

I would like to end by confirming that we find both aesthetic and moral values expressed in joyful play with children too young to appreciate talk about how to behave. The source of the emotions of grace and kindness appears to be in the way movements of a very complex body are harmonised through self-generated time of vitality and how they seek to cooperate in the graceful rhythms of their energy with other actors who wish to share and contribute to their invention with beauty (Daniel & Trevarthen, 2017; Trevarthen & Malloch, 2017).

From the meticulous science of motor control developed by Bernstein and the analysis of vitality dynamics by Stern we appreciate the importance of a sense of the future in this moving that makes stories that need no words. This supports a psychotherapy which the Harvard trained medical doctor Mark Epstein in *Thoughts Without a Thinker* describes as 'from a Buddhist perspective' (Epstein, 1995), and which gives privileged attention to the non-verbal aspects of the therapeutic engagement, which are so important for any sharing of emotions of creative vitality in pairs or in groups of any size (Pavlicevic, 1997).

In Epstein's book the Foreword by the Dalai Lama begins with this confession: "The purpose of life is to be happy. As a Buddhist I have found that one's own mental attitude is the most influential factor in working toward that goal. In order to change conditions outside themselves, whether they concern the environment or relations with others, we must first change within ourselves." Epstein's therapy values inner grace and harmony, and moral responsibility in relationships. Stephen Malloch (2017, p. 69), with his life as a violinist, conductor, and therapist, and as someone with a leaning to Buddhist practice, declares that "the therapeutic relationship is a piece of music, experienced in the unfolding present", in which the participants seek to improvise a balance of responsibility.

Human bodies move and test their feelings in polyrhythmic, melodious or poetic ways from before birth, and these expressions of self-awareness are shaped in action and sensed in ways that move others powerfully. Furthermore, the dynamic creation of being in movement expresses, from the start, inner vital time or measured sense of purposeful happenings and assessment of good or bad consequences in narrative forms. These motivations are essential for all practical learning

and for social cooperation, as well as for learning language (Trevarthen & Delafield-Butt, 2012). Fact and reasons are, as Whitehead said, not enough.

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