Play With Infants: The Impulse for Human Story-Telling

Colwyn Trevarthen

Abstract:
Children play with the fun of a human body moving. They communicate self-expression in games with pride and shame, which strengthen or limit friendships. A newborn baby may smile to a gentle touch or a kind and familiar voice, and imitate expressions. Young infants enjoy story-telling before words, showing interest for meaning-making that leads to learning of a wealth of symbolic representations. Understanding conventional ideas, taught at school as putting facts of objective experience into rational projects, relies on these innate impulses, and, as masters of our arts and sciences show us, discoveries are made first with playful curiosity.

The Nature of Play
Asking what play gives to human life is like asking what growth, flowering and coming to fruit with seeds does for plant life. We play to make sense of life in activity. We move our bodies with rhythms of imagination, and display emotions as expressions of feeling that value our experiences so we can cooperate in social life. Play in moving has evolved to use a muscular body with many parts, to invent projects that sustain vitality of the Self, and to animate a community. Everyday movements for eating a meal, or settling to sleep, are perceived by social partners to be both playfully self-indulgent and performed with expression. They tell a story of feelings in activity, which are sensed as either gracious or awkward.

Animal intelligence grows by generating its future in activity, not just by obeying stimuli. The impulse to play gives initiative and value to what the senses may know. That is also how a child’s consciousness gains new powers at every stage of life, not only by fabricating representations of past experiences in thought or language and testing their abstract rules, logically; or by learning to define good and bad behavior with a moral code (Trevarthen, 2015; Trevarthen and Bjørkvold, 2016).

Young animals play to experiment with how to move joyfully when they try to master new skills in engagement with the world (Panksepp, 2005). The most active species have heavy bodies with hundreds of muscles to control, and several inquisitive special senses, each separately mobile to select perceptual information for purposes of the moment. All these parts need a single Self-centred imagination for what will happen when movements are excited in synchrony and with the right sequencing, taking adventures through extended periods of time and into other places.

By sensing one another’s playful movements animals develop social habits of cooperation and competition, and signal them to share understanding of how to use the resources of the environment together as a ‘life world’, and how to avoid dangers (von Uexküll, 1957). Communities prosper and the young are brought up to know how to behave with signals of self-interest and emotional evaluation that are imaginative and intimately responsive. This true for human cultures as well (Bruner, 1996). Both body and brain of a human being are made for this life of learning in company before a baby is born.
“The ‘self-organising’ systems of the embryogenic Intrinsic Motive Formation (IMF) in brainstem and limbic cortex are of key importance in regulation of post-natal cognitive growth. They create the infant's curiosity, and above all they control and express sympathetic and mimetic awareness of attendant persons and their human responses. Infants' motives and emotions powerfully attract, respond to and evaluate other persons in communication. They continue to attract and transform relationships and collaborative awareness throughout childhood. Some motives are formed to recollect experiences and predict the advantages and risks of life in the physical world. Others seek intimate acquaintances in fellowship with intentional and emotional human beings. It is the latter that animate the peculiarly human cultural learning.”


The impulses for intelligent awareness are created by the ‘self-making’ of a multicellular organism shaped for moving as an individual. Human beings show patterns of motivation in activity from about 8 weeks after conception when a well-formed embryo, about 2 cm. long, makes first movements (Trevarthen, 2001). By the end of the second month the main components of the brain are adaptive in design and engaged with the body. The brainstem is being formed to integrate intentions for moving within an Emotional Motor System before the cerebral hemispheres begin to know the reality of an outer world (Damasio, 2010; Panksepp, 2005; Tucker, 2007). Eyes, vestibular canals and cochlear, face and mouth, and the hands -- all organs that will animate conversations with companions in future life -- are differentiating their special human forms in the fetus (Figure 1A). For example, human eyes unlike those of other mammals, are formed with white scleras that enable us to perceive accurately where someone else is looking, especially if they are looking toward ourself.

Core regulatory mechanisms of the brain that direct purposeful activities in self-related time and space are laid down in the first 3 months after conception, but the cognitive systems of the cerebral cortex needed for building knowledge of an outside world do not form until later. The motivating and life-maintaining structures adapted for intimate communication of purposes and interests form a link for regulation of gene instructions and the acquired adaptations of the developing mind. Defects in this epi-genetic link contribute to developmental disorders, including autism and schizophrenia, that affect maturation of playful relationships and learning.

After birth, before speaking, an infant loves to play with a companion, building trust in games that invent meanings and make fun of them (Trevarthen, in Bullowa, 1979). A baby wants to tell stories by sharing displays of body movements (Figure 1B) -- as adults do in every community whatever its level of technology or politics, when they honour ancestors by dancing and performing rituals with song in group celebrations to mark important events (Birdwhistell, 1970; Turner, 1982). The desire for participation in culture comes to life in shared activity of the body. And by sharing play it can learn to read books or other artificial media, or use computing machines to regulate presentations of text and pictures.

As experienced educators of young children know, play is necessary for cultural learning. Vygotsky (1967) called convivial play the child’s work. It prepares skills for the artful compositions of a ‘story-making creature’ (Bruner, 1996, pp. 122-123; Bruner, 2002). Mastery of the moment with innate ‘human sense’ is created imaginatively through time and
space in dreams and memories that extend modes of consciousness in conventions of activity, building what Margaret Donaldson calls ‘common sense’ (Donaldson, 1992, p. 248).

Cultural life depends on what the anthropologist Victor Turner (1982) describes as The Human Seriousness of Play. We have different experiences, but aim to follow the same ambitions as others, and we enjoy negotiating how cooperation should develop. Acting together brings new powers, new aesthetic experiences and new moral responsibilities. All these need signs or signals that transfer intentions and feelings between imaginative minds of persons who appreciate and identify one another, and the first signs are distinctive acts of the body, especially the head and eyes and hands that move to select important objects in a world that may be shared.

**Kinesic Play: Expressing Motor Images**

In live conversations what is said is supported by movements of the body with their own code of vitality, which Ray Birdwhistell named as ‘kinesics’. Infants show and respond to the ‘kinesics’, or Daniel Stern’s ‘vitality dynamics’ in all acts of orientation and the expression of feelings for communication (Stern, 2010). Play, especially physical, ‘rough-and-tumble’ play, feels exciting because strong shared moving with the whole body brings immediate rewards and also takes risks – the delight of moving well, or the fear of an accident (Panksepp, 2007). It is highly emotional. For all social animals play becomes the joyful language of cooperation and the essential way to take a role in rhythms of a common sense of what the shared world affords. Stephen Malloch and I have defined playful searching for shared meaning as ‘communicative musicality’ (Malloch and Trevarthen, 2010).

Nikolai Bernstein, a young Russian physiologist, proved, by making refined measurements from films, that we move our body in time and space with ‘motor images’ of the forces that will be experienced, governing them with ‘prospective control’ (Bernstein, 1967). He studied the actions of toddlers, who run, hop, skip, jump, or creep rather than walk with dignified steps, and he showed they are ingeniously exploring the ‘degrees of freedom’ in their mastery if the body’s inertia, playing with the risks of bipedal locomotion, not losing control. Children learning to eat with a spoon, or inventing stories (Bruner, 1996), are also playing with rules they are making up, not just overcoming ignorance of what to do. Teachers need to give time and space for the childish spirit of play, not imprison it with prescriptive rules of how to be intelligent or obedient.

**The Elaboration of Intuitive Values in Play**

Research on the play of young children reveals that it is guided by aesthetic feelings of grace in curiosity, and by feelings of moral kindness or teasing, which control the energy of self-expression and share it. Their feelings give ‘spiritual’ value to meanings to be shared, and wants to be appreciated (Hay and Nye, 2006). Even a newborn baby, inheriting the most complex body among animals, besides making powerful appeals when distressed, has a gracious sense of humour and can smile when receiving a gentle touch or hearing a mother’s voice expressing affection.

A two-moth-old enjoys the ‘primary intersubjectivity’ of a rhythmic musical conversation, taking turns with happy sounds (Trevarthen, in Bullowa, 1979), or expressions of being sad and fearful when lonely, or surprised by strange experiences or an unfamiliar voice. By 6 months games are played in routine, story-telling ways with special poetry (Figure 2, Table 1). They become favourite tricks to share with loved ones, rituals that can be used to tease the sense of fun that comes from challenging expectations, and making jokes about them (Reddy, 2008). Toddlers, with stronger and more agile bodies, seek more independence from parental care or guidance and enjoy rough-and-tumble play with their friends, like puppies, kittens, or
baby rats. They are motivated to explore life in a community that will cultivate artificial cultural habits that may be defined in symbols of language.

Throughout a life, with changes in pursuit of intimate relations and the development of mature skills of action and communication, the colour and rhythm of playful actions and narratives brings rewards to sports, musical performances, and in practice of skills at all levels of technical sophistication, or of provocative absurdity.

I use examples from the play of young children at different ages to clarify the vital functions of human story-telling play, and to show how developments in body and brain lead to the special form of creativity we call the meaning-making of culture, with its sober symbolic representations. Cultural meaning is taught at school as recollections of inventive experience by a curriculum of instruction, the facts of which have to be brought back to playful life if the learner is to remember them and master their use well (Trevarthen, Gratier and Osborne, 2014; Trevarthen and Bjørkvold, 2016). When a question asked is not motivated by curiosity and evaluated by pleasure in shared practice, the answer will not be remembered as meaningful.

Support for an appreciation of the creative motives we are born with comes from the psychobiology of infant play, the study of the evolution of animal play, and the neuroscience of its genesis of motives for play in the embodied brain. Finally I consider how findings of these sciences may be applied to advise and evaluate policies of early child care and education.

**Play Into Making Sense of Language: From Collaborative Inventions to Mythical Truths**

The development of playful learning in childhood shows cycles of adventurous energy, or ‘ergotropic’ efforts, separated by periods when ‘trophotropic’ well-being is restored and experience and skills are consolidated (Trevarthen and Aitken, 2003). The same changes are identified in Brazelton’s ‘Touchpoints’ programme, a clinical approach sensitive to expressions of need that occur at particular ages, planned for assisting maternal care or early education when there are problems with a young child’s socio-emotional life (Brazelton, 1992).

Study of the human initiatives for moving with imagination, the feelings that regulate them from before birth, and how motives and feelings are communicated through the first two years before speech proves that childish play follows a course prescribed in developments of organs in body and brain. Age-Related Changes (ARCs) or Periods of Rapid Change (PRCs) in behaviours and responses chart a progress in the inherent aims of play (Trevarthen, 2001; Trevarthen and Aitken, 2003; Trevarthen and Delafield-Butt, 2015) (Figure 2, Table 1).

The same developments were observed by Piaget (1962), but with an overriding interest in ‘genetic epistemology’ – how infants and young children, acting and experiencing as individual egos, develop concepts to discriminate, identify and group objects of knowledge for practical, manipulative use. He described a process of ‘equilibration’ between playful ‘assimilation’ and ‘accommodation’ to objective environmental conditions. I have found it more natural to conceive the same changes as transformations in attitudes toward other persons, whose actions and feelings are recognised in communication from birth. Study of the behaviour of children as partners in dialogues, games and sharing use of tools confirms that the development of shared cultural knowledge gives objects and actions social or moral values as well as practical or aesthetic ones.
Neonatal Play, and Developments Before Term

The first month of life is a challenging time when a human being meets a new environment. Within the first hours after birth, as Dr. Brazelton demonstrated, a baby may show a remarkable intelligence as a person, with motives adapted for communication by subtle emotions, including smiles, small ‘coo’ vocalizations and gestures of the hands (Brazelton, in Bullowa, 1979). The whole body may be coordinated in orientations that direct gaze and automatic ‘pre-reaching’ movements of the hands, arms and legs to track a slow moving object that attracts the infant’s attention (Trevarthen, 2015). This early state of ‘arousal’ is the optimal time for eliciting imitations of expressions of the eyes, face, mouth and hands. After this, however, there is normally a period when the newborn retreats into a sleepy state with rather automatic ‘reflex’ responses to maternal support, comfort and feeding, need for which is expressed with cries of distress.

Emese Nagy (2011), a doctor and psychologist who has pioneered sensitive discoveries in communication with newborns, remarks that while neonatology, the study of the responses of newborns to care of physiological state in hospital, is well-recognised in medical practice, a psychology of newborns hardly exists. She presents, “an intentional, intersubjective neonate”, with evidence that, “the neonate's early social preferences and responses indicate a unique, sensitive, experience-expectant stage of development.” (Nagy, 2011, p. 3). Her studies prove that the newborn can contribute to an affective relationship with a dialogue of expressive movements by reciprocal imitation. This is supported by other studies which establish that a calm and alert newborn can engage in ‘play’ with movements of the eyes, face, mouth, voice or fingers, which react imitatively to another person as a social companion in mental life, not just a care-giver for the body (Kugiumutzakis and Trevarthen, 2015).

Human motives for intimate playfulness in expressions of feelings are confirmed by observations of premature newborns and foetuses in utero (Trevarthen, 2015). Research using ultrasound movies of foetuses to observe them moving inside their mothers’ bodies reveals intentionality and display of feelings or states of animation in face movements and in gestures of the hands directed to touch the body. The foetus learns to recognise the mother’s voice before birth, and foetal mouth movements show reactions to sounds in the speech environment outside the mother’s body. Knowing of the mother as a special companion who shares in state of distress and well-being quickly leads to discovering others who may be responded to in intimacy.

We are led to accept that development of impulses to be a sociable human person begin months before birth, and may be detected in patterns of movement that explore feelings of the self and that discriminate, and react to, feelings in others. How the child’s person develops depends on individual dispositions, as well as on the environment of human biological and psychological support. A newborn who is awake and in good spirits is an expressive, sensitive and playful human being, attractive for other persons and ready to share expressions of purpose and feelings.

Practicing Protoconversational Play and its Grammatical Rules

The interpersonal consciousness present at birth changes around 4 to 6 weeks (Figure 2, Table 1). As the baby’s mind becomes more alert and curious, sight guided by precisely directed looking of the two eyes moving in synchrony transforms not only the infant’s experience of a new world, but also their expressiveness in communication (Trevarthen, in Bullowa, 1979). This development leads to what Mary Catherine Bateson called ‘proto-conversations’ -- playful dialogues mediated by exchange of precisely timed visible and audible expressions of intimate awareness in face-to-face and eye-to-eye contact. When she studied films of a mother with her 9-week-old, Bateson, an anthropologist and linguist, was astonished by the “delighted, ritualized courtesy” of the exchange, and the leading part the infant played. She
concluded that, “these periods of mutual gaze may provide contexts in which the vocalizations become increasingly meaningful” (Bateson, in Bullowa, 1979, p. 73). She suggested that, “at the pre-linguistic level we can see that the child is playing a ‘grammatical’ game” (p. 76).

Figure 1
A – The gestures of dialogue. How individual motives and feelings are communicated in body movement with shared kinesics.
B – Malloch’s pitch plot in quarter-tones of the vocal exchange between a six-week-old girl, Laura, in proto-conversation with her mother. Each dot represents the pitch of the voice in 1.01 seconds. C4 indicates the pitch of Middle C. The infant’s vocalisations are enclosed in rectangles. (Malloch and Trevarthen, 2010).
C – Transcript of the mother’s speech and non-verbal utterances, with the infant’s sounds.
Two-month-olds are alert to another person’s interest, seeking eye-to-eye contact with responsive smiles, like those that confirm communication in conversations between adults. They make complex movements of their lips and tongue in ‘pre-speech’, along with many gestures, and appealing coos (Trevarthen, in Bullowa, 1979). They appear to be prepared for language (Figure 1). The phenomenological philosophers Edmund Husserl and Maurice Merleau-Ponty interpreted the functions of mature language by as products of an intuitive ‘inter-subjective’ awareness of human beings in company. Welcoming their insight I called the abilities of the young infant to enter into collaborative patterns of dialogue a ‘primary inter-subjectivity’ (Trevarthen, in Bullowa, 1979, p. 321, and Trevarthen, 1980, p. 325).

My colleague Lynne Murray made experimental perturbations with mother-infant dialogues to test the infant’s sensitivity for the timing or ‘contingency’ of the mother’s responses which so impressed Bateson. In the first experiment Lynne asked the mother to look at the baby for a minute with an expressionless ‘blank face’ in the middle of a proto-conversation. Then she designed a double video system where mother and infant communicated from separate rooms by means of full sized video images in colour presented on a screen through which the responses of the baby could be recorded. After they became engaged in a good conversation she replayed one minute of the mother’s communication. Both ways of interrupting the real time live engagement with the infant’s expressions immediately led the infant to become withdrawn and sad, with dull expressions and low pitched vocal expressions or cries of distress (Murray and Trevarthen, 1985; Murray et al., 2016).

**Communicative Musicality of Play with the Voice**

A musician, Stephen Malloch, advanced our understanding of the dynamic emotional regulations of play with infants by applying advanced musical acoustic techniques to measure the essential ‘communicative musicality’ of intimate vocal communication in proto-conversations and baby songs and games (Malloch and Trevarthen, 2010; Trevarthen, 2015). He proved the matching sensibility of infant and adult for the rhythm, expressive tone or quality, and the organisation of bouts of play into compositions of narrative, with ‘introduction’, ‘development’, ‘climax’ and ‘resolution’, and frequently with a reflective ‘coda’ confirming a memorable event (Figure 1B).

The features that Malloch discovered correspond to the ‘vitality dynamics’ of human intercourse discovered by the pioneering psychiatrist and infancy researcher Daniel Stern, who enriched our conception of the ‘present moments’ of an active interpersonal world with a pre-verbal child, and its significance for creation of cultural achievements in friendship, and for therapeutic support of emotional health (Stern, 2010). In the following months, these and other games are also shared with other family members, enriching their affectionate relations and appreciation of the infant’s playful personality.

After 3 months infants’ bodies become stronger and their conscious regulation of movements is more complex, with richer expressions of convivial playfulness for the attention of familiar companions (Figure 2, Table 1).

**Rituals of Delight Performed With Pride in Action Games and Baby Songs**

Dabiel Stern began his work by studying games of a mother with her three-and-a-half-month-old twins. This is a second time of change in infants’ actions with awareness, and in communication. With increase in the strength of the body in the third to fifth month revealed in more confident support of the head with stronger and more selective reaching out with the arms and hands aided by improved vision and sense of touch, infants direct attention to a world more distant from their bodies, and may show less interest for close face-to-face play.
with the mother (Figure 2, Table 1). They are also becoming more expressive of their feelings with face and mouth movements and vocalizations.

In studies to trace development of communication during the first year, Penelope Hubley charted how mothers respond to this change of interest, first by being more provocatively playful, and then by bringing objects that attract the baby into the stories or games they invent together for fun (Hubley and Trevarthen, 1979). Their playful performances together develop into enjoyable rituals, features of which are remembered and recognized by the baby with pleasure at later times. Infants begin to imitate rhyming sounds in nursery songs, and the pattern of movements in an action game, such as “Round and Round the Garden”, or “Clappa-Clappa Handies”. And they display to their partner expressions of pride in making the response in the ‘conventional’ way.

![Graph](image)

**Figure 2**

Age-Related Changes (ARCs) in the behaviours of infants in the first 18 months after birth. Key positive developments in communication occur at B, D and F. (For further explanation and sources of data see Trevarthen, 2001 and Trevarthen and Aitken, 2003).

The increasing playfulness signals a change in Self-Other awareness, which is presented as ‘self-consciousness’ that reacts to being observed. Vasudevi Reddy has pioneered studies that reveal humorous avoiding or displaying behaviours that signal ‘coyness’ and ‘showing off. From this time babies express stronger social awareness by becoming more ‘fun’, enjoying and contributing to teasing with careful attention to timing. Numerous examples illustrating the developing richness of self-consciousness, and both marking and remembering of playful performances of ‘joking, teasing and mucking about’ that excite and play with others’ expectations, are presented by Reddy in her book *How Infants Know Minds* (Reddy, 2008)
After four months, as the infant’s interest becomes more focused in handling and exploring objects, play with a parent is led to become sharing and teasing with the objects which become “toys” in what Hubley called ‘person-person-object games’ (Figure 2, Table 1). This object-interest of the infant, identified by Piaget (1962) as the period of ‘secondary circular reactions’, transforms play in the family leading companions to make tempting offers and provocative withdrawals to excite purposeful and emotional responses from the infant.

Table 1: Developmental changes affecting play in the first 18 months of infancy

<table>
<thead>
<tr>
<th>Age in weeks</th>
<th>Somatic and cognitive developments. Object directed actions.</th>
<th>Developments in communication of intentions and feelings. Cooperative awareness in affectionate relationships</th>
<th>Piaget: Stages of cognitive development</th>
</tr>
</thead>
<tbody>
<tr>
<td>A New-born</td>
<td>Regulation of sleep, feeding and breathing. Coordinated binocular gaze. Innate ‘pre-reaching’ with or without an object seen.</td>
<td>Early imitation of expressions of face, mouth, eyes and hands, with provocation for an exchange or ‘dialogue’. May smile to voice or touch. Seeks eye-to-eye contact.</td>
<td>Simple reflexes</td>
</tr>
<tr>
<td>B 6</td>
<td>Pre-reaching declines. Reaching to fixated object develops as swipes and grabs.</td>
<td>Fixates eyes with smiling. Proto-conversations develop. Mouth and tongue imitations, then vocal and gestural imitations. Distressed by ‘still-face’ and video replay test.</td>
<td>First habits. Primary Circular Reactions</td>
</tr>
<tr>
<td>C 12</td>
<td>Smooth visual tracking, with strong head support. Reaching, touching and catching. Maturation of binocular stereopsis *</td>
<td>Not attentive to mother unless she assists the infant’s playful interest in ‘person-person’ games. Mirror recognition and self-conscious mannerisms.</td>
<td></td>
</tr>
<tr>
<td>D 18</td>
<td>Interest in surroundings increases. Accurate reach and selective grasp. Manipulative play with objects.</td>
<td>Looking at other’s hands. Imitation of clapping and pointing. Right hand gestures of expression * &quot;Person-person-object&quot; games in which a parent facilitates and ‘teases’ the infants enjoyment of recognition and manipulation of objects, which become recognized as accepted ‘toys’</td>
<td>Secondary Circular Reactions. Perceives objects</td>
</tr>
<tr>
<td>G 60</td>
<td>Self-feeding with hand.</td>
<td>Cultural learning. First words. Imitation or ‘mimesis’ of conventional mannerisms. Recognizes eating utensils and other ‘tools’ and uses them appropriately. Varies storytelling play with imaginative use of objects as agents or tools.</td>
<td></td>
</tr>
</tbody>
</table>

* These developments are recorded a few weeks earlier in girls
Experiments with objects lead to games in which objects are grasped, held up, banged against surfaces or thrown. This anticipates changes a few months later that lead the infant to find a mirroring of interest in objects chosen to be of special interest for the other person, beginning the learning of conventional practice with ‘tools’, and the naming of actions and objects with words.

**Developing a Self-Other Conscious Personality in Companionship: Setting Limits of Trust and Playing a Part in Shared Knowledge.**

At six months the baby grows in self-consciousness as the impulse to play explores new ways of testing the limits of other person’s interest and knowledge, and this is accompanied by a strong sense of humour, by which they express to others emotional evaluations of what they do and know. Family recognize that the baby is becoming a ‘clown’ and a sensitive performer, requiring appreciation as a recognised person whose cleverness is admired in familiar company. With this developing personality the infant is also watching how other persons attend to objects and is interested to imitate gestures such as pointing, clapping or waiving.

Increased self-consciousness is also exhibited in a strong response of caution with a stranger who approaches offering communication. This has been identified as ‘stranger fear’, but the behaviour may also be appreciated as ‘shame’, the infant attempting to withdraw and hide, in contrast to the display of ‘pride’ shown when presenting a learned performance to company that is known and trusted. We propose that these strong feelings at this stage of development are adapted to guide development of a new level of cooperative awareness that becomes evident after nine months.

**Sharing Tasks and Meanings. Playing with Purposes to Share Use of the Known World. Learning ‘How to Mean’ Before Speaking**

Development of Secondary Intersubjectivity or cooperative awareness at the end of the first year, discovered by Penelope Hubley’s studies (Hubley and Trevarthen, 1979), confirms the theory that the playful impulses of infants, and the intuitive responses of affectionate parents which favour emergence of companionship in understanding, are adaptations evolved to make cultural practices germinate and grow before words are understood by the child. Michael Halliday’s theory of protolanguage as a socio-cultural form of communication that establishes the foundations of verbal semantics (Halliday, in Bullowa, 1979), and the anthropological evidence presented by Ray Birdwhistell (1970) and Victor Turner (1982) of the universal features of expressive body movements that accompany and support all ways of communicating ideas and experiences with feelings of value, complement the evidence from study of infants.

**Conventional Labelling of Topics and Objects In Playful Stories of Discovery. Wording the Meaning of Gestures in Games, and to Identify Toys and their Uses**

A one-year-old shows how play with purposes and feelings in movement, and in tune with the playful actions of companions, develops the special human abilities for sharing conventions of culture. It fosters the use of particular objects as tools for imaginative projects, including having a meal and going out in society appropriately dressed. Curiosity for other people’s intentions also leads the child to imitate gestural or vocal signs that refer to them, and then to learn what words mean and imitate them.

The walking two-year-old starts boldly to talk in sentences, taking part in family adventures with self-conscious willfulness or pride in knowing, discovering a growing sense of purpose in activity, retaining memories that are shared in imaginative stories, some of which may never be forgotten. This work in ‘story-making’ is playfully learned and made into convivial
games. Jacqueline Nadel (2014) has studied how toddlers who have little or no language enjoy play on stage where they can invent and vary games by imitating each other, and she has shown how imitation of playful actions can be used to encourage and support communication with children who are avoidant, including those diagnosed with autism.

Three-to-five-year-olds love exuberant play with their strong and agile body senses, and teasing games with peers, exploring the local ecology with bold fantasy and with dramas of engagement, using any territory as a playground that becomes a place of learning. “They are very sociable, but can also find pleasure on their own, using careful concentration on detail to make intriguing discoveries with clever hands, eyes and ears. The ‘character’ of each child is different. Different personalities are becoming marked. At every step along the way the child’s individual curiosity and invention is ready to respond to any friendly teacher who will enjoy life in joint activity, and the fanciful stories composed in cooperation. The child’s invention and curiosity wants to be respected, and admired, in warm friendship.” (Trevarthen and Bjørkvold, 2016).

**Conclusion: Lessons from the Psychology of Infant Play for Practices of Education and Therapy**

“The roots of all sciences and arts in every instance arise as early as in the tender age, and that on these foundations it is neither impossible nor difficult for the whole superstructure to be laid; provided always that we act reasonably as with a reasonable creature.”

(John Amos Komensky (1592-1671), known as Comenius, in *The School of Infancy*. Quoted by Quick, 1910, pp. 144-145).

**Changing Educational Practice for Early Years and Life Benefits**

Understanding that infants, though they have no language for rational thoughts or purposes, have rich talents for showing intentions and feelings, supports teachers of early years and affectionate parents in their belief that play is the generator of shared meaning from birth. Before obeying the needs of instruction in a curriculum for language, literacy and numeracy (or ‘grammar, logic and rhetoric’, the *trivium* of training for skills of a ‘free man’ in a rich industrial culture of Hellenistic Greece and the Roman Empire) a child needs to share the joy of a curious life with companions.

This insight from Comenius the Moravian philosopher, pedagogue and theologian who wrote *The School of the Mother’s Breast* (1628), *School by Play* (1630) and *The Gate of Languages Unlocked* (1631), and who became world famous as a teacher and creator of schools who elucidated the best principles for educating children from birth to the age of six, when formal teaching may be appropriate, appreciates the infant’s playful creativity and its contribution to human learning.

In the 19th Century Robert Herbert Quick, in a masterly review of educational reformers, described a growing science of education intended to help parents and teachers welcome the initiatives of all children to share interests and feelings about the world in imaginative ways. Quick recorded the insights of the Jesuits of the 16th Century, who criticized the restriction of teaching to book learning and said young children must exercise their bodies, and Rabelais who ridiculed the absurd idea of ‘pouring in’ formulated knowledge. Following them, Pestalozzi and Froebel worked as teachers to reduce misfortunes of young children obliged to work too soon at prescribed tasks, promoting their freedom to enjoy sociable learning at play in nature.
James Mark Baldwin at the end of the 19th Century anticipated the discoveries of the physiologist Charles Sherrington’s classic *The Integrative Action of the Nervous System*, and the science of intentions in movement as the foundation of consciousness, thoughts and communication. Baldwin proposed that all life actively tests its awareness, retaining the vitally good and pleasurable relations with the environment and suppressing bad and unpleasant stimulation. He named these as ‘circular reactions’ because an initiative for action repeats itself to test stimulation. He inspired Piaget’s theory of active learning and Vygotsky’s explanation of the social development of thought and language with the child as playful agent (Vygotsky, 1978), and he opened the way to understanding how ‘self-imitation’ leads to reciprocal imitation with others as the key motive of communication (Nadel, 2014). But in his time Baldwin’s enlightened understanding was rejected by the reductive psychology of behaviourism. It gained recognition only in the writings of certain philosophers, including Bergson, James, and Dewey.

In the 1920s Alfred North Whitehead, argued for appreciation of the first ‘romantic’ stage of the educational experience, and retention of its creative energy through to University. He observed, with caution, that in school childish imagination is transformed into the stage of ‘precision’ which concerns ‘exactness of formulation’. He helped Susan Langer develop a philosophy of art in movement, presented as *Philosophy in a New Key* (Langer, 1942).

Jean Piaget (1962), following Immanuel Kant, inspired an empirical psychology that perceives the child as an experimenter, striving to master movements of manipulation, building practical concepts, and concentrating on what can be learned to ‘construct’, for individual use, a growing set of rational ‘schemas’ for perception of physical reality. He describes the infant mind as ‘egocentric’. He failed to notice that attractive expressions by eyes, face, voice and hands show more than “pleasure in mastery” of a practical task, and did not appreciate that ‘circular reactions’ are, as Baldwin showed, readily shared with teachers, if they are not too preoccupied with reason and unreceptive to playful invention.

In the past half century Jerome Bruner, an educator who already in the 1940s insisted on the importance of a child’s purposes and feelings for learning, expanded his philosophy of education in a new way by leading work in the Center for Cognitive Studies at Harvard to study the convivial enjoyment of intentions and problem solving by infants. He incorporated ideas from comparative primatology and the evolutionary theory of manipulative intelligence and how it may be ‘scaffolded’ by a teacher’s cooperation. Margaret Donaldson also led a move to more natural and ‘creative’ or ‘facilitative’ tests of the imaginative powers of toddlers with evidence that three and four year old children appreciate other persons’ points of view to experience a world shared purposefully and with emotional evaluation. They communicate imaginative experiences, enjoying differences of belief, as long as they do not receive imperative correction (Donaldson, 1992).

The foundations of education, in every culture, are in the development from birth of human motives to test and expand active experience, and to share it with companions, ‘story-telling’ for fun (Bruner, 1996; Trevarthen, Gratier and Osborne, 2014), with emotions of ‘human sense’ (Donaldson, 1992). To understand how we can best support the growth of this curiosity and sociability in infants and toddlers, we can learn from researchers in the arts, especially music, the most intimate and versatile of the ‘imitative arts’ of Adam Smith, by which the passions of human liveliness are shared most directly. This is the belief of Loris Malaguzzi of Reggio Emilia in Italy, who gives the "hundred languages" of childhood in play with all sorts of media freedom to discover their use in skills of everyday life. “The program is based on the principles of respect, responsibility, and community through exploration and discovery in a supportive and enriching environment based on the interests of the children through a self-guided curriculum.” ([http://en.wikipedia.org/wiki/Reggio_Emilia_approach](http://en.wikipedia.org/wiki/Reggio_Emilia_approach)).

That is how childish enthusiasm grows to motivate the learning of conventional practices and
beliefs no matter how complex and artificial they may be, thus supporting the traditions and inventions of a culture (Rogoff, 2003).

Transformation of Psychotherapy with Play

Like school education, the medical professions of pediatrics, psychiatry and psychotherapy have also had to overcome a neglect of the creative virtues of infant play. Sigmund Freud, searching for the origins of sadness in emotional illness presumed, like Piaget, that infants are born with no self-awareness, or awareness of other’s interests and feelings. Shocking evidence on the damaging effects of isolating babies in institutions lacking intimate human care and affection was presented by René Spitz and John Bowlby. This awoke recognition that babies, born with very limited powers of independent action, need affectionate parenting. In later publications Spitz attended to the more joyful and provocative ways older infants learn with loving companions (Spitz, 1957).

T. Berry Brazelton changed pediatric care by revealing the personal powers of newborn infants and encouraging parents, as well as doctors, in their affectionate response to the infant spirit (Brazelton, in Bullowa, 1979). Daniel Stern transformed psychodynamic theory with evidence that three-month-old babies enjoy sharing games of purposeful movement and he developed a powerful theory of innate ‘vitality dynamics’ with which we move with controlled elegance in the emotive ‘common sense’ of an interpersonal world shared from the time we were infants (Stern, 2010). He appreciated the natural source of aesthetic pleasure as follows. “We naturally experience people in terms of their vitality. We intuitively evaluate their emotions, states of mind, what they are thinking, and what they really mean, their authenticity, what they are likely to do next, as well as their health and illness on the basis of the vitality expressed in their almost constant movements. The time-based arts, music, dance, theatre, and cinema, move us by the expressions of vitality that resonate in us.” (Stern, 2010, p. 3). Stern’s description of the emotional benefits of infantile play led to a new approach to psychotherapy developed by the Boston Process Change Study Group.

Within the psychoanalytic movement, Carl Jung and Donald Winnicott accepted the importance of dynamic non-verbal expressions of feeling in intimate and enjoyable engagements as the source of cultural meaning and recognized their potential for therapeutic practice. Winnicott, as pediatrician working to relieve emotional distress of children, considered that playing, at all stages of life, is the key to emotional and psychological well-being. The ‘true self’ experiences well-being with humour in art, in sport and in enjoyment of meaning in conversation. Like Stern, Winnicott believed psychoanalysis was helpful when it becomes a pleasurable experience of creative discovery in a genuine intimate relationship (Winnicott, 1965).

The Australian psychiatrist Russell Meares developed, with Robert Hobson, a ‘conversational model’ which accepts the sharing of playful invention as a motivation for strengthening self-confidence. In The Metaphor of Play: Origin and Breakdown of Personal Being Meares (2005) uses the evidence from infant psychology to interpret experience with patients in sensitive engagements that aim to reinforce positive impulses and recollections in self-awareness. Particularly interesting is extension of this work by Judith Pickering (2015) to discover the musical fundamentals of the psychoanalytic relationship by recording changes in ‘acoustic resonance’ or the tone of voice of both patient and therapist speaking about their feelings and memories and applying Malloch’s method to measure ‘communicative musicality’. 
To conclude, I acknowledge the great influence for my work of Jerome Bruner’s insight into the story-making mind that lives to master playful employment of a versatile body in collaborative relationships that enrich understanding. That is the creative nature of ‘human being’, and how it grows in sympathy of companionship.

"Why are we so intellectually dismissive towards narrative? … Storytelling performs the dual cultural functions of making the strange familiar and ourselves private and distinctive. If pupils are encouraged to think about the different outcomes that could have resulted from a set of circumstances, they are demonstrating useability of knowledge about a subject. Rather than just retaining knowledge and facts, they … use their imaginations to think about other outcomes. … This helps them to think about facing the future, and it stimulates the teacher too.” (Bruner, 1996, pp. 39-40)

References:


