

The Well-Connected Child 1:
The Child's Ecology of Relations"

Wednesday 22nd May, 2013
The Scottish Universities Insight Institute, Glasgow

"Innate Values of Self In Relation"

Prof. Colwyn Trevarthen,
Department of Psychology, University of Edinburgh

PERCEPTION, MOVEMENT & ACTION RESEARCH CENTRE (PMARC)

INSTITUTE FOR MUSIC IN HUMAN & SOCIAL DEVELOPMENT (IMHSD)

An acorn is small, but it is an oak tree. It knows how to grow. With, rich soil and sun, it will be large and strong

A newborn infant, though small, is an imaginative person with lots of 'motor intelligence', expecting to affectionate and playful human company. If it has these it, and good food, will grow lively, joyful and proud of what it knows and shares.

Mental Health: A family proud of their life and traditions.
Frances Louise with her father and mother Sampson and Leah Beaver at home in the woods of Canada, in 1907.

HUMAN NATURE INVESTIGATES AND SHARES KNOWLEDGE

CURIOSITY

The young Charles Darwin with plants (He too studied earthworms, and proved they are intelligent)

The Apple in Eden: How We Find Meaning Before Words

Infant psychology has taught us that *knowledge is shared experience of being alive, alert and passionate*, with intentions and emotions. It is communicated from birth.

Titian - "The Fall of Adam"

Facts are learned with aesthetic feeling, and moral sensibility, in stories that are INTIMATE, IMAGINATIVE and INFORMATIVE (and not too IMPERATIVE or hurried).

Imaginative Meaning Is Shared In Movement, With Feeling

Technology, science and mathematics measure and master the material world logically, free of sentiment and fantasy. But their ideas are *products of active imagination*. However disciplined it may become, practical knowledge can only begin in how our complex human bodies feel in movement.

We know the world by sharing vital emotions -- aesthetic feelings for what is creative and harmonious, and moral sense in relationships.

These feelings guide us and make cooperation and 'common sense' possible.



Lilian Katz, Professor Emerita of Early Childhood Education, University of Illinois at Urbana-Champaign

"We are doing earlier and earlier to children what we shouldn't do later."

These words of wisdom were offered by Lilian Katz – in reference to the current trend of aligning curriculum and programs in an effort to prepare children for the next step in their education.

<http://illinoisearlylearning.org/ask-dr-katz.htm>

WHOSE CONCERNS? One can be too protected

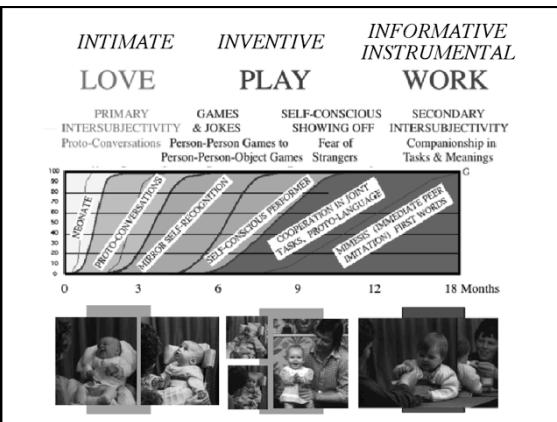


Giotto, 14th Century, Scrovegni Chapel, Padua



A baby is a person seeking a good life – first in **intimate** friendship, then enjoying **inventive** games with pretense, and finally **informative** for cooperative tasks in the shared material world, inventing meaning.

An infant wants companionship in knowledge with close friends, wants to be joyful and proud, without shame and fear of pain or loneliness. **That is human nature before school, and after too, if all goes well.**



BODY MOVEMENT, VISION AND ACTION

TWO TO FOUR MONTHS:

Accurate Reach to Touch. Stereo-Acuity, Precision Seeing. Eye-Head-Arm Coordination. Looking Away from Mother. Learned Right-Hand Gestures (Girls First)

FIVE TO EIGHT MONTHS:

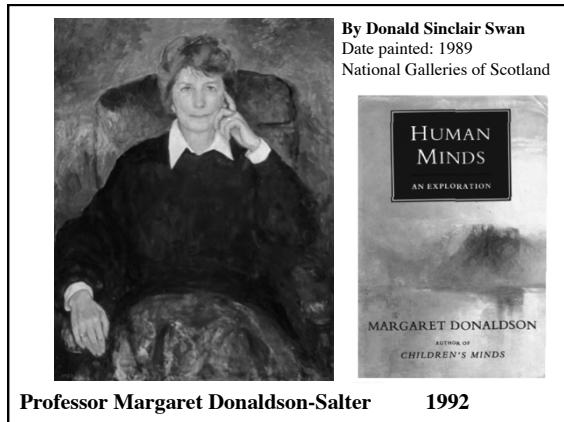
Crawling, Sitting, Pulling Up to Stand. Grasp and Hold Object. Looking at Mother's Hands. Banging Objects. Babbling, Supra-Glottal Articulations.

NINE TO EIGHTEEN MONTHS:

Attention to Other's Interests and Actions.

Combining Own With Other's Intentions.

Sharing Tasks, Meanings and Ritual Behaviours.



HOW KNOWLEDGE MATTERS IN COMPANIONSHIP

"Human sense is understanding how to live in the human and physical worlds that children normally develop in the first few years of life. It is learned spontaneously in direct encounters with these worlds that arise unavoidably everywhere, transcending cultural differences. The learning is always **informed and guided by emotion** - that is, by *feelings of significance, of value, of what matters*. And it is highly stable and enduring, once established. **It is the foundation on which all that follows must build."**

(Donaldson, *Children's Minds*, 1978,)

We all walk but we are not all ballet dancers. . . . We must *apply ourselves*. We must become able to guide and direct our own minds. Thus the need for discipline appears. And, though it is self-discipline that is in question, this is not easy to acquire unaided. Few can do it alone. The question is: what help is needed and how can it best be offered? This question, so simple in appearance, is *the educational question*. The answering of it is peculiarly delicate and difficult. For there is a narrow path between the pitfalls that lie on either side.

(Donaldson, *Human Minds*, 1992, pp. 252–253)

"Another contrast is equally essential for the understanding of ideals – the contrast between order as the condition for excellence, and order as stifling the freshness of living. This contrast is met with in the theory of education. The condition for excellence is a thorough training in technique . . . The first, the second, and the third condition for high achievement is scholarship, in that enlarged sense including knowledge and acquired instinct controlling action. . . . **The paradox which wrecks so many promising theories of education is that the training which produces skill is so very apt to stifle imaginative zest."**

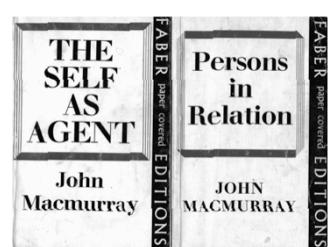
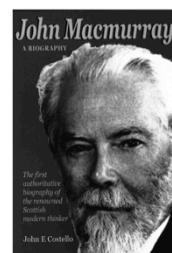
(Whitehead, *Process and Reality*, pp. 338–339)

EXPERIENCE, KNOWING, GROWS IN RELATIONSHIPS MEANING BEGINS IN THE INTIMACY OF SHARED MOVING BUT THEORIES OF STAGES OF LEARNING DIFFER				
Whitehead (1929)	Romance	Discipline	Generalization	
Creativity & Cooperation				
Erickson (1950)	Trust	Autonomy	Initiative	Industry
Ego Development,	v Mistrust	v Shame & Doubt	v Guilt	v Inferiority
Emotions in Relationships				
Piaget (1947)	Sensory-Motor	Pre-Operational	Concrete	Formal
Cognitive Mastery of Objects				
Bruner (1968)	Enactive	Iconic	Symbolic	
Imaginative Representation				
Donaldson (1999)	Point	Line	Construct	Transcendent
Modes, of Action, Loci of Concern, Intellect & Emotion	Here & Now	There & Then	Anywhere Anytime	Nowhere Noplace

An important guide from Scottish Philosophy
Prof. John Macmurray

1891-1976

His Gifford Lectures



"Buber singles out the fundamental relational character of human beings. Such relational character is at least two-folded. It can be a third-person relation, an *I-it* (and I-She, I-He) or a second-person relation, an *I-you*. Buber calls them the two basic words."

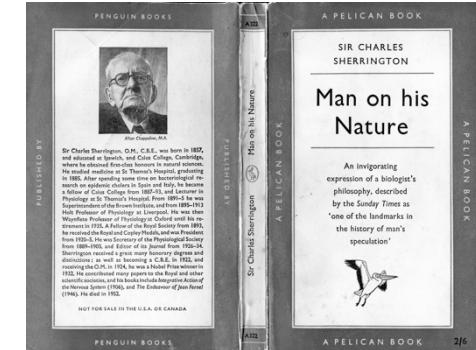


Vittorio
Gallese
2012



Martin Buber
(1878-1965).

Sherrington's Gifford Lectures – 1937-1938
About how all life is creative by being imaginative



CONCEPTION: HOW A PERSON'S LIFE IMAGINES LIVING

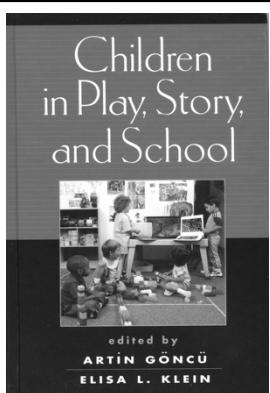
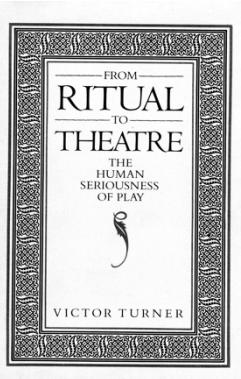
"It is not only man but it is the man John Brown, or the woman Mary Smith, whose exact like never was yet. An explanation once offered for the evolutionary process traced it to 'memory' in the ancestral cell.

.... It would be imagination rather than memory which we must assume for the ancestral cell; memory could not recall experience it never had."

Sherrington, C. S. (1955). *Man On His Nature*. Harmondsworth: Penguin Books Ltd. Chapter 4, The Wisdom of the Body, pp. 103-104 The Gifford Lectures, 1937-1938.

Life is expectant, seeking to know its effects.
It is creative – playful. An embryo becomes 'self-aware' as its cells form a body; a foetus knows its vitality with first movements, aware of its own life and of the mother's – or a twin's.

The moving Self of the child builds projects cooperatively, with other vital selves, in playful companionship.



Fein, G. G. (1987). Pretend play: Creativity and consciousness. In D. Gorlitz & J. Wohlwill (Eds.), *Curiosity, Imagination and Play* (pp. 282-304). Hillsdale NJ: Erlbaum.

"Pretense is charged with feelings as intense as those characteristic of attachment and it expresses thoughts **as intricate as those conveyed in language**" (Greta Fein, 1987, p. 282).

"Although divergent thinking is characterized by novel and original associations, most theorists exclude bizarre or inappropriate associations from their definitions of novelty and originality." (Greta Fein, 1987, p. 291) PLAY= CREATIVITY

"the [children] are ... playing with representations of their own affective knowledge..

I am proposing a double-layered system of representations, one for **practical knowledge** and another for **affective knowledge**. This double layered system emerges during the third year of life as pretend sequences become increasingly marked by **non-stereotyped, personal inventions**" (Fein, 1987, p. 300)

AND THESE ARE IMITATED WITH JOY



What do you gain
when reproducing
what you already
can do?

INTERACTION

Jacqueline Nadel on toddlers' imitative play.
In everyday life, preverbal children love to imitate familiar actions. They practice switching between roles of model and imitator



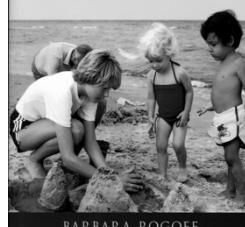
Primary codes regulate turn taking, negotiating companionship before language



The one who offers or points to the similar object **expects to be imitated**

The other takes the indicated item **agreeing to be an imitator**. Or, refuses the similar item **disagreeing to be an imitator**

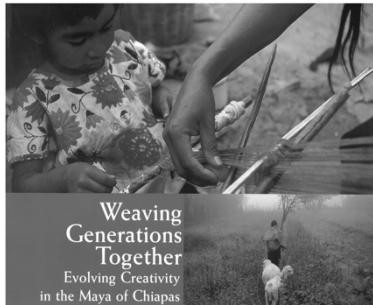
THE CULTURAL NATURE OF HUMAN DEVELOPMENT



BARBARA ROGOFF

Children gain knowledge in different social worlds, by 'collaborative learning', helping to make imaginary and meaningful things in companionship with good teachers, those who share intentions and ideas generously.

Barbara Rogoff is Prof. of Child Development, at UC Santa Cruz in California.



How little girls in Mexico learn to weave.
(They call school 'paper learning')



Three-year-old Rosy Xulubte' beats down a warp thread, leaning into her backstrap - a real loom.



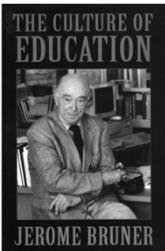
Aunt, 10y., makes heddle for Rosy. Others are involved, too.

Fein, G. G. (1995), Toys and stories. In A D Pelligrini (Ed.), *The Future of Play Theory* (pp. 151-164). Albany: State University of New York Press.

"Children's knowledge of ordinary events may be important in their daily conduct but for storytelling or other narrative processes, **it is their emotional meaning that makes events memorable and tellable**"

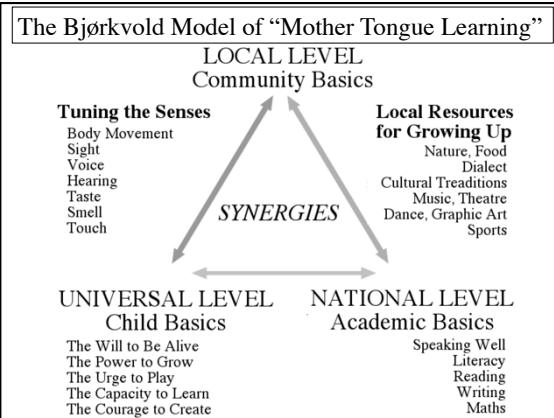
(Fein, 1995, p. 161).

Jerome Bruner "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.**"



Toddlers play with and explore an imaginative 'unreality' that others may believe has beauty and practical value. They enjoy sharing these emotionally, with aesthetic and moral feelings, not just pragmatic cognition, or rules of truth.

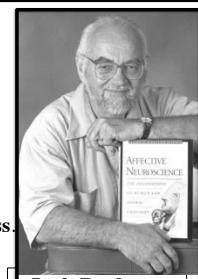
On their own, and with friends, the make practical sense of the world creatively, sharing the pleasure of knowing and doing. In play with dancing voice and body they create what the Norwegian musicologist Jon-Roar Bjørkvold calls *Children's Musical Culture*



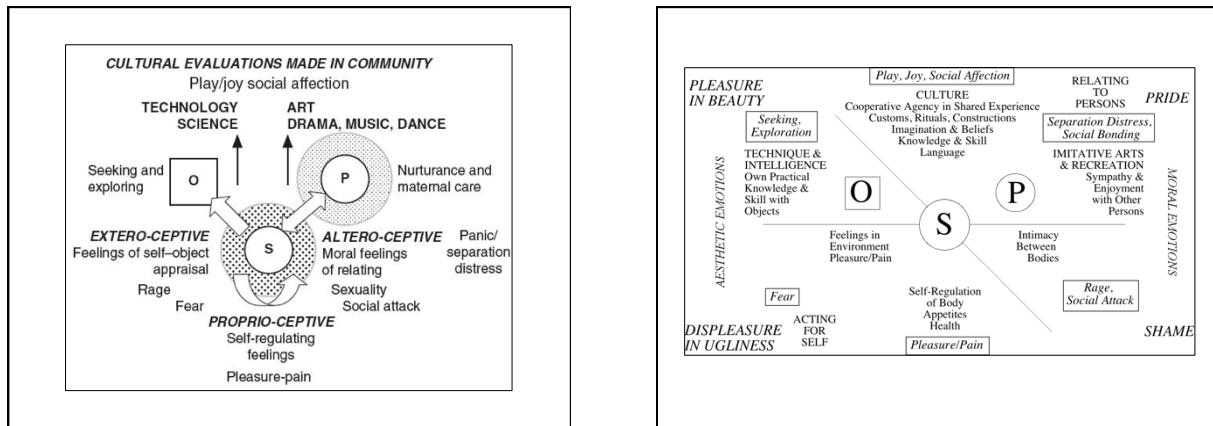
EMOTIONS COME FIRST

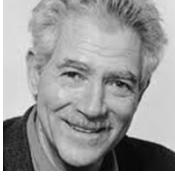
"It is commonly believed that consciousness is a higher brain function. Here we consider the likelihood, based on abundant neuro-evolutionary data that **lower brain affective phenomenal experiences provide the "energy" for the developmental construction of higher forms of cognitive consciousness**. this perspective, perceptual experiences were initially affective at the primary-process brainstem level, but capable of being elaborated by secondary learning and memory processes into tertiary-cognitive forms of consciousness."

Solms, M. and Panksepp, J. (2012). The "Id" knows more than the "Ego" admits. *Brain Sciences*, 2, page 147.



Jaak Panksepp



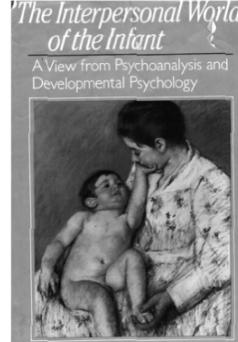


"FORMS OF VITALITY:
Exploring dynamic experience
in psychology, the arts,
psychotherapy,
and development."

Daniel N. Stern M. D.
Oxford University Press, 2010.

Vitality dynamics are psychological, subjective phenomena ... felt as aliveness ... designed to fit the workings of the human world.
They are. ... shapes of expressive movement.
They concern the **How**, the manner, the style, not the What nor the Why.

"This book attempts to create a dialogue between the infant as revealed by the experimental approach and as clinically constructed, in the sense of resolving the contradiction between theory and reality"
(Stern, 1985, p. ix).



Consider the following list of words.

exploding	surging	accelerating
swelling	bursting	fading
drawn out	disappearing	fleeting
forcefull	powerful	weak
cresting	pulsing	tentative
rushing	pulling	pushing
relaxing	languorous	floating
fluttering	effortful	easy
tense	gentle	halting
gliding	swinging	tightly
holding still	loosely	bounding

and many more.

These words are common, but the list is curious. Most of the words are adverbs or adjectives. *They are not emotions or motivational states ... pure perceptions ... sensations -- they have no modality. They are not cognitions or acts, as they have no goal state and no specific means.* They fall in between all the cracks.

They are *the felt experience of force – in movement – with a temporal contour - and a sense of aliveness. ... shapes of expressive movement.* They concern the **How**, the manner, the style, not the What nor the Why.

"Vitality dynamics are the child of movement. ... Movement is our primary experience and vitality dynamic experience is the most primitive and fundamental of all felt experience."



Nigel Osborne and student at a summer music camp near Sarajevo, BiH, 2009

At birth the human brain is one third the size of an adult brain, but **has all parts in place for a creative human life, including unique human face, eyes, voice and hands for sharing emotions, intentions & states of consciousness.**
They wait for bright company.



For dancers and dance and music therapists, Dan is a prophet and ally. In the introduction to the 2nd edition of *The Interpersonal World of the Infant* of 2000 he wrote:

One consequence of the book's application of a narrative perspective to the non-verbal has been the discovery of a language useful to many psychotherapies that rely on the non verbal. I am thinking particularly of dance, music, body, and movement therapies, as well as existential psychotherapies. This observation came as a pleasant surprise to me since I did not originally have such therapists in mind; my thinking has been enriched by coming to know them better (p. xv).

"The old model of thinking of the newborn infant as helpless and ready to be shaped by his environment prevented us from seeing his power as a communicant in the early mother-father-infant interaction. To see the neonate as chaotic or insensitive provided us with the capacity to see ourselves as acting 'on' rather than 'with' him."



Dr. T Berry Brazelton
1979 Evidence of communication during neonatal behavioural assessment, p. 79.

Young awake infants are visibly active mentally -- thinking and 'talking' with 'mimesis'.

They show **gestures of the hands** relating to **feelings** in their bodies, to orientation of their **interest** to events in the world, and to the **sympathy** they have for other persons who may respond to their signs, thinking with them.

Infant hand gestures are part of a rich display of expressions by posture and attitude of the head and eyes, and intricate movements of the face.

AND IS VERY EXPRESSIVE



A Musician's Daughter, 6 Hours Old

A newborn in Hyderabad, 1/2 hour old, is coordinated, alert and aware.

He has motor intelligence.



He eagerly tracks a lively ball because **someone is moving it in a 'game'**, teasing him.



Naseera, born 3 months early, kangarooing with father at 32 weeks. They share a conversation.



IN EARLY WEEKS A BABY SEEKS INTIMATE CHATS

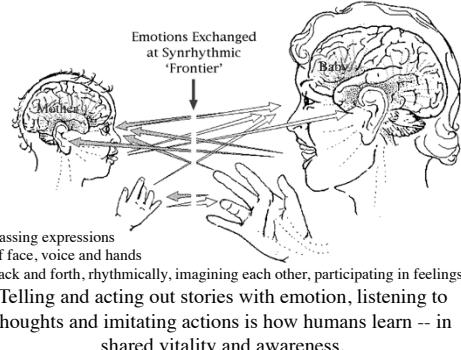
At 7 weeks Téa is very INTERESTED in communicating.



New Zealand baby 'Telling', 10 Weeks old Old, With open gaze and lively face, sharing mind time.

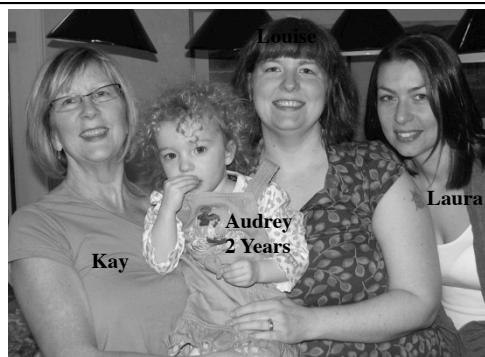
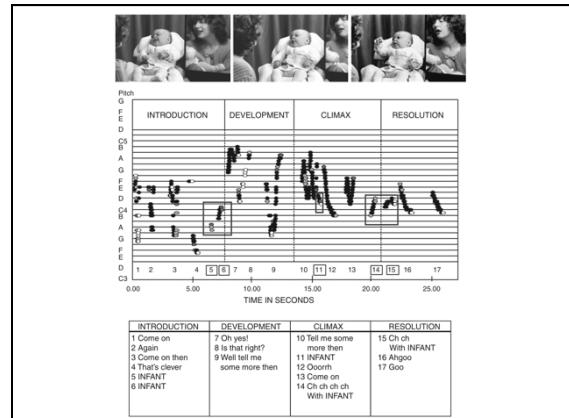


SYNRHYTHMIC REGULATION: Mother and infant can communicate **psychologically**, regulating sympathy by expressions of emotion.



We tell one another our intentions, interests and feelings from birth, by **moving in sympathy** -- creating stories of life with people we love. **The Prosser Family in Edinburgh, 1979**

Laura, at 6 weeks, starts to chat with her Mother, **Kay**, at Edinburgh University. She pays attention, and she has her say with perfect timing.



Thirty Years Later in Vancouver – Laura now says “Ah Goo” to her baby; has she learned nothing?

‘The Storyteller’. Clay figure by Helen Cordero. Her Grandfather Sings the Stories of the Ancestors to the Children



The Book That Came From Laura’s Chat With Kay

--
*Communicative Musicality
Exploring the Basis of Human Companionship*

Stephen Malloch
&
Colwyn Trevarthen

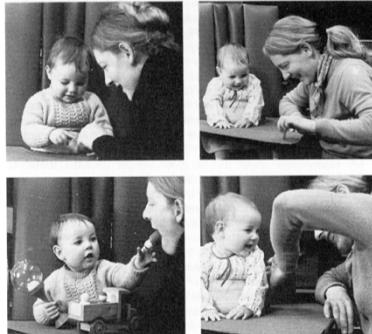
Oxford University Press
2009 Paperback 2010

THE BEGINNING OF RITUAL FUN

After 3 months, a baby is becoming stronger, more curious, eager to look at surroundings, and to grasp and manipulate things.

There is a growing tension between doing something for oneself, or sharing with others -- and this makes for **self-consciousness, teasing and fun, and invention of games**. (This is why the infant begins to find mirrors interesting -- they tease expectations of communication)

GIRLS 7 AND 8 MONTHS, GAMES WITH MOTHER



Left: Touching finger tips, feeding wooden doll to mother, with sympathetic open mouth.

Right: A different "Round and round the garden"; mother creeps to her over the table, then tickles her under the arm.

CLEVER GAMES AND JOKES AT NINE MONTHS



Esme shares a 'wrinkle nose' joke with her mother.

Andrew chases a ping-pong ball.
Alex pokes his tongue out to the mirror after his mother asks him to imitate.

'SELF-CONSCIOUSNESS' AT 3 MONTHS



Vasudevi Reddy's study of babies' 'coyness' in front of the mirror began her interest in 'other awareness'.

Harvard University Press 2008

"There are precious ideas here, well worth sharing with behavioral science, philosophy, anthropology and related disciplines."

Jerome Bruner



Professor Reddy's great book, on 'Second Person Psychology'

SHARING STORIES IN SONG AND GESTURE

Japanese Boy, 10 Months Old, With His Mother, Appreciating Her Performance, with Humour. He watches her rhythmic hand play to a nursery song, and bows respectfully with her at the end.



A FAVOURITE ACTION SONG

Round and round the gar-den,
 Ran a ted-dy bear,
 One step, two step,
 Tic-kl-y un-der there.



Clappa, clappa handies,

Mommy's at the well,
 Daddy's away to Hamilton,
 To buy wee Megan a bell.



Emma responds to "Clap Handies" (She is left-handed).

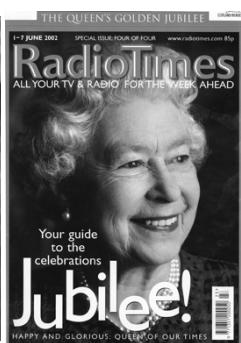


Emma, 6 months, on father's knee.

Her mother says, "Clap handies!"

Emma 'shows' or 'performs' to the photographer, with intent look and a proud grin. (Father is proud too)

That's pride!



But, With a Stranger Emma is worried and 'Ashamed'
 -- He does not 'get it'.



SUBTLE MOODS OF SELF-OTHER CONSCIOUSNESS



Emma, 7 months, shows clapping to the mother; and bravely offers clapping to an uncomprehending stranger.

Andrew, 1 year, pulls a silly face to the window as his mother is sitting 'blank-faced'; he looks sadly at a stranger, then cries.

SHAME
Escaping
Mis-understanding
With a Stranger,
Hiding Confusion
Emma
at 6 Months



Even infants sense strangers sometimes do not share their understanding, and this worries them. Its not fear - they have *anxiety of meaninglessness*. Such feelings make teaching of ideas and practices a moral task. *Shame and anxiety stop learning.*

Even a nice stranger is hard for a 10-month-old to bear.



"Master Baby" by Sir William Orchardson, Scottish National Gallery.
A one-year-old with her mother. Person-Person-Object Game.

For Basilie, 12 months, it is easy and amusing.

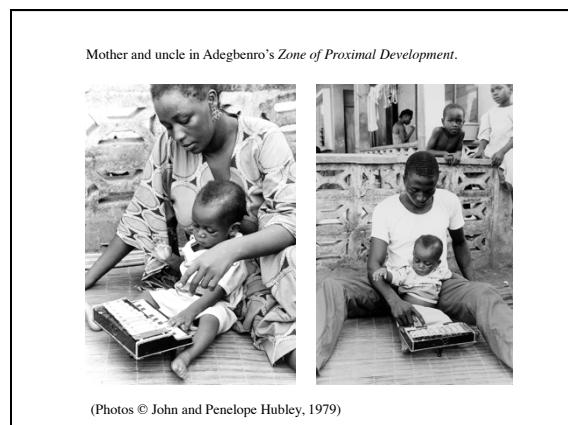
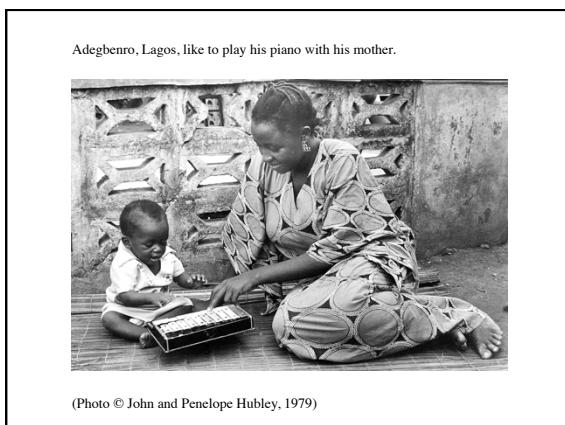
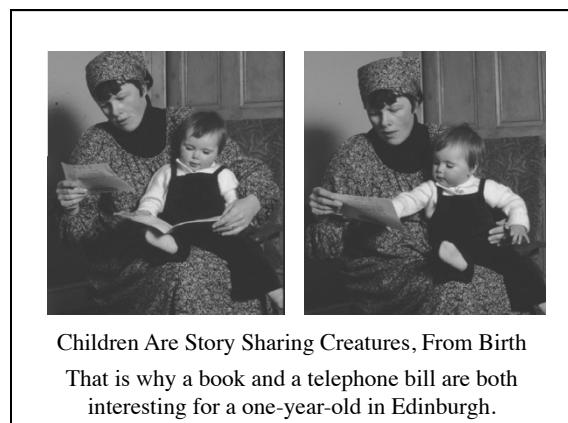
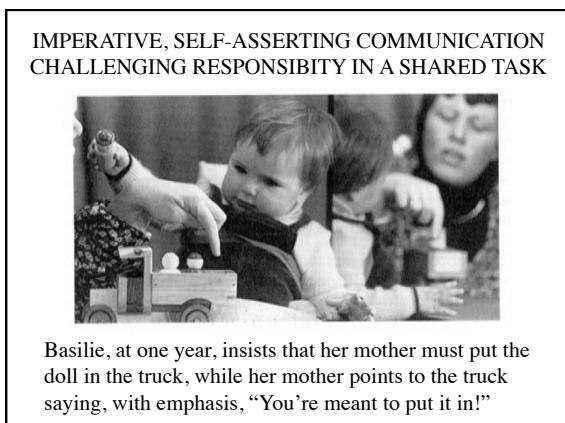
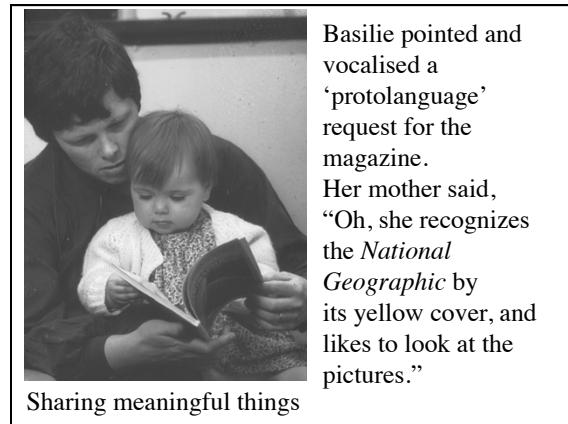
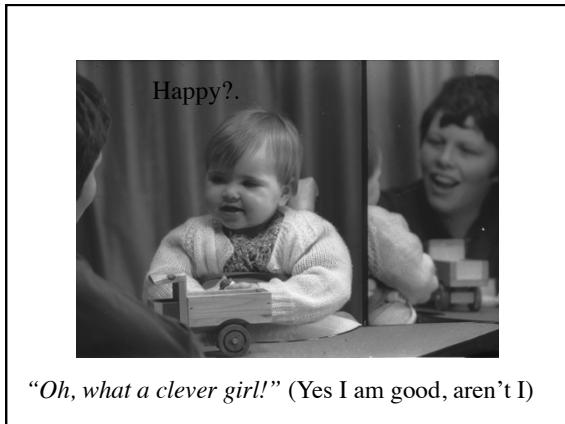


"Here, put this one in the truck!"

No problem!



Easy!



But Adegbeno is a capable and proud performer on his own.



(Photo © John and Penelope Hubley, 1979)

Adegbeno asks for his favourite rattle.



His mother gives it to him.



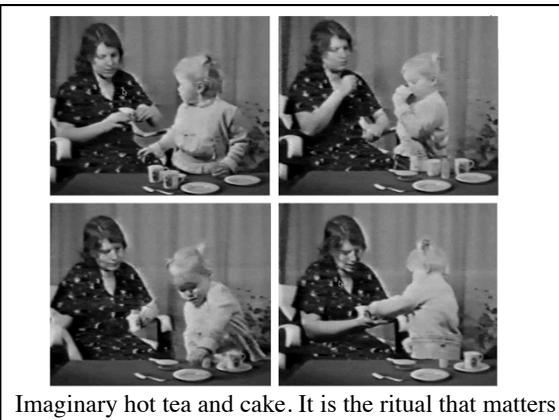
(Photos © John and Penelope Hubley, 1979)

"Look what I've got!"
Mother smiles.



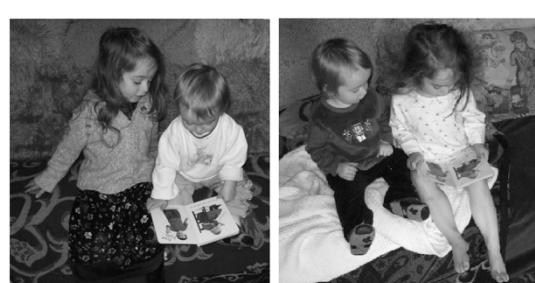
(Photo © John and Penelope Hubley, 1979)

Emma
27
Months.
Reading,
Counting
&
Having
Tea



Imaginary hot tea and cake. It is the ritual that matters

Caring for doll, having sympathy, mostly.



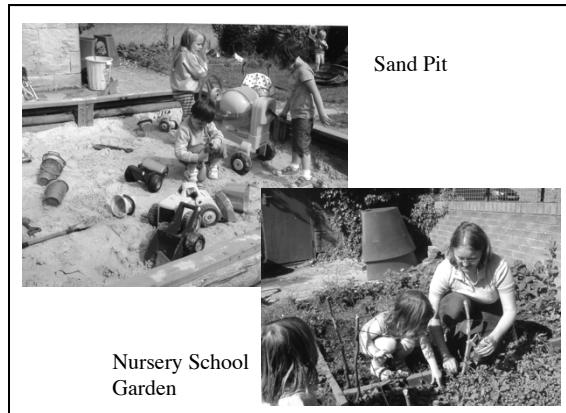
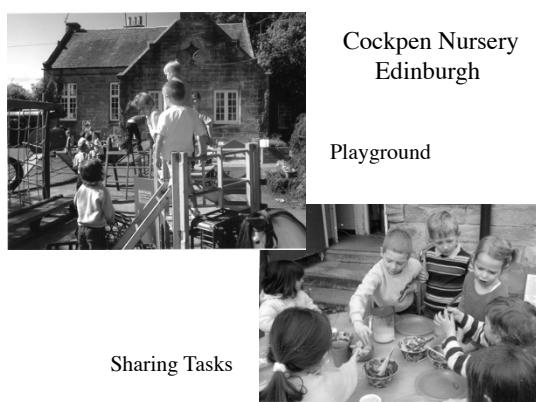
Sisters share imagination of pictures and a story, enjoying learning at home. Only one can read.

THE PRESCHOOL WORLD IS ONE OF THE RICHEST TIMES OF LEARNING WITH OTHERS

Toddlers seek friendships with parents, brothers and sisters, peers, grandparents -- people of all ages -- and want to take part in the serious fun of what companions know and understand. Learning at home and at school can be compared to follow the growth of self-confidence, interests and personality of each boy and girl – their personal story



Cameron House Nursery, Edinburgh



(2002) Learning in companionship. [Education in the North: The Journal of Scottish Education](#), New Series, Number 10, 2002 (Session 2002-2003), pp. 16-25.

The University of Aberdeen, Faculty of Education

Learning in Companionship

Colwyn Trevarthen,

Department of Psychology, The University of Edinburgh,
and Department of Primary Education, University of Strathclyde
Email: c.trevarthen@ed.ac.uk

Abstract

Research since the 1960s shows that children are born with motives to learn, not just *from* other people, but in companionship *with* them. They are motivated for 'cultural learning', for sharing meanings. Psychological researchers have been surprised by the capacity of infants for communicating intentions and feelings and for sensing the purposes and emotions of persons they know and trust. The 'commonsense' belief that affectionate relationships are essential for the full vitality of teaching and learning is confirmed by meticulous observations and experiments. Toddlers discover, invent and try to share meanings and skills months before language begins to enrich their thinking, memories, ideas and experiences, and they are especially attracted to what 'special' people think is interesting or 'clever'. They wish to move and know like these others, and to 'pretend' to use things in daily tasks as they do. Children imitate both adults and peers to for the pleasure of sharing meanings. All the natural 'intersubjective' abilities of young minds in active bodies are the source of education, which can never thrive as a technology of instruction alone. A child's pride in knowing and doing must be recognised and supported, too. Shame of not understanding, or of not being understood, is destructive of learning. The child who is proud to learn, and whose pride is recognised with admiration, will learn.

"My aim is to show, although this is not generally attended to, that 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 Comenius (1592-1671) *The School of Infancy*. Translated by D. Benham. London, 1858. Quoted by Quick, 1910).

"When people cannot communicate or think symbolically, for whatever reason, we should not assume that they lack conscious mental lives."

(Merlin Donald, 2001, pp. 121-122).

"Some achievements have to be won: won through sustained, deliberate practice or through structured study. ... We all walk but we are not all ballet dancers. ... We must *apply ourselves*. We must become able to guide and direct our own minds. Thus the need for discipline appears. And, though it is self-discipline that is in question, this is not easy to acquire unaided. Few can do it alone.

The question is: what help is needed and how can it best be offered? This question, so simple in appearance, is *the* educational question. The answering of it is peculiarly delicate and difficult. For there is a narrow path between the pitfalls that lie on either side."

(Margaret Donaldson, 1992, pp. 252-253).

"The teacher should always stand with the child – stand *by* the child in a shared enterprise, and try to understand imaginatively how it all seems from the child's point of view. Without this, how is it possible to appreciate the help that the child needs? ... it is an essential part of the teacher's role to have likely long term outcomes in mind, in ways that children are unable to do themselves. ... How could they? How could they know enough in advance about the wider resources of the human cultural heritage? Thus both of the centred extremes in education – the child-centred and the culture-centred – have serious disadvantages. If education is culture-centred, then conformity, decorum and the conveying of information are overvalued, and there is an under-estimation of the child's ingenuity, imagination and initiative. There is also an underestimation of the human capacity for defiance and rejection and

of the dire effects of boredom. Worst of all, perhaps, there is a strong likelihood that the children who are being taught will not be respected as human beings entitled to a say in the enterprise."

(Margaret Donaldson, 1992, pp. 255-256).

The School of Infancy

My research over 35 years with able young collaborators has aimed to observe closely, and as far as possible without prejudging the matter, the early steps that infants and toddlers make to communicate and learn. Our experience confirms what may have been guessed from natural science and common wisdom, that all children are equipped by their nature with eagerness to learn in conscious collaboration with companions, persons whom they trust and admire. Older persons -- parents, siblings, teachers of many kinds -- naturally respond to this vitality and eagerness to understand. They feel they want to help. They can learn how to do so from the child, who in this is their teacher.

A desire to know more and to gain skill in ways that other trusted people recognise and encourage is the defining feature of young human nature. It is the instinct that makes 'cultural learning' happen. This may be an old and obvious idea, and Comenius expresses it well. Nevertheless, intricately rational and busily occupied adult minds often deny it, forgetting how they themselves learned. The inventive curiosity and love of social attention of the young child is easily seen. But many who assume authority and expertise have difficulty accepting the innateness of human sympathy in action and knowledge, probably because there is no obvious rational explanation for it -- nothing in the physical or biological world to compare it with, no computational system that can simulate it. Even in academic psychology, intentions and feelings of the young child are given less attention, simply because they do not fit scientific models of how minds work. This neglect by those who claim expertise can have inhibiting effects on the practice of applied psychology, and on the training of teachers. We do not know how an imaginative sympathy for the human-created view of the world could be born in the human mind, so it is easier to conceive it as constructed from experience, by instruction from outside. Thus is the adult world led to teach, but not to learn from the child.

Rigorously checked data on child development confirm that infants possess a drive to learn meaning *by sensing the interests and evaluations of others*. They begin doing so from birth. We who have made it our business to observe the signs of motives in natural learning can take issue with those politicians, inspectors, managers or head teachers who are inclined to overlook the child's contribution. They have their gaze fixed on the *products* of schooling, which they feel free to define for their own ends or as needs of society, and not on the *process* by which school learning is possible. They take acquired effects in learning, such as demonstrations of 'intelligence', as causes of differences

between children.

The science that has advanced our appreciation of natural forces for human learning, and their natural variation among children, is both exact and descriptive; experimental when it is necessary to check details, but always respectful of the child's complex initiatives and sensitivities. It seeks to see and listen to the child in free activity and with intimate friends -- participating in live company. This reveals the natural physical vitality, curiosity, inventiveness, poetry, humour and morality of children, talents that have repeatedly been missed by measurement in tests of cognition and learning contrived according to the principles of an objective empiricist philosophy. The testing of children is often more suited to demonstration of what they *cannot do* than to discovery of their characteristic motives and abilities.

Research on mother-infant play is basic science, casting light on how we truly are, carrying implications for every level of analysis of the living human organism. If we are to use it as a guide in managing our lives and the lives of our children, it needs to be both exact and imaginative, with hypotheses that measure up to the complexity of essential human nature.

Education as an Expedition, a Craft Fair -- Not a Race Track

Infancy research has led me to accept the view taken by Comenius, Vygotsky, Bruner, Rogoff and others, that education of the young that fosters enthusiastic learning will be collaborative. It will be, I think, more like an expedition to explore in the company of experienced and interested guides; or like a craft fair where creative people with specially learned skills show to others what they have discovered and made -- not a competitive race over an obstacle course to win predetermined goals, watched over by judges with score pad ready. It should grow in consistent relationships of trust and liking, not battle with strangers to prove its worth in some unintelligible larger scheme imagined in a distant place. Education in any institution, from a play group to a university, should be situated and valued for its natural origins, and it should be communicated and received with authentic interest.

Not that the voyage or adventure in creative work and learning will be all fun and easy. Sometimes it is like a race with pleasure derived from coping with self-imposed, and shared, handicaps, making fun of the struggle. Sometimes it requires intense private concentration, working the problem over for the self. There is energy to be gained from risk, effort and triumph over difficulties in all motivated endeavours, at any age. Of all accounts of how children must *apply themselves* to the learning of meaning and skill, of how deliberation is acquired with the help of teachers and in structured study and instruction, I find the most compelling is that of Margaret Donaldson in Human Minds,

quoted above (Donaldson, 1992).

The end or goal of hard application must satisfy the appetite that made it possible. It must give rise to pride in shared achievement -- pride without conceit, that is. Otherwise there may actually be loss of knowledge and skill, because failure, recognised as failure by others, can destroy conviction and kill interest, and an arrogant disdain of others offends their willingness to share and cooperate.

We have to remember that effect of conceit, by the way, when we encourage an explicit corporate identity in sport or school, and the vanity that may be cultivated when we make comparisons of performance and achievement through competition. It is all a matter of balance, and moral respect for that enthusiasm we all like to maintain for doing things, for creating projects, and for communicating our pride in what is done and what has been learned. This is the kind of understanding of the learning process that we can get if we pay proper attention to the young child's vitality, openness and love of adventure and discovery. That must be what Comenius had in mind when he said that we should act 'reasonably' with the child.

Infancy Research and 'Learning How to Mean'

Methods of observation and experimentation developed in the past 30 years have transformed our beliefs and explanations concerning what infants can do, know and learn (Reddy et al., 1997; Trevarthen, 1998; Lacerda et al, 2001; Hobson, 2002). The hitherto private world of mothers' and fathers' play with inarticulate sons and daughters has proved to be rich in information for psychological science, and the moral implications of the play are great. The consciousness of an infant grows strong in the interpenetrating affections of companionship, meeting others' interests and experience when these are offered in ways the child can share. In a few years, the child entering school will be ready to take up the fantastic and intricately elaborated ideas of an ancient culture, learning from teachers how to use words, tools and procedures invented by unknown ancestors (Trevarthen and Logotheti, 1987; Trevarthen 1992).

By analysing films, videos and sound tracks of young children at talk and play with their companions, we have discovered that infants possess a special human motivation to create, acquire and elaborate shared ideas, to express them in the making (Trevarthen, 1987/2002). A newborn imitates expressions of voice face and gesture conversationally, with emotion modulated in intimacy, and with anticipation of appropriate qualities of response (Trevarthen et al., 1999). A two-month-old enjoys a 'proto-conversation' with an affectionate and attentive parent, attending to face and hands and voice, stimulating the 'communicative musicality' of 'motherese' talk and joining in. A four-month-old will contribute gestures and melodious cries to an action song or nursery rhyme, showing astonishing musical discrimination and precision in responses of all the body, and

anticipating the flow of the 'narrative' with pleasurable excitement. And before a baby is one year old, the inborn wanting to be in company becomes a will to participate in artificial knowledge and skill, to know what others' know, and to do what they do -- to start to share a world of invented meaning (Trevarthen and Hubley, 1978; Trevarthen, 1992). This taking up of other's intentions and emotional evaluations transforms what the one curious mind can become aware of or remember on its own, and gives a new kind of coded value to experience, one that can have permanent currency in a society and accumulate over historical time. Michael Halliday, the socio-linguist who learned about the nature of language by watching and listening to his infant son in vocal and gestural play with his mother, called it 'learning how to mean' (Halliday, 1975).

Language itself is, as Merlin Donald says, just such a 'distributed' creation, property of many minds and many epochs. Its making has required innumerable minds with a special sympathy of imagination for purposeful action. That sympathy, with a great capacity to store impressions of sights and sounds that other humans cause, is the 'innate language acquisition device' -- it is the human child, and it serves to learn much more than language. Before a child goes to school to learn to read and count, the words of the 'mother tongue' have become one pleasurable means of being conscious of what the world of companions is knowing, doing and thinking.

Two-Head Thinking is a Child's Need

Recognising the evidence for this transition or 'graduation' of the one-year-old to person-person-object awareness or *cooperative understanding* has caused a fundamental revision of psychological theory – some who are shaken by the implications call the development a 'revolution'. Contrary to what the rational or cognitive psychologist has been inclined to assert, no meaning can be represented in and for one human head, except in an imaginary theatre of remembered company, and even that kind of remembering for oneself has to be learned by watching others act, and by hearing their stories.

Psychological research often seems to miss the point. Laboratory tests score an observer's perceptual preferences, object categorisation and memories, vocabulary and parsing of grammatical forms. Questionnaires of personality traits and attitudes count what is in the storehouse of a subject's memory; probability lists can be made of habits and reactions in large social groups. But this method of investigation, digging deeper into the accumulation of details in the mental apparatus, does not record the imaginative curiosity that teaches us what we know, or the moral reasons for the search. It forgets the vitality, emotions and sympathy of the company with whom, and for whom, the search was begun. It overlooks the social evaluations that gave us roles to play, and that offer bridges to characters of an historical past.

Children need meaning to share, like plants need the sun. As plants have chlorophyll in

their leaves, children grow with an eagerness to communicate in their brains and bodies. Plants may be selected for their uses and forced in hot-houses, for display in competition, or for profit. But their plantly nature is to find healthy enough form and to flower and fruit in a great diversity of communities, adapted to a varied ecology of soils, geography, weather and the seasons.

Children, too, may be cultivated, forced to learn fast. But they have natural human potentials in great variety. They have it in them to make a great effort to become highly skilled, sophisticated and civilised, provided they can receive approval for the sense of what they do -- provided they find the right company.

Complex Emotions of Companionship Frame Pride in Identity and Performance

Participation in baby songs and action games is a matter of intense pride in what is shared for a 6-month-old, and confrontation with a stranger can make the baby act ashamed, both fearful and avoidant of the mutual incomprehension. We agree with Riccardo Draghi-Lorenz, Vasu Reddy and Alan Costall (2001) that coyness, pride and shame, and jealousy too, are primary, intuitive emotions that have natural social power. We do not think that they are constructed out of simpler 'biological' reactions by social experience. We think that such 'moral sentiments' (Smith, 1759), are absolutely fundamental in developing human relations, and in the growth of a sense of individuality or identity in society (Trevarthen, 2002a, b). They are also at the heart of school learning.

I am sure that the main motivation for cultural learning is something that is quite separate from what is described by John Bowlby's Attachment Theory as the motivation for seeking proximity to a mother. That is why we have developed what we call the Theory of Companionship (Trevarthen, 2001). We are not suggesting that attachment theory is wrong, it is just that is certainly not an adequate account of the emotions that normally operate in development of a baby's self confident possession of knowledge. The emotions of attachment have to do with regulating the needs *of one's own body* by communication with another person, soliciting their help and support. Cognitive learning and so forth relates one's own body *to objects*. Cultural learning and everything to do with education and shared artificial knowledge and skills involves communication *with other persons* in relation to a joint experience of the world of objects (Figure 1). And that is where you get these very powerful emotions of pride -- pride in knowledge, and pride in skill; or shame in not being thought master of such things, to be thought unskilled or ignorant. These emotions of companionship are, therefore, very important in the development of happy self-confidence, at any age. I believe they should be attended to in therapy and social work, especially for children, and concern for them is at the heart of effective teaching.

Cultures are the ways and makings of human communities, with dramatic power and

transcendent utility. They are motivated from the investigative and convivial impulses causing both communication and the collective accumulation of experience. They give found or created objects significance, making them 'special' in the potential intimacy of feeling that Ellen Dissanayake (2000) takes as the source of all art. Artefacts are both art and fact -- they may be made with reverence and displayed with pride, and their creation intends to have lasting effects. Their purposes have intimate value and social importance. They are both educated and instructive, the product of the two-way learning / teaching kinds of collaboration that Jerome Bruner (1996) and Barbara Rogoff (1990, 1998) describe.

Infants are adapted to live emotionally by what the sociologist Barry Barnes (2000) calls 'understanding agency' in human society, the dynamic balance of pride against shame that regulates negotiations and that gives value to all contractual obligations. Barnes adopts the same approach to human sentiments as did Adam Smith (1759), who, drawing on a rich Scottish philosophical belief in human nature and 'moral sentiments', identified in each of us the capacity for sympathy in the forms and feelings of acting, and to have a conscience who will appraise disinterestedly what we do or think about doing. This tradition was richly represented in the philosophy of John Macmurray (Costello, 2002; Trevarthen, 2002a). Cognitive abilities, categories of thought, declarative memories are all motivated by the human need for sympathy in agency.

Figure One: Three facets of the active self, for the body (A), for non-living objects (B), and for other subjects or persons (C); and how they are combined in behaviours: of self-protection by attachment to a carer, in private exploration of objects, and when sharing experiences in companionship.

(Trevarthen, 2001)

Getting into Language, by Mimicry

Lev Vygotsky (1986), Michael Halliday (1975), Jerome Bruner (1983), Michael Tomasello (1988) and John Locke (1993) have all emphasised that a child picks up words by noticing what other persons do with it, aided by shared human interest. Acts negotiating social participation with emotion come earlier in development than intention-directing 'proto-imperatives', just as 'person-person games' came before 'person-person-object games' in the middle of the first year (Trevarthen and Hubley, 1978). The early stages of 'grammar' learning, getting the syntactic and functional conventions right for sentences, is not simply a matter of coordinating vocalisations with intentions and attentions -- requests, pointing, showing, giving. It has concern for human feelings and sensitivities which form the backing texture of all live communication and 'experiencing together'.

'Joint attention', strongly associated with the picking up words, is not just a convergence of lines of sight and directions of instrumental action. It involves 'mutual attention' as well (Reddy, 2002) -- subtle awareness of moods and purposes, of instantaneous shifts of interest and emotional reactions that the infant has practised with familiar playful company through the first year.

Meaning and language continue to grow in personal relationships of shared pleasure and trust. Jacqueline Nadel shows how quickly collaborative parent-infant play transfers to communication between toddlers (Nadel and Pezé, 1993). She has recorded how immediate imitation of actions and utterances is used by 18-month-olds for non-verbal negotiation of purposes and for sharing meaning, and she underlines the pleasure and humour of sharing signalled by exuberant gesture and vocal prosody. Children and adults alike are easily caught in dramatic make-believe, identifying the roles of 'characters'. Infants play with emotional narratives long before they talk, and toddlers create dramas together before they have any demonstrable 'theory of mind'. This gives both the reason and the means for language learning. From 2 to 6 children make things, tell and listen to stories, create drama, acting fantastic parts, dance and exhibit all sorts of musical skills. Their appetite for cultural forms of life is enormous and their perception of human roles is rich and penetrating. We may well ask what goes wrong!

As the Norwegian musicologist Jon-Roar Bjørkvold (1992) says in his marvellous book on 'children's musical culture', a child can sit still, concentrate, work hard as long as their interest is engaged. They can satisfy Margaret Donaldson's requirement for diligence. Moreover, they can eagerly take up other's advanced ideas of how to move forward -- just so long as the thread of their enthusiasm is not broken. I hear a happy chatter of eager speculation among the 20-year-olds in the concourse of our university department -- and it is not all idle gossip. There is plenty of hard analysis of what their teachers have imparted, or tried to impart. These young adults made it through school with enthusiasm for learning intact.

Merlin Donald (2001), proposes that 'mimesis', that is communication by imaginative body-play to tell stories, has priority in both evolution and development of the human mind. He reminds us that language and all it represents was made possible with a new found flexibility of the hyperactive body and its metaphorical mind, and because the intrinsic pulse of human movement is so faithfully and instantaneously reflected between persons of all ages.

"Connected minds prosper in proportion to the richness of their links with culture. Minds grow with the collectivity, and isolated minds wither. Everything that is specifically human about our mode of awareness is a product of long-standing symbiosis with culture. Symbols, our notions of self-hood. and the

basics of autobiographical memory originate outside the monad, in culture." (loc. cit., p. 151)

And he notes the famous evidence from Vygotsky on the early development of human consciousness of words:

"Vygotsky observed that children always copy the externals of language first and do not initially have inner speech, or silent forms of symbolic thought. The developmental rule is that symbolic thought first represents external action, and only later reconstructs it so that it will occur internally. Thus the silent thinking skills of adults might be very misleading when we want to specify their origins. ... Vygotsky's studies have suggested that when they first appear, children's own performances are completely public, *even to themselves*. Only later do these operations become internalised, and independent of a specific social-mimetic role. The direction of flow is clear: from culture to individual; from outside to inside." (loc. cit., p. 250).

Human minds, through a miraculous sensibility for attitudes and expressions, mirror one another's motives and feelings in ideal form before they know how to speak, and from this talent symbols are created in many spoken and unspoken forms that can specify shared ideas with precision and combine them in infinitely varied ways. Literature is an artefact of tradition that exhibits the vitality of imagination and the urge to tell tales of moral and practical adventure -- that can explore fate in imagination and with the music and poetry of speech. Mark Turner argues that the 'literary mind' is designed to spin stories, verbally and non-verbally, blending fascinating metaphors to 'save its life', as Shahrazad had to do (Turner, 1996).

All the inherent and acquired attributes that are unique to humans, and that have stronger anticipation in all children than in young animals of other species, relate to the making and living of an intermental existence, a world built in a community of brains.

The 'Truth Permanence' of Experiences Shared in Action

I think any adult can recognise the validity of the statement that his or her learning germinated in relationships of trust in companionship. Asked what we know, we may forget our teachers. Asked how we learned, these important people come back. Then we can imagine what it was like to learn together, and how they spoke with a smile of encouragement, or seemed to judge us critically as not doing well enough. With luck, we recall them with real affection, as friends who shared discovery and gave their extra knowledge to us generously. If it was a bleak experience of mistrust and negative appraisal, our memory will turn away to a more hopeful time in approving company.

It is undeniable that the skills that education creates and reinforces may hide the way

they were acquired. Adult minds can sit back, reflect, leave the present, carrying out apparently completely inactive reasoning. We are well-practised in immobile, private states of argument and belief, helped by 'talk in the head'. Children show us that that kind of self-created mental theatre or radio debate is built up by a memorising that compresses experience, stripping away the active and experimental reality of the original consciousness from whence it came. Logical argument, which the psychologists of memory call 'declarative' or 'explicit', is a kind of short-hand. Mere stating facts is the reading of an account sheet. Codified memory has access to a vast capacity, like a great library, but its texts can do nothing. They need interested readers and researchers who live in the real 'episodic' world where the trade of experience with discovery takes place, and where communicating ideas and goals requires imagination and bargaining.

Even mathematical thought, so beautifully abstract and pure, turns out to grow from 'embodied' thoughts, notions about events in the body -- of limbs and sense organs active, orienting, focusing on discrete items successively in a space and a time created in activity (Lakoff and Johnson, 1999). Measuring, adding, multiplying, comparing congruencies are acts of purpose making sequential patterns of attending, and maps to compare relationships. They are descended from the abilities of an active creature to move in a natural world, to learn a geography and seasons in time, making strategic use of what the space and time of acting offers. As greatly elaborated human abilities, they store the images of socially mediated action in a symbolic form that can apply to an infinity of cases.

The Communicative Musicality of 'Teacherese'.

Infants are born with fine sensitivity for the 'musicality' of intuitive human expression (Trehub, 1990). From the first minutes after birth a baby can enter into the rhythms and melodies of a conversation. We find everything in a typical protoconversation of a mother with a two-month-old to be interesting musically (Malloch, 1999). Fluctuations in pitch create a melody, moving to a beat between allegro and adagio, fluctuating in rapidity depending on the mood. Mother and baby explore the two octaves either side of middle C (C4), most happy sounds moving above C4. The mother's graceful sound gestures sometimes rise or fall over an octave. The infant's coos are rhythmic and melodious too, usually rising a few notes above C4.

Daniel Stern (2000), who has pioneered studies of the dance of emotional regulation in mother-infant play, underlines the importance of dynamic 'intermodal fluency' in the establishment of 'affect attunement', and the mutual building of 'dynamic narrative envelopes' in games between infant and adult animated by 'vitality affects'. Motherese or Infant Directed Speech (IDS) is organised in repeated phrases. It creates animating, joyful incidents, as well as slow, cyclic 'narratives' of emotion, as in a lullaby. These features

together constitute what Stephen Malloch (1999) has described as 'communicative musicality', impulses of song-like expression that can be shared.

Music, with its changing mood or colour, does seem to be telling us something, sharing dramatic enterprises. You can hear the narrative of melody in the cyclic episodes of folk songs, jazz and classical music, not just in opera. Adult's speech and vocal play with an infant resembles the rhythmic and rhyming syllables, phrases and verses found in poetry and song of any language. This preverbal melody of expression shares motives and feelings. It displays the images of acting as they pass through the mind.

Research on the structure of songs for infants in different languages has taught us a great deal about how we share states of mind, moods and rituals of story-telling underneath or beyond the spoken word (Trevarthen, 1999; 2002b). It is highly significant that a nursery song, once attended to with appreciation, is virtually unforgettable as pure music, and that music makes the words of an appealing narrative both richer and more memorable. The link between melody and memory must explain one key function of musicality, or poetics -- they make sharable and retrievable dynamic meanings. The evidence from early infancy suggests that emotions shape reasons. What Stern (2000) calls the 'relational emotions', which are specifically adapted to real-time regulation of the balance of initiatives and reactions between persons, and which determine relationships of affectionate attachment, trust and companionship, and defend against abuse, mistrust and disregard, are fundamental to the ecology of emerging human consciousness.

In teaching, the manner, the poetry, is surely as important as the prosaic information -- both communication and instruction are going on. We plan to test this idea with research on the musicality of teachers' talk, or 'teacherese'. Indeed the idea has already been pioneered by Professor Frederick Erickson, now at the University of California in Los Angeles. He made a musical study of a teacher with a small class of youngsters, and could trace the sharing of initiatives, and the cooperation of roles simply by noting the ways they entered into the rhythms of communication (Erickson, 1996)

The Transition to Formal Learning-and-Teaching from the Creative Discovery of Toddlers' Imaginative Play.

Margaret Donaldson (1978) famously called the reduction of the 'human sense' of early childhood to the logic of school a progress from 'embedded' to 'disembedded' reasoning. Clever consciousness began in a toddler's living motoric engagement with the world, charged with mercurial emotions. It found social value in the sympathetic company of people equally engaged in doing and perceiving things in the same world. In preschool years it became detached or abstract by fantasy play and story-telling, using metaphors and symbols to stand for objects, actions and experiences of the more immediate 'hands-on' kind. Its guides and mentors became characters in legends and literature, then in the

history of technical and scientific discovery, and we imagined a life for each of our heroes and villains.

That is where formal education begins, in story-telling. In the transition to contrived awareness and technique, between the immediate necessary and personal drama to the general, historical and socially approved prosaic 'seriousness' of the adult work and responsibility. As teaching and learning becomes more formal, the thread of imagination, and the companionship of experience, must be kept intact if understanding is to retain confidence in that link to reality -- the being in the world we share, to which all discovery, invention and creation must return.

How to teach the skills of both ends of the thread of human knowledge; the endless discovery of life for oneself and for one's friends, and the reasoned, socially codified remembering? Well, even at University we discover that learning and remembering significant, 'ground-breaking' knowledge requires practice of embodied, embedded, passionate experience, and companionship. Advanced learning retains both aesthetic and moral principles, like those that come naturally to a toddler. Preschool and early primary education should have the advantage of making these foundations more obvious and useful to the student of educational practice. That is 'getting back to basics'. True and trustworthy knowledge never becomes wholly fact and measurable truth. Reading, writing and arithmetic, and language before them, are increasingly artificial tools that can be used to make clear, memorable and communicable the discoveries of art, music, theatre and sport, as well as literature, law, medicine, science and philosophy -- all activities where there is a clear community of purpose different from the technique of the individual actor's movement. It is a pedantic myth, by the way, that science, any science, is only concerned with proving the dependability of facts, though that is an important part of the work. It also has to keep imagination for the parts of the picture that technique leaves unobserved, and for the tradition of experience of which it is a continuation, otherwise the pursuit of knowledge becomes a slave to virtuosity, or an obsession, and only of transitory interest.

Conclusions: Pin-Pointing the Special Human Motives for Cultural Learning.

Two talents, evolved from the rich and agile, roving social intelligence of our ancestors, appear to have transformed that intelligence, making it cultural, and both are brilliantly evident in their innate, generative form in the mobile bodies and playful pretensions of infants and toddlers everywhere. These are the graceful postural rhythms and free gestures of a body born to walk and dance balanced on two feet, and a new intimacy of expression in conversation. The first freed the mind to spin extravagant imaginary projects of action and emotion without the call to carry them to consummation, have creative dreams and make ideal plans. The second invites shared imagining of this acting

in the mind and the creation of an infinite array of knowledge and skills through collaborative story-telling and the building of artefacts. We weave trans-generational fabric of culture that is patterned with elaborate beliefs, celebrations and constructions. We invent different social roles for individuals in a community, giving ourselves identities and personalities that are owned with pride and lost with shame. A new morality and sense of group affinity grows within families and communities. The collective narrative first told in myths and legends is extended in societies as literature and into artificial systems of practical duty, religious belief and obedience to laws. Our young become educated because they have a keen desire to understand what culture means, and because their elders wish to teach what they know and can do.

The evolution of the culture of language and all it represents was only possible with this new flexibility of the hyperactive body and its metaphorical mind, and because the intrinsic pulse of human movement is so faithfully and instantaneously mimicked between persons of all ages. Human minds mirror one another's motives and feelings in ideal form before they know how to speak, and thus symbols are acquired in many spoken and unspoken forms that can specify shared ideas with precision and combine them in infinitely varied ways. Literature is an artefact that exhibits the vitality of imagination and urge to tell tales of moral and practical adventure, that can explore fate in imagination. Science is another form of story, or myth, telling how to deal with nature, and how nature may be transformed by the corporate physics of human effort.

Young children, whose intentions and sympathies are not merely 'constructed' by us, show that our own language and cognitions are more products of a natural life process than many politicians, judges, theologians and philosophers, and a majority of developmental psychologists, are prepared to believe.

References:

- Barnes, B. (2000) *Understanding Agency: Social Theory and Responsible Action*. Beverley Hills and London: Sage.
- Bjørkvold, J.-R. (1992) *The Muse Within: Creativity and Communication, Song and Play from Childhood through Maturity*. New York: Harper Collins.
- Bruner, J. S. (1983) *Child's Talk. Learning to Use Language*. New York: Norton.
- Bruner, J. S. (1996) *The Culture of Education*. Cambridge, MA: Harvard University Press.
- Costello, J. E. (2002) *John Macmurray: A Biography*. Edinburgh: Floris Books.
- Dissanayake, E. (2000) *Art and Intimacy: How the Arts Began*. Seattle and London: University of Washington Press.

- Donald, M. (2001) *A Mind So Rare: The Evolution of Human Consciousness*, New York: W.W. Norton.
- Donaldson, M. (1978) *Children's Minds*. Glasgow: Fontana/Collins.
- Donaldson, M. (1992) *Human Minds: An Exploration*. London: Allen Lane/Penguin Books.
- Draghi-Lorenz, R., Reddy, V., and Costall, A. (2001) Re-thinking the development of 'non-basic' emotions: A critical review of existing theories. *Developmental Review*, 21 (3), 263-304.
- Erickson, F. (1996) Going for the zone: Social and cognitive ecology of teacher-student interaction in classroom conversations. In, D. Hicks (ed.), *Discourse, Learning and Schooling*. (pp. 29-62). New York: Cambridge University Press.
- Halliday, M. A. K. (1975) *Learning How to Mean: Explorations in the Development of Language*. London: Edward Arnold.
- Hobson. P. (2002) *The Cradle of Thought: Exploring the Origins of Thinking*. London: Macmillan.
- Lacerda, F., von Hofsten, M. and Heimann, M. (2001) *Emerging Cognitive Abilities in Early Infancy*. Mashwah, NJ: Erlbaum.
- Lakoff, G. and Johnson, M. (1999) *Philosophy in the Flesh : The Embodied Mind and Its Challenge to Western Thought*. New York: Basic Books.
- Locke, J. L. (1993) *The Child's Path to Spoken Language*. Cambridge MA and London: Harvard U. Press
- Quick, R. H. (1910) *Essays on Educational Reformers*. London: Longmans, Green, and Co.
- Reddy, V. (2002) Before the 'Third Element': Understanding attention to self. In, N. Eilan, J. Roessler and P. McCormack (eds.) *Joint Attention: Perspectives from Philosophy and Psychology*.
- Reddy, V., Hay, D., Murray, L. and Trevarthen, C. (1997) Communication in infancy: Mutual regulation of affect and attention. In, G. Bremner, A. Slater and G. Butterworth (eds.) *Infant Development: Recent Advances*. (pp. 247-274). Hillsdale, NJ: Erlbaum
- Rogoff, B. (1990) *Apprenticeship in Thinking: Cognitive Development in Social Context*. New York: Oxford University Press
- Rogoff, B. (1998) Cognition as a collaborative process. In D. Kuhn and R. S. Siegler (eds.), *Handbook of Child Psychology, Volume 2: Cognition, Perception and Language*. (pp. 679-744) New York: Wiley.

- Smith, A. (1759) *The Theory of Moral Sentiments*. Glasgow, 6th. edition 1790 (D. D. Raphael and A. L. Macfie , General Editors. Oxford: Clarendon, 1976; Reprint, Indianapolis: Liberty Fund, 1984)
- Stern, D. N. (2000) *The Interpersonal World of the Infant: A View from Psychoanalysis and Development Psychology*. (Second Edition, as Paperback, with new Introduction) New York: Basic Books.
- Tomasello, M (1988) The role of joint attentional processes in early language development. *Language Sciences*, 10: 69-88.
- Trehub, S. E. (1990) The perception of musical patterns by human infants: The provision of similar patterns by their parents. In, M. A. Berkley and W. C. Stebbins (eds.) *Comparative Perception; Vol. 1, Mechanisms*. New York: Wiley. pp. 429-459.
- Trevarthen, C. (1987/2002) Infancy, mind in. In, R. Gregory (ed.) *Oxford Companion to the Mind*, Oxford: Oxford University Press, pp. 362-368. (Revised Edition in preparation, 2002)
- Trevarthen, C. (1992) An infant's motives for speaking and thinking in the culture. In, A. H. Wold (ed.) *The Dialogical Alternative: Festschrift for Ragnar Rommetveit* (pp. 99-137). Oslo/Oxford: Scandinavian University Press/Oxford University Press.
- Trevarthen, C. (1997) The curricular conundrum: Prescription versus the Comenius Principle. In, A. W. A. Dunlop & A. Hughes (eds.) *Pre-School Curriculum. Policy, Practice and Proposals*. (pp. 62-81). Glasgow: University of Strathclyde.
- Trevarthen, C. (1998) The concept and foundations of infant intersubjectivity. In, S. Bråten (Ed.) *Intersubjective Communication and Emotion in Early Ontogeny*. (pp. 15-46). Cambridge: Cambridge University Press,
- Trevarthen, C. (1999) Musicality and the Intrinsic Motive Pulse: Evidence from human psychobiology and infant communication. In, Rhythms, musical narrative, and the origins of human communication. *Musicae Scientiae, Special Issue*, 1999-2000, pp. 157-213. Liège: European Society for the Cognitive Sciences of Music.
- Trevarthen, C. (2001) Intrinsic motives for companionship in understanding: Their origin, development and significance for infant mental health. *International Journal of Infant Mental Health* , 22(1-2): 95-131.
- Trevarthen, C. (2002a) Proof of sympathy: Scientific evidence on the co-operative personality of the infant, and evaluation of John Macmurray's 'Mother and Child'. In, David Fergusson & Nigel Dower. (Eds.) *John Macmurray: Critical Perspectives*. (Proceedings of the Conference at Kings College, Old Aberdeen, 6-9 April, 1998) New York: Peter Lang.

Trevarthen, C. (2002b) Origins of musical identity: evidence from infancy for musical social awareness. In, R. MacDonald, D. J. Hargreaves and D. Miell (eds.) *Musical Identities*. (pp. 21-38). Oxford: Oxford University Press.

Trevarthen C., and Hubley, P. (1978) Secondary intersubjectivity: Confidence, confiding and acts of meaning in the first year. In, A. Lock (Ed.) *Action, Gesture and Symbol*. London: Academic Press, 183-229

Trevarthen, C., Kokkinaki, T., & Fiamenghi, G. A. Jr. (1999) What infants' imitations communicate: With mothers, with fathers and with peers. In, J. Nadel & G. Butterworth (eds.) *Imitation in Infancy*. (pp. 127-185). Cambridge: Cambridge University Press.

Trevarthen, C. and Logotheti, K. (1987) First symbols and the nature of human knowledge. In, J. Montagnero, A. Tryphon and S. Dionnet (Eds.) *Symbolisme et Connaissance/Symbolism and Knowledge*. (Cahiers de la Fondation Archives Jean Piaget, No. 8). Fondation Archives Jean Piaget: Geneva, 65-92.

Turner, M. (1996) *The Literary Mind: The Origins of Thought and Language*. New York & London: Oxford University Press.

Vygotsky, L. S. (1986) *Thought and Language*. (2nd. Revised Edition). Cambridge, MA: MIT Press.

13 May, 2002