

Is Infant Learning Egocentric or Duocentric? Was Piaget Wrong?

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Full Text: It may be that a major North American understanding of how children develop, which owes much to the studies and conclusions of Jean Piaget, is incorrect. It may be that educational practices based on this understanding are in difficulty because they do not match what children need and seek naturally. Consider further these two possibilities by first examining how Piaget viewed the beginnings of child development. In his summative work, *The Psychology of the Child* (1969), it is emphasized that the child's development, both cognitive and affective, begins with the newborn baby totally centred in itself: . . . The child's initial universe is entirely centered on his own body and action in an egocentrism as total as it is unconscious (for lack of consciousness of the self). In the course of the first eighteen months, however, there occurs a kind of Copernican revolution, or more simply, a kind of general decentering process whereby the child eventually comes to regard himself as an object among others . . . (Piaget and Inhelder, 1969, p. 13). Further, We have assumed that affective decentering is a correlative of cognitive decentering, not because one dominates the other, but because both occur as a result of a single integrated process. Indeed, when the little child ceases to relate everything to his states and to his own action, and begins to substitute for a world of fluctuating tableaux without spatio-temporal consistency or external physical causality a universe of permanent objects structured according to its own groups of spatio-temporal displacements and according to an objectified and spatialized causality, then his affectivity will also be attached to these localizable, permanent objects and sources of external causality which persons come to be (p. 26). A Copernican revolution is not usually glossed over lightly but for Piaget this decentering process merely manifests "the existence of a law of development which is of some importance, because it will also govern all the later development of the child" (p. 19). This development he saw proceeding through assimilation by which every newly established connection is integrated into what is already present and operative: "The organizing activity of the subject must be considered just as important as the connections inherent in the external stimuli; for the subject becomes aware of these connections only to the degree that he can assimilate them by means of his existing structures" (p. 5). But this raises the question how a child whose existing structures are from the beginning totally egocentric could proceed to assimilate decentering. There is a puzzling gap here for which Piaget provided no bridge. He contrasted his view of development through assimilation with the understanding of other students for whom the key mechanism in development is association, a cumulative process by which conditionings are added to reflexes and many other acquisitions to the conditionings, each being a response to an external stimulus (cf. pp. 5-6). He might have pointed to the Scottish philosopher, John Macmurray, as one taking an associationist approach to early child development. There is a gap also in Macmurray's explanation. He saw the newborn developing from total helplessness without instincts and without coordinated movement: "The random movements of limb and trunk and head of which he is capable do not even suggest an unconscious purposiveness . . . All purposive human behaviour has to be learned. To begin with, our responses to stimulus are, without exception, biologically random" (Macmurray, 1961, pp. 47-48). Yet Macmurray would explain somehow that this unpurposive newborn is taught entirely by its caretaker (its "mother") to move from total randomness into interdependent mutuality. His explanation necessitated his positing "an impulse to communicate with another human being" in spite of his prior rejection of any purposive human behaviour in the newborn: In the human infant-and this is the heart of the matter-the impulse to communicate is his sole adaptation to the world into which he is born. Implicit and unconscious it may be, yet it is sufficient to constitute the mother-child relation as the basic form of human

existence, as a personal mutuality, as a "You and I" with a common life (p.60). Again there is a gap, in this case between the unpurposive and randomly moving newborn and the infant learner who soon responds to the mother in mutuality. Though the gap was closed, supposedly, by the introduction of an impulse to communicate with another human being, still the puzzle remains.

NEW KNOWLEDGE OF NEONATAL COMPETENCY

The gaps in the foundational theorizing of these two renowned students of human development stem from their assessment of the human newborn as locked away in total, unconscious egocentrism and as unpurposive and random. Since the heyday of Piaget and Macmurray there has come new knowledge of neonatal competency. A leader in neonatal research is the Boston and Harvard neonatologist, T. Berry Brazelton. In his Introduction (1985) to the reprinted classic by Milicent Washburn Shinn, *The Biography of a Baby*, first published in 1900, he has indicated some of what is now known about the remarkable abilities of newborn babies: Mrs. Shinn ... made her observations throughout her cherished niece's first year, documenting each new behaviour in great, glowing detail. In her exuberant, warm-hearted descriptions one can see the emergence of affective, motor, and cognitive learning . . . For me, her only failing was her unwillingness to attribute experience to the newborn baby. She talks as if the newborn were an empty vessel, "gathering experiences." She describes the first two months as a "life of vegetation." Because her other observations are so keen, so insightful, it amazes me that she didn't see Ruth register recognition of visual and auditory experiences even at birth. Also, Ruth's awareness of having achieved a complex motor act-that is, combining four reflex behaviours (the tonic neck reflex, hand to mouth, rooting, and finally sucking on her fist) into a method of keeping herself under control-seems not to have been noted by this otherwise highly sensitive observer. For me, the early recognition by babies of their own ability to take in important information, or to move in a way that brings self-control, is a template for their later recognition that they can act upon their new world. This recognition then fuels them to acquire more and more important experiences. The well-equipped motor and sensory programs in newborn babies help them learn important things about their world-important to them and in setting up the patterns they will need to capture the adults around them (Brazelton, 1985, pp. ix-xi). There is a growing body of evidence of neonatal competency: two researchers at Boston University, Condon and Sander, stunned students of child development with their demonstration in 1974 that newborn babies move in precise rhythm with maternal vocalizing. Using microanalysis of high speed sound films of mothers speaking to their babies between 12 hours and 2 days after delivery, they found that even at this early age (and it may be as early as minutes after delivery), babies move in synchrony with their mother's voice, as do the mothers, thus executing a sort of dance. Even particular body movements are linked with particular sounds! The rhythmic interaction is not observed by the casual onlooker but evidently the mothers see it, perhaps subliminally, and respond deeply in the exchange. Commenting on this responsiveness between newborn and mother, Brazelton likened it to the "mating dance" of swans. (Brazelton, 1976, p. 74) Even more remarkable, perhaps, are the findings of Meltzoff and Moore at the University of Washington, that babies less than an hour after delivery can imitate the facial expressions of adults, a skill requiring the newborns to translate visual perception into muscular action, without having yet seen the movements of their own faces! (Schiefelbein, 1986, p. 39)

NEW KNOWLEDGE OF FETAL LEARNING

It is evident that Piaget and Macmurray did not really "see" newborns. They might have been even more astonished by what is now coming to be known about fetal learning and behaviour. Brazelton again has been perceptive. More than a decade ago he expressed the following radical conviction: We are convinced that in a "good" interaction, mother and baby synchronize with each other from the beginning and that pathways may be set up in intrauterine life, ready to be entrained, especially by the mother immediately after birth. Intrauterine experience with other maternal cues, such as auditory or kinesthetic, may well set the stage for enhancing the meaning of the synchronous rhythms. Rhythmic interaction seems to be basic to human affect (Brazelton et al., 1975, p. 148). Long before Brazelton's work on mother-baby entrainment other observers were convinced that maternal emotions help to shape the later personality development of the unborn child. Centuries ago Leonardo da Vinci expressed his conviction in *Quaderni* that the things desired by the mother are often found impressed

on the child which the mother carries at the time of the desire. He thus voiced what countless mothers and many native traditions have long known to be true. But those early intuitions and convictions pertained more to what a mother may build into the fetus than to fetal responsiveness and even fetal initiative in learning. What Brazelton and others increasingly are seeing is how early a baby is able not only to respond to but also to learn to contribute to interaction with the mother. Information and theory about this development in birth-related psychology has been made available by the Toronto psychiatrist, Thomas Verny, in *The secret Life of the Unborn Child* (1981). Some dramatic evidence of fetal competency may be found in the experience reported in 1985 to the present author by two young special education teachers, husband and wife, who had conceived two children a year apart. The mother had to remain at home almost from the beginning of each pregnancy to avoid a miscarriage. Having read Verny's *The secret Life of the Unborn Child*, she had proceeded to read children's stories daily to each fetus and to play gentle music with the serious intention of enabling her babies to learn before birth. Each night on his return from school the father, not to be left out, had intentionally greeted his unborn babies by placing his face against his wife's abdomen and calling in a repeated "Hoo-hoo." Early in the first gestation an ultrasound exploration was needed: when the technician was unable to stimulate the one-inch-long embryo to change position for another angle shot, the father uttered his greeting, with marked results: the embryo moved actively as if in response! Encouraged by this responsiveness, the parents continued their daily reading and greeting. The mother first could detect fetal movement during week 20. At 25 weeks in the first pregnancy, with the father still sending in his nightly greeting, something totally unexpected occurred: with his face pressed against her abdomen, he called "Hoo-hoo" and then he felt a pressure on his cheek. When he pulled his face away a bulge appeared there on the abdomen! He then pressed his face against the other side of her abdomen and repeated his greeting and the bulge moved to that side! From that night on for fifteen weeks, father and fetus "played tag"!! This happened also in the second pregnancy. With the completion of each pregnancy there came protracted labour with which the dedicated and trained parents were able to persevere for a week. Finally, forceps were used to facilitate delivery and the exhausted newborn was placed on the mother's breast to begin nursing. In both cases at this point the father sounded his greeting and to the utter amazement of the attending doctor each exhausted newborn stopped sucking and turned to search out the source of that familiar sound!! Isolated in unconscious egocentrism? Not purposive? Biologically random? Hardly! Piaget and Macmurray simply did not "see" the beginning of human development on which they based their understanding and theory. Indeed they might have scoffed at Brazelton's reading of early mother-infant interaction (which in the cited case he would surely broaden to parent-mHaat interaction): "The basic principle is mutuality and it begins early." Brazelton's reference noted earlier, to "intrauterine experience with other maternal cues, auditory or kinesthetic" links up with the experience of many mothers who have played music while pregnant hoping to soothe their unborn baby. A cynic might dismiss such action as unsupported and actually just wish-fulfilling for the mother. Let the cynic rage, however, against the National Geographic Society for publishing in its book, *The Incredible Machine* (1986), the following information: "Just six months after a simple cell cleaves in two . . . , [fetuses] do hear sounds, transmitted through the mother's abdominal walls. Fetuses of this age seem to respond to music-they blink their eyes and move, as though dancing to a beat" (Schiefelbein, 1986, p. 39). Verny's report of "the new knowledge" about fetal learning indicates that the Australian obstetrician Albert Liley and colleagues demonstrated in the 1970s that from the twenty-fifth week on a fetus will jump in rhythm to the beat of an orchestra drum (Verny, 1981, p. 39). In the report of the father who called in to his unborn babies there is evidence, not to be lightly dismissed, of two fetuses learning to respond actively to consistent signals from the father. Their postdelivery responsiveness to further reading by their mother and their own "reading" to themselves in a simulated manner would suggest their fetal learning also in connection with the mother's reading "signals." Such fetal learning may seem so rare as to be dismissed as only a fluke or an exaggerated report of proud parents. However, it is also rare to find such consistent parental teaching of unborn babies. Maybe these two rarities are connected? Maybe the common assumption that a

fetus cannot learn is actually a result of fetuses not being taught? If Piaget and Macmurray could be so blind to the competency of newborns, could we also not be blind to the competency of fetuses? If Brazelton et al. have now demonstrated that newborn babies are adept learners, by what logic could we assume that this learning propensity begins only after delivery? We may already have other evidence of fetal learning in response to consistent teaching: if a mother does not typically convey consistent vocal signals to her fetus, she does convey without interruption for about 40 weeks, fairly consistent rhythmic signals through her bodily movement as in breathing, and particularly through her persistent heartbeat. Is it mere coincidence, then, that children of all ages in every culture are responsive to rhythm in hand-clapping and foot-stomping dance? Could this provide evidence of fetal learning, world wide? How was this universal responsiveness to rhythm developed if not in the womb? Even if we do not yet know how the fetus could be learning to respond rhythmically so early, we surely ought to explore the beckoning possibility that our mother's heart was the first drum to which we learned to dance. When our foot taps spontaneously in time with the bass (heart?) beat in music, it might make sense to ask if our body is remembering that early dancing practice. And when we are deeply drawn by music in which two differing beats, one quick and the other slow, are interacting sometimes regularly, sometimes in syncopation, sometimes restfully, sometimes with high excitement, then let us risk the wild speculation that such a rhythmic duet reminds us of our first duet, fetal heart with maternal heart, in our mother's womb. Duet Learning To aid in our exploration of fetal learning and our reconsideration of Piaget's approach a new expression may prove useful: "duet learning." It is beyond dispute that the system(s) of the embryo/fetus and the system(s) of the mother interact with and adapt to each other in a kind of duet: their mutual adjustment and accommodation while both are developing toward complexity and competency may fill us with wonder. Clearly this is interactive learning, at least systemically. At some point or gradually in this progression both fetus and mother develop the competencies required for the interaction after delivery that Brazelton has likened to a swan mating dance. Somehow during gestation there emerges the fetal competency to relate rhythmically. In the case reported, two fetuses learned by 25 weeks after conception how to "play tag" with a consistent signaller. Let us call that learning of a fetus with mother, and in that case with father, "duet learning" and have it carry the implication of learning while being totally involved in dyadic interaction. Given the common assumption that conditions for development in a "good womb" are positive, it may seem fitting to assume that duet learning is a positive experience, and the typical human enjoyment of dance and other rhythmic expression may confirm that. There is now solid evidence from consciousness research that womb experience before the onset of labour can carry such positive overtones that when it is recalled with assistance and reexperienced in adulthood it may be described as blissful, unconditionally nourishing, an experience of cosmic unity and mystical union (Grof, 1985, p. 102). Stanislav Grof is a Czechoslovakian American now based at Esalen Institute in California who has given leadership in consciousness research on a par with Brazelton's leadership in neonatology. Grof's findings based on three decades of careful research involving many hundreds of subjects in Europe and the United States, have led him to adopt a radically new perspective on the development of human learning during gestation and thereafter, lacking which Piaget's and Macmurray's approaches may be deemed to be inadequate. It is impossible to summarize briefly the range of his findings pertinent to the cognitive and affective development of persons. Among them is his incontrovertible demonstration that a fetus undergoing delivery can record its experience in precise detail which may be vividly recalled, felt, and often objectively verified decades later in adult life. But even more important, these delivery experiences may fundamentally influence one's perception of one's later interactions with other persons and with the environment. So fundamental in lifelong personal meaning-making is this learning that Grof refers to four Basic Perinatal Matrices which he has concluded are put in place within the meaning-making system of the emerging person during delivery. The First Perinatal Matrix is laid down, he is convinced, during womb experience before labour begins, which is recallable both as undisturbed and as disturbed intrauterine life; i.e. "good womb" and "bad womb," golden, cosmic unity, on the one hand and unpleasant, "sick," disturbed unity, on the other. The Second Perinatal Matrix is laid down

during the experience of the onset of labour before the cervix opens, which is recallable as "cosmic engulfment" in a "no exit," hellish situation. The Third Perinatal Matrix is constituted, in his view, concurrently with the determined struggle of the fetus and the mother to complete the delivery, with the cervix now open and enormous pressure being applied. This part of the delivery experience is recallable later as a "death-rebirth struggle," in vivid detail and symbolically embellished to be a titanic, volcanic, and often a sadomasochistic exchange. The Fourth Perinatal Matrix corresponds with the actual delivery/separation of the baby from the mother which is recallable as "ego death," "hitting the cosmic bottom," followed by rebirth-liberation into a potentially positive world (Grof, pp. 102-127). The new world may not be positive if the mother is not able to persevere in a positive duet: whether due to bodily weakness or loss of courage and/or lack of support from partner/family or for other reasons, a mother may not be able to carry on sensitively and consistently or at all. Someone else, the father perhaps, may undertake to "mother" the newborn and may sometimes succeed, but what if this does not happen? What effect does a breakdown in positive duet have on the newborn's duet learning? Possibly the effect is to confirm the prior negative duet culminating in "ego death" as the way of surviving, if at all, and linked with this a desperate ambivalence toward duet. All of the meaning matrices that Grof uses to make sense of his perinatal findings emerge in dyadic interaction: the fetal system(s) and the maternal system(s) are in harmony or in disharmony, or they struggle together even to the extremes of "no exit" and "ego death," and they may be reunited after separation. The combined learning deposit seems to be a profound and lifelong sense of one's existence being subject from outside oneself as well as from within to separation, death and rebirth, though this both threatening and promising awareness may be covered up by defences. If all this is learned by the fetus interacting with mother during gestation and delivery, it is surely a striking example of duet learning. But it is not all positive; rather, it is positive and negative in sort of dialectic beginning in early gestation as predominantly positive, then becoming predominantly negative during delivery, even to a loss of duet in "ego death," followed by a potential return to positive duet learning. A baby's potential for learning in duet after delivery is manifest in the findings of Condon and Sander noted, concerning the baby moving in synchrony with mother's vocalizing, and in the already cited findings of Meltzoff and Moore concerning the newborn's capacity to imitate the facial expressions of another person. The still-debated findings of the case Western Reserve University pediatricians, Klaus and Kennell, about maternal-infant bonding early in the reunion period, may be related to this high duet potential (Klaus and Kennell, 1976). Evidence is available, therefore, for what may be called duet learning by the fetus during gestation and delivery long before Piaget and Macmurray considered any interactive learning to be occurring. A suggestion will follow as to how this duet learning may undergird and orient the later cognitive and affective development they studied. But first consider another possibility: there has been an ongoing debate as to whether the human baby is routinely born premature because its burgeoning cranium necessitates delivery before the fetus is fully ready for birth. Again The Incredible Machine (1986) has provided expert testimony: In some ways the human baby is still a fetus. While some other animals can walk at birth, a newborn human cannot even crawl until eight months or so. If we were sheltered in the womb for all the stages of development that other primates are, human pregnancy might last a year and a half. Our brain, so much larger than any other animal's in relation to our size, would make delivery impossible at eighteen months. For human beings to finish gestation outside the womb, carried in their parents' arms, may be regarded as an advantage. Even as newborn fetuses continue their physical development, they learn from the world of sights, sounds, smells, language, and emotion-for the making of a human being is more than just assembling differentiated cells. Our genes issue orders for our brains, but our humanity is the embodiment of concern provided or begrudged, education offered or withheld, love denied or bestowed (Schiefelbein, 1986, p. 53). If human gestation be redefined in this extended way and be considered to encompass the duet learning that is plainly visible in what has heretofore been called infancy, plus the duet learning manifest in Grof's findings about fetal learning during delivery and earlier, plus the earlier duet learning glimpsed through the report of the mother who read to her fetuses and the father who called to them, and

through the universal readiness in infants for rhythm, then four tentative conclusions may be stated: 1. A human fetus participates in duet learning throughout (extended) gestation. 2. The first duet learning early in gestation is profoundly positive; later in gestation duet learning may be negative, with resulting duet ambivalence in the infant. 3. Much of what is learned in positive and in negative duet during (extended) gestation continues to influence personal and interpersonal development throughout life. 4. Positive duet, being the first natural learning habitat of the newly thriving person, is "home." PIAGET RECONSIDERED Consider now how all of this may connect with the approach taken by Piaget. We may note in passing that all of this fits rather well with Macmurray whose central and abiding emphasis was on duet though he did not use that term. In spite of his erroneous assessment of neonatal competency, he assumed an impulse to communicate with another human being as the essential natural endowment of the newborn. The mother-child relation he declared to be the basic form of human existence, and in his view it is because of this "personal mutuality as a 'You' and I with a common life" that the "infant is born a person and not an animal" (Macmurray, 1961, p. 60). Further, "all [the newborn's] subsequent experience, all the habits he forms and the skills he acquires fall within this framework and are fitted to it" (pp. 60-61): i.e., duet learning! Macmurray's agreement could not be more complete; for him "the unit of personal existence is not the individual but two persons in personal relation" (p. 61). The connection with Piaget's approach is problematic. Like Macmurray he emphasized interaction as being fundamental in human learning; he saw the developing infant entering into a kind of duet learning with its environment, making sense of its world through assimilation and accommodation. To quote Robert Kegan, the Harvard educator, "Piaget's principal loyalty was to the ongoing conversation between the individuating organism and the world, a process of adaptation shaped by the tension between the assimilation of new experience to the old 'grammar' and the accommodation of the old grammar to the new experience" (Kegan, 1982, pp. 43-44). Unlike Macmurray, however, Piaget focused on the infant separated from its mother, deprived of its basic interactive learning medium. What is even more striking, in his summative work, *The Psychology of the Child* (1969) there is not a single entry in the index for "mother"; her contribution to the learning and development of her newborn is evidently reduced to responding to "the sucking reflex"; her presence is significant only as "the nipple!" (p. 7). When Piaget concluded that the newborn is as totally egocentric as it is unconscious, apparently he was observing the baby out of duet entirely. In doing this he might be compared to a biologist who set out to study a fish developing but did so while the fish was out of the water, gasping and flopping on the shore. It is even possible that what Piaget saw to be egocentrism and unconsciousness in the newborn were actually symptoms of withdrawal, a defensive reaction for protection from unbearable stress while "out of water" out of duet. If this be true, then what he theorized about was at best the survival and recovery process of an isolated and threatened infant rather than the natural duet learning process of an infant thriving in its appropriate learning medium. One of his students, the Harvard child development researcher, Burton L. White, adopted a similarly insensitive approach in his study of infants. In his widely known manual for parents, *The First Three Years of Life* (1975) he reported, "From 1958 to 1965 I spent many, many hours watching infants in their cribs. I learned a good deal about what they could and could not do" (White, 1975, (p. 2). What did he learn that the newborn in its crib, isolated from its mother like a fish out of water, cannot do? He reported these findings: Few living creatures are as helpless as a newborn babe. At birth, an infant cannot think, use language, socialize with another human, run, walk, or even deliberately move around (p. 12). Perhaps the most obvious quality babies show in the first weeks of life, aside from total dependence, is sleepiness. . . . When he is not asleep, do not be surprised to find a newborn easily irritated (pp. 15-16). For the first few weeks of life the baby is not very interested in any aspect of the external environment (p. 20). All this White saw in the isolated newborn baby! It is difficult to comprehend how a child expert who elsewhere in his book emphasized mothers tending babies in a loving and attentive way, could be so out of touch with fundamental mother-baby interaction. Could the explanation be that he was "blinded" by Piaget? White wrote: According to Piaget, a baby's behavior at birth consists of a rather small number of somewhat clumsy, unfinished, and isolated reflexes. These simple bits of

behavior (rooting and sucking, grasping, occasional glances at nearby objects) are the foundation elements of all later intelligence. In a stunning analysis, documented by detailed reports of the development of his three children, Piaget has described and explained the emergence of problem solving and thinking ability in the first two years of life. But effective action is far beyond the capacity of the baby in Phase I. His reflexes are triggered by external circumstances of which he has no awareness. They operate briefly and mechanically, and, as far as anyone can tell, are in no way deliberately controlled by him (pp. 16-17). Whatever the explanation of White's oversight of the neonate's competency in duet with its mother, it provides striking evidence of how "seeing, we see not." A statement by another child psychologist, Urie Bronfenbrenner, is apropos: "Much of contemporary developmental psychology is "the science of the strange behavior of children in strange situations with strange adults for the briefest possible periods of time" (Bronfenbrenner, 1977, p. 19). Piaget's egocentrism axiom has been queried by other students of human development. In the book *Children's Minds* (1984) by Margaret Donaldson, a developmental psychologist who once worked with Piaget, a book described on its back cover by Jerome Bruner as "one of the most powerful, most wisely balanced and best informed book on the development of the child's mind to have appeared in 20 years," there is a careful examination of the ability to "decenter" in infants and children. Donaldson stated: It has been claimed that children under the age of six or seven are very bad at communicating, precisely for the reason that they are bad at decentering-or that they are highly 'egocentric'. This claim has been made most forcibly by Jean Piaget, and it has been backed by much supporting evidence. He has made it central to his theorizing about the capacities of children in the preschool and early school years. He has constructed such a farreaching and closely woven net of argument, binding together so many different features of the development of behavior, that it is hard to believe that he could be wrong. Yet there is now powerful evidence that in this respect he is wrong (Donaldson, 1984, pages 18-19). The evidence presented in Donaldson's book does not pertain to womb or birth learning but rather to the actual studies reported by Piaget et al. She is convinced that many of the findings would have been interpreted differently if the researchers) had had greater empathy for the children observed. In particular, she noted that the researchers) failed to take into account how the children were affected by the researchers) in formulating their responses. Though she did not use the term duet, she suggested that the children were actually more interactive with the researcher than was recognized. With reference to the evidence offered she made this highly significant statement: Many workers who have closely observed the interaction of mothers and young babies are now convinced that the impression of personal response from a baby is by no means illusory and that communicative strivings begin within the first few months of life. Thus Jerome Bruner presents evidence which supports the view that adult and infant can very soon come to a sharing of attention and a communication of intention, and he takes this early "mutuality" to be the essential starting point for the learning of language (see 'The ontogenesis of speech acts'). Kindred findings and arguments come from Colwyn Trevarthen who claims that evidence from films of more than 100 exchanges between mothers and their infants of two or three months of age forces us to conclude that a complex form of mutual understanding develops even at this age. Trevarthen believes that this kind of early interpersonal responsiveness is the source from which the whole of human intelligence springs (p. 29, italics added). It appears that Piaget's conception of human development, in which egocentrism and decentering loom large, was governed by a circular model at the centre of which is the person gradually emerging into interaction but seeking also to retain a centre of control. It is becoming evident, however, that human existence from the start does not have one centre; indeed, to use a circle as a model is to distort one's understanding of how development proceeds. Human existence might instead be linked with an ellipse, i.e., a closed curve in which the distances of any point from two points called the foci have always the same sum. We have seen that fetal and neonatal development, being duet, has two foci, mother and baby: one could call it duocentric. In presupposing egocentric rather than duocentric development as basic in the child, Piaget could not begin to understand correctly the child's cognitive and affective development. By observing a child outside of its natural duet learning habitat, as he did, he was bound to get a distorted picture of what

learning is possible: e.g., suppose one set out to study a child's propensity to dance but without any rhythmic partner; or to study a child's interest in playing tag with father or mother but without a playmate; or to observe a newborn's curiosity but without a mother or father to learn with. Ironically, if it be true that humans are indigenous in duet because of their womb and birth learning it was not possible for Piaget to study a child's cognitive and affective development uninfluenced by duet because where duet was not allowed, duet deprivation was suffered. Furthermore, according to Grof's findings a person carries within one's psyche, perinatal memories of dyadic interaction, some of which may be painfully negative. If a child's memories produce duet resistance, i.e., a self-defensive tendency to avoid closeness in interaction, then this resistance is bound to haunt the child's approach to anyone or anything outside oneself and it will haunt one's learning accordingly. Specifically, it will bring about a tension between one's cognitive and one's affective development. To proceed, as Piaget did, to study the origins of cognitive development alongside of affective development as though prior interactive learning had not introduced a dynamic tension between them was surely to miss studying child development in its actuality. This is not to say that all of the conclusions reached by this widely respected researcher are invalid but it must be asked how much his findings about later cognitive development were dependent upon his conclusions about how development begins. Psychotherapist Peter Lomas in *True and False Experience* (1973) saw Piaget as insisting that "the essence of the operations of the intelligence is the achievement of knowledge which is independent of the ego." Lomas observed further: The impersonal approach is, in his [Piaget's] view, more correct, more mature than the personal; it is also more detached, being once removed from the original experience ... a view which idealizes a stereotype of mature functioning: calm, omniscient, unemotional detachment in contrast to the frantic and impulsive desires of the child; and the kind of adult it depicts has an obsessional character (albeit one that is as acceptable as normal in our society): he has sacrificed his passionate commitment to spontaneous living (Lomas, 1973, p. 33). It would appear from this observation that the discounting of interpersonal duet at the beginning of child development in Piaget's theorizing was matched by a discounting of interpersonal duet in adult life as well. Of course this impression is derived from only one assessment and other assessments must be sought. Yet a question emerges: was Piaget himself, from his own infancy, caught in duet ambivalence? It is striking to note how within his studies there is both a clear neglect or avoidance of mother-child interaction and at the same time there is a strong insistence on equilibration between learner and environment. It is manifest that the foregoing inquiry and analysis are only the beginning of a much larger probe into educational assumptions and practices widely accepted as orthodox. To follow through on what has only been started, there is much to be added to set duet learning and duocentric development into a lifelong developmental perspective. In particular, there needs to be a clarification of the rightful place of "solo learning" both within duocentric development and sometimes in creative tension with it (the "duet-solo dialectic)." Also there needs to be an examination of how a child's duet partner may become one's father as well as one's mother, and later, a sibling (a twin!), a playmate, real or imaginary, a teacher. The prominence in one's later development of a lover, a partner, and a mentor might also be linked with duocentric development. There is also to be explored the intriguing connection between this reconsideration of Piaget's approach and Carol Gilligan's reconsideration of Lawrence Kohlberg's Piagetian approach to moral reasoning development, cf. *In a Different Voice* (1982). Another beckoning connection to be examined is with the work of Reuven Feuerstein on the importance of early learning being mediated by a parent or teacher for optimal cognitive development (Feuerstein, Rand, Hoffman, & Miller, 1980). A CALL TO POSITIVE DUET? It has been said that Piaget's conclusions make sense in this culture where competitive individualism linked with obsessive control is becoming a way of life (Robinson, 1983, pp. 8-9). His findings inform much of the practice in North American schooling. Does this concurrence with Piaget manifest that we and our children are caught destructively in the grip of duet ambivalence? It is not easy to hear this massive question. If such be our predicament, is there any prospect for our children other than downward spiralling dehumanization? There may not be, because downward spirals, as in tailspins and whirlpools, are notoriously powerful. But a homing instinct

has another kind of power, and we humans may have a homing instinct for the positive duet in which we first came into being. Martin Buber, the widely recognized philosopher and educator, would probably agree. He taught that humans essentially seek to be completed in dialogue: Man wishes to be confirmed in his being by man, and wishes to have a presence in the being of the other ... secretly and bashfully he watches for a Yes which allows him to be and which can come to him only from one human person to another (Buber, 1965, p. 71). On a larger scale, James Luther Adams, the widely recognized social ethicist and educator, has envisaged persons being fulfilled in mutuality in community (that is, in manifold positive duet): Just as mutuality is a prerequisite to existence, so also will nature and history vindicate decision and action for community. The divine element in reality not only demands, it also supports mutuality.... The possibility for increasing community is not merely an ideal; it is rooted in human nature and in the resources upon which man can draw (Adams, n.d., pp. 23-24). A stubborn struggle between competitive individualism linked with obsessive control and what may be a homing instinct for positive duet (and thus for mutual community interaction) may be seen right in our midst. Some observers see its disruptive and creative presence in sexual behavior and family life, in educational, medical and religious institutions, in politics and economics. So pervasive is the struggle that one can even speak of a possible paradigm shift toward interdependence and mutuality: consider the possible transformation envisaged by Marilyn Ferguson in *The Aquarian Conspiracy* (1980), Elizabeth Dodson Gray in *Green Paradise Lost* (1981), Fritjof Capra in *The Turning Point* (1982), Stanislav Grof in *Beyond the Brain* (1985), and others. How will the struggle turn out? Who can tell? Who can assess the power of a homing instinct for positive duetedness when pitted against the widespread resistance to mutual involvement? If we come to realize generally the duet learning potential of the embryo/fetus/neonate, will there follow a corresponding enlightenment in our understanding and nurturing of human development and well-being? There are already promising currents of change in North American child-bearing attitudes and practices but they are still exceptional. Schooling attitudes and practices would be a big obstacle, with their traditional and emotional investment in the "original sin" of student egocentrism and in salvation by competitive solo achievement.* It surely does appear to be a long shot. But a homing instinct for positive duet as "original grace" is also an almost unbelievable possibility that just may be true. And the day may come when our children, far more than their parents, will break out of the downward spiral and turn instead towards "home." Footnote * Some exceptional teachers have long been committed to duet learning and duocentric development in practice if not in theory. This paper may serve to encourage their vital efforts. Many implications for changing schooling attitudes and practices remain to be explored. Pertinent reflections and suggestions have been expressed earlier by the author in two papers, "The teacher as midwife" (1985) to be published in *The Journal of Curriculum Theorizing*, and "Mutuality education" (1987). References REFERENCES Adams, J. L. (n.d.). On being human-the liberal way. American Unitarian Association Booklet #359. Brazelton, T. B., (1976). Comment. In M. H. Klaus and J. H. Kennell (Eds.) *Maternal-infant bonding*. Saint Louis: Mosby. Brazelton, T. B. (1985). Introduction. In Millicent Washburn Shinn *The biography of a baby*. Reading, Mass.: Addison-Wesley. Brazelton, T. B. et al. (1975). Early mother-infant reciprocity. Parent-infant interaction. Ciba Foundation Symposium 33 (new series). Amsterdam: Associated Scientific Publishers. References Bronfenbrenner, U. (1977, July). Toward an experimental ecology of human development. *American Psychologist*, 32:7. Buber, M. (1965). *The knowledge of man*. New York: Harper and Row. Capra, F. (1982). *The turning point- Science, society and the rising culture*. New York: Bantam Books. Condon, W. S. & Sander, L. W. (1974). Neonate movement synchronized with adult speech. *Science*, 183, 99-101. Dodson Gray, E. (1981). *Green paradise lost* Wellesley, Mass.: Roundtable press. Donaldson, M. (1984). *Children's minds*. London: Fontana Books, Flamingo Edition. Ferguson, M. (1980). *The Aquarian conspiracy: Personal and social transformation in the 1980s*. Los Angeles: Tarcher. Feuerstein, R., Rand, Y., Hoffman, M., Miller, R. (1980). *Instrumental enrichment*. Baltimore: University Park Press. Freeman, M. (1985). *The teacher as midwife*. Unpublished paper. Revision of paper presented at the Moral/Values Education Conference, Ontario Institute for Studies in Education, Toronto, 1983. Freeman, M.

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