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## Five Kinds of Self-knowledge

*define different selves.*

### Introduction

Considered as a unitary object, the self is full of apparent contradictions. It is simultaneously physical and mental, public and private, directly perceived and incorrectly imagined, universal and culture-specific. Although there is nothing with which we are more familiar, we are often enjoined to know ourselves better than we do. One way to clarify this puzzle may be to consider what makes it possible for individuals to know themselves at all, i.e. to analyse the information on which self-knowledge is ultimately based.<sup>1</sup> The analysis to be presented here distinguishes among several kinds of self-specifying information, each establishing a different aspect of the self. These aspects are so distinct that they are essentially different selves: they differ in their origins and developmental histories, in what we know about them, in the pathologies to which they are subject, and in the manner in which they contribute to human social experience. Here, in capsule form, is the list:

) In what  
these selves  
differ? (1)

<sup>1</sup>The term 'information' is currently used by cognitive psychologists in two rather different ways. In J. J. Gibson's (1966, 1979) ecological theory of perception, information exists objectively, specifies the properties of objects and events by virtue of physical principles, and is 'picked up' by perceivers. In conventional theories of thinking and memory, information is thought of as stored in the brain and subject to such mental operations as 'recording' and 'retrieval' (see also footnote 13 below). Because the self is an object of thought as well as of perception, I will draw on both traditions in this paper.

The *ecological self* is the self as perceived with respect to the physical environment: 'I am the person here in this place, engaged in this particular activity.'

The *interpersonal self*, which appears from earliest infancy just as the ecological self does, is specified by species-specific signals of emotional rapport and communication: I am the person who is engaged, here, in this particular human interchange.

The *extended self* is based primarily on our personal memories and anticipations: I am the person who had certain specific experiences, who regularly engages in certain specific and familiar routines.

The *private self* appears when children first notice that some of their experiences are not directly shared with other people: I am, in principle, the only person who can feel this unique and particular pain.

The *conceptual self* or 'self-concept' draws its meaning from the network of assumptions and theories in which it is embedded, just as all other concepts do. Some of those theories concern social roles (husband, professor, American), some postulate more or less hypothetical internal entities (the soul, the unconscious mind, mental energy, the brain, the liver), and some establish socially significant dimensions of difference (intelligence, attractiveness, wealth). There is a remarkable variety in what people believe about themselves, and not all of it is true.

These several 'selves' are not generally expe-

*Why all these selves are not experienced as distinct.*

rienced as separate and distinct, because there is stimulus information to specify their cohesion. (For example I can usually see that it is I, here, who am engaging in a particular social interaction.) In cases where such information is less salient, the unity of the self is correspondingly weakened. But unified or not, all five 'selves' are of fundamental importance. They all begin early in life, though not all at the same point or in the same way. They all exhibit some degree of continuity over time, and so each contribute to the universal experience of the continuity of self. They are all *experienced*, though perhaps not all with the same quality of consciousness. And they are all *valued*: people go to great lengths not only to save their lives but to preserve the personal relationships that establish their identities, to defend their interpretations of the past and their plans for the future, to keep inviolate the secret places of their minds, and to maintain the integrity of the culturally-defined self that they have adopted.

My analysis of the self will focus more on what we know and how we know it than on what we do and how we do it. Overt action is indivisible, or at least it only occasionally divides along the lines proposed here. I do not intend to suggest, for example, that some deeds are the responsibility of the ecological self and others of the conceptual self. The information on which a given action is based may be more or less weighted by what is known ecologically or interpersonally, publicly or privately, from personal memory or by acceptance of social norms; nevertheless it is the whole individual who acts in the real environment. This very fact provides further information for the coherence of the several 'selves,' or at least for those that are based on perceptual information.

### The Ecological Self

A continuous flow of optical information anchors the visual system to its immediate environment. Any station point (i.e. any possible

point of observation by an eye) in any illuminated environment can be thought of as surrounded by a 360° shell of optical structure—a structure that depends on the position of the point of observation and on the layout from which the light was reflected. This 'optic array' undergoes systematic changes as the point of observation moves through the environment. Under ordinary circumstances,<sup>2</sup> the resulting structure-over-time is unique to the particular layout of the immediate environment and to the actual path of the point of observation: it specifies the real situation that gives rise to it. The visual systems of animals have evolved to take advantage of this omnipresent veridical information.

Every movement of the point of observation produces a systematic flow pattern in the visual field. This flow is the basis of what J. J. Gibson called 'visual kinesthesia'—an optically produced awareness of one's own movement and posture (Gibson, 1979, p. 182). The simplest case occurs when an observer, looking straight ahead, walks toward an extended surface like a wall. Under these conditions every bit of optical texture flows outward from a single central point, and that focus of expansion is exactly the point toward which the observer is moving. This makes it possible, literally, for people to see where they are going.<sup>3</sup> Another important type of optical flow occurs when the observer moves parallel to an extended surface. The 'streaming' of texture elements that occurs under these conditions is a particularly effective source of infor-

<sup>2</sup>In this context, 'ordinary circumstances' refers to the conditions that prevailed during the evolution of the human visual system. Recent technologies such as film, television, and holography now make it possible to create optic arrays in the absence of the environments that they apparently specify.

<sup>3</sup>The analysis becomes rather more complicated if the environment is cluttered with objects and/or the observer is not looking forward (Regan & Beverley, 1982). Nevertheless, the wealth of egomovement-specifying information available in normally occurring patterns of optical flow cannot be disputed (Cutting, 1986).

(2) What does *it mean*  
.. ? Explain your  
understanding.

(3) In what ways are these

mation, and can give rise to the experience of motion even in the absence of the corresponding central expansion pattern. (This is the basis of the illusion of egomotion often experienced in a stationary train or car when a neighbouring vehicle begins to move.) In normal movement, of course, the appropriate flow patterns occur everywhere in the visual field at once: they specify the position and movement of the entity I am calling the ecological self.<sup>4</sup>

The 'moving room' technique devised by David Lee and his associates (e.g. Lee & Lishman, 1975) makes it possible to present optical flow without any real motion of the individual. Although the subject is standing on the solid floor of the laboratory, s/he is surrounded by the walls of a small open-floored cubicle that hangs from the ceiling (or rides on rollers, as in Stroffregen, 1985) and is thus independently movable. Small children standing in this room can be 'knocked down' simply by moving the walls a short distance; their ability to remain upright depends on how long it has been since they first learned to stand (Butterworth & Cicchetti, 1978). Adults will sway a little, and fall if they are not securely balanced. What happens is that the optical flow created by moving the walls forward (for instance) specifies to the subjects that they themselves are swaying backwards; the muscular readjustments undertaken to compensate for this apparent sway cause them to fall.

The rapid radial expansion pattern produced by approach to a surface is called 'looming'. Although this pattern by itself does not distinguish movement of the observer from movement of the object, other information (the presence or absence of peripheral flow, the occlusion produced by the edge of the moving object) usually eliminates any ambiguity. In either case, looming specifies an imminent colli-

sion between the point of observation and the surface. Even very young infants apparently pick up this information: they blink, move their heads back, and generally behave as if they saw what was coming. But the looming expansion pattern does not merely suggest that a collision is coming sometime soon: it specifies the exact moment at which the impact will occur. David Lee (1980) has shown that the instantaneous value of the parameter *tau* (defined by the inverse of the rate of optical expansion) is a precise measure of the time remaining until the distance between the eye and the surface is reduced to zero. Of course, this principle applies only if there is no acceleration or deceleration; it will not hold if the owner of the eye slows down or moves out of the way. Both people and animals apparently use *tau* in the control of movement.

One surprising bit of evidence for the importance of optical flow for the ecological self comes from a phenomenon investigated by Flavell, Shipstead & Croft (1980). The phenomenon is amusing in its own right and has often been described: young children cover their eyes with their hands and say "You can't see me!" Prior to the work of Flavell *et al.* (1980), this behavior was typically interpreted in Piagetian terms: since the child cannot see anything, s/he assumes that you can't see anything either. Indeed, when these experimenters asked their eyes-covered subjects "Can I see you?", most 2- and 3-year-olds answered No. Surprisingly, however, the same subjects answered Yes to many other questions about what the experimenter could see. "Can I see Snoopy (a doll located nearby)??" Yes. "Can I see your leg?" Yes. "Can I see your head?" Yes. These results show that "You can't see me" does not reflect any egocentric misapprehension about other people's seeing; rather, it is a clue to the speaker's own conception of self. The child's 'me'—the entity to which the adult's question "Can I see you?" refers—is evidently somewhat near the eyes. To be sure, that localisation is not precise:

<sup>4</sup>George Butterworth (in press) has independently suggested that the optic flow field is an important determinant of the infant's emerging sense of self.

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Flavell *et al.* got mixed results when they had their subjects cover only one eye, or stand behind a barrier with a hole in it so that nothing but an eye was visible. Nevertheless the implication seems clear: children locate the self at the point of observation, as specified by the optical flow field.<sup>5</sup>

Important as it is, optical flow is by no means the only determinant of the ecological self. The self is an embodied actor as well as an observer; it initiates movements, perceives their consequences, and takes pleasure in its own effectiveness. Infants love to look at their own hands in action, and they can distinguish their own moving legs, seen in real time on a TV screen, from the moving legs of another baby (Bahrick & Watson, 1985). Many theorists have noted the importance of agency in establishing a sense of self. I can cause changes in the immediately perceptible environment, and those objects whose movements and changes I can inevitably and consistently control are parts of *me*. This kind of self-perception is precisely time-dependent and richly intermodal: I can see and feel what I do: the optical and kinesthetically-given structures that specify the consequences of movement are exactly synchronous, and both coincide with the efferent activity by which the action itself is produced. In general, then, the two principal aspects of the ecological self are defined by two distinguishable kinds of information. The existence of a perceiving entity at a particular location in the environment is most clearly specified by the optical flow field (though touch and hearing also contribute); the existence of a bounded, articulated and controllable body is specified not only by what we can

see of it but by what we feel and what we can do.<sup>6</sup>

The ecological self does not always coincide with the biological body. In particular, anything that moves with the body tends to be perceived as part of the self—especially if its movements are self-produced. This principle applies most obviously to the clothes we wear. It is *I* who kick the soccer ball, though in fact its only contact is with my shoe; when you touch my shoulder you are touching *me*, even when a shirt and a jacket interpose between your fingers and my skin. These experiences have nothing to do with my ownership of the clothes. The same jacket is not part of my ecological self when it hangs in my closet, or when I am carrying it home from the cleaners; to touch it in such cases is not to touch *me* at all. What matters is not possession or contact but agency and co-ordinated movement. The same principle explains why the practised wearer of an artificial limb so naturally perceives it as a part of the self. Such wearers have not mistakenly come to believe that the limbs are flesh-and-blood parts of their bodies. On the contrary, their perceptions are exactly correct: to the extent that the motion of a limb is responsive to one's intentions and is co-ordinated with movements of the point of observation, it belongs to the ecological self.

Any controllable object that moves together with the point of observation can become part of the ecological self. This principle even applies to automobiles—that's why we say "he ran into me" when we mean "he ran into my car." As in the case of clothing, such uses of the first person do not depend on ownership. I am just as likely to use 'me' when I have been driving a

<sup>5</sup> Selma Fraiberg (1977) reports that congenitally blind children are slow to develop an adequate sense of self; for example, they master the pronouns 'I' and 'you' much later than sighted children do. As E. G. Gibson (1976) has pointed out, this is to be expected if optical structure is an important source of self-specification.

<sup>6</sup> Passive bodily experiences such as pain are often mentioned in discussions of the self, but they contribute very little to the ecological self as defined here. Pain can disrupt everything we do, but it does not specify much about us unless we reflect upon it—an activity which belongs with the private or the conceptual self rather than with the self as perceived.

④ Why is self an embodied actor as well as an observer?

⑤ What is the difference between ecological & biological self?

# the self: ourselves as embedded in the environment.

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Self

rented vehicle, and I would not use it about my own car if the collision occurred while a friend was at the wheel. The important point is not whether the car was mine but whether the two of us were moving together as an ecological unit when the crash occurred. This tendency is a special case of the principle that the Gestalt psychologists called 'common fate': objects that move together are perceived as belonging to a single coherent unit. (The collision example actually illustrates this principle in two different ways: "He ran into me" treats the *other* car and its driver as a unit too.) Kellman & Spelke (1983) have recently shown that common fate governs object perception even in early infancy; I am here suggesting that it governs self-perception as well.

The last 10 years have seen great advances in the study of infant perception (see Gibson & Spelke, 1983, for a review). Certainly by 3 months of age (and probably from birth), the infant perceives much the same sort of world that we do: a world of distinct, solid, and permanent objects of which she herself (or he himself) is one. The information that specifies the ecological self is omnipresent, and babies are not slow to pick it up. They respond to looming and optical flow from a very early age, discriminate among objects, and easily distinguish the immediate consequences of their own actions from events of other kinds. The old hypothesis that a young infant cannot tell the difference between itself and the environment, or between itself and its mother, can be decisively rejected. The ecological self is present from the first.<sup>7</sup> Indeed, it is not only present but *accurate*: except in rare pathological cases (pathologies of the ecological self include the 'phantom limbs' of amputees and the 'neglect' syndrome that

appears in some cases of brain damage), immediate perception of the self is more or less veridical at all ages. Although ecological self-perception certainly becomes more complete and more precise with development, it is almost never grossly in error.<sup>8</sup>

Of course, we do not perceive only the self: as J. J. Gibson (1979) put it, all perceiving involves co-perception of self and environment. Optical looming, for example, specifies an objective relationship (impending collision) between the two. What we perceive is ourselves as *embedded in* the environment, and acting with respect to it. Moreover, the distinction between perception and action can be made only at the level of theoretical analysis; in ordinary behavior they are inseparably fused. Except in special cases, we do not first perceive and only then proceed to move. We perceive *as* we act and *that* we act; often, our own actions constitute the very characteristics of the ecological self that we are simultaneously perceiving.

In summary, here are some of the characteristics of the ecological self:

The self, like the environment, exists objectively; many of its characteristics are specified by objectively-existing information. That information allows us to perceive not only the location of the ecological self but also the nature of its ongoing interaction with the environment.

Much of the relevant information is kinetic, consisting of structure over time. Optical structure is particularly important, but self-specifying information is often available to several perceptual modalities at once.

<sup>7</sup>The fact that children do not recognise themselves in the mirror till about 2 years old has often been taken to mean that they have no sense of self until that time (Lewis & Brooks-Gunn, 1984). In my view, however, what they achieve at 2 years is just an understanding of the optics of mirrors (Loveland, 1986); the self is present much earlier.

<sup>8</sup>The *conceptual* self usually includes (among other things) a representation of one's own body. These 'body-images' comprise an important subset of what we believe about ourselves, but they should not be confused with the ecological self. They are not based on perceptual information alone; partly for that reason, they can be quite inaccurate.

# 6 What is the interpersonal Self?

*How is it specified?*

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The ecological self is veridically perceived from earliest infancy; nevertheless self-perception develops and can become more adequate with increasing age and skill.

Are we conscious of our ecological selves? To answer this question in the negative would be to claim that ecological self-perception was phenomenally 'silent'. I believe, on the contrary, that it is often accompanied by a definite—and often powerful—kind of awareness.<sup>9</sup> This is presumably true not only of adults but of infants; indeed, of all animals whose perceptual systems pick up self-specifying information. Nevertheless, awareness of this kind is not what we would ordinarily call 'self-consciousness'. The ecological self *per se* is not an object of thought; very young infants have no internal self-representations to be conscious of or to think about. Such representations appear only in the extended, private, and conceptual selves. The ecological self, in contrast, is directly perceived. **NO.**

Ture, direction, timing, and intensity of one person's actions mesh appropriately with the nature/direction/timing/intensity of the other's, they have jointly created an instance of what is often called *intersubjectivity*. The mutuality of their behaviour exists in fact and can be perceived by outside observers; more importantly, it is perceived by the participants themselves. Each of them can see (and hear, and perhaps feel) the appropriately interactive responses of the other. Those responses, in relation to one's own perceived activity, specify the interpersonal self.

What defines the responses of the other person as appropriate to our own? The underlying principles here are not those of ecological optics (Gibson, 1979); that is, they do not depend simply on the way that light is reflected to (moving) points of observation. Rather, they are species-specific. We take the expressions and gestures and vocalisations of other people as evidence of an ongoing intersubjectivity because, being human, we are genetically equipped to do so just as they are. We are not the only ones, of course: non-human animals also respond to their conspecifics. As Darwin put it, "When two young dogs in play are growling and biting each other's faces and legs, it is obvious that they understand each other's gestures and manners" (1904, p. 60). The communicative gestures of other species may resemble our own, but only to the extent that we are evolutionary kin.

Darwin's use of the term 'understand' in this context should not be misunderstood. He does not claim (or at least I do not claim) that puppies have an *intellectual* understanding of each other's behavior; their interactions do not necessarily involve a conceptual self or a conceptual other. What is going on between them is sometimes called 'non-verbal communication', but even that term can be misleading; it tends to suggest that each participant is somehow telling the other about his/her own mental states. If that were true, the achievement of intersubjectivity would depend on the accuracy with

## The Interpersonal Self

The interpersonal self is the self as engaged in immediate unreflective social interaction with another person. Like the ecological self, it can be directly perceived on the basis of objectively existing information. Again like the ecological self, most of the relevant information is essentially kinetic, i.e. consists of structures over time. In this case, however, the information—and the state of affairs that it specifies—come into existence only when two (or more) people are engaged in personal interaction. If the na-

<sup>9</sup>An account of the circumstances under which we are (or are not) explicitly conscious of what we perceive is beyond the scope of this paper. It is certain, however, that such consciousness is not primarily based on the use of language; everyone sees much more than they can possibly describe in words.

which we attribute thoughts and feelings to other people. While we do sometimes attempt such attributions in adult life, they can hardly be the basis of the smooth and immediate interpersonal co-ordination I am considering here.

The claim that intersubjectivity is based on direct perception rather than inference is most strongly supported by recent studies of infancy, especially of the interactions between infants and their mothers. These studies show that a very rich form of intersubjectivity is typically in place by the time the infant is 2 months old. Here is Colwyn Trevarthen's account:

*In the second month infants become more precisely alert to the human voice and they exhibit subtle responses in expression to the flow of maternal speech. They are frequently content to engage in expressive exchanges for many minutes on end by means of sight and sounds alone . . . Definite eye contact is sought by most infants about 6 weeks after full term birth. Once this orientation is achieved, and in response to a complex array of maternal expressive signals, many 4- to 6-week-olds smile and coo . . .*

*Mothers align their faces with the baby, adjusting position to the least distance of clear vision for an adult, and making modulated vertical and horizontal head rotations. Their faces are exaggeratedly mobile in every feature and these movements are synchronized with gentle but rhythmically accentuated vocalizations. All this behavior responds to the infant's evident awareness and acts to draw out signs of interest and pleasure. The infants show intent interest with fixed gaze, knit brows and slightly pursed lips or relaxed jaw, and immobility of the limbs. They exhibit an affectionate pleasure, closely linked to fixation on the mother's face and responsive to her expression, with smiles of varied intensity, coos, and hand movements . . . When the mother makes her face immobile the baby ceases smiling and may exhibit distress with grimaces, pouting, wringing of the hands,*

*large forceful gestures with fisted hands, and gaze avoidance. [Trevarthen, 1983, p. 139]*

These interactions illustrate what Trevarthen has called 'primary intersubjectivity'. The participants respond to each other immediately and coherently, in both action and feeling; their reciprocal activities are closely co-ordinated in time. The result is a shared structure of action —a structure that both of the participants enjoy, and that neither of them could have produced alone. Indeed, the contributions of the individual partners would be useless and foolish if they occurred by themselves. An elegant experiment by Lynne Murray (Murray & Trevarthen, 1985) demonstrates this point. Mothers and their 6 to 12 week-old babies, actually in separate rooms, interacted via double closed-circuit television. Each partner saw and heard a full-face, life-size video image of the other, with appropriate eye contact being made. As long as the video presentation was 'live', this system allowed interaction to proceed normally: the babies looked intently at their mothers with open and relaxed mouth, slightly raised eyebrows, and other signs of interest. The first minute of live interaction comprised the control condition. It was recorded on videotape; the tape of the mother was then rewound and immediately replayed on the infant's screen. This second (replay) minute comprised the experimental condition. Although what the infants saw and heard was identically the same in both conditions—the same mother, the same gestures, the same displays of affection—their responses were dramatically different. In the experimental condition, the babies who had been happy a minute ago now exhibited signs of distress: they turned away from the mother's image, frowned, grimaced, and fingered their clothing.<sup>10</sup> (A final control presentation ensured that they had not sim-

<sup>10</sup>If the procedure is reversed so that what the mother sees is only a replayed videotape of the baby, she too notices that something is wrong; she may wonder if she has unintentionally done something to disturb the relationship.

## 7. What is intersubjectivity?

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ply become tired of the situation itself.) The subjects' distress during the replay was evidently produced by some kind of mismatch between their mothers' responses and their own.

Murray's study shows that infants in normal face-to-face interactions are not just picking up information about their partners; they actually perceive the ongoing intersubjective relationship. J. J. Gibson's (1979) principle that all perceiving involves co-perception of environment and self applies also to the social environment and to the interpersonal self, i.e. the self that is established in these interactions. Just as the ecological self is specified by the orientation and flow of optical texture, so the interpersonal self is specified by the orientation and flow of the other individual's expressive gestures; just as the ecological self is articulated and confirmed by the effects of our own physical actions, so the interpersonal self is developed and confirmed by the effects of our own expressive gestures on our partner.

The stimulus basis of these interactions is still poorly understood. Murray's experiment does not imply that 2-month-old infants are exquisitely sensitive to variations in timing; for all we know at present, their distress in the experimental condition may have resulted simply from an inability to maintain eye contact. We do know, however, that the range of social responses available to babies increases dramatically during the first year. This development elicits a corresponding increase in the sophistication of the social behavior of their partners, so that very rich forms of intersubjectivity become possible. Consider, for example, the phenomenon that Daniel Stern calls *affect attunement*:

A 9-month-old girl becomes very excited about a toy and reaches for it. As she grabs it, she lets out an exuberant 'aaaah!' and looks at her mother. Her mother looks back, scrunches up her shoulders, and performs a terrific shimmy with her upper body, like a go-go dancer. The shimmy lasts only about as long

as her daughter's 'aaaah!' but is equally excited, joyful, and intense . . .

An 8½-month-old boy reaches for a toy just beyond reach. Silently he stretches toward it, leaning and extending arms and fingers out fully. Still short of the toy, he tenses his body to squeeze out the extra inch he needs to reach it. At the moment, his mother says "uuuuuh . . . uuuuuuh!" with a crescendo of vocal effort, the expiration of air pushing against her tensed torso. The mother's accelerating vocal-respiratory effort matches the infant's accelerating physical effort. [1985, p. 140]

These examples (Stern gives many others) show again that intersubjectivity is an emotional business: the two partners are obviously sharing an affect. Nevertheless, the ordinary vocabulary of the emotions is not adequate to describe what is going on. It is not just that both are 'happy' or 'excited', but that the mother is precisely matching the pattern and temporal contour of the infant's activity with her own. Such 'vitality affects' (Stern, 1985) are specified by information in several sensory modalities: in visible movement, in the emphasis and modulation of the voice, in bodily contact. Their specification is so rich that they are readily perceived and shared, not only between mothers and infants but between any two individuals in social contact. The resulting experience is an immediate awareness of both the other person and the (interpersonal) self, as well as of the specific present relationship between them.

There is nothing inferential about this kind of interpersonal understanding, at least in its basic form. The information that specifies vitality affects is directly available in the optic array (and in the acoustic and haptic arrays), and anybody with the right kind of perceptual system can pick it up. As Solomon Asch noted a generation ago, ". . . the organised properties of experience are structurally similar to those of the corresponding actions . . . the emotion of joy and

the expressions of joy have identical characteristics . . . formally the same qualities are present in the experience and movements of tension, hesitation, and daring" (1952, p. 158). That is why even very young infants can perceive and respond appropriately to the affective gestures of other people.<sup>11</sup> The interpersonal self begins just as early as the ecological self; both are based on perceptually available information.

The close parallels between ecological and interpersonal self-perception should not be allowed to obscure certain important differences. The successful achievement of intersubjectivity depends not only on the operation of the perceptual and motor systems but on some additional, specifically human mechanism that permits us to relate to members of our own species. The mechanism can fail, and it has often been suggested that the dramatic condition called *infantile autism*, characterised from the outset by a total lack of interest in relationships with people, results from just such a failure. Leo Kanner made this point explicitly in the paper that established autism as a diagnostic category: "We must, then, assume that these children have come into the world with innate inability to form the usual, biologically provided affective contact with people, just as other children come into the world with innate physical or intellectual handicaps" (1943, p. 250). Murray (1984) has recently presented a similar argument, and suggested that the effects observed in her double closed-circuit television paradigm may provide useful models for autism research.<sup>12</sup>

## 7.

<sup>11</sup>The fact that even newborn infants can apparently imitate facial expressions (Meltzoff & Moore, 1983) provides further support for this view.

<sup>12</sup>I do not mean to suggest that every infant who fails to exhibit affect attunement will necessarily become autistic. In a follow-up study of 50 children who had originally been diagnosed (at a median age of 18 months) as suffering from Kanner's 'extreme aloneness', Knobloch & Pasamanick (1975) found that three-fourths of them had lost their autistic symptoms a few years later.

Both ecological and interpersonal perception are soon supplemented by other forms of cognition. In the ecological case, we learn to make inferences about the environment that go beyond what we can see: for example, that the faucet on the sink is not just a protuberance we can grasp but a source of hot water as well. In the interpersonal case, we learn that people are not just participants in our interactions but have beliefs, intentions, and feelings of their own. Young children acquire what is nowadays called a 'theory of mind' (Wellman, 1985; Leslie, 1987) roughly between the ages of 2 and 4 years. They begin to attribute mental states to other individuals: partly on the basis of what they have been told; partly by analogy with their own private experience, and perhaps partly by more detached consideration of the information available in personal interaction. Sometimes, the beliefs and emotions thus attributed to other people concern ourselves. But despite the claims of George Herbert (1934) and others, such inferences are certainly not the primary basis of self-knowledge. Their effect is not on the self as a whole but primarily on the conceptual self, and even there it is modulated by other sources of information.

Elaborating the interpersonal self (and the 'interpersonal other') in this way is necessarily risky. Inference can go astray, not only through our own lack of skill but also because our partner may be deliberately presenting an inauthentic image (Goffman, 1959). In contrast, the *perception* of ongoing intersubjectivity is necessarily veridical. Perhaps my partner only pretends to like me, but s/he cannot pretend to be intersubjectively engaged with me. Intersubjectivity is defined by an appropriate match between the nature/direction/timing/intensities of two people's activities; it either occurs or it does not. When it does occur, two distinct and yet closely related interpersonal selves are brought into existence along with it.

Awareness of the interpersonal self is almost invariably accompanied by a simultaneous awareness of the ecological self. A wealth of

8 In what case the interpersonal selves and ecological selves are separated?

9. What is the extended self?

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information specifies their co-existence: I can see that the person to whom you are addressing yourself (the interpersonal me) is the very person who is located here, at this point of observation in this environment (the ecological me). For this reason, these two aspects of the self are rarely experienced as distinct. Such a separation can occur, however, if we attend exclusively to one class of information and ignore the other entirely. To attend only to ecological information structures, ignoring the interpersonal, is to treat another individual merely as a non-human object—perhaps to walk past him, or shove him aside, without engaging in any form of intersubjectivity. The opposite case can occur in very intimate personal contact, as between lovers or (as psychoanalysts have long suggested) between mothers and infants: one's attention is so fully directed to the ongoing intersubjective experience that one does not pick up any ecological-self-specifying information at all. This does not mean that lovers and infants have no ecological selves, but only that there are moments at which those aspects of their selves may go unnoticed.

### The Extended Self

The objectively-existing kinds of information considered so far—optical flow, effective movement, other people's expressive gestures—specify only the present self. We can see what we are doing right now, and with whom, but how can we know what we did yesterday or last week? The answer, of course, is just that we remember: the information is in our own heads.<sup>13</sup> The extended self is the self as it was in

the past and as we expect it to be in the future, known primarily on the basis of memory.

Not all uses of the past involve knowledge of the extended self. It is now well established that so-called procedural memory—'knowing how', as opposed to 'knowing that'—is substantially independent of memory for personal experiences. Perceptual and motor learning are obvious cases in point: performance gains are based on information stored in the past, but not necessarily information about the past self. (This is particularly dramatic in amnesics, who can acquire new skills without any recollection of the prior occasions on which those skilled were practised; cf. Parkin, 1982. Amnesia is, *par excellence*, the pathology of the extended self.) Even improvements in the ability to see how we ourselves are physically and socially engaged—i.e. in the articulation of the ecological and interpersonal selves—need not be accompanied by any experience of the self that transcends the present. In procedural memory the past modulates what we do in the present without standing apart from it.

Genuine remembering occurs when at least some information about the past is disentangled from the current situation. In many cases, that information is about *my* past, i.e. it is a record of some aspect of the extended self.<sup>14</sup> In remembering something that I did or experienced on some other occasion—by remembering that I did it rather than merely how to do it—I neces-

For convenience, I shall say that memory 'records' or 'encodes' or 'carries forward information about' certain events. What I mean is conventional enough: some (not all) of the information which originally specified those events to the perceiver was somehow stored, and some (not all) of that stored information is retrieved in the act of remembering.

<sup>13</sup> At least, some of it is. Remembering is not like perceiving: the stored information does not specify the remembered state of affairs in the same unequivocal way that optical structure specifies the layout of the environment. Like the tree rings from which one can infer past variations in climate, information stored in memory is merely a record—generally an incomplete and fallible record—of the past.

<sup>14</sup> Not in all cases, of course. Everyone remembers a vast array of facts—e.g. that Columbus discovered America—that have no self-reference at all. Such facts are appropriately assigned to what Tulving (1972) called 'semantic memory'. Tulving's term cuts across the distinctions made here: my knowledge of my own familiar scripts and routines would also be classified as semantic memory, but they are clearly aspects of the extended self.

sarily became aware that my existence transcends the present moment. This can happen in two rather different ways. To the extent that what I recall is a unique and particular past event (say, presenting a colloquium talk at the University of Aberdeen in November 1987), I am having an *episodic memory* (Tulving, 1972). But to the extent that what I recall is a repeated and familiar routine (there is a script for colloquia that includes arriving in town, talking to colleagues, being introduced, giving the talk, answering questions, etc.), I am using a general event representation (Nelson, 1986) or *script* (Schank & Abelson, 1977). Both kinds of memory contribute to the extended self. I am the person who gave that colloquium in Aberdeen: I am also a person who gives colloquium talks from time to time. While these two examples are certainly not among the most central components of my extended self (!), that self can be thought as a kind of cumulated total of such memories: the things I remember having done and the things I think of myself as doing regularly.

*Q. What are the two types of memory that are involved in the extended self?*

The notion that the sense of self depends on autobiographical memory is hardly new (for recent expositions see, e.g., Brewer, 1986; Baddeley, 1987; Fivush, 1988). What is new, however, is research on the development of that memory in early childhood. We now know that both script knowledge and episodic recall appear very early. Consider script knowledge: even 3-year-olds can readily answer such questions as "What happens when you make cookies?" Their answers—"Well, you bake them and eat them" (Nelson & Gruendel, 1986, p. 27)—are not very elaborate, but they almost always include a correctly-reported sequence of events. (By 4½, they can say "My mommy puts chocolate chips inside the cookies. Then ya put 'em in the oven; then we take them out, put them on the table and eat them.") These young children are not describing what happened on some particular occasion, but what regularly happens in a certain routine. At 3 years they already know a great many scripts: getting up, getting dressed,

having breakfast, and so on. What is important here is not merely being able to execute such routines—they have been doing that already for at least 2 years—but to remember one when it is not being executed. To do that is to be aware of oneself as existing outside the present moment, and hence of the extended self. In the case of script knowledge, however, that self does not belong so much to the past as to the timeless realm of regularities, rules, and roles; we say "This is what I do." The actual past self is more clearly established by episodic memory, ↗ when we can say "This is what I did."

Recent studies show that episodic recall, like script knowledge, is in place by the age of three. A 2½-year-old child will often fail to remember the particular 'target event' that an interviewer first asks about, but s/he will usually have at least some fairly accurate memories that go back 3 or more months (Todd & Perlmutter, 1980; Fivush, Gray & Fromhoff, 1987). Despite these findings, I doubt that episodic memory contributes very much to the sense of self at this early age. Children under 3 years are not very interested in the past, even when they can recall it. They would much rather talk about something in the present—or play and not talk at all—than spend effort in remembering earlier experiences (Galotti & Neisser, 1982).

That interest increases as the child comes to realise the social significance of autobiographical recall, i.e. its potential for extending relationships beyond the present moment. The most important adaptive function of memory may be that it makes permanent interpersonal relations possible, and thus vastly strengthens the coherence of human groups (Neisser, 1988). Note that even rather sloppy memories can serve this purpose: my recall of a shared event must be close enough to yours to avoid bizarre discrepancies, but it need not be accurate in every detail. Unsurprisingly, this is just the level of mnemonic accuracy that people generally achieve.

Although the development of the extended self is more or less inevitable—any child with a

*Q. Why is the importance of the extended self grows with time? - Mark experiences,*

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normal memory will sooner or later begin to reflect on its own past experiences—many families engage in activities that seem explicitly designed to stimulate and shape it. By talking to their children about shared experiences and future plans, parents deliberately try to create an increased awareness of the continuity of both the family and the self. Two examples from recent research illustrate this activity especially well. The father of Nelson's (1988) subject 'Emily' regularly spoke to her, just before bedtime, about family routines and plans for the next day. Emily's subsequent crib monologues (which were tape-recorded), often dealt with these very plans. For example:

Father: You know what we're going to do, you know what we're going to do this weekend? We're going to go to Childworld and we're going to buy some diapers for Stephen and some diapers for Emily, and we're going to buy an intercom system so that we can hear Stephen in different parts of the house . . . When we go to Childworld and buy diapers for Stephen and diapers for Emily and what is called an intercom system that we plug in, Stephen, into Stephen's room and then we go downstairs and we plug it in and we get to hear Stephen! Making a, when Stephen wakes up we'll hear him cry, through the intercom system . . ."

Emily [later, in pre-sleep monologue]: . . . daddy said buy diapers for Stephen and Emily and buy something for Stephen, plug in, and say ah-h-h [simulates baby cry] and put the in—. On Saturday go Childworld buy diaper for Emily and diaper for the baby and then buy something for the, and—see—for—that—baby, plug it in and get diapers for everybody, and . . . [Nelson, 1988, pp. 270–271].

A different example of the role of the family in developing the extended self comes from the work of Edwards & Middleton (1988), who simply asked mothers to talk with their young children about pictures in the family photograph

album. The resulting conversations, in which both partners were clearly interested in relating the past to the present, followed typical patterns. After a deliberate explication of what a given picture actually showed, the participants would usually go on to consider why it mattered: how they had felt, how the past event was related to present concerns, etc. Here are two examples (Paul is 4.3 years old):

Mother: Look at you inside this photograph.  
Paul: Is that our new car?

Mother: That was the car we hired. Oh look, you're pretending to drive it aren't you?  
Paul: Mm. [Edwards & Middleton, 1988, p. 11].

Or, more explicitly:

Paul: Is that me?

Mother: Yes, that's you. Mm.

Paul: Oh, that's nice. Did you love me there?  
Mother: Oh I DID. Yes" [p. 15].

The extended self becomes increasingly important as we grow older. Most adults develop a more or less standard life-narrative that effectively defines the self in terms of a particular series of remembered experiences. These accounts are continually being extended (and occasionally revised!), creating a narrative structure much like that of more formal autobiographies (Barclay, 1986). As in the case of social relationships, the memory that supports these narratives need not be highly accurate. It also need not deal in equal detail with every epoch of life. Recent studies suggest that elderly people have particularly rich and accessible memories for the period of adolescence and young adulthood (Rubin et al., 1986).

The extended self and ecological selves are linked by objectively available stimulus information. Even in the act of recollecting the past, I can still see that I am here in the circumstances of the present. But their coherence is not always salient: I do not *need* to know those circumstances in order to recall effectively. It is possible, then, for the remembered self to be some-

what detached from the self experienced in the present. This possibility gives rise to wide individual and cultural differences. Some people are not much concerned with the past, and spend relatively little time in retrospection; others, of whom Marcel Proust is the best-known example, seems to value the past much more highly.

Although our knowledge of the extended self is based on stored information, access to that information is not unproblematic. Memory is typically reconstructive (Bartlett, 1932); what we recall depends on what we now believe as well as on what we once stored. This means that the remembered self is not independent of the conceptual self; our self-theories affect what we choose to recall as well as how accurately we recall it. (Those theories even affect what we perceive, ecologically and interpersonally, by focusing our attention on some aspects of the available information to the neglect of others.) Because the information we have for the extended self is private and limited rather than public and indefinitely rich, it is especially vulnerable to misconstrual.

they first used for that purpose? While even the youngest children surely have a conscious mental life (including an awareness of the ecological and interpersonal selves!), I suspect that they do not yet take the *immediacy* of their experience as an important line of demarcation between themselves and the rest of the world. They do not need to: such a line already exists for them, established by ecologically available information. Although each of us certainly "dichotomizes the Kosmos in a different place," as William James put it (1890, p. 290), we first do so by exterospection rather than by introspection.

Sooner or later, children notice that certain experiences are exclusively their own. It is hard to be sure just when this happens. Although phrases like 'It hurts' and 'I'm hungry' appear well before the age of 2 years (Bretherton *et al.*, 1981), they may not yet have the introspective reference we accept as adults. ('I'm hungry', for example, may only be a way of asking for food.) Whatever may be true at earlier ages, however, many studies show that children are aware of the privacy of mental life before the age of 5 years. The 4-year-olds tested by Mossler *et al.* (1976), for example, clearly understood the notion of a 'secret': if A and B agree on something by gesture while C is not looking, then C will not know it unless he is subsequently told. More recent studies by Wimmer & Perner (1983) have confirmed this point.

We not only *have* private experience but *remember* it, recalling dreams we had last night or thoughts we had last week and thus augmenting the extended self. The importance of this contribution varies substantially from one person to another, perhaps in part because memory for mental experiences is relatively poor. Pains are notoriously difficult to recall; we remember that we were in pain, but cannot easily recapture the quality of the experience. Most people forget most of their dreams almost immediately. William Brewer (1988) has recently shown that this principle also applies to everyday waking thoughts. The subjects of his ecological memory

### The Private Self is related to

*12. What is the private self?*

Each of us has conscious experiences that are not available to anyone else. Some of these are the inner aspects of perception and action; others (dreams, for example) are quite independent of the individual's actual present circumstances. These personal experiences are an important source of self-knowledge.<sup>15</sup> When are

<sup>15</sup>I am reluctant to call private conscious experience a 'form of information' (like stimulus structure, or the stored contents of memory) because it does not specify anything beyond itself in the way that optical information (say) specifies the layout of the environment. Some conscious experiences do 'refer' to the environment, but the sense in which they do so is beyond the scope of this paper; other conscious experiences do not 'refer' at all.

While even the conscious members of the ecological self that they do experience as action between world. They do exist for them, able information "dichotomies," as Wilhe first do so introspection. that certain un. It is hard is. Although hungry' appear herton et al., introspective hungry', for ng for food.) es, however, re aware of he age of 5 lossler et al. ood the no something then C will told. More (1983) have

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study carried 'beepers' that went off randomly several times a day; at the sound of the beep they wrote down where they were, what they were doing, and what they were thinking. In later tests, recall of the recorded thoughts was far below recall of actions.

Although the varieties of phenomenal experience cannot easily be catalogued, it is easy to list familiar examples. Some, like dreams and memories, are virtually independent of the ecological and interpersonal selves. I can be asleep in Atlanta and dreaming of London, or talking to Peter and thinking of Paul. In many belief systems, such experiences are taken as support for a dualistic distinction between mind and body —i.e. for the existence of an entirely bodiless conceptual self. Logically, of course, this evidence is not compelling. The fact that private experience is essentially independent of the ecological self does not at all imply that it is independent of the material brain.

Philosophers in the Western tradition—indeed, in many traditions—have often treated the private self as the only self worth knowing. Descartes is primarily responsible for the further claim that it is the only self we can be sure about, all other experiences being subject to error and delusion. I have argued, in contrast, that the ecological and interpersonal selves are perceived effectively and surely from the beginning of life. (This argument does not dispute the value of the private self, only its epistemological priority.) In any case it is worth noting that individuals differ widely in the value and importance they attach to inner experience. This was roughly Jung's original distinction between *extraverts* and *introverts*. In the extravert, "... thinking is oriented by the object and objective data" (Jung, 1921/1971, p. 342), while introverted thinking "... is neither determined by objective data nor directed to them; it is a thinking that starts from the subject and is directed to subjective ideas or subjective facts" (p. 344). These are essentially differences in the allocation of attention. All such forms of infor-

mation and experience are available to everyone, but within the normal range they are not all equally noticed, equally used, or equally valued. Outside the normal range are the pathologies of the private self, which include obsessive thinking, repression and denial of feelings, multiple personality, and related conditions.

There are also individual differences in concern with another, less detached aspect of the private self. Perceiving and doing—"being in the world"—are typically associated with particular subjective experiences, and one can take those experiences themselves as objects of attention. In addition to seeing a pencil and picking it up (say), one can attend to the *experience* of seeing it and picking it up. Although this particular example is trivial, what is gained from private experience can be rich and deep. In an eloquent passage, Isaiah Berlin attributes the discovery of this kind of knowledge to the Italian philosopher Giambattista Vico:

personal  
Self 12.

*He [Vico] uncovered a sense of knowing that is basic to all humane studies: the sense in which I know what it is to be poor, to fight for a cause, to belong to a nation, to join or abandon a church or a party, to feel nostalgia, terror, the omnipresence of a god, to understand a gesture, a work of art, a joke, a man's character, that one is transformed or lying to oneself . . . The sense in which [one] claims to know this is quite different from that in which I know that this tree is taller than that, or that Caesar was assassinated on the Ides of March . . . In other words, it is not a form of 'knowing that.' Nor is it like knowing how to ride a bicycle or win a battle or what to do in case of fire . . . That is to say, it is not a form of 'knowing how' (in Gilbert Ryle's sense). What then is it like? It is a species of its own. It is a knowing founded on memory and imagination. [Berlin, 1969, pp. 375-376].*

Vico was not the first person to have this form of knowledge and self-knowledge, only the first to theorise about it. He also believed that one

could have valid knowledge of the same kind about *other* people, and even about other epochs in history, by an effort of the imagination. An evaluation of that hypothesis is beyond the scope of this paper. Like many similar claims, however, it remains significant whether or not it is true. To the extent that we believe in such a capacity, or in other private capacities, they become parts of our conceptual selves.

### *Our perception of ourselves.*

### The Conceptual Self

Each of us has a concept of him/herself as a particular person in a familiar world. These self-concepts originate in social life, and so they vary widely across different societies and cultures. A few concepts of my own can serve as convenient examples: I am an American, a husband, and a professor. I assume that I have certain social obligations and political rights; that I have a liver and a spleen and a distinctive pattern of nuclear DNA; that I am a fast reader, poor at remembering names, and neither handsome nor ugly; that in general I do not think enough about the future consequences of my actions. Everyone could make such a list, and no two lists would be the same. Even the relevant dimensions need not be the same: a member of the Lohorung Rai in East Nepal would include the state of his *Niwa* (Hardman, 1981), and a medieval Englishman the state of his soul.<sup>16</sup>

In the face of this complexity, it is useful to begin by considering concepts and categories of other kinds. What do we mean, for example, when we say that something is a 'dog'? The

so-called classical theory of concepts, which would claim that the class *dog* is defined by certain necessary and sufficient features, no longer seem adequate: it is too difficult to think of really definitive features, and those that do come to mind (e.g. 'has four legs') are just as hard to define as *dog* itself (Murphy & Medin, 1985). The classical theory also fails to explain the typicality effects discovered by Eleanor Rosch (1978); in most categories, some members function as 'prototypes' while others are more marginal. But category membership cannot just be a matter of similarity to the prototype either: besides the difficulty of defining 'similarity', such a definition would miss the point that many categories, including *dog*, are conceptually all-or-none. (Any given animal either is or isn't a dog.) These difficulties are resolved by realising that concepts do not stand alone: each is defined with reference to a network of others, i.e. to a *theory*.<sup>17</sup>

Many linguists, philosophers, and psychologists have made this point (e.g. Lakoff, 1987; McCauley, 1987; Medin & Wattenmaker, 1987). To call something a dog is to assign it to a place in our theory of animals in general and dogs in particular, i.e. to assert that it occupies space, has internal organs, must eat or starve to death, is likely to behave in certain ways, is bigger than a mouse and smaller than an elephant, should be treated in a particular manner appropriate to dogs, had two parents who were dogs and will (if it becomes a parent) have puppies, etc. These beliefs are components (not all equally central) of our implicit theory of doghood—of what George Lakoff (1987) would call an 'idealised cognitive model'. Children have such models quite early, at least where animals are concerned (Carey, 1985).

13. Where do cognitive models come from? Like all other theories, they are based on a mixture of

<sup>16</sup>Even in our own culture, individuals can differ substantially in what they take as relevant dimensions of self-description. Markus (1977) has pointed out that a characteristic which is central for one individual may be a matter of indifference to another; her research shows that these differences have predictable consequences for what each is likely to notice and remember.

<sup>17</sup>As I have suggested elsewhere (Neisser, 1987), Rosch's 'basic-level' categories are based on perception, and hence comprise a partial exception of this rule.

of concepts, which dog is defined by sufficient features, no so difficult to think and those that do legs') are just as Murphy & Medin, also fails to explain covered by Eleanories, some members the others are more membership cannot just be prototype either: defining 'similarity', at the point that they are conceptually al either is or isn't resolved by realis- and alone: each is network of others,

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instruction and observation. We acquire concepts from our parents and our peers and our culture, and in some cases from reading and schooling as well. We also see things for ourselves, and do our best to co-ordinate those observations with what we have heard and read. As in science proper, however, observation is often shaped by theory. What we notice and how we interpret it depends substantially on what we already believe, so that fundamental changes are rare after a theoretical framework has once been established.

These principles apply equally to the concept of self. My notion of what I am, like your notion of what you are, reflects a cognitive model embedded in a theoretical network. It too is based primarily on what I have been told, not only in the form of general cultural assumptions but also of communications addressed to me in particular. Like other concepts it tends to govern what I notice; in this case, what I notice about myself. Like other theories, it is not necessarily correct; all of us know people whose self-theories seem off the mark in certain respects. Nevertheless most self-theories do work fairly well, at least in areas where they make predictions about real experience. (Where this is not the case—e.g. in paranoia—we tend to classify them as pathological.) When Epstein (1973) proposed that psychologists should think of the self as a theory rather than as an independently-existing entity, he was talking about the conceptual self.

B Although the self-concept can usefully be regarded as a single cognitive model, it usually comprises several more or less distinct sub-theories. Three of these deserve specific mention, although they cannot be considered in detail here. *Role theories*, which have been much studied by sociologists, are our own notions of how we fit into society: of what we should do and how we should be treated. They originate, I think, in children's understanding of the scripts in which they participate; hence they are in place very early. *Internal models*, in contrast,

concern our bodies and our minds. In modern Western culture, self-theories of the body (like my firm belief that I have an internal organ called the liver<sup>18</sup>) are mostly based on biology and medicine. Theories of the mind, in contrast, are the province of psychology, philosophy, and religion. Children are presented with these theories by the people around them, and do their best to interpret their own lives in terms of what they have been told. When and what they are told depends, of course, on the particular culture in which they are growing up.

*Trait attributions* are an important class of self-theories that straddle the boundary between social roles and internal models. We may believe, for example, that we are clever or stupid, handsome or ugly, fortunate or unlucky. Although these dimensions are essentially conventional—not all cultures classify along the same importance. In this vein, Carol Dweck (1986) has shown that children's beliefs about intelligence affect their actual performance in school. Those who believe that intelligence is a fixed quantity (and that they themselves are stupid) learn much less from school experience than those who have a self-concept that allows for intellectual growth and development. Although such attributions are acquired early, they are not impervious to change.

Self-theories are distinguished from the other four aspects of the self by being based primarily on socially established and verbally communicated ideas. As we elaborate our own conceptual selves, however, we often try to take other kinds of experience into account. Thus our self-concepts typically include ideas about our physical bodies, about interpersonal communication, about what kinds of things we have done in the past and are likely to do in future, and especially about the meaning of our own thoughts and feelings. The result is that each of the other

<sup>18</sup> Under ordinary circumstances, internal bodily organs do not belong to the ecological self: they cannot be directly perceived and are not subject to intentional movements.

14) what are the subtheories associated with the conceptual self?

who believe that intelligence is a fixed quality less based on what we have experienced in our sense experience.

15) Why

16) Does the conceptual self contain  
four other self-knowledge?  
If it does, how? Explain.

Self

16 four kinds of self-knowledge is also represented in the conceptual self. These 'meta-selves' are never quite accurate, but they make a difference. Just as our concepts of intelligence can affect what we learn in school, for example, so our conception of our own body and its movements may affect our physical activity and motor skill. Social behavior is shaped not only by the directly perceived quality of real social interactions but by our own theories of how we relate (and how we should relate) to other people. Our memories of past experiences depend on our self-conceptions as well as on originally-stored information (cf. Greenwald, 1980; Neisser, 1981). Even our interpretations of our own private experience are partly shaped by what we believe experience should be like; that is one reason why introspection is such an uncertain source of psychological understanding. While it is a mistake to suppose that the conceptual self is the only self we have, it would also be a mistake to underestimate its scope and importance.

### Conclusion

What we know about ourselves seems paradoxical: it is both objective and subjective, social and private, definite and vague, abstractly theoretical and firmly concrete. One claim of this paper has been to dispel that air of paradox and replace it with a set of clear distinctions. But I have done so at the risk of creating what may seem to be a new puzzle: if there are five cognitively different 'selves', why do we (usually) experience ourselves as unitary and coherent individuals? The answer, again, is in terms of information. The fact that the ecological and interpersonal self are aspects of the same person can be directly perceived: they are located in the same place and engaged in the same activities. The extended self is linked to both of them, not only because what we recall are ecological and interpersonal experiences but because we can

see where we are even in the act of remembering.<sup>19</sup> In the private self at least one form of consciousness—explicit awareness of what we are doing—is intimately linked to our present situation. It is true that dreams and other detached mental phenomena tend to fractionate the self, but most cultures have theories to deal with such phenomena. Some of these self-theories maintain that there is only one self, others that there are two or perhaps three; in Buddhism, there is said to be no self at all (Kolm, 1986). Whatever the theory on which it is based, the conceptual self still helps to hold all the others together. It does so by providing a roughly coherent account of ourselves as persons in interaction with our neighbors; an account that is almost always similar in structure, though different in detail, from the one that our neighbors would give of us.

We know our neighbors (and they know us) in much the same ways that we know ourselves. If there are many kinds of self-knowledge, there are many kinds of other-knowledge too. We get information about other people ecologically by seeing what they do and interpersonally through direct engagement; we remember our previous encounters with them; we think about them, as about ourselves, in ways that depend on our general conceptions of human nature. To be sure, we typically have less information about other individuals than about ourselves. Optical flow most fully specifies our own movements, memory records many more of our own actions than anyone else's, and our private experience is exclusively our own. This wealth of information must be one of the reasons why children (and many adults) are so naturally self-centered; why it is so easy to pursue one's own interests from one's own point of view. But though it is easy, it is not necessary. Information about other people is also available from earliest

<sup>19</sup> As noted earlier, this link is not always compelling: we can 'lose ourselves' in a memory to the extent that we are no longer aware of our present ecological and interpersonal situation.

the act of remembering at least one form of awareness of what we linked to our present dreams and other demands tend to fractionate selves have theories to deal with. Some of these self-theories are only one self, or perhaps three; in some cases there is no self at all. The theory on which it still helps to hold does so by providing a sense of ourselves as persons, our neighbors; an account similar in structure, from the one that our

us. (and they know us) at we know ourselves. In self-knowledge, there is knowledge too. We get people ecologically and interpersonally; we remember our them; we think about them in ways that depend on human nature. To have less information than about ourselves, specifies our own movement more of our own selves, and our private experience. This wealth of reasons why we are so naturally self-centered to pursue one's own point of view. But necessary. Information available from earliest

is not always compelling; we to the extent that we are no ecological and interpersonal

infancy: the same interactions that specify a real interpersonal self also specify a real interpersonal other. Even more such information is available conceptually, at least in cultures with beliefs that define man and woman and person to include others equally with the self. Self-knowledge is inherent in the human condition, but self-centredness is not.

The principle that all concepts are embedded in more general theoretical schemes applies also to the ideas presented in this paper. Most of those ideas have their roots in cognitive and perceptual psychology: I have drawn particularly on the ecological approach to perception, on recent naturalistic studies of memory, and on the notion—familiar to philosophers but relatively new to psychologists—that concepts can only be defined with respect to larger conceptual systems. Perhaps because of this cognitive focus, certain traditional questions about the self have been given rather short shrift. The most obvious omission concerns the identity of the doer as opposed to the knower: who is it that thinks, acts, and feels? If I do something that later seems incomprehensible to me, who was responsible? If I produce an egocentrically distorted memory, who has distorted it? The answer to all such questions is brutally simple: I was, and I have. There is no internal agent to whom I can realistically delegate the responsibility.<sup>20</sup> The inner man, the unconscious mind,

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and the alternate personality are not real entities but aspects of the conceptual self. They are defined only with reference to particular theories of motivation and action, and it seems unlikely that any of the theories currently popular will turn out to be correct.

The theory of self-knowledge presented here is also a version of the conceptual self—or at least, it becomes one to the extent that it is believed. My hope is that it will turn out to be correct, in outline if not in detail. While there are certainly other ways to classify the information we have about ourselves, there is no way to deny its multiplicity. We know ourselves not only as objects of thought and experience but also as objects of perception, genuinely engaged with our fellow human beings and our shared environment.

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<sup>20</sup>This principle applies even to reflexive cases, as when I admire myself or despise myself, although the object of such sentiments may only be an aspect of the conceptual self.

17. For audience: (general question: CIS/IND Face-to-face)
- What are the major points of this article? New issues can arise from the article be used in writing your autobiography?