

# Structure and Openness in the Development of Self in Infancy

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**Abstract:** *From early infancy, structures are created in engaging with the world. Increasingly complex forms of self, other, and world emerge with shared rhythms, affective patterns and interpersonal routines, cultural norms, concepts and symbols, and so on. These open up an increasing number of possibilities for new kinds and levels of engagement and for further developing a world together. However, these same structures, becoming more rigid, salient, and perhaps reified with time, may obscure or obstruct engagement and constrain development. We explore this paradoxical relationship between structure and openness to engagement and attempt to understand the process of formation and change of structures in self and its relations to the world.*

This paper explores what we can learn from engagements in infancy and particularly about the role of structure and openness in the process of being and developing as a self. Thinking about self in preverbal infants challenges us. It immediately invites us to explore non- conceptual aspects of self (in infants as well as adults) and offers connections to Buddhist notions about relation, process, and the self as an illusion. We take a relational and process view of self and explore how aspects of self arise in relation to the world and to others in the process of living, interacting, and separating. In such a view, self appears at times more pronounced and solid, at times more fleeting and permeable, having different boundaries or facets in different relations while becoming increasingly differentiated over time. We focus in particular on the intriguing tension between structure and openness in development: how patterns and structures are created in engagement and foster further engagement and change, but through becoming entrenched may also get in the way of engagement and change.

Patterns of action and interaction from everyday life may become established over time — even reified — as stable and relatively invariant ‘structures’. We use the notion of structure here because it vividly suggests a certain palpability: while patterns come and go, change, cancel each other out, and vanish, structure suggests something more stable. It carries with it a higher degree of persistence, of continued existence beyond the original interaction context, and a more perceivable effect on its surroundings: obstructing, guiding, and channelling processes. Importantly, the word also suggests that it can be an ‘object’ in itself to be engaged with and inviting further exploration and change (see also Goodwin, 2013; Shotter, 1983).

Structures might become incorporated as habits or skills or, on a larger scale, as personalities. They might become established as shared routines which are publicly accessible or exist as implicit norms only noticed from the reactions to breaking them. They might exist as material artefacts, as systems of patterns

scaffolding each other such as concepts, language, beliefs, theories, and value systems, or as explicit conventionally established laws and institutions (Deacon, 1998). Although differing widely in kind, complexity, and composition, what all these structures have in common is that they regulate the activities of everyday living (be it cooking, washing, working, playing, sleeping, having conversations, or moving in public spaces), they channel and constrain our acting and sense-making in specific ways and, as we enact them, they also contribute to constituting our selves and our multiple identities.

### **Methodological Challenges and Theoretical Stances on Self in Infancy**

Enquiring into the 'self' in preverbal infants and trying to relate such an enquiry to other approaches studying the self poses a challenge: not only has it often been questioned whether preverbal infants even have a self, but, if they do, whether we can understand what it might be like. Their lack of speech can constrain psychologists' and phenomenologists' explorations of infancy.

Theories about the emergence of self-awareness or self–other awareness vary enormously in their emphases, their methods, and their conceptions of selfhood. Some theoretical positions in developmental psychology posit that objective self-awareness is necessary for an awareness of self as an object to others, and that this arises late in infancy (between the middle and the end of the second year). The implication is that prior to this awareness neither is the experience of being experienced as a self by another person possible, nor are the self-conscious emotions such as embarrassment, shame, and pride possible. This objective self-awareness is argued to depend on the prior emergence of a concept of self or 'idea of me' (Lewis, 1995), which is tested by infants' recognition of the visual self in the mirror self-recognition task (Gallup, 1968; see also Amsterdam, 1972). However, other theories argue for a multifaceted and relational approach to selfhood, positing, for example, that an initial ecological self emerges in the foetus's and neonate's interactions with the material world, followed by an interpersonal self in face-to-face interactions with people in the first months, then followed eventually by a conceptual self and a verbal and moral self (Neisser, 1993) after infancy. Others argue that the self is largely an affective entity developing within emotional exchanges from the earliest days of life (e.g. Trevarthen, 1993). The emphasis on affect as core to the self has been pursued by many theorists such as Daniel Stern (1985), challenging the dominant conceptual emphasis and arguing that self-conscious affectivity emerges prior to concepts and is either independent of a concept of self or actually enables its development (Izard and Hyson, 1986; Hobson, 1990; Hobson *et al.*, 2006; Reddy, 2003). A focus on the linguistic aspects of self — the use of the personal pronouns 'I' and 'You' in particular, and the difficulty which toddlers have in reversing them appropriately — has also led to links with the particular difficulty children with autism have both in relation to pronoun reversal and with a typical sense of self and other (Hobson, 1990; Hobson and Meyer, 2005).

## The Emergence of Self in Infant Engagement

*Self–non-self differentiation:* Although writers such as Freud, Piaget, and James proposed a process of selective differentiation of self, they largely operated under the assumption that infants initially have a completely undifferentiated sense of self. This assumption has since been challenged by a considerable number of empirical studies. For example, when touched on their cheek infants turn their head towards the touch (a rooting response facilitating breastfeeding), but, if the touch happens to come from their own moving hand, they turn their heads significantly less (Rochat and Hespos, 1997), thus showing a differentiation between sensory events which are related to their own actions (in this case involving a coinciding double touch on face and hand) and those which are not. Indeed infants are intensely interested in the consequences of their own actions and strive to maintain closed action-perception loops. When 4-week-old infants, lying in the dark, encounter a narrow beam of light which the researchers have shone either above their chest or their face, infants move their arms in the appropriate area to keep their hands in the light, exploring the relationship between moving their hand and seeing their hand move (van der Meer, 1997). Recent studies suggest that even foetuses not only anticipate the sensory consequences of their actions but selectively guide their actions according to their particular expectations. 4D ultrasound recordings of the kinematics of arm movements of twin foetuses have demonstrated prospective control of action from the fourteenth week of gestation. Not only were self-directed movements of foetuses towards their sensitive eye region slower with longer spans of deceleration compared to movements towards their mouth, movements directed towards their twin — but not movements directed towards the uterine wall — showed equally long or even longer periods of deceleration before contact (Castiello *et al.*, 2010).

These examples show that engaging in prospective control of actions as a living, acting being is closely connected with a basic distinction between self and non-self: infants come to respond differently to events estimated to be related to self-generated actions and events which are not, and infants encountering the different consequences of actions directed towards self, world, or other come to anticipate these consequences and guide their actions appropriately. Thus they effectively enact a pattern of systematic distinctions between self vs. world or other. This basic ‘self–world distinction’ is only one among many instances of the already highly structured organization exhibited by newborns, including a range of discriminatory abilities, sensitivities and preferences, and action tendencies enabling them to selectively engage with the world.

*Neonatal preferences:* Human neonates (and the neonates of some other species too) can be, within minutes of birth if not too stressed by the process or by maternal drugs, absurdly interested in the world around them. They look intently at faces and objects positioned roughly a foot or so away from them where their vision is most clear, and they turn their heads to follow things — especially faces, but also other objects and voices — which have got their attention. Controlled studies have demonstrated a range of sensory preferences: for face-like patterns (Johnson *et al.*, 1991) and especially for faces with eyes

directed towards them (Farroni *et al.*, 2002), for sounds in the human voice range, for female over male voices, and for sweet (milky) odours over others. For objects positioned within what is called their 'reach space', they tend to swipe out with their arms, with evident tension and orientation towards the object in their entire body (see von Hofsten, 1984). In this responsiveness the neonate both reveals embodied structures — including a basic self–world distinction and selective interest in specific aspects of the world — and an enormous openness for engagement.

### **Infant Selves in Early Dialogues**

As young infants — whose perception and action is organized in such a way that it enables them to engage with the world — meet an interaction partner — who is orientated towards the infant, eager to interact, and experienced in interaction — infants will, from the very beginning, enter into sustained interactions and communicative exchanges. Whether in neonatal imitation, a little later in proto-conversations, in smiling and coyness, in nappy change routines, or in responses to being picked up, they are addressed, respond, and are responded to, each partner taking turns and co-regulating the engagement. These young infants — though they might show interest in and direct actions towards objects — are not very capable of effectively acting on the object world. Yet, in a social context — when they are attended to, addressed, and invited to act — even small or 'fuzzy' actions on the part of the infants may be (affectively) responded to by an (attentive) partner and hence may have a big effect on their experience and their action-perception loops. And, since actions successful in creating an interchange are likely to be repeated, this in turn may spur a process of jointly creating action patterns and structures.

Although neonatal imitation is still a hotly debated phenomenon, many studies have shown that neonates respond to gestures such as tongue protrusion and mouth opening by an adult model by doing the same themselves. Exploring this phenomenon with your own newborn can be an exciting thing to do (as tried by one of us). Sometimes, if the tongue protruding engagement continues over the first days, the exchange can become a startlingly clear 'game' or strong interactive structure. Newborns not only respond to these actions by the adult, but may also try to elicit them, initiating a round of actions themselves if the adult does not do it first (Meltzoff and Moore, 1994; Nagy and Molnar, 2004). The openness to engaging can thus lead very quickly to a structure of engagement and a desire for re-experiencing that structure even shortly after birth.

*Proto-conversations:* Early interactions not only involve infant responses with actions similar to their partner's but also complementary actions. In proto-conversations (from around the second month) infant and caregiver engage in preverbal dialogue through rhythmical vocalizations and movements co-regulating affect and arousal and taking turns in co-producing complex phrase patterns (Bateson, 1975; Snow, 1977; Trevarthen, 1977). They also jointly perform (culturally shaped) everyday routines (sometimes involving objects), with the infants actively participating, anticipating, and responding to

actions directed to them including being picked up, having their nappy changed, playing peek-a-boo, or book-sharing.

What all these interactions have in common is that infant and partner are intimately engaged in second-person I-You relations, where the partners directly address each other with their bodies and multiple modalities (gaze, vocalization, bodily movement, sometimes touch) and co-regulate each other's affect, arousal, and actions. Violations of this contingent coupling of address and response — as shown by 'still-face' experiments or delayed video communication (Tronick *et al.*, 1978; Cohn and Tronick, 1983) — can be enormously upsetting to 2-month-old infants, leading to frowning, closed mouth expressions, and actual crying. In the typical flow of interaction with its cycles of engagement and disengagement, infants and caregivers repeatedly move through and shape affect-imbued action arcs together: starting a specific action, building it up to a climax before bringing it to conclusion in resolution.

*Self-other awareness: 'I-you and we' experienced in jointly created actions:* How do the participants in these kinds of engagements experience self and other? Jointly enacted actions are and feel different from solitary actions. They cannot be experienced alone. They define social context, allowing each participant to distinguish the 'I' from the 'I-with-Other' (see also Stern, 1985), with the participants experiencing 'being addressed' and a mutuality of ensuing actions. Being addressed could affect the infant through a wide range of sensory modalities: most prominently, feeling someone's gaze directed to oneself, accompanied perhaps by a pronounced facial expression, rhythmical dynamically modulated vocalizations and movements, being touched, acted upon, or being moved. All these modalities and strands of action may contribute to the more global processes of living through waves of arousal and affect and moving through action arcs together: whether going through a wide-ranging fast-paced dynamic flow of excitement and joy in a co-enacted tickling game, or being soothed and calmed faster and more easily with than without the other, or conversely, experiencing potential friction when being pulled through the motions of being dressed. Daniel Stern, focusing mostly on affective co-regulation, talked about 'I-with-self-regulating-other', and 'I-resonating-with-other' in this context (*ibid.*). Taking a closer look at these situations might even provide the resources for a more differentiated experience of self-other and the experience of a basic form of 'we'.

*'Me': being the object of attention and the target of action:* In the infant's awareness and understanding of being addressed, we may already see the roots of 'me'-awareness in the sense of feeling oneself as the target or 'object' of another's attention and actions. Infants demonstrate an awareness that 'they are meant' as well as an understanding of 'what to do' by responding appropriately when being addressed, whether through vocal turn-taking in proto-conversations or through anticipatory adjustments in everyday activities such as nappy changing or being picked up (Reddy, Markova and Wallot, 2013; Rossmanith *et al.*, in preparation, Rączaszek-Leonardi, Nomikou and Rohlfing, 2013). When approached by

their mother with her arms outstretched, the majority of 2- and 3-month-olds, in anticipation of being picked up, start adjusting their bodies in ways that enhance a smoother and less risky pick-up, stretching out and stiffening their legs or tucking them up tight, raising or opening out their arms, turning their heads sideways or raising their chins, while intently watching the mother's face (Reddy, Markova and Wallot, 2013). In a simple self-directed context they have learned about others' actions and intentions, and have developed structured responses appropriate to the impending physical change. Perhaps the most striking manifestation of a 'me'-self-awareness and indeed of affective self-consciousness is when 2–3-month-old infants who have just started to respond to others with a smile in social communication (Wolff, 1987) suddenly turn away from their communication partner with a coy smile. Like adults, who, when given a sudden or intimate compliment, briefly avert gaze or raise a hand to cover their smiles, infants too, when greeted or addressed smilingly by another, may smile intensely and avert gaze or head briefly, and may even raise an arm in a whole body coy reaction, revealing not only pleasure at the other's greeting but a sense of being overwhelmed by the emotion (Reddy, 2000). Such emotional reactions to direct gaze not only reveal (more) complex emotional structures in the infant, but suggest an early form of self-conscious affectivity arising within a relation in which they are aware of the other's awareness of them.

These cases suggest that a basic form of the 'me'-aspect of the self (Mead, 1934) is constituted here by multiple aspects coming together: first, emphasizing the infant's body, there is a change of affective experience involving both proprio- and intero-ception: the 'me' as affected by the other; second, emphasizing the other, there is the experience of the other's actions via exteroception: the 'me' as being the object of the other's attention and actions. However, in these infant–caregiver dialogues the 'me'-aspect of self does not become completely objectified, the interactions do not move to an extreme 'I–it-pole' of relating (Buber, 1923/1983), where the 'me' is merely the object of a relation but does not take part in regulating that relation, nor in shaping this 'me'-structure.<sup>1</sup>

*'I': enacting agency — being effective and being responded to:* On the contrary, the dialogical I–You relation which infant and caregiver are engaged in is characterized by an interplay of *being affected by*

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<sup>1</sup> That might, for example, be the case when the actions of one interaction partner are strongly constrained and his or her autonomy is significantly reduced resulting in a merely instrumental way of relating (compare De Jaegher, Di Paolo and Gallagher, 2010). Or when the 'me' — as in older children and adults — becomes (to some degree) identified with ideal entities or loci within a larger system of ideas (e.g. a 'role') and is implicitly or explicitly judged against a larger framework of values or norms. Not only is this 'me' objectified in the sense of being looked at from some distance as an 'entity' in relation to other entities, but also partially eludes the reach of its owner as norms and value systems are typically created collectively and exceed the control of an individual.

and *affecting* another, where the 'me' who is looked at is also acknowledged as a 'you' (rather than merely being treated as an object) by the other. Invited and given space to act from early on (in proto-conversations as well as in joint object routines) the infant can experience the 'self' as agency, as an 'I', enacting itself into the available action structures. Also, when putting forth its own actions, the 'I' can experience itself as having an effect, being responded to and thus being acknowledged. This occurs particularly through affect- and action-attunement, where the mother responds to the infant's action by mirroring back an aspect of the action with cross-modal variation (e.g. verbally commenting on an infant's manual action, matching it in rhythm and level of arousal) thus carving out and reifying the action as well as acknowledging the actor in its current state of arousal and affect (Stern, 1985).

*Structure, openness, and self in early dialogue:* In these early infant-caregiver dialogues, processes of self-other awareness arise in an interplay between jointly enacted action structures and openness to the other and to change. Co-created structures provide a framework for actions in which and as which a 'self' may experience itself. With the help of the adult and through the ensuing interaction dynamics and repetitions, stable patterns emerge providing a medium for stable and consistent experience of 'self' and 'other'. Conversely, in being open to and acknowledging the other's presence, in responding, and letting oneself be affected and led by the other, the equally vital role of openness becomes manifest for interactions to continue and 'self' and 'other' to be experienced.

### **Selves Enacted through Joint Participation in Shared Cultural Routines**

Infants and caregivers jointly practise cultural routines from early on, which are not entirely dyadic (solely revolving around the interaction partners and their affective exchanges) but where 'something else', a 'third thing', plays a major role: an object, a specific cultural form of action, a specific goal to be reached, or a societal rule to be followed. Here the participants — though staying in contact with each other — are typically not completely (but are at least partially) focused on each other, with some modalities decoupled and involved with something else; the dyad is opening up to the world.

*Joint structuring of actions involving objects:* From early on infants actively participate in joint cultural practices involving objects, e.g. looking at a book together from 3 months on, 'helpfully' lifting their bottom in nappy changing routines at 3 months, or covering and re-covering their face with a blanket in peek-a-boo even at 4 months. Caregivers facilitate this participation by structuring the interaction in various ways: multimodally carving out objects to engage with, e.g. dynamically pointing up and down the picture of an elephant while rhythmically voicing 'e-le-phant', or creating multimodal invariances which stand out as a 'unit' from a background and thus parse the scene. And they rhythmically pattern actions, ostensibly shaping them into exciting action arcs with a beginning, build-up, climax, and resolution. In this way they not only co-regulate the infant's arousal, for example by placing relevant action events or objects

at prominent points in the arc and marking them verbally, but also create a practical and intuitive action framework helping the infant to orient and participate. Repeatedly moving together through these affect-imbued action arcs provides the opportunity for infants to experience themselves acting into a space opened up by the caregiver, and, in relation with the other, enacting an activity which is bigger than that which could be accomplished alone (Rossmanith *et al.*, 2014; in preparation).

At 3–4 months infants are mostly alert and responsive, and — with their attention drawn to relevant objects and events by the local cues provided by the caregiver — follow their caregiver’s lead through the activity, even if with slight delay. In some frequently practised and clearly structured routines, infants already show great fluency at 3 or 4 months. Over the next months, interaction with their caregivers becomes more finely attuned and subtle, some of the routines are ritualized: that is, a partially performed or subtly indicated action becomes sufficient for the well-practised partner to respond appropriately. In the nappy change interactions of a well attuned mother– infant dyad at 6 months, for example, a ‘Ta!’ (i.e. thank you) — which in previous months was used by the mother to thank the infant at the end of the interaction — now could be deliberately used at any time as a cue to prompt the infant to lift her bottom.

*Directives and societal rules — being drawn into explicit cultural structures:* From around 6 or 7 months of age parents (differently in different societies) increasingly use directives as they draw infants into cultural practices and actions, by setting up playful as well as serious and repeated routines of engagement around them. They issue many directives to infants everyday — to look at something, to wave, to clap, to come to them, to go to someone, to fold their hands in prayer before an idol, to roll a ball to them, to give, to take, to not spit, to wait, to stand, to sit, and so on — before infants can quite understand the words involved, and they repeat these directives, turning them into routines. Tentative infant compliance with these routines enables the construction of structures at higher levels and the practice of participation itself (which is a different level of structure, a meta- structural practice) (Reddy, Liebal, *et al.*, 2013).

*Self–other awareness between structure and openness in cultural routines:* As a first repertoire of stable shared action routines is established, the infant may experience itself in and across specific routines as a co-participant performing specific actions with another person’s specific action, the whole embedded within a larger frame- work. The I-aspect might now arise more pronounced and determined within these routines and infants start initiating social actions on objects. The me-aspect might be felt more defined as being the person of whom specific actions in specific contexts are expected. The possibilities for and instances of openness to engage become more differentiated as well as more specific: one partner can invite and wait for the other to participate with specific actions at a specific point in time. The other can be willing and choose to participate at a specific time with a specific action — or not.

These kinds of interactions and the ways in which self and other might arise in them might indeed form a bridge between self–other awareness in dyadic interactions (with its potential I–You and We seeds), and full-blown triadic interactions (with more ‘objectified’ forms of self, where the self can see itself as seen by others, as an ‘entity’ in relation to other ‘entities’). As interactions get known and established as stable routines — hence ‘reified’ — the ‘I–You and We’ from dyadic interactions find themselves not only in relation to each other but in relation to ‘something else’ (to specific bigger action structures), which over time get elaborated into a highly structured shared action space, within which both participants can direct one another’s attention and actions.

### **Jointly Modifying and Negotiating Shared Routines**

*Social games:* Once an interaction pattern is established it can also be modified, re-combined, and played with, as is evident in social games from 3–4 months. In one example at 7 months, a playing mother–infant pair quickly move from ‘blowing-belly-button’ to ‘peek-a-boo’ to ‘smelly feet’ with the mother briefly pausing at suspense and decision points from where she could move into a different game depending on the infant’s response (Rossmann *et al.*, in preparation). *Clowning:* Also from this age, around the middle of the first year infants play a much more obvious role in setting up new interactive structures and violating structures that they have just mastered or accepted. Sensitive to others’ emotional reactions to things, from around 7 months infants start to play with these reactions — often performing extreme and absurd actions — in order to evoke and re- elicit laughter and amusement in others. Such clowning might involve shaking the head repeatedly, making funny sounds, odd facial expressions, doing absurd things with objects, or fake coughing. The actions themselves rely clearly on the relation with the other — if they amuse they survive, if they receive no response they die out. These relational structures confirm not only the infant in a new role as clown, but also the relationship itself as one constituted by amusement.

*Teasing:* From around 9 months of age infants also start to provoke. They playfully violate established understandings and gestures or newly learned ‘rules’. Having just learned to give objects in response to open palm requests, they offer and cheekily withdraw the object before it is taken. Having grasped that the plug socket is a no-go area, they reach out a hand and almost touch it, watching for reactions. They tease others by provocatively playing with newly established structures. In teasing, infants use structure (as do adults in even more complex ways) to take the relationship further; the violations cause surprise, alarm, amusement, and then a denouement, a coming together into a deeper level of resolution and intimacy. A new openness has been enabled between self and other (Reddy, 1991; Reddy and Mireault, 2015).

*Self–other awareness between structure and openness:* Here against the background of already established shared action structures, ‘self’ and ‘other’ can be felt acutely in varying, exaggerating, violating these structures. Deviating and breaking out of established patterns as well as profoundly affecting the other as a consequence may contribute to a new form of experiencing agency and ‘self’ as the author of specific, original actions (the ‘I’-aspect of self). At the same time being seen performing specific actions and being acknowledged and admired for particular ones affirms the ‘me’-aspect of self. On the receiving end of such variations in action structures, when one’s expectations are playfully violated, the sense of ‘me’ may deepen as one feels oneself addressed with intention, with a deliberate effort to affect ‘me’ building on a history of such engagements. Thus, what is implicit in these playful variations is ‘I affect you in a way in which I am acknowledging our relationship’.

These variations may contribute to further develop a sense of ‘we- awareness’ not only by adding to a unique shared history but also by inviting the participants — rather than to merely know and follow the steps of the routine — to pay close attention to the other’s (unexpected) actions and to diligently coordinate one’s own actions with them, thus enhancing mutual attunement and fostering cooperation. Across the repertoire of established action routines and their respective variations, a particular interaction structure comes to stand out even clearer and becomes increasingly graspable as an ‘object’ which can be jointly related to, modified, and negotiated about.

### **Opening a Conversation with Spiritual Traditions**

So what can we learn from infants’ engagements in their everyday worlds about the self? And how might this connect to Buddhist and other spiritual traditions?

We identify here several points of linkage which may serve as the start of a conversation between these different traditions.

First, very young infants do not have a concept of self and lack the linguistic and narrative wherewithal which for adults is a major source for maintaining a self as a reified, separate, and enduring entity. In Buddhist dharma, this reified self is pointed out as illusory and a source of suffering. However, contrary to earlier accounts about the lack of self–non-self differentiation at birth, numerous studies now suggest that even before birth, and certainly immediately after birth, infants distinguish between consequences of actions generated by self and other, respectively, and guide their actions appropriately with respect to different targets (self, world, or other). This set of basic self–non-self distinctions does not map onto adult conceptual and linguistic distinctions between self, other, and world. Rather, it can be seen as a basic pattern enacted by living beings, in the course of striving to sustain themselves — approaching pleasure and avoiding pain — relating to and participating in a world of things and others. This resonates with the Buddhist notion of co-dependent arising or origination of self and world (compare Varela,

Thompson and Rosch, 1991), and may be regarded as the beginning of a gradual process of self-reification, coming in different forms and degrees.

Second, the interpersonal self emerges within interpersonal engagements, with each participant *feeling* the other through their own actions and emotional responses. In an infant's coy smile to an adult greeting, for example, the expression of self–other awareness involves a dynamic changing shape (intensifying, turning away, returning), regulating the interaction and leaving both partners affected and changed. In such delicate encounters both 'self' and 'other' are structures, at times more pronounced and solid, at times more fleeting and permeable, with different boundaries or facets in different relations. This corresponds to images of the self as an 'eddy in the social stream' (Mead, 1934), drawing from James's 'stream of consciousness' (James, 1892), which are strikingly similar to the Buddhist simile of the self as a wave in the ocean; each highlights the dynamic, fleeting character of a self embodied in action that cannot be understood as an isolated entity.

Third, we suggest that the self develops within and through jointly created structures:

First, in very early dyadic interactions, interaction histories provide patterns or structures which serve as a *medium* within which engagements can occur and self and other can be consistently experienced in direct contact. The powerful effects of patterns of contingent relating between self and other can be seen both in infant coy smiles to greetings and in distress to its violation. This is shown in the still-face studies (Cohn and Tronick, 1983) where infant distress is very evident (and can affect the partner too), and in the studies of infants of depressed mothers (Field *et al.*, 1988) who had adapted to the different response patterns of their mothers and subsequently affected new interaction partners with their adaptation.

Second, structures can also act as *containers* within which infants can experience agency in particular contexts. For example, jointly performed routines such as nappy changing involve a series of steps — lying on the changing mat, feeling the nappy open, hearing the mother speak, feeling the nappy removed, etc., with the infant herself performing some actions — such as lifting the bottom at the right moment. The infant's participation is enabled by the structure of the routine. These repeated experiences, allowing action parsing and recognition of specific contingencies, may lead to an 'objectified' understanding of self as a co-participant in complex actions.

With the establishment of these kinds of interactions, the basic processes that continually shape us as 'personal and cultural selves' are already in place in the first year of life. To the extent that we are what we do, our skills, habits, daily routines, interaction dynamics all constitute a 'procedural self', a circumscribed space of actions and lived experience. Interpersonal and cultural interactions, customs and (implicit) norms sanction — encourage or impede — our actions, defining and delimiting this self-in-social-context.

Third, structures can also be the *stable background* against which infants can experience themselves in new ways. They can now be 'owners' of actions as in 'clowning' or 'showing-off', showing pride at being acknowledged and recognized by others' responses to the actions, or shame at the absence of such recognition. They can be 'authors' of new actions, varying and deliberately deviating from established routines as in teasing. These interactions may contribute to a solidifying sense of self extended over longer periods of time. As structures (joint action patterns) become increasingly fluent and familiar they also become increasingly reified and thus available as *objects* which can be jointly attended to, modified, or negotiated. Early forms of such reification are already evident at around 6 months, e.g. in book sharing, when infants and caregiver engage in affective exchanges as 'comments' on the ongoing activity. Joint relating to such action routines as 'objects' becomes more frequent over the next months as caregivers and infants jointly modify their games, particularly clear from around 9 months in deliberate teasing.

This way of jointly relating to previously established action patterns as objects of shared concern could be argued to be a basic form of *reflection*, a reflective movement directing attention (and actions) to the jointly created action. By enhancing the understanding of the action structure as well as the role of the self, this may over time lead to a more objectified sense of self, as being seen from a distance, from another's perspective, as one 'entity' in relation to other 'entities'. Reflection or reflexivity is perhaps the most characteristic, or at least the most frequently discussed, aspect of 'self'. Mead defined the self as 'that which can be an object to itself' (Mead, 1934, p. 140). Adyashanti describes the self as a reflective movement of consciousness looking at its own experiences (which e.g. might mean looking at the 'ego' which itself is founded in reflection) (Adyashanti, this issue). The reflexive aspect of self-awareness may have different forms and levels (Almaas, this issue). Inherent or pre-reflective reflexivity may be distinguished from explicit re-reflection and finally the movement of reflection alone. Inherent reflexivity of consciousness is the awareness of being aware which accompanies every experience. Explicit re-reflection may be seen as the reflection that occurs through rational thought and language, and can be placed as occurring in the middle of the second year with the emergence of a concept of self (Lewis, 1995). Finally, in the context of spiritual practice, when awareness is deliberately directed onto itself, the self may be experienced as this reflecting awareness witnessing experiences as they arise. Adyashanti (this issue) describes a point where there is the movement of reflection but nothing to reflect upon, no conflict, distinction, division (and hence experience) so all that remains is awareness aware of itself and the process of reflection and hence the self ceases altogether.

Returning to self-development in infancy, even the basic feedback loops of prospective actions could already be conceived of as a basic form of 're-reflection'. In early dialogues, specific actions are reflected back to the infant by the adult via affect attunement. When infants and caregivers finally start jointly relating to shared actions, this may contribute to more complex ways of creating new structures together,

including imitation and symbolic activities such as labelling. As infants over the next years come to participate and live in increasingly complex networks of structure and structure creation, they increasingly treat objects in conventional ways — but also engage in symbol play — and at around 3 years they participate in setting up explicit rules, and stick to and feel bound by established rules (Rakoczy, Warneken and Tomasello, 2008). All this again goes hand in hand with (ever) more complex ways of shaping and negotiating the self, in particular the ‘conceptual’ and ‘narrative’ self (Gallagher and Hutto, 2008). Thus, for developmental psychology, the development of a conceptual self is seen as an important milestone on the road to a fully functioning self — while Buddhist dharma cautions us about self-reification as an illusion and source of suffering. Exploring how these perspectives relate, we enquire into how the self and indeed jointly created action structures both inherently enhance engagement as well as lead to separation.

### **Structures Enhancing and Hindering Engagement**

Interaction patterns established as shared action routines provide opportunities for further engagement on a cultural as well as an inter-personal level. At the interpersonal level the establishment of shared action patterns by repeated performance of the same actions between interaction partners allows the patterns to become familiar and hence predictable. This not only fosters a feeling of security but also allows more active, meaningful (and anticipatory) participation by the infant, thus serving as a ‘container’ for feeling self and other in engagement, joined in a larger activity. As the component actions become established and reified, they can serve as ‘objects’ for further reference, modification, and expansion, that is, further engagement. Thus, structure seems to open the door for the emergence of further structures to engage with. In the interpersonal situation, these emerging and enlarging structures contribute to a unique history of the particular relationship, increasing intimacy and what might be called a ‘we-ness’ between them. The joint shaping of what might be seen as ‘an action landscape’ inevitably excludes other paths and channels, with other potentials remaining unrealized. But this selectivity too maintains the structures and identity of the relationship.

These consequences also hold at the cultural level. Neither care-givers nor infants are isolated agents, but are always participants in and co-creators of sociocultural niches. As illustrated in previous sections, infants participate in cultural practices from early on and are trained in the implicit norms and conventions as well as the more explicit societal rules of the respective social group. Practices and conventions range from differentiation of language-specific phonemes and prosody (Werker and Tees, 1984), as well as culture-specific ways of moving, sitting, and walking (Adolph, Karasik and Tamis-LeMonda, 2010; Mauss, 1973), to cultural formats such as greetings, multi-party conversations, book sharing, helping, or specific rules of etiquette. For example, the immediate response to infant burps and bowel movements, outside the immediate feeding context (within which they tend to be praised), may be responded to with a culturally appropriate ‘Excuse you!’, which might surprise foreign visitors, but is a common feature in

British middle-class households. Familiarity with and skills in these practices allow the infant to interact and participate beyond the interpersonal and to belong to a specific socio-cultural group. The infant's familiarity with the book as an artefact and with the sequence of activities in book sharing allows her to meaningfully interact beyond the close circle of daily interaction partners, with other members of the culture.

On the flip-side of the coin, however, the very same jointly practised and ingrained action patterns which enable joint engagement, intimacy, and belonging also lead to separation from others and the world (and even to separation within the self). The 7- or 8-month-old's anxious withdrawal from the stranger who is unfamiliar with her games and action patterns (compare also Trevarthen, 2004) could be seen as an early example of separation and an incipient 'us' and 'them' divide. Sticking to established action patterns can also contribute to separations within the self. The caregiver's interests, inclinations, and adherence to sociocultural norms might lead to some of the infants' actions being routinely picked up and 'affirmed' while others remain unresponded to and dropped. Daniel Stern (1985) talks about 'selective affect attunement' as a powerful contributor to the development of personality types or one-sided coping strategies for interacting: think of the case of an infant only consistently attuned to by the caregivers when acting enthusiastically but not when in a sad mood. Learning that one of these states is shareable while the other is not, she will likely live and relate to these respective emotions differently (perhaps ignoring or denying one altogether), thus creating a line of separation within her life, experience, and self.

### **Structure and Openness**

The self along with other structures enhances engagement and at the same time hinders it, creating both separation and connection, stability and change. Even within each interaction, there is openness in the form of variability. The sources of this variability are multiple: they lie in the separate agency and spontaneity of the participants, in the encounter between present actions with previously established structures, and in the ability of the participants to be affected and to change in the present encounter between them. Each self meets the other as both familiar and surprising or transcendent, as a particular, bounded self as well as in ways in which these boundaries recede. This dialectic of knowing and not knowing the other, and knowing and not knowing what is going to happen in the encounter, is common to participants. Within this shared unknowing lies connection (see also Buber, 1923/1983). And within this connection lies both form and emptiness.

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