

The earliest sense of self and others: Merleau-Ponty and recent developmental studies

SHAUN GALLAGHER & ANDREW N. MELTZOFF

ABSTRACT Recent studies in developmental psychology have found evidence to suggest that there exists an innate system that accounts for the possibilities of early infant imitation and the existence of phantom limbs in cases of congenital absence of limbs. These results challenge traditional assumptions about the status and development of the body schema and body image, and about the nature of the translation process between perceptual experience and motor ability. Merleau-Ponty, who was greatly influenced by his study of developmental psychology, and whose phenomenology of perception was closely tied to the concept of the body schema, accepted these traditional assumptions. They also informed his philosophical conclusions concerning the experience of self and others. We re-examine issues involved in understanding self and others in light of the more recent research in developmental psychology. More specifically our re-examination challenges a number of Merleau-Ponty's conclusions and suggests, in contrast, that the newborn infant is capable of a rudimentary differentiation between self and non-self.

Recent empirical studies in developmental psychology have not only revolutionized that field by challenging and revising a variety of traditional assumptions, they have also raised questions with important implications for a philosophical understanding of the experiences of self and other persons. In this paper we discuss two related research areas that have undergone significant, and even radical changes since the early 1960s. These two areas involve the existence of phantom limbs in cases of congenital absence of limbs (aplasia), and the imitation of body movements in infants. In contrast to traditional assumptions, the evidence from recent studies suggests that there exists an innate system that accounts for the possibilities of early infant imitation and the existence of aplasic phantom limbs. These results challenge traditional assumptions about the status and development of the body schema and body image, and about the nature of the translation process between perceptual experience and motor ability.

On all accounts, both traditional and the more recent, the organized and meaningful perception of self and of others depends upon a proprioceptive system

Dr Shaun Gallagher, Professor of Philosophy, Canisius College, Buffalo, NY 14208-1098, USA. Email: gallagher@canisius.edu. Professor Andrew N. Meltzoff, Department of Psychology, University of Washington, Seattle, WA98195, USA. Email: meltzoff@u.washington.edu

of a developed body schema organized to allow for an intermodal translation between external and internal senses. Does the body schema's innate status have any consequences for how we experience ourselves and others, or how we accomplish intermodal translation?

These issues stand on their own as significant ones for both psychology and philosophy, and we want to explore them for their own importance. But these are also issues that were very much the concern of Merleau-Ponty. Perhaps more than any other philosopher, Merleau-Ponty has been known as a philosopher of the body. He made use of the concept of body schema (*schema corporel*) in discussions that ranged across a number of cognitive and existential issues (Merleau-Ponty, 1962). In this respect his philosophy was greatly influenced by his study of developmental psychology and by the psychologists and psychological research he cited, including the work of Piaget, Wallon, Guillaume, and Lhermitte. In specific reference to Merleau-Ponty we want to show that in a number of ways his conceptions of infancy and development were imprecise.

In contrast to Merleau-Ponty's view, it is not the case that various aspects of development are blocked by a neurological immaturity that prevents the elaboration of a body schema. Furthermore, infants are capable of external perception and of imitating the gestures of others much earlier than Merleau-Ponty thought. The recent studies of newborn imitation suggest that an experiential connection between self and others exists right from birth, and that this connection is not, as Merleau-Ponty believed, a confused and undifferentiated experience. In effect, infants are able to do several things that Merleau-Ponty, relying on developmental studies of his own day, assumed they would not be able to do. This fact motivates us to reconsider his conclusions about the relations between self-experience and the experience of other persons.

1. A scientific dispute concerning aplasic phantom limbs

In 1961, the year of Merleau-Ponty's death, a scientific debate about the status of phantom limbs began. The focus of the debate concerned whether phantoms exist in cases of the congenital absence of a limb (aplasia) and early (prior to age six) amputations. The psychological and neurological literature stretching from the early 20th century to the early 1960s indicated that in cases of aplasia and in most cases of early amputation no phantom develops. This, indeed, was the established scientific doctrine and it was the view held in the overwhelming majority of studies up until the early 1960s (e.g. Bailey & Moersch, 1941; Bonnier, 1905; Browder & Gallagher, 1948; Gerstmann, 1927; Head, 1920; Kolb, 1954; Lhermitte, 1939; Pick, 1915; Simmel, 1966, 1962; and White & Sweet, 1955).

Simmel (1961) reaffirmed this tradition, offering evidence that supported the contention that phantoms for congenitally-missing limbs do not exist. Making the traditional assumption that the phantom limb is exclusively a phenomenon of the body schema, Simmel also made clear what is at stake in this observation, namely, the view that the body schema results from or is built up in experienced (proprioceptive, kinesthetic, and tactile) sensations. On the hypothesis that the body schema is

not present at birth, “if a person lacks an extremity since birth, he has never received such sensations from the missing limb, and he should therefore not have a phantom” (Simmel, 1958). The studies conducted by Simmel indicated that this is precisely the case. There is no phantom in aplasia because the limb in question is never experienced, and thus is never incorporated into the body schema.

This view of the phantom was also expressed by Merleau-Ponty in connection with his acceptance of the received doctrine that the body schema is a product of development. Although he conceives of the body schema as an anterior condition of possibility, a dynamic force of integration that cannot be reduced to the sum “of associations established during experience”, still, in terms of development, the operations of the body schema are “‘learnt’ from the time of global reactions of the whole body to tactile stimuli in the baby...” (1962, pp. 101, 122n). The body schema functions *as if* it were an “innate complex” (p. 84), that is, as strongly and pervasively as if it were innate, but, as an acquired habit with a developmental history, it is not innate. It follows that the existence of a phantom limb is based on a history of sensory inputs, and the continuation of sensory inputs at the stump. Sensory impulses “establish and maintain its place, prevent it from being abolished, and cause it still to count in the organism”. They are the *sine qua non* by which we “build up the phantom” (1962, p. 86).

Consistent with his view of the body schema, Merleau-Ponty, following Wallon, believed that experience “begins by being introceptive”, and that the newborn is without external perceptual ability (1964, p. 121). What William James famously calls the “blooming, buzzing confusion”, and what Merleau-Ponty calls the “chaos in which I am submerged” (1964, p. 118), is not straightened out until between the third and sixth month when a collaboration takes place between the introceptive and extroceptive domains—a collaboration that is not there at the beginning of life (1962, p. 121). One reason for the lack of any organized extroceptive perception is the absence of a “minimal bodily equilibrium”.

Up to that moment [extroceptive] perception is impossible.... The operation of a postural schema—that is, a global consciousness of my body’s position in space, with the corrective reflexes that impose themselves at each moment, the global consciousness of the spatiality of my body—all this is necessary for [extroceptive] perception (Wallon). (1964, p. 122)

The reason for the lack of a body schema, according to Merleau-Ponty, is neurological—a certain lack of physiological development. Myelination is said to occur between the third and sixth months and is later in some limbs than in others (feet vs hand; left hand vs right hand). The development of the body schema happens only following these physiological conditions and thus only in a fragmentary way at first. It is then gradually integrated and, in a reciprocal system with external perception and sensory inputs, “becomes precise, restructured, and mature little by little” (1964, pp. 123).

A challenge to this general agreement about the development of the body schema and the impossibility of aplastic phantom limbs started to take shape in 1961. Weinstein and Sersen (1961) cited evidence that directly challenged the received

doctrine. They found, in a study of 30 cases of aplasia, that 17% experienced a phantom limb. Even this small percentage, they reasoned, would be enough to indicate “that phantoms need not result from prior stimulation of a part.... The fact that phantoms can exist for limbs which themselves never existed indicates that some native factor must be responsible, at least in part, for the existence of the phantoms” (Weinstein & Sersen, 1961, p. 910). In more precise terms, the evidence raises the possibility that the basic framework of a body schema is innate. Subsequent studies (Melzack, 1989; Poeck, 1963, 1964; Scatena, 1990; Vetter & Weinstein, 1967; Weinstein *et al.*, 1964) supported the thesis of an innate body schema based on a built-in neural framework or substrate; a schema from the very beginning, but one that is also open to modification by multimodal sensory experiences throughout the lifetime of the organism.

2. The body schema and the body image

(a) *A conceptual distinction*

The concept of an innate body schema clearly challenges the traditional view that the body schema is an acquired postural model. However, is the concept of an innate body schema validated by the studies that show the existence of an aplasic phantom limb? This depends on how one defines *body schema* and the extent to which it can be clearly distinguished from the concept of *body image*. As a provisional characterization (to be elaborated in more detail below), we can make the distinction in the following way. A body schema is a system of motor capacities that function without the necessity of perceptual monitoring. Body image, in contrast, consists of a system of perceptions, attitudes, and beliefs pertaining to one’s own body. In light of the historical use and misuse of these concepts, however, we need to analyse the distinction between body schema and body image in more detail.

There is a long tradition of ambiguous terminological usage and conceptual misusage in the psychological literature on body image and/or body schema. A good deal of the current confusion between the two concepts can be traced back to Schilder (1923, 1935/1950), who had employed Head’s (1920) term “body schema” to signify a conscious image or representation of the body. Head’s concept of body schema, however, did not involve an image or perception of the body. Nonetheless, Schilder, and others who followed, used the terms interchangeably (for summary and critical review, see Gallagher, 1986; Poeck & Orgass, 1971). Schilder’s definition amply shows this conflation of terms:

The image of the human body means the picture of our own body which we form in our mind, that is to say the way the body appears to ourselves.... We call it a schema of our body or bodily schema, or, following Head...postural model of the body. The body schema is the tri-dimensional image everybody has about himself. We may call it ‘body-image’.
(1935/1950, p. 11)

Without clearly distinguishing between these two concepts, Schilder character-

