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ity' and the 'transcendency' of the world, at the same time showing the world to be inseparable from transcendental subjectivity."

36. Husserl, *Ideas I*, 205.
37. Husserl, *Cartesian Meditations*, 41.
38. Edmund Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy, Second Book: Studies in the Phenomenology of Constitution*, trans. R. Rojcewicz and A. Schuwer (Dordrecht: Kluwer Academic Publishers, 1989), 61.
39. Ibid.
40. Cf. Zahavi, *Husserl's Phenomenology*, 112–15.
41. These two volumes are Edmund Husserl, *Aufsätze und Vorträge (1922–1937)*, ed. Thomas Nenon and Hans Rainer, Husserliana 27 (Dordrecht: Kluwer Academic Publishers, 1989), and *Vorlesungen über Ethik und Wertlehre 1908-1914,* ed. Ullrich Melle, Husserliana 28 (Dordrecht: Kluwer Academic Publishers, 1998). All translations are John J. Drummond's.
42. Tom Nenon, "Willing and Acting in Husserl's Lectures on Ethics and Value Theory," *Man and World* 24 (1990): 301. Cf. Gary E. Overvold, "Husserl on Reason and Justification in Ethics" in *Descriptions*, ed. Don Ihde and Hugh J. Silverman (Albany: State University of New York Press, 1985) 248–55. Overvold is much more skeptical about the value of these texts in formulating an ethics, but this skepticism concerns any attempt to justify ethics through reason rather than with Husserl in particular.
43. John J. Drummond, "Moral Objectivity: Husserl's Sentiments of the Understanding," *Husserl Studies* 12 (1995): 166.
44. Husserl, *Vorlesungen über Ethik und Wertlehre*, 252.
45. For a good discussion of the foundedness of emotional acts see Drummond, "Moral Objectivity."
46. I say "moral" normativity to indicate the universality and necessity of moral obligation and to distinguish this kind of normativity from the simple "norm" or what most people do most of the time.
47. Husserl, *Aufsätze und Vorträge*, 23.
48. Ibid., 24.
49. Ibid., 29.
50. Ibid., 33.
51. Husserl, *Vorlesungen über Ethik und Wertlehre*, 145.
52. Ibid., 240–41.
53. Ibid., 354.
54. Ibid., 355. Emphasis mine.
55. Edmund Husserl, Ms. F I 40, 133a, quoted in Ulrich Melle's "Edmund Husserl," 238.
56. Husserl, *Vorlesungen über Ethik und Wertlehre*, 43. Emphasis mine.
57. A good treatment of the different species of a priori in Husserl's phenomenology is given by John J. Drummond, "Synthesis, Identity, and the A Priori," *Recherches Husserliennes* 4 (1995): 27–51. The following treatment of the a priori is greatly indebted to Drummond's discussion.
58. Ibid., 41–42.
59. Drummond, "Moral Objectivity," 174.
60. At this point it is important to note that the kinds of claims that could be made regarding the material a priori would be rather modest. In other words, the material a priori does not allow one to "deduce" virtues or goods that one is obligated to pursue. What it does is indicate goods (ends in Kant's language) that human beings should pursue, and our obligation to pursue these would be what Kant calls wide duties rather than strict.
61. Though I cannot articulate this here, I think there are significant similarities between Husserl's project in his later reflections on ethics and Christine Korsgaard's Kantian argument for normativity in *The Sources of Normativity*, ed. Onara O'Neill (Cambridge: Cambridge University Press, 1996), 90–166. Korsgaard's emphasis on identities and her grounding of ethics in our identity as members of the Kindgom of Ends resembles Husserl's discussion of forms of lifeand the absolute end of the ethical human being, respectively. Cf. Husserl, *Aufsätze und Vorträge*, esp. 29.
62. I would like to thank John J. Drummond, Kem Crimmins, and Michael Kelly for their helpful comments on earlier drafts of this essay, as well as those who asked questions during the session at which it was presented.

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MERLEAU-PONTY IN DIALOGUE WITH THE COGNITIVE SCIENCES IN LIGHT OF RECENT IMITATION RESEARCH

Beata Stawarska

Recent revival of interest in pursuing a constructive dialogue between phenomenologists and cognitive scientists testifies, if need be, that the methodologies based on first person approaches, i.e., rigorous and trained reflection on experience, and objective or third person approaches, based on external observation, can be correlated. The question of how exactly this correlation is to be achieved has received a number of responses.[1] One view, neurophenomenology, proposed by F. Varela, stipulates that the disciplines based on first and third person methodologies should enter in a relation of mutual constraint and enlightenment.[2] This relation is especially productive in cases of conflict between views espoused by phenomenologists and natural scientists, in that it allows the disciplines to throw a critical light on each other and also to stimulate their respective developments. Another view, heterophenomenology, defended by Dennett, claims that first-person reports should be transformed into raw data for science, i.e., for third person analysis.[3] This view has received critical reception from the phenomenological camp, to the effect that it is a naive and possibly un-scientific strategy which does not integrate but ultimately effaces the first person perspective of phenomenological analysis from objective study.[4] In the heterophenomenological framework, the scientist who interprets the subjective reports in view of turning them into data is herself not trained in the phenomenological method and relies on her own first-person experience and/or upon unbracketed preexisting beliefs which tend to be derived from the so-called folk psychology. Finally, there have recently been developments towards having a phenomenologically enlightened experimental science or front-loaded phenomenology. In this perspective, phenomenological contributions should be used directly in conducting empirical research. The novelty of this perspective lies in that it moves from the unidirectional influence of the natural sciences on phenomenology, as evidenced notably in the work of Merleau-Ponty as well as Sartre, to a bi-directional relation between the two disciplines, where phenomenology itself has a say in how natural science progresses.

In this essay, I propose to examine recent studies on neonate imitation in light of this complex dialogue between phenomenology and the cognitive sciences. The contention that I will defend is that imitation studies provide a concrete example of how to conduct the dialogue of mutual constraint and enlightenment between phenomenology and the cognitive sciences. This claim will critically bear on Dennett's heterophenomenological proposal; it will also permit me to hypothesize about front loading phenomenology into experimental research on imitation.

Experimental research into infantile imitation of facial and manual gestures of adults has been conducted over the last thirty years by a team of researchers in many parts of the world. In the United States, imitation has been most extensively studied by Andrew Meltzoff and his associates. They have conclusively demonstrated that infants are able to imitate simple facial gestures of adults, such as tongue protrusion and mouth opening, literally from birth on.[5] The infants do not imitate in a reflex like fashion, i.e., they do not automatically produce a fully fledged copy of what they see the adult perform. They initially experiment with the relevant body part (e.g., the tongue) to gradually arrive at the gesture matching the one displayed by the adult. Infantile imitation cannot therefore be explained in terms of a simple releasing mechanism but seems to

mobilize a more complex cognitive system.[6] This conclusion is further substantiated by the fact that infants not only imitate what they see the adult do on-line, but can also imitate from memory. For example, in a specially designed experiment to test delayed imitation, infants observed two facial gestures of mouth opening and tongue protrusion; they were prevented from mimicking the facial display by having a pacifier inserted in their mouth during the experiment. It was documented that after the pacifier has been removed and the adult assumed a neutral facial expression, the infants imitated the gesture they previously perceived.[7]

This data documents the precocious existence and relative complexity of the so-called invisible imitation, i.e., imitation performed by parts of the body that cannot be visually accessed by self (i.e., the face). The early presence of invisible imitation has enabled Meltzoff et al. to argue for an innate representational system which regulates the intermodal connection of visual information about other people's facial gestures with the proprioceptive awareness of the movements and location of the infant's own unseen face. Following the researchers, the imitated facial gesture of, e.g., mouth opening is coded in a sense-neutral or supramodal representation which can be cast both in the modality of vision and proprioception. The fact that neonates come to the world equipped with a representational system which handles the communication between different sense modalities accounts for the possibility and the mechanics of their imitative performance: the active intermodal matching (AIM) system transfers the representation of a given gesture from its perceived appearance on the adult's face to the infant's "invisible" face, thus facilitating the reproduction of a perceived act.[8]

The intermodal matching system which interrelates perceived and performed activity clearly plays a significant role in how we relate to others or how we register similarities between our own and other people's behavior. This explains why the imitation research has been incorporated into the current debates about how infants form a theory of mind or how they arrive at the idea that other people are mindful agents analogous to themselves.[9] Seen from the phenomenological perspective, the interest and novelty of recent experimental research lies, however, primarily in the challenge and call for revision it poses to the phenomenological accounts of interpersonal relations, e.g., the one developed by Merleau-Ponty. Merleau-Ponty's account is directly informed by previously dominant and currently questioned psychological theories, which declared neonate imitation impossible and located it in later stages of infantile development. Clearly, the debate engendered by the up-to-date psychological reports does not hang exclusively on the sheer factual presence of imitation at the zero point of human ontogenesis. The relevant questions raised by imitation research concern rather the sort of cognitive processes that are mobilized in neonates, their dependence on innate structures and/or experience, and the implications of neonate imitation for any philosophical theory that wants to address the earliest manifestations of intersubjectivity, as Merleau-Ponty's theory does. These philosophical questions raised by up-to-date developmental studies to Merleau-Ponty's phenomenological account of self and others have been recently discussed by Gallagher and Meltzoff. Referring mainly to Merleau-Ponty's Sorbonne lecture on "Child's Relations with Others,"[10] the authors argue that recent developmental studies challenge the philosopher's claim that infants are born into a state of non-differentiated confusion between self and environment and suggest rather that a primitive body schema facilitates the neonate's primitive sense of self and that a basic framework of relations to others exists from birth on.

To substantiate these points, recall that neonate imitation does not operate in a reflex-like fashion but takes the form of a learning process which gradually approximates the perceived facial gesture by infant's own motor performance. The condition *sine qua non* of such gradual approximation of a visual model is that the infant be able to monitor and correct the gesture she performs by means of proprioceptive feedback from her own body. This ability implies that the neonate possesses an innate body schema which facilitates a basic and rudimentary awareness of self as an organized embodied agent with a set of motor possibilities. Another implication of the fact that imitation is a gradual approximation process concerns the infant's relation to the person she imitates: the infant clearly registers the non-identity between her own proprioceptively felt gesture and the visually perceived gesture of the adult, even if the gesture may be cast within the same supramodal framework, as Meltzoff et al. claim. In order to be able to grasp the other's gesture as a model to be attained, the infant must be aware of the distinction between what the other does from what the infant (feels that she) does. It can therefore be concluded that neonate imitation relies on a primitive sense of self and a minimal distinction between self and non-self. Phrased differently, the very *modus operandi* of imitation precludes a confusion between the two actors involved and, insofar as imitation is a process observable at age zero, it follows that a minimal distinction between self and other occurs from the start and not at a later developmental stage.

As Gallagher and Meltzoff observe, Merleau-Ponty would not have objected to the argument that imitation requires the correlated awareness of self and a distinction from non-self. However, following the dominant psychological authorities of his time, notably Piaget's, he assumed that such awareness is precluded at age zero by the relative developmental immaturity of the infant and postponed in ontogenetic time to the age of 8–12 months. Unable to correlate the so-called visual and tactile-kinesthetic schemas, i.e., to intermodally link the visual information received from the outside with the tactile and kinesthetic sensations originating in its own body, the infant cannot imitate facial gestures of others since she is supposedly unable to connect them with the distinct modality in which she experiences her own unseen face in the first months of life. This denial of neonate imitation by psychologists received neurological backing from the then accepted belief that neurological pathways are incompletely myelinated at birth, hindering infant's proprioceptive awareness of her own body and thus excluding any sense of individuated selfhood. Due to these developmental blocks, the infant was thought to live in an anonymous non-differentiated state by a wide range of theorists including Guillaume, Wallon, Lacan—the authors whose views Merleau-Ponty cited and embraced in his lecture on "The Child's Relations with Others." These views postulated the primacy of self-other confusion or, in Piaget's own words, *adualism* as the original state of human sociality. Wallon termed this initial indistinction between me and the other *syncretism* or syncretic sociality. A classic example of this adualistic or syncretic sociality was arguably found in the cases of transitivism; for example, the so-called "emotional contagion" reported in neonate nurseries where the crying of one infant would spread to all the others in the vicinity, regardless of their prior emotional state. This phenomenon of an emotional spill-over was interpreted as a proof that no firm boundaries exist between young infants. On this interpretation, the generalized crying is a multi-voiced yet non-differentiated event, a fusional choir without individuated singers. Merleau-Ponty embraced this interpretation that "indistinction of the two personalities . . . makes transitivism possible,"[11] as much as he accepted that this indistinction follows from the developmental immaturity of the neonate. Invoking up-to-date research in developmental psychology, Meltzoff and Gallagher call the validity of this fusional view of infantile sociality into doubt and argue for the primacy of self and other distinction in human ontogeny. In an effort to pursue a constructive dialogue between the cognitive sciences and phenomenology, the authors thus demonstrate that Merleau-Ponty's views are directly challenged by recent findings from experimental studies into infancy.

It remains to show that this dialogue need not have a purely unilateral character with phenomenology being critiqued by the cognitive camp but that a bilateral dialogue is called for as well. Before elaborating on this point, let me add that Gallagher and Meltzoff's critical argument can be extended

to additional texts by Merleau-Ponty that have not been covered by the two authors, notably the remaining lectures from the Sorbonne series on child psychology and pedagogy (currently available in French),[12] as well as some later philosophical texts which address interpersonal relations, notably the essay on "The Philosopher and His Shadow,"[13] and the working notes from *The Visible and the Invisible*.[14]

In the Sorbonne lectures, Merleau-Ponty positively appreciates some key ideas about early infancy developed by Piaget, despite the fact that Piaget is consistently critiqued for the excessively intellectual interpretation of child behavior. Merleau-Ponty notably endorses Piaget's idea that the child is characterized by initial egocentrism, i.e., an overvaluation of the immediate evidence of her own senses. Merleau-Ponty clarifies that this egocentric slant does not mean, as the term may falsely suggest, that the child is *self*-centered nor even that the child is *self*-conscious. Egocentrism stipulates rather that the infant's experience is characterized by "excessive realism," insofar as the infant does not initially identify the personal quality of her perceptions and, unable to distinguish between her own view and the world in general (or the world for others), equates her own *percipi* with the *esse* of world (184). Piaget's postulate of infantile egocentrism does not point to an excessively self-centered consciousness but testifies rather to an initial lack of (consciousness of) individuated selfhood. As such, it has far reaching consequences for the problematic of self-other relations. If the infantile experience is not attached to a self or if the infant is not aware of the limits of her own perspective and does not distinguish it from an alien one, then the infant cannot make any sense of a non-self or of another self either. Hence the initial lack of separation or the aforementioned *adualism* between self and other.

Merleau-Ponty openly declares in the Sorbonne lectures that the thesis of initial egocentrism is both refined and correct,[15] against the critics who mistakenly identified Piaget's idea with crude subjectivism. More importantly still, the thesis of egocentrism directly informs Merleau-Ponty's own philosophical efforts to move beyond the subjective idealism of Husserl's phenomenology of consciousness to the ontology of impersonal flesh.[16] The references to egocentrism occur in a note of April 1960, where Merleau-Ponty strives to restore the meaning of sensible life irreducible to the consciousness-object distinction. In this note, he distances himself clearly from phenomenology understood as an "ontology that obliges whatever is not nothing to *present* itself to the *consciousness* across *Abschattungen* and as deriving from an originating donation which is an *act*, i.e., one *Erlebnis* among others," and invokes Piaget's psychological contributions in his quest for restoring "life without *Erlebnisse*, without interiority"—a life undistorted by the subjective bias of Husserl's idealist philosophy.[17]

A similar debt to Piaget can be found in the essay "The Philosopher and His Shadow." In this text, Merleau-Ponty redefines Husserl's idealist postulate of a solitary subject or a *solus ipse* in terms of "true and transcendental solitude," which is more radical than in Husserl because it is impersonal. While the *solus ipse* hypothesis continues to theorize others in their experiential absence *for the solitary self*, impersonal solitude precedes self-awareness or is not attached to a self. As such, it precludes the possibility of having an *Erlebnis* of another person. Impersonal solitude is therefore more primary and veridical than the solitude contained in Husserl's pervasively subjectivist picture could ever be. It provides the clue to Merleau-Ponty's thinking about impersonal being—ultimately termed the flesh of the world—which precedes individuated selfhood and displaces Husserl's starting point of the transcendental consciousness to the level of anonymous life. Merleau-Ponty uses notably Piaget's notion of the child's egocentrism to account for this original anonymity. He cites the phenomena of infantile transitivism and the confusion between self and other, which are typical of egocentrism, as a hallmark of the "solipsist layer" redefined along the lines of true and transcendental solitude.[18] It is therefore in direct reference to phenomena studied and interpreted

within developmental psychology that Merleau-Ponty pursues his project of supplementing the idealist stance of Husserl's phenomenology with the ontological principle of anonymity.

It seems therefore fair to conclude that the impetus for the ontological thesis of the primacy of anonymous life over individuated selfhood has been found, in part at least, in contributions from psychology, with Merleau-Ponty's ontological account construing the apparent confusion between self and other no longer as a developmental stage to be overcome in more advanced stages of human ontogenesis but rather as a permanent and basic trait of being. Developmental psychology seems then to have significantly informed Merleau-Ponty's thinking up to its final formulation in terms of the flesh of the world, and not only the reflections dealing explicitly with child psychology and pedagogy. Furthermore, if it is true that the psychological contributions that inform Merleau-Ponty's thinking are in need of revision, as shown in this essay on the example of self-other relations in neonate imitation, then critical light is thrown not only on his child psychology lectures but also on the theories which have been, partially at least, inspired and shaped by the psychological reports, such as the thesis of anonymous impersonal life. In that case, it may be that the potential of Merleau-Ponty's ontological project to fully account for interpersonal relations in terms of the dynamics of impersonal flesh becomes limited, and that an alternative theory of sociality which builds on his insight of the foundational role of embodied experience while incorporating the more up-to-date findings from developmental psychology about the primacy of self-other distinction is called for. This directive for further phenomenological research preserves, it seems, the spirit of Merleau-Ponty's own deliberately cross-disciplinary inquiry and so it rejuvenates rather than simply 'refuting' his philosophy.

Having critically examined Merleau-Ponty's views in light of developments in experimental psychology, I proceed to the second section of this interdisciplinary exchange between phenomenology and the cognitive sciences and raise the question whether phenomenology can throw some revealing light on the contemporary psychological research in turn. This question will be answered in the affirmative. Specifically, it will be argued that phenomenology provides better tools for interpreting the data gathered in experimental research on imitation than those currently in use. Recall that following Meltzoff et al., the neonate imitative performance is regulated by an innate representational mechanism which codes the perceived gestures in sense neutral or supramodal representations that can be cast within different sense modalities, for example proprioception, and so automatically re-enacted by self upon the perception of another's person activity. Following the authors, the functioning of this representational system and so the efficacy of imitation is independent of whether or not given sense modalities have actually been employed by an individual in the course of her life. For example, should a born-blind individual recover sight, her ability to translate newly acquired visual information into another sense modality would be just as swift as in the case of sighted individuals who have relied on visual information throughout their life. On this innate account, the intermodal system would kick in immediately upon sight recovery, independently of learning and experience. Henceforth, the traditional dilemma raised by the seventeenth century philosopher William Molyneux whether a congenitally blind person who can distinguish by touch between a cube and a sphere would be able to distinguish and identify them through vision as well, if she were to recover sight, receives an affirmative response from the defendants of the innate intermodal matching mechanism hypothesis. A special experiment was designed to corroborate this view: young infants were made to orally explore two different types of pacifiers (with the spherical part inserted into the mouth covered with rubber nubs—or smooth), without being able to see them. The infants were subsequently shown both pacifiers and the duration of them fixating the pacifiers was measured. It was shown that the infants fixated the pacifier which was previously inserted into their mouth

longer than the other one, and so intermodally linked visual and tactile presentations of the same object at a very young age.[19]

The question remains, however, whether these experimental findings automatically extend onto the blind population, as Meltzoff and Borton stipulate. This question is clearly answered in the negative by concrete case studies of persons who regained sight in adulthood. These studies demonstrate that sight recovery patients frequently fail to integrate the newly acquired visual information into their habitual ways of dealing with the environment. These individuals cling to their familiar tactile strategies of exploring and manipulating the world and do not automatically correct these tactile habits by means of the visual information at their disposal. It is as if touch offered not only sense-neutral information *about* the world, as Meltzoff stipulates, but also a sense-specific style of interacting *with* the world, which does not automatically translate into the unfamiliar and possibly distinct style of interaction required by the freshly recovered visual sense. Vision introduces distance between the perceiver and the perceived in place of proximity and contact which typifies touch, and it may be that the latter is never fully rendered in the visual givenness of the perceptum. The sight recovery patient described by Oliver Sacks,[20] who insisted on palpating newly encountered objects despite the fact that he could perceive them visually, seems faced with this difficulty of rendering the immediate presence of things to his fingers into their detached appearance in front of his eyes. It seems therefore that perceptual abilities cannot be theorized exclusively in terms of modality neutral representations and information processing mechanisms but that specific perceptual habits need to be taken into account as well.[21] Yet if habits constitute an important variable in the theory of perception, then so does the sensible body which develops them, as Merleau-Ponty has shown.[22] The challenge posed by Merleau-Ponty to Meltzoff would then be not to limit his account to dis-embodied representational mechanisms but to integrate the sensible body and its habitualities into the innate intermodal matching system.

Another question that a phenomenologist may raise to Meltzoff is whether neonate imitation really does substantiate the theory of mind model of interpersonal relations. This model is based on the idea that the self relates to other mindful selves by constructing a theory to the effect that they possess a mind similar to her own. The starting point of self-other relations is located in the first person experience of one's own mind as a matrix for making theoretical inferences about foreign minds. The imitative practice is argued to play a foundational role in this regard, insofar as it enables the infants to relate visual information about others with "internal states, the way the 'feel' themselves to be."[23] However, once we realize that internal states indicate the infant's proprioceptive awareness of her own face in the imitative exchange with the adult, then we may be hesitant to accept the conclusion that the former are akin to internal and private mental events, and henceforth provide the precursors of an invisible mind, as Meltzoff and Gopnik stipulate. The authors claim to follow "common-sense psychology" and adopt its double requirement of interiority and privacy for the mind theory: "mental states are located inside the skin (or the head or the body), while physical objects, including the bodies of others, are located outside it."[24] These internal states are "private experiences," which cannot be "publicly observable." They are defined therefore as invisible sensations accessible exclusively in the first person mode and confined to the interiority of subjective life. We may wonder, however, whether sensory awareness of one's own face really does support this idea of an invisible subject residing in a visible body. It may be argued, to the contrary, that Meltzoff and Gopnik have made an unjustified theoretical leap from the qualification of facial imitation as invisible, i.e., devoid of visual data about one's own face, to the hypothesis of an invisible mind as the necessary prerequisite of such imitation. To substantiate this critical point if suffices to clarify, with the help of phenomenological analysis, that unseen does not equal visually neutral and so does not permit making the transposition from the face proper to invisible/internal/private mental states.

The face proper may be thought of in terms of an *Abschattung*, a hidden profile of the body, which is in principle available to view even though it is removed from my own visual field. The body proper evades full visual inspection by the seer insofar as it provides the very means by which such inspection is carried out in the first place. The body proper cannot therefore be fully captured in terms of a visible thing, unless we resort to positing a separate body-spectator who perceives the body-object in its entirety, and then yet another one to watch the spectator, and so on, *ad infinitum*. This essential impossibility to theorize the body proper exclusively in terms of visible things does not, however, remove it from the visible register either. The factual impossibility to perceive parts of my body does not cancel the validity of Merleau-Ponty's ontological thesis about the reversibility of the senses, which postulates a necessary interrelation of seeing and of being seen. Construed as an ontological thesis and not only as an empirical observation, my visibility does not refer exclusively to the de facto possibility of viewing parts of my body but also to the de jure continuity of the seer and the seen, ultimately based in the shared element of the flesh of the world. This continuity is exemplified but not exhausted by the actual perception of our bodies, whether immediate (as in the facade and the sides of one's body beneath the neckline) or mediated by a reflection in the mirror (perception of the face and the back). The ontological thesis about the de jure visibility of the seer enlarges the scope of visibility beyond the range of body parts actually given to sight. It therefore puts pressure on the attempts to extrapolate an invisible mind from the unseen face proper and suggests that facial awareness does not become internalized and confined to the private realm on account of the fact that we do not perceive our own faces directly. It replaces the paradigm of vision as a confrontation of an invisible mind and the visible world, such as it figures in the writings of Descartes who required that the dis-embodied mind intervene in the processing of visual information, with the thesis of ontological continuity between the seer and the seen based on shared corporeality. As such, it provides theoretical tools for interpreting imitation as an embodied practice which draws on the reversibility inherent in vision. For example, it permits us to theorize the *modus operandi* of imitation not exclusively in terms of intermodal matching but also of an intramodal process that relies on visual continuity between the embodied seer (the infant) and the seen (the adult). The latter view suggests that the infant does not relate a visually neutral proprioceptive input to a visually perceived gesture performed by the adult but rather that the infant correlates two differentially given visibles, that of the other's and of her own face, during face-to-face interaction. It seems that Meltzoff's account of imitation, which theorizes the face proper exclusively in terms of proprioceptive sensations, leaves open the question of how the infant could ever learn that this "internal" face has a visible exterior as well.

Yet another way to think about the visibility of the face proper which has the additional merit of underscoring the interpersonal quality of face-to-face interaction may be found in Sartre's writings.[25] Sartre's analysis of the effect produced by a foreign gaze has been systematically critiqued for its negative overtones and the equation of social life with irresolvable conflict.[26] This charge is certainly a fair one, but it does not remove the possibility of drawing positive insight from the philosopher's reflections on the role of the experience of a foreign gaze for constituting the sense of a visible body proper. It permits us to include the other person as a co-agent involved in the evolving sense of one's own facial exterior and to further substantiate the view that visibility is not exhausted by direct visual perception but includes indirect modes as well. Following Sartre, the person who directs her gaze upon my self produces the discovery of my body as visible to others even though cut off from my view. A foreign gaze directed at self is a source of a lived experience of visibility proper and the exposure to others mediates the awareness of the body proper as manifest

in the public world even though unseen by self. In the context of face-to-face interaction, this suggests that self gains a sense of having a visible facial exterior in the exchange with another person looking at self. By registering the gaze as directed at me, I experience my facial exterior at the terminus of the other's gaze. In face-to-face interaction, I not only register the visible spectacle of the other's face but have also a visually significant experience of my own face as seen by the other. The face-to-face interaction depends then on a sense of visual continuity between the face proper and the other's face, and not only on the difference between the modalities of vision and proprioception. This brings us back to the observation that face-to-face situations, such as facial mimicry, do not rely exclusively on intermodal matching mechanisms but include intramodal visual continuity between self and other as well. We can then resituate the previously made statement about the necessary interrelation between the active and passive modes of seeing within the context of interpersonal life and characterize it as an experience requiring two seers engaged in direct social interaction. On this interpersonal account, the experience of being seen arises out of the discovery of a foreign gaze directed at self rather than being ontologically intertwined with seeing. Despite their non-negligible differences, both accounts of the interrelation of seeing and being seen allow us to challenge the all-to-easy exclusion of the unseen face proper from the visual experiential domain in sighted subjects and the corollary confinement of facial awareness the interior and private domain that typifies a dis-embodied mind. Combining the ideas of reversibility and the experience of a foreign gaze from phenomenological theory we are able to offer an alternative account of visibility and facial embodiment which leaves room for the unseen and visually significant quality of the facial exterior proper and which explains how another person may play a significant role in the experience of one's own face.

This alternative account challenges the polarized view of human experience underpinning Meltzoff and Gopnik's interpretation which maps the naive dualism of the material and the mental onto the split between the visible and the invisible, and so reintroduces Descartes' metaphysical categories into contemporary empirical research. Needless to say, the authors do not invoke the seventeenth century metaphysics in their work but rather make references to the supposedly pervasive and generally accepted beliefs regarding the mind and the body. However, the problematic metaphysical claim of a dis-embodied mind that parades in the guise of these folk psychology postulates and which biases the interpretation of imitation research in favor of the theory of mind is easily exposed and calls for some caution in the face of the dominant interpretation. It also calls for caution in the face of philosophical efforts to turn subjective reports into raw scientific data by untrained interpreters who rely on beliefs derived from folk psychology and so may import similarly problematic metaphysical presuppositions into the body of science. The preceding reflections on neonate imitation interpretation sends a warning sign against accepting the heterophenomenological proposal as a neutral and objective alternative to trained phenomenological reflection. Contrary to its purported neutrality and objectivity, heterophenomenology runs the risk of incorporating pervasive yet problematic ideas into experimental research.

Before concluding my exposition, let me hypothesize about front loading phenomenology into experimental research on imitation. For the purpose, I will focus on the role of the gaze in neonate imitation. The gaze has not been included as a variable in the facial mimicry research conducted by Meltzoff et al.[27] This may be surprising insofar as the gaze is an irreducible element of all face-to-face interaction and typically serves to establish the communicative channel between two individuals facing each other and looking at each other. In fact, we use the term face-to-face relation only for those forms of social interaction which are sustained by mutual visual attention. Henceforth, we typically confine face-to-face relations to the sighted population and hesitate whether or not they may be attributed to the blind. It is

also questionable that we could qualify the interaction between a blind and a sighted person as a face-to-face relation, insofar as the blind individual does not see that she is being looked at and so does not engage in a *mutual* visual relation with the sighted individual. Mutuality appears to provide the key to face-to-face interactions, where both actors see the other and see that they are being seen.

The aforementioned omission of mutual gaze in Meltzoff's neonate imitation studies has the effect of excluding the mutual visual attention that binds two sighted individuals facing each other. On Meltzoff's account, the crux of neonate imitation consists in the intermodal relation between the infant's internal awareness of her own unseen face and the visual representation of the face of the adult. Construed exclusively as an intermodal transfer between the visually perceived and proprioceptively felt body parts, face-to-face relation is, however, not functionally different from, to give a possibly absurd yet telling example, a "back-to-back" relation with another person, subtended by an intermodal match between visual information about the other's back and the internal feelings in the back proper. The "back-to-back" relation can be construed either in on-line or off-line terms. In the former case, I am positioned behind the other and relate the visual information about her back with the internal feelings of my own. In the latter case, my relation to the other is based solely on the visual representation of her back perceived in the past. I may then be actually placed with my back opposite the other's as I match the visual and the proprioceptive input. On Meltzoff's account, the intermodal matching between proprioceptive and visual information is in fact typically construed as an off-line situation, with the infant relying on internally stored representation of the gesture to be executed.[28]

Whether construed in on-line or off-line terms, the "back-to-back" relation is analogous to the face-to-face relation as theorized by Meltzoff in the neonate imitation studies because in both cases, the relation between self and other centers on matching an unseen part of the body proper (the back or the face) with the perceived part of the other's body (the back or the face), the intermodal transfer making it possible to discover that the internally felt and the externally perceived information refers to the same body part. The limited validity of this analogy exposes, it is hoped, the difficulty of explaining face-to-face interaction exclusively in terms of intermodal matching between one's own and the other's body parts. For what gets left out of account in this case is the nature of the relation established between self and other. Whereas in the (on-line) back-to-back situation, the relation is unidirectional (I see the other, the other does not see me), in the face-to-face situation, the relation is bi-directional (I see the other and the other sees me). The intermodal matching mechanism, limited to conjoining proprioceptive and visual information about the face, unjustifiably regards face-to-face interaction as a variant of the unidirectional visual relation, devoid of mutual visual contact.

I believe that by paying attention to the role played by mutual visual attention in facial mimicry, it may be possible to bring the bi-directional relation between self and other in face-to-face interaction into focus. Merleau-Ponty's and Sartre's insights about the interrelation between seeing and being seen are especially relevant in this context and can be front loaded into empirical research. They would serve to test whether the conjoined experience of looking and being looked at is an indispensable element of facial mimicry or whether infants imitate facial gestures independently of the degree of visual contact with the adult. For example, one could compare imitative performance in groups where the adult maintains eye contact with the infant and averts the gaze. If mutual visual attention did turn out to significantly affect the imitative performance, then it would be shown that infants differentially experience mutual gaze long before they are able to theorize about the other's non-manifest mental states. It would also be shown that the engagement with the other takes the form of a direct perceptual experience rather than being a theoretical process based on inference. The other would be

grasped as a perceiving agent rather than as a perceived body to which mental states need to be attributed on the basis of one's own inner events. It would be evidenced that the infant's facial awareness includes the sense of being visible to others and so that facial imitation supports the idea of a publicly manifest social self rather than a hidden private mind. I conclude therefore that insights drawn from phenomenology may be utilized to produce new empirical results in the area of neonate imitation research and to challenge the dominant theory of mind paradigm of social relations. In that case, neonate imitation research clearly testifies to the continued validity of the methodology of mutual constraint and enlightenment for interdisciplinary research, with phenomenology not only being constrained and updated by recent experimental research but also contributing directly to the design of experimental work and to the interpretation of the data.

ENDNOTES

1. See S. Gallagher, "Phenomenology and Experimental Design: Toward a Phenomenologically Enlightened Experimental Ecience," *Journal of Consciousness Studies* (in press).
2. F. Varela, "Neurophenomenology: A Methodological Remedy to the Hard Problem," *Journal of Consciousness Studies* 3 (1996): 330–50.
3. D. Dennett, *Consciousness Explained* (Boston: Little, Brown and Co., 1991).
4. Gallagher in press.
5. See A. N. Meltzoff and K. Moore, "Imitation of Facial and Manual Gestures by Human Neonates," *Science* 198 (1977): 75–78; 1989: "Imitation in Newborn Infants: Exploring the Range of Gestures Imitated and the Underlying Mechanisms," *Developmental Psychology* 25 (1989): 954–62; "Imitation, Memory and the Representation of Persons," *Infant Behavior and Development* 17 (1994): 83–99.
6. See S. Gallagher and A. N. Meltzoff, 1996: "The Earliest Sense of Self and Others: Merleau-Ponty and Recent Developmental Studies," *Philosophical Psychology* 9:2 (1996): 211–33.
7. Meltzoff and Moore, "Imitation of Facial and Manual Gestures by Human Neonates."
8. A. N. Meltzoff, and A. Gopnik, "The Role of Imitation in Understanding Persons and Developing a Theory of Mind," in S. Baron-Cohen, H. Tager-Flusber, and D. J. Cohen,eds., *Understanding Other Minds. Perspectives from Autism* (New York: Oxford University Press, 1993), 335–66.
9. Discussed in, e. g., A. N. Meltzoff, "Elements of a Developmental Theory of Imitation," in A. N. Meltzoff and W. Prinz, eds., *The Imitative Mind. Development, Evolution, and Brain Bases* (New York: Cambridge University Press, 2002), .
10. Maurice Merleau-Ponty, *The Primacy of Perception and Other Essays*, ed.. James M. Edie (Evanston: Northwestern University Press, 1964), 96–155.
11. Ibid., 220.
12. Maurice Merleau-Ponty, *Psychologie et pédagogie de l'enfant. Cours de Sorbonne 1949–52* (Paris: Verdier, 2001).
13. Maurice Merleau-Ponty, *Signs*, trans. Richard C. McLeary (Evanston: Northwestern University Press, 1964), 159–81.
14. Maruice Merleau-Ponty, M. 1968: *The Visible and the Invisible*, trans. Alphonso Lingis (Evanston: Northwestern University Press, 1968).
15. Merleau-Ponty, "l'égocentrisme" enfantin tel quel l'entend Piaget est un concept très nuancé (*Psychologie et pédagogie de l'enfant*, 183); l'égocentrisme enfantin: c'est une idée juste (ibid., 224).
16. See my "Anonymity and Sociality. The Convergence of Psychological and Philosophical Currents in Merleau-Ponty's Ontological Theory of Intersubjectivity" *CHIASMI International* 5 (2004) for a more extensive presentation of this point.
17. Merleau-Ponty, *The Visible and the Invisible*, 243–44.
18. Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (New York: Humanities Press, 1960),174.
19. A. N. Meltzoff and R. W. Borton, 1979: "Intermodal Matching by HumanNeonates," *Nature* 282, no. 5735 (1979): 403–04.
20. Oliver Sacks, *An Anthropologist on Mars* (London: Picador, 1995).
21. In contrast to A. N. Meltzoff and K. Moore, "Explaining Facial Imitation: A Theoretical Model." *Early Development and Parenting* 6 (1997): 79–192), who contend that sensory deficits such as blindness can be compensated for as long as the central supramodal representational system is not compromised.
22. Merleau-Ponty, *Phenomenology of Perception*, esp. 142–47.
23. Meltzoff and Gopnik, "Explaining Facial Imitation: A Theoretical Model," 337.
24. Meltzoff and Gopnik, "The Role of Imitation in Understanding Persons and Developing a Theory of Mind," 339.
25. I examine this point in depth in "Facial Embodiment in 'Invisible' Imitation," in *Embodiment and Awareness. Perspectives from Phenomenology and Cognitive Science*, special edition of *Theoria et Historia Scientiarum: International Journal for Interdisciplinary Studies* 7:1 (2003): 139–61.
26. Jean-Paul Sartre, *Being and Nothingness. An Essay on Phenomenological Ontology*, trans. Hazel E. Barnes (New York: Philosophical Library, 1956).
27. Even though Meltzoff has recently paid attention to the importance of the gaze. See R. Brooksand A. N. Meltzoff, "The Importance of Eyes: How Infants Interpret Adult Looking Behavior," *Developmental Psychology* 38:6 (2002).
28. See Meltzoff and Moore, "Explaining Facial Imitation: A Theoretical Model."

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