

The Moral Significance of Primitive Self-Consciousness: A Response to Bermúdez

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Various philosophers have denied that infants and very young children are capable of self-consciousness.¹ This seems uncontroversial as long as the concept of self-consciousness is defined in a complex way. Dennett, for example, makes self-consciousness one of six necessary conditions of moral personhood but makes self-consciousness itself depend on the other five conditions. On this definition, self-consciousness involves rationality, an ascribed intentionality, language use, and the possibilities of recognizing and reciprocating with others. Following Frankfurt, Dennett further characterizes self-consciousness as involving second-order volitions, where this means the ability to act upon oneself as if upon another person.² It is not surprising, then, that Frankfurt, Dennett, and others deny self-consciousness to young children.

John Harris also offers a complex definition of self-consciousness in the context of examining the moral status of personhood.³ He argues that the value of an individual life depends on the individual being able to value her own life, and that such an ability requires certain cognitive capacities that allow her to recognize future interests. As a result, moral personhood depends on the necessary condition of a self-consciousness capable of awareness of self over time. Again, it seems clear that an infant would not be capable of such complex self-consciousness.

1. See Kathleen V. Wilkes, *Real People: Personal Identity without Thought Experiments* (Oxford: Clarendon, 1988); Daniel Dennett, "Conditions of Personhood," in *The Identities of Persons*, ed. Amelie Rorty (Berkeley: University of California Press, 1976), pp. 175-96; H. Frankfurt, "Freedom of the Will and the Concept of a Person," *Journal of Philosophy* 68 (1971): 5-20.

2. Dennett, pp. 177-79, 192-93.

3. John Harris, *The Value of Life: An Introduction to Medical Ethics* (London: Routledge & Kegan Paul, 1984).

In his recent article, "The Moral Significance of Birth," José Bermúdez explores the following questions.⁴ Is a complex concept of self-consciousness required to determine moral personhood? Is it possible that a less complex, primitive self-consciousness is sufficient enough to bear moral significance? Bermúdez constructs his answer on the basis of what he terms the "principle of derived moral significance." This principle states that "if a particular feature or property is deemed to confer moral significance upon a life that has it, then any primitive form of that feature or property will also confer moral significance, although not necessarily to the same degree."⁵ On this view, the moral significance of a particular feature does not rest upon its future development or its potential for future development but on the fact that it is an actual feature that already exists, albeit in primitive form relative to its fully developed state. Thus Bermúdez claims that if a fully developed self-consciousness has moral significance, a primitive form of self-consciousness must also have moral significance, although perhaps of a lesser degree. Beyond a moral intuition that this principle is right, however, Bermúdez does not provide good reason to accept it. For my purposes here, I won't try to justify the principle either; I'll take the moral intuition to be sufficient enough for its employment.

The specific question that Bermúdez addresses is whether birth bestows on the neonate a moral significance that the fetus, even the full-term fetus, does not have. In opposition to a variety of authors⁶ who have argued that there is no morally significant difference between a fetus and a neonate, Bermúdez contends that there is a morally significant difference: namely the neonate, but not the fetus, is capable of a primitive self-consciousness. As evidence for this capacity he cites recent studies of imitation in newborns conducted by Meltzoff and Moore in the field of developmental psychology. These studies provide evidence of self-awareness in neonates less than an hour after birth. A brief review will help to clarify the results of this research and their relevance to the issue of self-consciousness.

MELTZOFF AND MOORE ON NEONATE IMITATION

The traditional view on infant imitation, represented by Piaget, defines "invisible imitation" as the child's imitation of another person's movements using parts of the child's body that are invisible to the child, for example, the imitation of facial movements.⁷ According to Piaget

4. José Luis Bermúdez, "The Moral Significance of Birth," *Ethics* 106 (1996): 378-403.

5. *Ibid.*, p. 383.

6. Raanan Gillon, *Philosophical Medical Ethics* (Chichester: Wiley, 1985); Peter Singer, *Practical Ethics* (Cambridge: Cambridge University Press, 1979); L. W. Sumner, *Abortion and Moral Theory* (Princeton, N.J.: Princeton University Press, 1981).

7. Jean Piaget, *Play, Dreams, and Imitation in Childhood* (New York: Norton, 1962).

(as well as most other classical theorists of development), invisible imitation requires the operation of a body schema that would provide the child with control over its own bodily movements. As a result, the traditional view holds that such imitation is not possible prior to eight to twelve months of age because a body schema isn't sufficiently developed until that age.⁸

Bermúdez cites studies on imitation in infants that show, in stark contrast to the traditional view, that invisible imitation occurs in newborns less than an hour old. In one experiment forty normal and alert newborn infants ranging in age from less than one hour to seventy-one hours were tested.⁹ The experimenter presented each infant with a mouth-opening gesture over a period of four minutes, alternating in twenty-second intervals between the mouth opening and a passive facial appearance. The same procedure was then followed with tongue protrusion as the target gesture. The study showed a clear and statistically significant result in terms of both the frequency and duration of the infants' response gestures, demonstrating that normal and alert newborn infants systematically imitate adult gestures of mouth opening and tongue protrusion. Notably, even the youngest infant in the study, forty-two minutes old at the time of the test, showed a strong imitation effect. Other experiments have extended the range of gestures that young infants imitate to a wider set, including lip protrusion, sequential finger movement, head movements, smiling, frowning, and surprised expressions.¹⁰

8. A developed body schema is required to coordinate the sense modalities involved in such imitation: proprioception and vision. Thus Piaget states: "For imitation of such movements to be possible, there must be co-ordination of visual schemas with tactilo-kinesthetic schemas" (p. 45). Piaget also takes the traditional view that the intermodal coordination made possible by an organized body schema is actually accomplished on a more cognitive level. Thus, he contends, "the intellectual mechanisms of the [child under eight months] will not allow him to imitate movements he sees made by others when the corresponding movements of his own body are known to him only tactually or kinesthetically, and not visually (as, for instance, putting out his tongue). . . . Thus since the child cannot see his own face, there will be no imitation of movements of the face at this stage" (p. 19).

9. Andrew Meltzoff and M. Keith Moore, "Newborn Infants Imitate Adult Facial Gestures," *Child Development* 54 (1983): 702-9.

10. Andrew Meltzoff and M. Keith Moore, "Imitation of Facial and Manual Gestures by Human Neonates," *Science* 198 (1977): 75-78. This study showed that twelve- to twenty-one-day-old infants imitated three facial gestures (lip protrusion, mouth opening, and tongue protrusion) as well as sequential finger movement (opening and closing the hand by moving the fingers in a serial fashion). Meltzoff and Moore ("Imitation in Newborn Infants: Exploring the Range of Gestures Imitated and the Underlying Mechanisms," *Developmental Psychology* 25 [1989]: 954-62) also showed that newborn infants less than seventy-two hours old (the youngest at 13.37 hours) could imitate tongue protrusions and head movements (full rotations of the head clockwise in the frontal plane) in experimental conditions similar to those outlined above. T. M. Field,

In another experiment Meltzoff and Moore showed that infants between ages of sixteen and twenty-one days imitated facial gestures after a delay.¹¹ This involved putting a pacifier in the infant's mouth as it was shown the facial gesture. After the presentation of the facial gesture was complete, the pacifier was removed and the infant imitated the gesture. Thus, imitative responses were delayed and only allowed when the gesture had vanished from the perceptual field. Even in circumstances of longer delays (of twenty-four hours) infants clearly remember and imitate gestures.¹²

The findings of imitation under these experimental conditions rule out "reflexes" or release mechanisms as potential mediators of this activity. Reflexes and releasing mechanisms are highly specific—that is, narrowly circumscribed to limited stimuli. One cannot have a releasing mechanism for imitation in general. As a result, the range of behaviors displayed by infants would require the unlikely postulate of distinct releasing mechanisms for each kind of imitative behavior: tongue protrusion, tongue protrusion to one side, mouth openings, smile, frown, and so on. Furthermore, neonate imitative behavior involves memory and representation,¹³ and the improvement or correction of the imitative response over time,¹⁴ neither of which is compatible with a simple reflex or releasing mechanism.

Perhaps the most amazing thing about these studies is that they demonstrate that the newborn apparently "knows" how her own face, which she has never seen or, one supposes, has never conceptualized, is in some way equivalent to the visually presented face. This suggests

R. Woodson, R. Greenburg, and D. Cohen ("Discrimination and Imitation of Facial Expression by Neonates," *Science* 218 [1982]: 179–81) demonstrated that two-day-old infants could imitate the smiling, frowning, or surprised expressions of adult models.

11. Meltzoff and Moore, "Imitation of Facial and Manual Gestures by Human Neonates."

12. Andrew Meltzoff and M. Keith Moore, "Imitation, Memory, and the Representation of Persons," *Infant Behavior and Development* 17 (1994): 83–99. In this study they tested forty normal and alert six-week-old infants. An adult experimenter displayed either a passive face or one of three target gestures: mouth opening, tongue protrusion at midline, or tongue protrusion to the side. Tests with the same infants occurred over three days and were divided into five time periods: three involving immediate imitation, and two "memory periods" involving imitation at a delay of twenty-four hours. The experiment showed not only immediate imitation, as in previous experiments, but also imitation after a delay of twenty-four hours. After twenty-four hours, the infant saw the identical person they had seen the day before, but now presenting a passive face (instead of demonstrating the gesture). If the earlier display gesture had been tongue protrusion, the infant, twenty-four hours later, would produce significantly more tongue protrusions during the memory period.

13. Meltzoff and Moore, "Imitation of Facial and Manual Gestures by Human Neonates."

14. Meltzoff and Moore, "Imitation, Memory, and the Representation of Persons."

a number of things. First, that there is a "primitive body schema" from the very beginning—an innate ability for moving one's body in appropriate ways in response to environmental stimuli. Second, that the neonate is capable of an intermodal perception. Invisible imitation requires the infant to translate between her visual experience of the other's body and her proprioceptive experience of her own body. For the infant, the visually observed face is in some way equivalent to the infant's own proprioceptively perceived face.¹⁵ The notion that the infant has a proprioceptive awareness of her own body is clearly the relevant point for the issue addressed by Bermúdez. Although a newborn does not have a visual perception of her own face, the intermodal translation involved in invisible imitation requires that the infant have a primitive consciousness of her own face in the form of a proprioceptive awareness. This proprioceptive awareness forms part of a primitive body image.

The distinction between a body schema and a body image is an important one that I have argued for elsewhere.¹⁶ To state it briefly, the body schema involves a subpersonal control mechanism that, in an immediate and close to automatic fashion, provides the capacity to control posture and movement. In contrast, body image, when fully developed, is a system of perceptions, beliefs, and attitudes about one's own body. As such, the body image involves a reflective intentionality in which one's own body is the intentional object. Not all of the beliefs and attitudes need be conscious ones, but an occurrent perception of one's own body would surely count as an instance of conscious experience. Proprioceptive awareness, although "attentively recessive," is normally considered to be part of the conscious experience of the body that helps to constitute the perceptual aspect of the body image.¹⁷

15. For a more developed account, see Shaun Gallagher and Andrew Meltzoff, "The Earliest Sense of Self and Others: Merleau-Ponty and Recent Developmental Studies," *Philosophical Psychology* 9 (1996): 213–36. I am using the term 'proprioceptive experience' (or 'proprioceptive awareness') in a very general sense to include experiences that originate in a variety of body systems. In a more narrow sense, for example, proprioception refers only to information concerning limb position derived from receptors in muscles and joints. No such proprioceptors exist in the face. Proprioceptive awareness of the face depends on receptors that provide information about pressure and stretch on and beneath the surface of the skin.

16. Shaun Gallagher, "Body Image and Body Schema: A Conceptual Clarification," *Journal of Mind and Behavior* 7 (1986): 541–54, also see "Body Schema and Intentionality," in *The Body and the Self*, ed. José Bermúdez, Anthony Marcel, and Naomi Eilan (Cambridge, Mass.: MIT Press, Bradford Books, 1995), pp. 225–44; Shaun Gallagher and Jonathan Cole, "Body Image and Body Schema in a Deafferented Subject," *Journal of Mind and Behavior* 16 (1995): 369–90.

17. See Brian O'Shaughnessy, "Proprioception and the Body Image," in Bermúdez, Marcel and Eilan, eds., pp. 175–203.

In the case of neonate facial imitation, both a primitive body schema and a primitive body image are required. But only one feature of the body image seems to be involved. The infant will not have developed a set of beliefs, attitudes, or conceptions about her own body; nor will she have a visual perception of the relevant part of her own body—the face. The only aspect of body image available to the infant is the proprioceptive awareness that she has of her own body.

THE NATURE OF PRIMITIVE SELF-CONSCIOUSNESS

Bermúdez appeals to the studies on neonate imitation to show that infants have a primitive self-consciousness. Rather than specify this concept in terms of degree, it is less ambiguous to define it by listing specific features and to claim that a certain minimal set of features is required for primitive self-consciousness to *be* primitive self-consciousness. This is the approach taken by Bermúdez, and in this sense his conception of primitive self-consciousness still has some degree of complexity. Specifically, Bermúdez indicates three defining features of primitive self-consciousness.

1. A primitive body image that involves “some level of understanding of how one’s body fits together, of its contours, and how its parts are structurally related.”
2. A differentiation between self and other.
3. A recognition that the other is of the same sort as oneself.

In regard to the first feature, a primitive body image, we have already suggested that in the case of neonate imitation, the only relevant and existing aspect of the body image is proprioceptive awareness.¹⁸ If we view feature (1) to be a primitive (but articulated) proprioceptive awareness, then I would argue that (1) is the central core of primitive self-consciousness and a necessary condition for (2) and (3). For example, feature (2) is quite basic to invisible imitation. The infant’s ability to correct its movement, which implies a recognition of the difference between its own gesture and the gesture of the other, indicates a rudimentary differentiation between self and nonself. At

18. Bermúdez does not make a distinction between body image and body schema, nor does he specify the aspect of the body image relevant to neonate imitation as proprioceptive awareness. He does suggest that the body image, understood as the complex phenomenon that it is in the case of the more developed child and adult, can be linked to a more developed self-consciousness and “is intimately connected with one’s awareness of one’s possibilities for action” and for taking a third-person perspective on oneself as an object (p. 390). In the case of infant imitation, however, the body image is something less than this and, he suggests, “is not in itself a sign of self-consciousness,” although it “is employed in a cognitive context that does betoken a primitive form of self-consciousness” (p. 390).

a minimum, this depends on a proprioceptive awareness (i.e., [1]), as well as an awareness of something other than one's own body. The recognition that the other is of the same sort as oneself (3), is evident from the fact that infants do not imitate nonhuman objects or movements other than human movements.¹⁹ Again, however, to recognize the other as similar to self requires some form of self-awareness, in this case, a proprioceptive awareness (1). So both (2) and (3) are features of self-consciousness that depend upon (1).

Bermúdez does not claim, and I do not claim, that proprioceptive awareness is a *sufficient* condition for the other two aspects of primitive self-consciousness. Indeed, Bermúdez sees the moral significance of birth precisely here. Imitation is possible only after birth. One needs the perceptual experience of the other person to initiate the more complex features of primitive self-consciousness. Features (2) and (3) obviously require some access to the other.

In regard to (2), one way to understand this would be to say that (1), proprioceptive awareness, on its own, provides an awareness of one's own body but not of one's own body *as one's own*. Proprioceptive awareness remains something less than primitive self-consciousness unless the awareness of body is an awareness of the body as one's own. One might argue, as Bermúdez does, that this requires postnatal intersubjective interaction in which the neonate comes to acquire at least (2)—the distinction between self and other. I will return to this argument below. It does seem clear, however, that (3) requires postnatal experience, since to recognize that the other is of the same sort as oneself requires more experience than the fetus can have; that is, it would seem to depend on a perception of another person's behavior. Still, although the Meltzoff and Moore studies show that one needs (3) for neonate imitation, Bermúdez does not clearly show why one needs to include (3) in a definition of primitive self-consciousness. Indeed, one could argue that (1) and (2) together can be considered sufficient conditions for a primitive form of self-consciousness, albeit a form more primitive than that reflected in Bermúdez's threefold definition. Feature (1) is proprioceptive awareness—a primitive awareness of one's own body that informs one of where one's body parts are—where the mouth is, for instance, and the kind of movements it is capable of. Feature (2) is a consciousness of the differentiation between self and other. Features (1) and (2) together, then, seem sufficient to form a consciousness of ourselves distinct from others and thus, in combination, constitute a primitive, proprioceptive self-consciousness.

19. M. Legerstee, "The Role of Person and Object in Eliciting Early Imitation," *Journal of Experimental Child Psychology* 51 (1991): 423–33.

THE MORAL SIGNIFICANCE OF PRIMITIVE SELF-CONSCIOUSNESS

I am suggesting, then, that if what Bermúdez calls primitive self-consciousness, defined as including features (1) through (3), is primitive relative to full-fledged, adult self-consciousness, which might include extra features such as Harris's notion of awareness over time or Dennett's concept of second-order intentional states, then the combination of (1) and (2) is itself a more primitive self-consciousness relative to Bermúdez's threefold notion of primitive self-consciousness. If this is right, then it seems clear that, although this twofold concept of primitive self-consciousness is more primitive and less complex than Bermúdez's threefold concept, the principle of derived moral significance tells us that it involves some degree of moral significance.

Furthermore, and this is perhaps a more controversial point, I want to suggest that this primitive proprioceptive self-awareness is something that the close-to-term fetus, and not just the neonate, possesses. Indeed, Meltzoff and Moore suggest that proprioceptive awareness is innate (meaning simply that it develops sometime prior to birth). But here the objection might be posed: only (1) is innate—the fetus may well have proprioceptive awareness in the womb—but, as Bermúdez argues, (2) requires visual perception of another person. Now here, admittedly, I am treading on shaky ground. Yet, I think it is possible to argue that (2), the differentiation between self and other, may in fact be possible in the womb.

Bermúdez argues that it is not. He considers the following objection.

Certainly, it could be maintained, imitation of facial expression is impossible in the womb, but other sorts of imitation are perfectly possible. So, for example, if it could be shown that when the fetus hears three taps through the wall of the womb it responds with three taps of its own, this would appear to be evidence of exactly the same capacities as are manifested by the neonate. The fetus would be imitating and, if imitation is supposed to be evidence of a primitive form of self-awareness, then there is no reason why such primitive self-awareness should not be available to the fetus, either at full term or conceivably before.²⁰

Bermúdez's response to this objection is simply that "not every form of imitation should be taken to imply a degree of self-awareness."²¹ I take this to be correct, but irrelevant to the issue of primitive self-consciousness in the late-term fetus. His response is cast in terms of imitation—that is, only a certain kind of imitation is relevant to the

20. Bermúdez, pp. 394–95.

21. *Ibid.*, p. 395.

issue. Perhaps this response is motivated by the fact that the objection itself is posed in terms of fetal imitation. But surely the issue is not whether the correct kind of imitation, or even any kind of imitation, is possible in the womb; rather, the issue is whether primitive self-consciousness is possible for the close-to-term fetus.

Here I note that Bermúdez quite often slides between these two issues. For example, he rightly suggests more than once that “what is morally significant is not the imitative behavior itself, but the primitive form of self-awareness.”²² Yet the focus of his remarks is very often directed on the capacity for imitation, and he implies, as well as states, that “it is the exercise of the capacity [for imitation] that is morally significant.”²³ For Bermúdez, however, this sliding is not as inconsistent as it might seem. At bottom, he holds that the primitive form of self-awareness “emerges” from or exists only “in virtue of” the exercise of the capacity for imitation.²⁴ I don’t believe that the evidence from the infant imitation studies supports this view. I would contend, in fact, that it is the other way around. Imitation behavior constitutes the evidence of primitive self-awareness, not vice versa. Primitive self-consciousness is a necessary condition for imitation behavior, so that the capacity for imitation is, in part, constituted by primitive self-awareness. That is, one has the capacity for imitation only if one has the capacity for primitive self-awareness, not the other way around.

If the issue is primitive self-consciousness rather than imitation, then, with respect to the close-to-term fetus we still need to consider the status of (2): a sense of differentiation between self and other. Is it possible that the fetus recognizes a stimulus, for example, a sound, as something other than itself? In that case, it wouldn’t have to imitate the sound; it would be enough if it reacts to the sound as something other than itself.

In this regard, we can say that the fetus definitely reacts to sound and other stimuli, but it is not completely clear that such reactions attest to a fetal experience of stimuli as being something other than the fetus. Fetal responsiveness to sound, for example, has been well documented. In response to auditory stimuli, as early as twenty-four weeks of gestation, the fetal heart rate changes, and after twenty-five weeks, the fetus responds by blinking its eyes or moving its limbs. Cortical response to such stimuli has been demonstrated in premature infants between twenty-four and twenty-nine weeks of gestation. The evidence also suggests that the fetus is capable of differential responsiveness, showing preference for some sounds (such as the mother’s

22. *Ibid.*, p. 400.

23. *Ibid.*, p. 401; also see his n. 31.

24. *Ibid.*, pp. 399–401.

voice) over others.²⁵ To show that listening skills develop prior to birth, DeCasper and Spence had mothers read stories to their fetus during the last two months of pregnancy. Their study shows that one- to two-day-old newborns preferred to hear the same stories that were read to them during pregnancy.²⁶ Since responsive facial movements are often cited as evidence that infants are differentially aware of what is going on in their surroundings,²⁷ then fetal facial movements which are prompted by music or voice may be indicative of a similar differential awareness. It is also the case that bright light directed on the lower abdomen of the mother in the third trimester can elicit fetal eye blinks.²⁸ Thus, on a variety of data, across auditory, tactile, and even visual modalities, there is evidence for a continuity between fetus and infant and for the general observation that with respect to behavioral reaction to various stimuli, "rudimentary forms of learning, memory and cognition" can be found in the prenatal period.²⁹

Is this enough to establish (2)—a sense of differentiation between self and other? Even if the fetus can behaviorally differentiate stimulus X from stimulus Y, it does not necessarily mean that it can consciously differentiate either of these stimuli from itself, although this seems possible. The behavioral evidence points in this direction, even if the fetal phenomenology remains unclear.

It might help my argument if it could be shown that premature infants are capable of imitation, since imitation depends upon the capacity for primitive self-consciousness. One study, by Field et al., has suggested precisely this. They report the capacity for imitation in preterm neonates (of 35.6 weeks instead of full-term, forty weeks).³⁰

25. W. P. Fifer and C. Moon, "Auditory Experience in the Fetus," in *Behavior of the Fetus*, ed. William P. Smotherman and Scott R. Robinson (Caldwell, N.J.: Telford, 1988), pp. 175–88.

26. A. J. DeCasper and M. J. Spence, "Prenatal Maternal Speech Influences Newborns' Perception of Speech Sounds," *Infant Behavior and Development* 9 (1986): 137–50.

27. C. Trevarthen, "Emotions in Infancy: Regulators of Contact and Relationships with Persons," in *Approaches to Emotion*, ed. K. Scherer and P. Ekman (Hillsdale, N.J.: Erlbaum, 1983), pp. 129–57.

28. Jason C. Birnholz, "On Observing the Human Fetus," in Smotherman and Robinson, eds., pp. 47–60.

29. Eugene K. Emory and Kay A. Toomey, "Environmental Stimulation and Human Fetal Responsivity in Late Pregnancy," in Smotherman and Robinson, eds., pp. 141–61.

30. T. Field, R. Woodson, D. Cohen, R. Garcia, and E. Collins, "Discrimination and Imitation of Facial Expressions by Term and Preterm Neonates," *Infant Behavior and Development* 6 (1983): 485–89. The preterm infants used in this study had a gestational average age of 35.6 weeks instead of the normal forty weeks. Forty-eight term and forty-eight preterm neonates were compared on imitation of three facial expressions: happy, sad, and surprised. Term neonates averaged thirty-five hours of age at the time of experiment; nonterm neonates averaged forty-two hours. Both groups of

If this is right, its importance would be clear in establishing the capacity for imitation and thus, the capacity for primitive self-consciousness in premature neonates and the thirty-five-week-old fetus.

This may not be enough, however. Bermúdez makes his claim of moral significance depend not on the capacity for self-conscious activity like imitation, but on actual exercise of that capacity. So Bermúdez would object that such imitation does not simply depend on some internal readiness, but also requires an appropriate environment—specifically a social environment where the infant can visually perceive the other person as another like itself. In regard to imitation this seems right and is implied by Legerstee's study that shows infants imitate humans but not nonhuman objects.³¹ Again, however, even if actual imitation depends on a postnatal social environment, this does not imply that primitive self-consciousness does also. Imitation is evidence rather than a constitutive requirement for primitive self-consciousness. If we say that the readiness of the newborn, even the premature newborn, to imitate depends on an innate capacity for primitive self-consciousness and that this capacity is actualized or exercised in the particular form of imitation when in the right environment, this does not mean that it is not also actualized in prenatal behavior like differentially reacting to sound and other stimuli.

Let me conclude by summarizing what I think I have shown. First, I don't believe that we can be as certain as Bermúdez seems to be in his claims that primitive self-consciousness is exclusively a postnatal phenomenon and that the life of a full-term fetus cannot in principle possess the moral significance that accompanies primitive self-consciousness. I don't think I have shown Bermúdez to be wrong, but I have made his conclusions less sure.

There are some important definitional differences between Bermúdez and me. He includes (3)—a recognition that the other is of the same sort as oneself—as part of his definition of primitive self-consciousness. And (3) requires more experience than the fetus can

neonates imitated components of the expressions that were presented by female models; observers of the actual imitation and of videotapes of infant faces filmed during experiments accurately recognized imitation in both groups at a frequency higher than average. There are no other studies showing imitation earlier than this. Andrew Meltzoff suggests (private correspondence) that infants who were more premature would probably not see well enough or have enough motor control to be able to test imitation. Also, I should note, there has been no replication of this data, as far as I know. It is clear, however, that the fetal nervous system is sufficiently mature by thirty weeks of gestation to support the perception of various nonvisual stimuli. Concerning the neurological and neurochemical development of the fetus with respect to the possibility of pain perception, see, e.g., K. J. S. Anand and P. R. Hickey, "Pain and Its Effects in the Human Neonate and Fetus," *New England Journal of Medicine* 317 (1989): 1321–29.

31. Legerstee.

have; that is, a recognition that the other is of the same sort as oneself depends on a postnatal intersubjective encounter. A perception of another person's face can fulfill this requirement, and there is obviously a relevant difference between a visual perception of another's face and a prenatal auditory perception of sound. Nonetheless, I don't think Bermúdez has shown why one needs to include (3) in a definition of primitive self-consciousness. He shows only that one needs (3) for neonate imitation. But, again, the moral significance does not depend on neonate imitation; it depends on primitive self-consciousness. I've argued that (1) and (2) are sufficient for a primitive self-consciousness of the proprioceptive kind—that is, a somewhat more primitive self-consciousness than what Bermúdez requires and indeed, than what imitation requires, but not necessarily outside the possibility of close-to-term fetal experience.

Finally, my argument that close-to-term fetuses have the capacity for proprioceptive self-consciousness and *may* exercise that capacity, and that therefore we cannot rule out the possibility that the life of a close-to-term fetus can in principle possess the moral significance that accompanies primitive self-consciousness, is not inconsistent with Bermúdez's argument that birth has a moral significance. The moral significance of birth can be predicated on the fact that other, less primitive features of self-consciousness are gained (e.g., [3]). At a minimum, it should be clear that I am in agreement with Bermúdez that the research on imitation suggests an important qualification to the claims made by Frankfurt et al. about the absence of self-consciousness in infants and small children. I have argued that the close-to-term fetus also may have a primitive form of self-consciousness. I leave it as a question whether a primitive self-consciousness that involves (3), as well as (1) and (2), bestows a higher degree of moral significance than a more primitive self-consciousness which has only features (1) and (2), or whether it bestows a moral significance of a qualitatively different kind.

