Is There an Achilles' Heel in Piaget's Theorizing?

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From the outset of his theorizing, Piaget has stressed the importance of genetic development for understanding life, and there can be no doubt that his stress is well taken: both phylogenesis and ontogenesis must be taken into account to understand the behavior of any living being, let alone man. At the same time, however, he has also insisted on interpreting genesis in a unique manner, an interpretation which may not be too well taken. This interpretation holds that genesis is a succession of levels of the organism's interaction with its environment, where each preceding level is a necessary condition for the development of its succeeding level. This interpretation, restricted to the problems of human ontogenesis, is stated unequivocally as early as 1936:

'Verbal or cogitative intelligence is based on practical or sensorimotor intelligence, which in turn depends on acquired and recombined habits and associations. These presuppose, furthermore, the system of reflexes whose connection with the organism's anatomical and morphological structure is apparent. A certain continuity exists, therefore, between intelligence and the purely biological processes of morphogenesis and adaption to the environment' [Piaget, 1952, p. 1].

In a new foreword written for the second edition, he expresses himself much more specifically:

'... it is primarily preverbal sensorimotor activity that is responsible for the construction of a series of perceptual schemata, the importance of which in the subsequent structuring of thought cannot, without oversimplification, be denied' [Piaget, 1952, p. 10; stress not in original].

Finally, in a monograph published in 1970, one finds:

'... although deaf and dumb children are delayed with respect to normal children, they are delayed much less than children who have been blind from birth. Blind infants have the great disadvantage of not being able to make the same coordination in space that normal children are capable of during the first year or two, so that the development of sensory-motor intelligence and the coordination of actions at this level are seriously impeded in blind children' [Piaget, 1970, p. 46; stress not in original].

About 10 years ago, while visiting an institution for the aged and incurable, I was attracted by a patient there: Her head was that of a normal adult of her age—in the early 40's—but her body was that of a neonate—albeit about two to three times the size

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of a month-old infant. Her arms and hands were 'absolutely' infantile. They stuck out from her body exactly as an infant's do, moving occasionally but showing no purpose whatsoever. A nurse sat near the patient, holding a cigarette to enable the patient to smoke, and reading a newspaper to her.

I asked about the patient and was told that she was one of the most popular and intelligent of the patients, serving as a regular discussion leader, and being of great help to both the other patients and the staff in filling out income tax returns. Everyone considered it a great tragedy that so intelligent a person should be so handicapped in not being able to use her body at all since birth; who could have imagined what she might have achieved in life had she had a normal body. I made my acquaintance with the patient in question and engaged in several long discussions with her. There could be no doubt about it: The patient did function at a high level of intelligence and was most assuredly capable of doing all that was attributed to her.

This patient poses a serious question to Piaget's theorizing: Given the fact that the patient never used her body since birth and interpreting sensory-motor activity as action in and upon the environment, it follows that the patient never did engage in sensory-motor activity. Yet, the patient did exhibit a normal adult functioning intelligence. I wrote a letter to Piaget, asking him how this can be accounted for by his theory. The answer to my question was as follows:

'Dear Sir,

'Prof. Piaget asks me to briefly answer your letter. ' Cases such as you quote are not at all exceptional and do not constitute counter-examples to his theory. In fact, sensorimotor activity has to be taken in a very general sense, and does not necessarily imply using your hands, running around, etc... It implies that activities are assimilated and accommodated, and this is the case with any child that lives, since it has to eat and drink (involving assimilation and accommodation—one drinks and eats very different things, and adjusts the movements according to the substance), and since it has perceptual activity (movements of the eyes and the head, if that is possible, also follow the same patterns of coordination). 'Evidently, severe handicaps, which limit the field of activity greatly, constitute enormous obstacles to be overcome; and usually such children show retardation in the establishment of cognitive structures in general and also of language acquisition. But on the whole this will be retardation rather than change in the patterns. ' The patient you met must have been exceptionally gifted in energy and intellectual capacities to arrive at the level you describe. It would be most interesting to study such cases longitudinally. ' Hoping that this short answer will satisfy you,

Sincerely,

(signed) H. Sinclair, Professor'

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No matter how I tried to find this short answer satisfactory, I could not do so. I cannot reject the conclusion that this 'explanation' saves the theory nominally, at the expense of stripping it of practical significance: if the mere fact of autonomic living of the body in addition to an intact sensorium is sufficient for the constituting of sensory-motor schemata necessary for the subsequent development of adult intelligence, then all the other sensory-motor schemata constituted by the action of a normal body, upon which Piaget restricted his research and based his theory, cease to be necessary conditions for the development of intelligence, no matter what demonstrable effect they may have upon this development. Furthermore, a suspicion arises which is very difficult to dispel: May it not be the case that the answer I received is a post hoc rationalization of the theory, not really considered prior to the receipt of my letter?1

A careful reading of Piaget's writing seems to support this suspicion. It is obvious that motor action on the environment is referred to exclusively as the step preceding verbal intelligence, i.e., 'using your hands, running around', etc. In discussing the slow-ing-down of a moving hand as it

enters the child's field of vision even prior to his ability to coordinate manual behavior to vision, Piaget writes:

'The child discovers that in moving his hand in a certain way (more slowly, etc.) he conserves this interesting image for his sight. Just as he assimilates to his glance the movement of his hands, so also he assimilates to his manual activity the corresponding visual image. He moves with his hands the image he contemplates just as he looks with his eyes at the movement he produces. Whereas until now only tactile objects served as aliments for the manual schemata, visual images now become material for exercises of the hands. It is in this sense that they may be called "assimilated" to the sensory-motor activity of the arms and hands. This assimilation is not yet an identification: the visual hand is not yet a tactile-motor hand. But the substantial identification will result from assimilation as the geometric point of the crossing of lines. The intersection of the assimilating activities will define the object, in proportion as these activities applied to the outside world will constitute causality' [Piaget, 1952, pp. 107–108; stress not in original].

The key sentence in the cited excerpt is the stressed one. It is obvious that the constitution of the concept of causality can only come about through action on the environment. Elsewhere, Piaget distinguishes between passive and active sensory-motor assimilation; the latter's being built upon the former is said to be a necessary step in ontogenetic development. Piaget clearly has the latter in mind in the excerpt cited. Yet, the patient in question is restricted solely to passive sensory-motor assimilation by Piaget's own definitions. How she ever got to 'define' an object thereby becomes a mystery. How she ever 'learned' to speak becomes just as much a mystery. No matter how one understands the phenomenon of human speech, it necessarily entails the 'definition' of objects, since speech entails the speaking about objects.

Piaget rejects the idea of 'pure physiological maturation' with respect to the development of intelligence:

'We see here at work, in the most definite way, the play of assimilation in its dual reproductive and recognitory character. If the coordination of vision and prehension

1 The nonfunctional infantile body and normal adult intelligence of the patient described also raises serious questions for Merleau-Ponty's philosophizing as well, with respect to the central role played by his concept of 'body-in-the-world'. But this cannot be entertained here.

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were a matter of pure physiological maturation of the nervous system, the differences in dates of acquisitions as revealed by three normal children such as Jacqueline, Lucienne, and Laurent could not be understood. On the other hand, by following in detail Laurent's psychomotor assimilations (the use of the cycle to the joining of the hands, the assimilation to this schema of the visual image of the hands and finally the assimilation of my hand to his hands) the reason for his precocity may be understood' [Piaget, 1957, pp. 108–109].

This argument is not well taken. First, it is the setting up of a straw man. Words such as 'pure', 'absolute', 'perfect', etc., should not be used in scientific discourse. It is hard to imagine pure biological maturation, i.e. maturation which shows no effects whatsoever of the environment, both past and present, in which the organism found and finds itself. But if there is a state deserving the characterization of 'pure' physiological maturation, it is that of puberty; the temporal range of puberty is, relatively speaking, just as great as is the range of the acquisitions Piaget is here discussing. If anything, the fact that the patient under discussion did have a functioning adult intelligence bespeaks more for a 'pure' physiological maturation explanation of

intelligence than otherwise: Once the patient matured physiologically so that she could organize her sensory input into objects and could then ‘learn’ to talk about them, she did so, despite the fact that no active assimilation can be postulated, and, at best, there was but a minimum of passive assimilation. All of Piaget’s experiments and research, which nevertheless command the highest of respect, are ambiguous on this point. Granted that it can be explained the way he explains it, it all can also be explained by placing the primary emphasis of physiological maturation. Piaget has yet to present a critical experiment to decide the issue. On the other hand, the patient in question may serve as a critical experiment against Piaget’s theorizing, unless he or his upholders can come up with a more convincing argument than that found in the letter cited above.

The ‘truth-value probability’ of a scientific theory is a function of its weakest link— a function, unfortunately, far more tortuous than those neat functions generally dealt with in mathematics. If there are no competing theories around, a theory can stand many weak links without its ‘truth-value probability’ being seriously threatened; Newton’s theory did not undergo a serious shock with the discovery of the perihelion of Mercury. But if there is a competing theory that can account for the phenomena constituting the weak link, then the shock is great indeed; the weak link becomes an Achilles’ heel. The female patient in question poses no particular difficulties for those who think of ontogenesis primarily in terms of physiological maturation; she does pose very serious difficulties for those following Piaget’s way of thinking. May it not be the case that she therefore exposes the Achilles’ heel in Piaget’s theorizing?

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