Genetic Epistemology: How We Build Our Understanding

Authored by

mohammad looti

June 16, 2026

Genetic epistemology is a study of the origins (genesis) of knowledge (epistemology). The discipline was established by Jean Piaget.

The goal of genetic epistemology is to link the validity of knowledge to the model of its construction. In other words, it shows that the method in which the knowledge was obtained/created affects the validity of that knowledge. For example, our direct experience with gravity makes our knowledge of it more valid than our indirect experience with black holes.

Genetic epistemology also explains the process of how a human being develops cognitively from birth throughout his or her life through four primary stages of development: sensorimotor (birth to age 2), preoperational (2-7), concrete operational (7-11), and formal operational (11 years onward). The main focus is on the younger years of development.

Progress from one stage to another comes by way of a process of development. Assimilation, which occurs when the perception of a new event or object occurs to the learner in an existing schema and is usually used in the context of self motivation. Accommodation, one accommodates the experiences according to the outcome of the tasks. The highest form of development is equilibration. Equilibration encompasses both assimilation and accommodation as the learner changes their way of thinking in order to arrive at a correct or different answer. This is the upper level of development.

Jean Piaget did not consider himself a psychologist - instead he called his study Genetic Epistemology. In contemporary English, genetics refers to the functions of heredity, rather than the more broad reference to biological concerns. Contemporary reference to his studies would more likely give you the terminology 'developmental theory of knowledge'. Piaget believed that knowledge is a biological function that results from the actions of an individual and is borne out of change and transformation. He also stated that knowledge consists of structures, and comes about by the adaptation of these structures with the environment.

From the standpoint of logic, Piaget's genetic epistemology is a half-way house between formal logic and dialectical logic; from the standpoint of epistemology, Piaget's genetic epistemology is a half-way house between objective idealism and materialism.

Piaget's Schema Theory

Thought passes through a series of stages of development; at each stage there applies formal logic at a specific stage of differentiation which may be characterized by an algebra in which exactly such-and-such a mathematical structure applies, corresponding to the axioms of logic at that stage; this logic is manifested first in actions, then at a relatively early stage in sensorimotor operations (in the specific mathematical sense of the word, as opposed to "actions" which are equivalent to relations but not yet mathematical operations), and finally in operations which

express thoughts, conscious purposive activity.

The material basis for transition from sensorimotor intelligence to representation and from representation to conceptual thought is the interiorisation of practical activity.
The successive stages of concepts manifested in child development imply relations of deduction in mathematical logic and in the development of thinking in other planes of development, such as in the history of science and the history of knowledge in the anthropological domain.

Piaget draws on the full range of contemporary mathematical knowledge, a vast empirical base of observation of the learning of very young children built up at his institute and reports of observations of older children and a general knowledge of the development of knowledge in history.

1. From the standpoint of dialectical logic, we must agree that at each stage of development, at each "definition of the Absolute" in Hegel's terminology, formal logic is applicable. Piaget's proof of this is striking, and his demonstration of how the stages of development in child thought pass through a specific series which is deductive in a specific sense from the standpoint of mathematics is original and profound.

However, from the standpoint of understanding development (and this is Piaget's standpoint), what is important is not the definition of each stage but the transition from one to the next; and for this it is necessary to demonstrate the internal contradiction within the logic of that plane.

Since Piaget draws on mathematical logic more developed than what was known to Hegel, it will be necessary to investigate these structures to see if this speculative proposition proves to be valid.

2. The concept of interiorisation is indeed the basis of the materialist view of the development of thought. However, Piaget, as a professional child-psychologist falls prey to the objective idealism of any professional, of elevating the subject matter of his particular profession from being an aspect of the material world to being its master. .

Thus, since his body of authoritative empirical work is in relation to early childhood development, he imposes the schema appropriate to this semi-human subject on to adolescent development, speculates on its possible reflection in anthropological development and confounds it with the history of development of science and philosophy. I say "confounds" because Piaget is aware that his schemas do not seem to apply in this domain. In this sense, the charge of objective idealism would seem unfair, but from confounding he does not go further and seek the implication of this lack of correspondence, but seeks to minimize it.

By focusing on early childhood (as indeed he must; that is his profession, and his institute has contributed a vast body of empirical material), Piaget sees what is biologically (zoologically?)

human but not what is socially (historically) human, and humanity is essentially social, after all.

3. On the plus side, it has to be said that Piaget deals once and for all with any idea of innate intelligence, and makes fully convincing the prospect of a fully genetic (i.e. developmental) elaboration of intelligence, assuming only animal instincts such as grasping and sucking and sensorimotor "equipment" capable of reflecting highly developed relations. A weakness in Piaget's theory could be that there isn't proof in how one transitions from one stage to the next. Can someone progress from one stage forward, but revert backwards, and then move forward again?

Types of Knowledge

Piaget proposes three types of knowledge: physical, logical mathematical, and social knowledge.

Physical knowledge: It refers to knowledge related to objects in the world, which can be acquired through perceptual properties. The acquisition of physical knowledge has been equated with learning in Piaget's theory (Gruber and Voneche, 1995). In other words thought is fit directly to experience.

"Piaget also called his view constructivism, because he firmly believed that knowledge acquisition is a process of continuous self-construction. That is, Knowledge is not out there, external to the child and waiting to be discovered. But neither is it wholly performed within the child, ready to emerge as the child develops with the world surrounding her...Piaget believed that children actively approach their environments and acquire knowledge through their actions."[2]

"Piaget distinguished among thee types of knowledge that children acquire: Physical, logical-mathematical, and social knowledge. Physical knowledge, also called empirical knowledge, has to do with knowledge about objects in the world, which can be gained through their perceptual properties...Logical-Mathematical knowledge is abstract and must be invented, but through actions on objects that are fundamentally different from those actions enabling physical knowledge...Social Knowledge is culture-specific and can be learned only from other people within one's cultural group."