

PAPERT ON PIAGET

By Seymour Papert¹

Einstein used the words "so simple only a genius could have thought of it" to describe the theory advanced by pioneering Swiss philosopher and psychologist Jean Piaget that children don't think like grown-ups. Of course, it does not take a theory or a genius to find children's utterances cutely surprising or exasperatingly illogical. It took both to understand, as Piaget began to suspect after thousands of conversations with children, that their thinking has its own kind of order and its own kind of logic.

The essence of his theory might be simple, but developing it was not easy. By the end of a wide-ranging and remarkably prolific research career that spanned nearly 75 years—from his first scientific publication at age 11 to work still in progress when he died at age 84—Piaget had created several new fields of science: developmental psychology, cognitive theory and evolutionary epistemology. He championed a new way of thinking about children that provided the theoretical foundation for today's educational reform movement. It was a shift comparable to the displacement by modern anthropology of stories of "noble savages." One might say that Piaget was the first to take children's thinking seriously.

Others who shared this respect for children—John Dewey in the United States, Maria Montessori in Italy, and Paulo Freire in Brazil—fought harder for immediate change in the schools, but Piaget's influence on modern education is deeper and more pervasive. He is revered by generations of teachers inspired by the belief that children are not empty vessels to be filled with knowledge (as traditional pedagogical theory has it), but active builders of knowledge—little scientists who are constantly creating and testing their own theories of the world. And though he may not be as famous as Sigmund Freud or even B. F. Skinner, his contribution to psychology may be longer lasting. As digital technology gives children greater autonomy in exploring larger worlds, the ideas he pioneered become more urgently relevant to parents and educators.

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Piaget grew up near the Lake of Neuchâtel in a quiet region of French Switzerland known for its wines and watches. His father was a professor of medieval studies and his mother a strict Calvinist. He was a child prodigy who soon became interested in the scientific study of nature. When his observations led to questions that could be answered only by access to the university library, the 11-year-old Piaget wrote and published a short note on the sighting of an alpine sparrow in the hope that this would influence the librarian to stop treating him like a child. It worked. Piaget was launched on a path that would lead to his doctorate in evolutionary biology and a lifelong conviction that the way to understand anything was to understand how it evolves.

After World War I Piaget moved to Zurich to attend Carl Jung's lectures on experimental psychology, and then to Paris to study logic and abnormal psychology. Working with Théodore Simon in Alfred Binet's child psychology lab, he noticed that Parisian children of the same age made similar errors on true-false intelligence tests. Fascinated by their reasoning processes, he began to see how the key to human knowledge might be discovered by observing how the child's mind develops.

Back in Switzerland, the young scientist began watching children play, scrupulously recording their words and actions as their minds raced to find reasons for why things are the way they are. In one of his most famous experiments, Piaget asked children, "What makes the wind?" What follows is a typical Piagetian dialogue:

Piaget: What makes the wind?

Julia (age 5): The trees.

Piaget: How do you know?

Julia: I saw them waving their arms.

Piaget: How does that make the wind?

Julia: Like this (waving her hand in front of Piaget's face). Only they are bigger. And there are lots of trees.

Piaget: What makes the wind on the ocean?

Julia: It blows there from the land. No, it's the waves.

Piaget recognized that Julia's answers, while not correct by any adult criterion, are not "incorrect" either. They are entirely sensible and coherent within the framework of the child's way of knowing. Classifying them as

"true or false" misses the point and shows a lack of respect for the child. What Piaget was after was a theory that could find in the wild dialogue coherence, ingenuity and the practice of a kind of explanatory principle (in this case, by referring to body actions, in other cases much harder to state) that stands young children in very good stead when they don't yet know enough or have enough skill to handle the kind of explanation grown-ups prefer.

Piaget was not an educator and never enunciated rules about how to intervene in such situations. But his work strongly suggests that the automatic reaction of putting the child right may well be abusive. Practicing the art of making theories may be more valuable for children than achieving meteorological orthodoxy. And if their theories are always greeted by "nice try, but this is how it really is..." they might give up after a while on making theories. As Piaget put it: "Children have real understanding only of that which they invent themselves, and each time that we try to teach them something too quickly, we keep them from reinventing it themselves."

Disciples of Piaget have a tolerance for, indeed, a fascination with, children's primitive laws of physics: that things disappear when they are out of sight; that the moon and the sun follow you around; that big things float and small things sink. Einstein was especially intrigued by Piaget's finding that 7-year-olds insist that going faster can take more time—perhaps because Einstein's own theories of relativity ran so contrary to common sense.

Although every teacher in training memorizes Piaget's four stages of childhood development, the better part of Piaget is less well known, perhaps because schools of education regard it as "too deep" for teachers. Piaget never thought of himself as a child psychologist. His real interest was epistemology—the theory of knowledge—which, like physics before Newton, was considered a branch of philosophy before Piaget came along and made it a science in its own right.

Piaget was the first to explore a kind of epistemological relativism in which multiple ways of knowing are acknowledged and examined nonjudgmentally, yet with a philosopher's analytic rigor. Since Piaget, the territory has been widely colonized by those who write about women's ways of knowing, Afrocentric ways of knowing and even the computer's ways of knowing. Indeed, artificial intelligence and the information-processing model of the mind owe more to Piaget than its proponents may realize.

The core of Piaget is his belief that looking carefully at how knowledge develops in children will elucidate the nature of knowledge in general. Whether this has in fact led to deeper understanding remains, like

everything about Piaget, controversial. In the past decade Piaget has been vigorously challenged by the current fashion of viewing knowledge as an intrinsic property of the brain. Ingenious experiments have demonstrated that newborn infants already have some knowledge of the kind that Piaget saw as actively constructed by the growing child. But for those, like me, who still see Piaget as the giant in the field of cognitive theory, the difference between what the baby brings and what the adult has is so immense that the new discoveries do not significantly reduce the gap but only increase the mystery.