

# Jean Piaget

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**Jean Piaget** [ʒɑ̃ pjaɛ] ([August 9, 1896](#) – [September 16, 1980](#)) was a [Swiss](#) philosopher, [natural scientist](#) and [developmental psychologist](#), well known for his work studying [children](#) and his [theory of cognitive development](#). According to [Ernst von Glasersfeld](#), Jean Piaget is also "the great pioneer of the [constructivist](#) theory of knowing"<sup>[1]</sup>.



Piaget, by André Koehne

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## [\[edit\]](#) **Early life**

Piaget was born in [Neuchâtel](#) in the French-speaking part of [Switzerland](#). His father, Arthur Piaget, was a professor of [medieval literature](#) at the University of Neuchâtel. Piaget was a precocious child who developed an interest in [biology](#) and the natural world, particularly [molluscs](#), and even published a number of papers before he graduated from high school. In fact, his long career of scientific research began when he was just eleven, with the [1907](#) publication of a short paper on the albino [sparrow](#). Over the course of his career, Piaget wrote more than sixty books and several hundred articles.

Piaget received a [Ph.D.](#) in natural science from the [University of Neuchâtel](#), and also studied briefly at the [University of Zürich](#). During this time, he published two philosophical papers which showed the direction of his thinking at the time, but which he later dismissed as adolescent work. His interest in [psychoanalysis](#), a strain of psychological thought burgeoning at that time, can also be dated to this period.

He then moved from Switzerland to Grange-aux-Belles, [France](#), where he taught at the school for boys run by [Alfred Binet](#), the developer of the Binet [intelligence test](#). It was while he was helping to mark some instances of these intelligence tests that Piaget noticed that young children consistently gave wrong answers to certain questions. Piaget did not focus so much on the fact of the children's answers being wrong, but that young children kept making the same pattern of mistakes that older children and adults did not. This led him to the theory that young children's thought or cognitive processes are inherently different from those of adults. (Ultimately, he was to propose a global theory of developmental stages stating that individuals exhibit certain distinctive common patterns of cognition in each period in their development.) In 1921, Piaget returned to Switzerland as director of the [Rousseau Institute](#) in [Geneva](#).

In 1923, he married Valentine Châtenay, one of his students; together, the couple had three children, whom Piaget studied from infancy. In 1929, Jean Piaget accepted the post of Director of the [International Bureau of Education](#) and remained the head of this international organization until 1968. Every year, he drafted his “Director’s Speeches” for the IBE Council and for the International Conference on Public Education in which he explicitly expressed his educational credo.

## [\[edit\]](#) **The stages of cognitive development**

*Main article: [Theory of cognitive development](#)*

Piaget served as professor of [psychology](#) at the [University of Geneva](#) from 1929 to 1975 and is best known for reorganizing cognitive development theory into a series of stages, expanding on earlier work from [James Mark Baldwin](#): four levels of development corresponding roughly to (1) infancy, (2) pre-school, (3) childhood, and (4) adolescence. Each stage is characterized by a general cognitive structure that affects all of the child's thinking (a [structuralist](#) view influenced by philosopher [Immanuel Kant](#))<sup>[[citation needed](#)]</sup>. Each stage represents the child's understanding of reality during that period, and each but the last is an inadequate approximation of reality. Development from one stage to the next is thus caused by the accumulation of errors in the child's understanding of the environment; this accumulation eventually causes such a degree of cognitive disequilibrium that thought structures require reorganizing.

The four development stages are described in Piaget's theory as

1. [Sensorimotor stage](#): from birth to age 2 years (children experience the world through movement and senses and learn object permanence)
2. [Preoperational stage](#): from ages 2 to 7 (acquisition of motor skills)
3. [Concrete operational stage](#): from ages 7 to 11 (children begin to think logically about concrete events)
4. [Formal operational stage](#): after age 11 (development of abstract reasoning).

These chronological periods are approximate, and in light of the fact that studies have demonstrated great variation between children, cannot be seen as rigid norms. Furthermore, these stages occur at different ages, depending upon the domain of knowledge under consideration. The ages normally given for the stages, then, reflect when each stage tends to predominate, even though one might elicit examples of two, three, or even all four stages of thinking at the same time from one individual, depending upon the domain of knowledge and the means used to elicit it.

Despite this, though, the principle holds that within a domain of knowledge, the stages usually occur in the same chronological order. Thus, there is a somewhat subtler reality behind the normal characterization of the stages as described above.

The reason for the invariability of sequence derives from the idea that knowledge is not simply acquired from outside the individual, but it is constructed from within. This idea has been extremely influential in [pedagogy](#), and is usually termed [constructivism](#). (See "[Constructivism \(learning theory\)](#)") Once knowledge is constructed internally, it is then tested against reality the same way a scientist tests the validity of hypotheses. Like a scientist, the individual learner may discard, modify, or reconstruct knowledge based on its utility in the real world. Much of this construction (and later reconstruction) is in fact done subconsciously.

Therefore, Piaget's four stages actually reflect four types of thought structures. The chronological sequence is inevitable, then, because one structure may be necessary in

order to construct the next level, which is simpler, more generalizable, and more powerful. It's a little like saying that you need to form metal into parts in order to build machines, and then coordinate machines in order to build a factory.

## [\[edit\]](#) Piaget's view of the child's mind

Piaget viewed children as *little philosophers*, which he called *tiny thought-sacks* and scientists building their own individual theories of knowledge. Some people have used his ideas to focus on what children cannot do. Piaget, however, used their problem areas to help understand their cognitive growth and development.

## [\[edit\]](#) The developmental process

Piaget provided no concise (or clear) description of the development process as a whole. Broadly speaking it consisted of a cycle:

- The child performs an action which has an effect on or organizes objects, and the child is able to note the characteristics of the action and its effects.
- Through repeated actions, perhaps with variations or in different contexts or on different kinds of objects, the child is able to differentiate and integrate its elements and effects. This is the process of *reflecting abstraction* (described in detail in Piaget 2001).
- At the same time, the child is able to identify the properties of objects by the way different kinds of action affect them. This is the process of *empirical abstraction*.
- By repeating this process across a wide range of objects and actions, the child establishes a new level of knowledge and insight. This is the process of forming a new *cognitive stage*. This dual process allows the child to construct new ways of dealing with objects and new knowledge about objects themselves.
- However, once the child has constructed these new kinds of knowledge, he or she starts to use them to create still more complex objects and to carry out still more complex actions. As a result, the child starts to recognize still more complex patterns and to construct still more complex objects. Thus a new stage begins, which will only be completed when all the child's activity and experience have been re-organized on this still higher level.

This process is not wholly gradual, however. Once a new level of organization, knowledge and insight proves to be effective, it will quickly be generalized to other areas. As a result, transitions between stages tend to be rapid and radical, and the bulk of the time spent in a new stage consists of refining this new cognitive level. When the knowledge that has been gained at one stage of study and experience leads rapidly and radically to a new higher stage of insight, a "gestalt" is said to have occurred.

It is because this process takes this dialectical form, in which each new stage is created through the further differentiation, integration, and synthesis of new structures out of the old, that the sequence of cognitive stages are logically necessary rather than simply

empirically correct. Each new stage emerges only because the child can take for granted the achievements of its predecessors, and yet there are still more sophisticated forms of knowledge and action that are capable of being developed.

Because it covers both how we gain knowledge about objects and our reflections on our own actions, Piaget's model of development explains a number of features of human knowledge that had never previously been accounted for. For example, by showing how children progressively enrich their understanding of things by acting on and reflecting on the effects of their own previous knowledge, they are able to organize their knowledge in increasingly complex structures. Thus, once a young child can consistently and accurately recognize different kinds of animals, he or she then acquires the ability to organize the different kinds into higher groupings such as 'birds', 'fish', and so on. This is significant because they are now able to know things about a new animal simply on the basis of the fact that it is a bird – for example, that it will lay eggs.

At the same time, by reflecting on their own actions, the child develops an increasingly sophisticated awareness of the 'rules' that govern in various ways. For example, it is by this route that Piaget explains this child's growing awareness of notions such as 'right', 'valid', 'necessary', 'proper', and so on. In other words, it is through the process of objectification, reflection and abstraction that the child constructs the principles on which action is not only effective or correct but also *justified*.

One of Piaget's most famous studies focused purely on the discriminative abilities of children between the ages of two and a half years old, and four and a half years old. He began the study by taking children of different ages and placing two lines of M & M's, one with the M & M's in a line spread further apart, and one with the same number of M & M's in a line placed more closely together. He found that, "Children between 2 years, 6 months old and 3 years, 2 months old correctly discriminate the relative number of objects in two rows; between 3 years, 2 months and 4 years, 6 months they indicate a longer row with fewer objects to have "more"; after 4 years, 6 months they again discriminate correctly" (Cognitive Capacity of Very Young Children, p. 141). Initially younger children were not studied, because if at four years old a child couldn't conserve quantity, how could a child that is younger? The results show however that children that are younger than three years and two months have quantity conservation, but as they get older they lose this quality, and don't recover it until four and a half years old. This attribute may be lost due to a temporary inability to solve because of an overdependence on perceptual strategies, which correlates more candy with a longer line of candy, or due to the inability for a four year old to reverse situations.

By the end of this experiment several results were found. First, younger children have a discriminative ability that shows the logical capacity for cognitive operations exists earlier than acknowledged. This study also reveals that young children can be equipped with certain qualities for cognitive operations, depending on how logical the structure of the task is. Research also shows that children develop explicit understanding at age 5 and as a result, the child will count the M & M's to decide which has more. Finally the study

found that overall quantity conservation is not a basic characteristic of man's native inheritance.

## [\[edit\]](#) **Influence**

Despite ceasing to be a fashionable psychologist, the magnitude of Piaget's continuing influence can be measured by the global scale and activity of the Jean Piaget Society, which holds annual conferences and attracts very large numbers of participants. His [theory of cognitive development](#) has proved influential in many different areas:

- Development psychology
- Education
- Historical studies of thought and cognition
- Evolution of human intelligence
- Primatology
- Philosophy
- Artificial Intelligence (AI)

On the other hand, Piaget does not seem to have influenced therapeutic methods or models to any significant degree.

## [\[edit\]](#) **Developmental psychology**

Piaget is without doubt one of the most influential developmental psychologists, influencing not only the work of [Lev Vygotsky](#) and of [Lawrence Kohlberg](#) but whole generations of eminent academics. Although subjecting his ideas to massive scrutiny led to innumerable improvements and qualifications of his original model and the emergence of a plethora of neo-Piagetian and post-Piagetian variants, Piaget's original model has proved to be remarkably robust (Lourenço and Machado 1996).

Stage One - Sensorimotor (birth to 1.5 years)

Stage Two - Preoperational (1.5 years to 7 years)

Stage Three - Concrete Operations (7 years to 11 years)

Stage Four - Formal Operations (11 years and onward)

## [\[edit\]](#) **Education**

During the 1970s and 1980s, Piaget's works also inspired the transformation of European and American [education](#), including both theory and practice, leading to a more 'child-centred' approach. In *Conversations with Jean Piaget*, he says: "Education, for most people, means trying to lead the child to resemble the typical adult of his society . . . but for me and no one else, education means making creators. . . . You have to make inventors, innovators—not conformists," (Bringuier, 1980, p.132).

## [\[edit\]](#) **Historical studies of thought and cognition**

Historical changes of thought have been modelled in Piagetian terms. Broadly speaking these models have mapped changes in morality, intellectual life and cognitive levels against historical changes (typically in the complexity of social systems). Robinson's [\*History of Human Reason\*](#) (2004) also suggests that history itself is the expression of our intelligence.

Notable examples include:

- Michael Barnes' study of the co-evolution of religious and scientific thinking (Barnes 2000)
- Peter Damerow's theory of prehistoric and archaic thought (Damerow 1995)
- [Kieran Egan's stages of understanding](#)
- [James W. Fowler's stages of faith development](#)
- Suzy Gablik's stages of art history (Gablik 1977)
- Christopher Hallpike's studies of changes in cognition and moral judgment in pre-historical, archaic and classical periods (Hallpike 1979, 2004)
- [Lawrence Kohlberg's stages of moral development](#)
- Don Lapan's theory of the origins of modern thought and drama (LePan 1989)
- Charles Radding's theory of the medieval intellectual development (Radding 1985)
- R.J. Robinson's stages of history (Robinson 2004)

## [\[edit\]](#) Evolution of human intelligence

The origins of human intelligence has also been studied in Piagetian terms. Wynn (1979, 1981) analysed Acheulian and Oldowan tools in terms of the insight into spatial relationships required to create each kind. On a more general level, Robinson's [\*Birth of Reason\*](#) (2005) suggests a large-scale model for the emergence of a Piagetian intelligence.

## [\[edit\]](#) Primatology

Piaget's models of cognition have also been applied outside the human sphere, and there is a thriving community of primatologists assessing the development and abilities of primates in terms of Piaget's model. Notable names include Sue Taylor Parker and Francesco Antinucci. A summary of the very extensive literature can be found in Parker and McKinney (1999).

## [\[edit\]](#) Philosophy

Given his explicitly neo-Kantian assumptions<sup>[\[citation needed\]](#)</sup> and his focus on topics such as logical and mathematical reasoning, moral judgment, contradiction, language, justification and so on, it is surprising how little attention Piaget has attracted among philosophers. Some have taken account of his work, however, For example, the [philosopher](#) and [social theorist Jürgen Habermas](#) has incorporated it into his work, most notably in [\*The Theory of Communicative Action\*](#). The philosopher [Thomas Kuhn](#) credited

Piaget's work in helping him understand the transition between modes of thought which characterized his theory of [paradigm shifts](#).

## [\[edit\]](#) AI

Piaget also had a considerable impact in the field of [computer science](#) and [artificial intelligence](#). [Seymour Papert](#) used Piaget's work while developing the [Logo programming language](#). [Alan Kay](#) used Piaget's theories as the basis for the [Dynabook](#) programming system concept, which was first discussed within the confines of the Xerox Palo Alto Research Center, or [Xerox PARC](#). These discussions led to the development of the [Alto](#) prototype, which explored for the first time all the elements of the [graphical user interface](#) (GUI), and influenced the creation of user interfaces in the 1980's and beyond.

## [\[edit\]](#) Major works and achievements

### [\[edit\]](#) Major works

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- Piaget, J., and Inhelder, B. (1967). *The Child's Conception of Space*. New York: W.W. Norton.

## [\[edit\]](#) Appointments

- 1921-25 Research Director, Institut Jean-Jacques Rousseau, Geneva
- 1925-29 Professor of Psychology, Sociology and the Philosophy of Science, University of Neuchatel
- 1929-39 Professor of the History of Scientific Thought, University of Geneva
- 1929-67 Director, International Bureau of Education, Geneva
- 1932-71 Director, Institute of Educational Sciences, University of Geneva
- 1938-51 Professor of Experimental Psychology and Sociology, University of Lausanne
- 1939-51 Professor of Sociology, University of Geneva
- 1940-71 Professor of Experimental Psychology, University of Geneva
- 1952-64 Professor of Genetic Psychology, Sorbonne, Paris
- 1955-80 Director, International Centre for Genetic Epistemology, Geneva
- 1971-80 Emeritus Professor, University of Geneva

## [\[edit\]](#) Piagetian and post-Piagetian stage theories

- [Michael Barnes](#)' historical stages of religious and scientific thinking (Barnes 2000)
- [Peter Damerow](#)'s theory of prehistoric and archaic thought (Damerow 1995)
- [Kieran Egan](#)'s [stages of understanding](#)
- [James W. Fowler](#)'s [stages of faith development](#)
- [Suzy Gablik](#)'s stages of art history (Gablik 1977)
- [Christopher Hallpike](#)'s historical stages of cognitive moral understanding (Hallpike 1979, 2004)
- [Lawrence Kohlberg](#)'s [stages of moral development](#)
- [Don LePan](#)'s theory of the origins of modern thought and drama (LePan 1989)
- [Charles Radding](#)'s theory of the medieval intellectual development (Radding 1985)
- [R.J. Robinson](#)'s stages of history (Robinson 2004)
- [Robert Kegan](#)'s constructive-developmental theory (Kegan 1982)
- [Allen Ivey](#)'s developmental counseling and therapy (DCT) (Ivey 1986)

## [\[edit\]](#) Quotations

- *Intelligence organizes the world by organizing itself*, in "La construction du réel chez l'enfant" (1937)

## [\[edit\]](#) See also

- [Constructivist epistemology](#)
- [Developmental psychology](#)
  - [Developmental stage](#)
- [Erik Erikson](#), [Erikson's stages of psychosocial development](#)
- [Lawrence Kohlberg](#), [Kohlberg's stages of moral development](#)

## [\[edit\]](#) Notes

1. <sup>^</sup> (in *An Exposition of Constructivism: Why Some Like it Radical*, 1990)

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[\*Jean Piaget\*](#)

- [Jean Piaget Society](#), society for the study of knowledge and development.
- [The Jean Piaget Archives](#), with full bibliography.
- [Jean Piaget's Genetic Epistemology: Appreciation and Critique](#) by Robert Campbell (2002), extensive summary of work and biography.
- [The Construction of Reality in the Child](#) by Jean Piaget(1955)
- Piaget's role in the [International Bureau of Education](#) and the [International Conference on Education](#)
- [Genetic Epistemology](#) by Jean Piaget(1968)
- [Comments on Vygotsky](#) by Jean Piaget(1962)
- [Biography resource dedicated to Jean Piaget](#)
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