

## Jean Piaget (1896 to 1980)

Disclaimer: This is a fictional story about real scientists. All the science and historical dates are accurate. However, the events and some of the characters are entirely fictional.

Valentine opened the old heavy door with extreme caution, as she did whenever she entered this chaotic mase. After decades of marriage to Jean, she could not convince him to organise his office.

“It is an organised chaos. I know where every book or paper is located”, unapologetically explained Jean. “In that corner”, pointing towards a pile of around 15 books with different thicknesses and colour covers placed near one of the room’s corners, ‘You can find The Principles of Phycology, written by William James in 1890. Several editions of the Psychological Bulletin and other books convey the American School of Thought about psychology. On this side here”, pointing towards two piles made of books and binders full of papers. One of the piles was placed on the floor near his desk while the other was sitting on his desk. The two piles were taller than her. It was a miracle that they were still standing. “You can find anything related to the European School of Thought, like Human and Animal Psychology by Wilhelm Wundt, 1912 edition. I prefer to have the books handy when I am working on a topic. And there”, pointing at the pile of papers covering half of the massive and only window in his tiny office. “There are my drawings of molluscs, including some of my papers on the subject”.

This was a few years after they got married, almost a lifetime ago. Back then she thought that she could change this small annoying behaviour of his. Ohh, how naïve she was. She stopped trying a few years after Lucienne was born. She developed techniques to ignore this part of her husband’s life. The pile with mollusc paper was still there, much bigger than before. Her husband’s obsession with molluscs was as strong as he was 15 years old, and he published his first paper on them. Although she managed to contain their spread in a few of the rooms, the house was full of them. She stopped counting after the 500<sup>th</sup>. At least his fascination with birds died a long time ago, sometime after he published his first essay about the albino sparrow when he was only 11 years old. Molluscs she could tolerate, but stuffed dead birds it was out of the question. His bizarre fascination with philosophy and zoology had pushed him towards psychology. He was one of her teachers in the J. J. Rousseau in Geneva. She fell in love with his mind and abstract thinking when they met. He was not afraid to use his personal life as an anecdote to help his students understand a concept or a theory. He gave an astonishing example of his childhood to demonstrate how easy it is to create a false memory as an adult, better known as confabulation. Also, how susceptible the kids are to manipulation and creating false memories. Children between 6 to 7 years old are the most susceptible to this phenomenon. He described how he was almost kidnapped when he was a child. He still remembered how tall the attackers were, their smell and even their clothes, how his nanny leapt to save him and fought them off. The problem was that this event never happened. His nanny confessed years later that she had made up this event, yet he still remembered it. Oscar Wild put it best when

Cecily said: “it usually chronicles the things that have never happened, and couldn’t possibly have happened.” referring to our memories.

His passion for teaching and education attracted her to him, and even after so many years, his brain and way of thinking did not stop fascinating her. In contrast, his chaotic office is the opposite. But it can be done, there are no perfect people. So, she tried to spend less possible time in the office. The room was depressing her and making her claustrophobic. She liked rooms with a lot of light, minimal furniture, and nothing out of place. The item in the house was placed so that upon entering each room, a person could breathe and not worry that something would fall upon them. The tearoom was her favourite place, and every family member knew that if there were guests in that room, everyone’s behaviour should be perfect. No dirty clothes or running up and down on the stairs, and for sure, no shouts or cries.

She almost forgot why she came into the office, Jean’s note about children’s cognitive development. She gathered all the notes about the studies to try to put them in order so finally, they could put everything in writing and publish it. So many years they spent writing and researching this topic and she wanted to see everything, all information and studies in one book. They first started noticing and taking notes of specific behaviours they observed with Jacqueline and then with Lucienne and Laurent. Their kids were the primary subjects of the study. Her sister thought that using their own kids as test subjects was awful parenting, and she used all possible opportunities to tell her how discussed she was. But Valentine and Jean always thought that if they had kids at home, why should they go to the institute and interview other people’s kids? Plus, they were spending more time with their own kids and bonding with them, a win-win in her books. It took her more than 15 minutes to locate and collect all the notes and relevant papers.

Jean Piaget came home relatively early that day, it was a few minutes past 3 pm when he crossed the house entrance. He found his wife in the tearoom, surrounded by papers.

“I don’t think I have ever seen this room in such a chaotic state,” he commented upon entering the room.

“What are you doing here? Did anything happen at the International Bureau of Education?”

“Nothing important, that is why I decided to come home. I had some boring meeting in the afternoon, so I decided that I prefer to spend the afternoon looking and organising my notes here with you, then listening to men complaining about money. It is always the same problem, and they always come to the same solution despite not working. So, here am I, what do you want me to do?” smiling said Jean. He was dressed in a grey, slightly oversized suit. He had a chubby face with a prominent forehead. His thick black hair was thinning, but it did not look like he would go completely bald. The tiny round glasses were making him look goofy, which was not so far from his personality. He was always smiley, and you could trust him to light the mood of everyone if it was necessary.

“Ok then. Could you finish organising the notes here? I need to finish typewriting some of the information. I am organising them by age, not study.” saying this, she left the room.

A few hours later, Valentine reappeared while Jean enjoyed his tobacco pipe. He had finished the job long ago and had spent some time with the kids after they came from school. Now, he waited patiently for his wife to finish whatever she was doing. He had learned long ago not to

disturb her when she had a plan in her head. Do whatever she asks and wait. In those cases, the initiative was always a no-no because, in the end, he always ended up giving her and himself more work than was necessary.

“I decided to typewrite a small summary for each of the cognitive development stages, so tomorrow you can give them to your students, and they can gather all case studies in the university and separate them by the age of the student and their characteristics.” She said and continuing by asking “would you like to read them now or after dinner?”

“The kids are up, getting ready for dinner and won’t be down for the next 30 minutes. Would you mind reading it to me? My eyes are tired. Plus, I miss those first years of our marriage when we had entire afternoons to enjoy our time together. You were always reading to me.”

In response, she sat beside him on the sofa and started reading.

There are 4 stages of cognitive development in children. The stages happen in consecutive order, and a stage cannot be skipped. Each stage is age-dependent, with specific characteristics that describe children’s ability and intellectual development, such as knowledge, thought and judgment. Although some children can go through the stages at slightly different ages or can even show characteristics of more than 1 stage, in general, the 4 stages are as follows: The sensorimotor stage from birth to 2 years old, the next stage is the preoperational stage, from 2 to 7 years old, the third stage is the concrete operational stage which happens from 7 to 11 years old, and the final is the formal operational stage for children beyond 11 years old.

“I know that, your students already know that, but a summary of the entire work is always a must. It is better to reiterate the information. The following pages are about each stage, with a list of the characteristics and an explanation of what to expect. Please let me know if I have missed something”.

Jean smiled at her. She was always open to being corrected, and she never got angry. But then, she was seldom wrong, it was her unique ability to be always right and never apologetic about it.

“Of course, my darling, as always”.

“During the sensorimotor stage (birth to 2 years),” she started again “, the children react to what is happening in their immediate surroundings. The kids learn through touch, tasting/batting and looking at this stage. Cognitively, they develop through goal-direct behaviour, coordinated space, mental representation, object permanence concept and cause and effect relationship. Children start to understand that the object that surrounds them is not an extension of themselves and create a boundary between what surrounds them and self, this is the coordinated space awareness. Between 4 and 8 months, children develop an understanding that their actions can affect the behaviour of people around them, starting to make sounds or movements to get attention. They also develop the object permanence concept, which describes the perception that objects continue to exist even though they are hidden from their sight. Between 8 months and 1 year, the children start to explore the environment and imitate behaviour. During the mental representation behaviour substage, the kids start to have mental pictures or situations that are not in their immediate surroundings and can start imitating behaviours they previously observed in different environments. Finally, during the coordinated space substage, the children start to associate coordination between different objects, for

example, they start to understand that if they throw an object on the floor, it may break. During the first 7 to 8 months, toddlers just react to the environment, after that, they start to do things intentionally.”

“Between the ages of 2 and 7 is the Preoperational stage in which 9 characteristic cognitive development exist. The symbolic functioning starts to develop between 2 and 4 years old. At this substage, the children start using symbols in communication. They also develop a mental representation of objects that may not currently exist around them. Children’s perception also plays a critical role in this substage. From age 4 to 7, the intuitive thought develops. Children start using logic to solve problems, but they still can not explain their thoughts or why. During the egocentrism substage, children believe that everyone sees, thinks and feels the same way as them, and they cannot take another person’s point of view and perspective. The transductive reasoning is the substage in which children start to associate events that are unrelated to each other. They can observe the cause-and-effect relationship but cannot understand it completely. When children believe that objects are alive and capable of actions, this is called animism, while artificialism references children’s belief that the people around them control environmental objects. During this substage, children develop centration, i.e. the ability to focus on one object, but still have problems with seriation, which is the ability to classify things. Children’s ability to think, reason, and problem-solve during this stage becomes more complex and abstract, and their curiosity develops.”

“Are you even paying attention to what I am saying?” suddenly said Valentine, stopping her narration.

“Of course I am.”

“So, closing your eyes helps you listen better than.”

“Ah, not really, but who said:”

“Listening with closed eyes is like listening with the heart.”

“Beautiful saying indeed, but I do not need you to listen with your heart. I am interested in your brain right now”.

“A true gentleman would find it impossible to merely engage intellectually when graced by the presence of an angelic voice.”

“See, after saying these kinds of things, I cannot stay mad at you”, cheerfully said Valentine.

“I know, this is why I say them. But we cannot digress, the kids will be down soon for dinner, and I would like to finish this before that. So, after dinner, we can enjoy the night without doing any work”.

“Of course, the next major stage is called the concrete operational stage and happens between the ages of 7 and 11, and it is mainly characterised by logical thinking development. More logical and sophisticated thoughts replace all illogical thinking processes like artificialism and animism during this stage. The children start to have the ability to focus their attention on more than 1 aspect in different situations, which is called decentration. Their inductive logic gets fully developed, so they can associate that the day is when there is light, and the sun is up even if clouds hide the sun, but their deductive logic is not developed yet. So, if you say to them that all birds have feathers and a goose has feathers, they still can struggle to connect that the goose

is a bird. The classification is also an example of this stage, children start to classify things by their properties and can arrange items in a specific order. The reversibility starts to develop. So, children realise that if they know the path from home to school, they can go from school to home because the path is just the reverse. During this stage, the kids start to eliminate egocentrism and start to see the world from other people's perspectives too."

"Finally, the formal operational stage, the final stage, starts at approximately 11 years old and lasts into adulthood. This is the stage where kids' thinking starts to be more sophisticated. They start using logical thinking to solve problems. Their deductive reasoning abilities are developed, and they can use general rules to determine specific outcomes. Abstract thinking has also developed, and they can plan with a long-term solution in mind, they also can guess and predict possible outcomes from an action. They start to use hypothetical thinking and often wander and use "what if".

"This is a summary of your notes in the last few years. I have examples of what kids can and cannot do for each stage. I also separated the studies done with the children for each stage and placed them on the table in the library. You will find a separate folder for our studies with our children there. This will help us organise all the notes and typewrite everything so we can show it to the publisher" concluded Valentine.

"Dear, dear! What I would have done without you. I became the luckiest man the day you agreed to marry me," affectionately said Jean.

"On this, we both agree. I will place these notes in your briefcase, so tomorrow, you can give them to your students".

"You worry too much. We are almost done. In a few more years, all this information will be published."

"Talking about worrying", interrupted Valentine, "we need to discuss what we will do with the studies we did on our children and all information related to them. Maybe it is wiser to remove the files."

"Here we disagree. They were a vital part of the conclusion's deduction, and I think we should keep them."

"I agree, but there are already people slamming our methodology. They mention sample bias and the low number of children in the studies, which can affect the conclusion. They also criticise that you don't consider the influence of personality, family relationships and any kind of individual markers".

"And how does removing the studies of our children it will help with those problems?" asked Jean.

"It is not going to help with those ones, but at least they cannot criticise further and complain that we were biased in our conclusions because they are our children".

"Let them look for biases in the studies, they won't find any related to our children. We wrote what we observed, nothing less, nothing more. But, if this is making this head of yours worried, tomorrow, I will discuss this subject with some of my colleagues. In this way, we will have a second and third opinion on the subject."

“Thank you, that means a lot to me.”

“Of course, daring.”

Soon after, the kids’ voices started coming from the stairs. Jacqueline entered first. She was the oldest, born in 1925, she believed she was a grown-up already. After her, Laurent, the youngest and Lucienne, the middle child, entered. Lucienne and Jacqueline were only 2 years apart, the age difference between the firstborn and the youngest was 6 years. Laurent adored Jacqueline, but she merely tolerated him. They were dressed in clean clothes and looked full of energy, as always. The nanny ran after them, apologising for the interruption. But the kids did not care at all, they had different missions in their heads, and they needed their parents.

“Mother, father, here you are. Ingrid said that the dinner was served. Should we move towards the dining?” asked Jacqueline.

“Father, father, look what I found outside!” excitedly shouted Lucienne, taking out of her pocket a tiny coal pebble.

“Lucienne, I asked you to leave that dirty thing outside. Garbage is not to be taken inside.” Said the nanny, trying to take the coal from her.

“It is not garbage; it is my treasure. I can do so many things with it. My dolls can use it in their dollhouse, or I can draw with it. So many possibilities.” was Lucienne’s response, hiding the treasure behind her back.

“But it is only a dirty coal, there is no value in it. Plus, you do know where it had been, the streets are filthy.” Tried to protest the nanny.

“That is okay, Marie, she can keep her treasure”, said Valentine. “It is finders keeper, after all”.

Marie looked defeated, out of her comfort zone, so Jean said to her:

“Are we forming children who are only capable of learning what is already known? Or should we try to develop creative and innovative minds, capable of discovery from the preschool age on, throughout life?”