



THE DEVELOPMENT OF KNOWLEDGE IN THE WORK OF AWARENESS

THE DEVELOPMENT OF KNOWLEDGE ON THE JOB BECOMING AWARE

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SUMMARY

This article aims to bring to light Piagetian explanations about the development of knowledge in the work *The Awareness*. In the second part we will briefly present the discussion on the relationship between technique and science that is proposed by Jean Piaget in the introduction to the work *Doing and Understanding*.

Keywords: awareness; doing; understanding; science; technique.

ABSTRACT

This article aims to bring to light the Piagetian explanations about the development of knowledge in the work *The Awareness Takeover*. In the second part, we will briefly present the discussion on the relationship between technique and science that is proposed by Jean Piaget in the introduction to the book *To do and to understand*. **Keywords:** awareness; of; understand; science; technique.

1. INTRODUCTION

Jean Piaget's epistemological project had as its main objective to solve the problem of the development of knowledge, that is, the Piagetian project, ultimately aimed to clarify how “[t]he passage from a less good or poorer knowledge to a richer knowledge (in understanding and extension)” takes place.¹ Throughout his work, Piaget used some mechanisms to explain how this development of knowledge occurs, such as: equilibration, reflective abstraction, possibilities and awareness. According to Montangero and Maurice-Naville, awareness, as a development mechanism, plays a non-negligible role in Piaget's texts, and the author's studies on this mechanism are compiled in two works: (i) *The Awareness* and (ii) *Doing and Understanding*. This essay aims, initially, to bring to light Piagetian explanations about the development of knowledge in the work *The Awareness*. And the second part of this essay presents, briefly, the discussion on the relationship between technique and science that is proposed by Jean Piaget in the introduction to the work *Doing and Understanding*.

2. THEORETICAL FRAMEWORK

Before bringing to light Piaget's explanations about the development of knowledge in *The Awareness*, we understand that it is necessary to clarify the concept of “raising awareness”.

For the common sense of a psychologist, the concept of “awareness” is just an “enlightenment” that does not modify or add anything, except visibility to what already existed before light was projected on it². A subject before becoming aware of x is unconscious in relation to x; when this same subject becomes aware of x he passes from a state of unconsciousness to a state of consciousness; according to the common sense of a psychologist, this passage does not generate anything new, that is, it is not an expression of the development of knowledge. Piaget demonstrates through the fifteen experiments carried out in the work *The Awareness* that, in order to highlight and maintain the differences between the unconscious and consciousness, it is necessary that the passage from one to the other “requires reconstructions and is not simply reduced to a process of illumination.”³ Jean Piaget denies the proposal of common sense psychologists who intend to define “awareness” as a kind of enlightenment and states: “the awareness of a scheme of action transforms it into a concept, this awareness therefore consisting essentially of

1 Genetic Epistemology, p. 4

2 The Awareness, p. 197

3 Ibid., p. 197





in a conceptualization".⁴Demonstrating how this transformation occurs is one of the main aspects of the work. *The Awareness.*

The experiments that were applied to the children in the work *The Taking of Consciousness* demonstrate that children often manage to do the experiment correctly, but cannot explain how they did it. In the first experiment in the book entitled *Crawling*, collaborator Androula Henriques-Christophides asks the child to crawl for about ten meters and then explain verbally how he proceeded in his action. When looking at the various examples of children who performed this experiment, we can state: the child, even when crawling perfectly (successful in the action), explains his action in a different way from the way he proceeded, and this is because the knowledge that the child needs to successfully carry out his action is different from the knowledge that the child needs to verbalize and successfully explain how he acted. Regarding this difference in knowledge that exists between successful action and successful explanation, Montangero and Maurice-Naville state: "action is a form of autonomous knowledge, which can be organized without awareness of the means used". Verbal explanation, which can only be done through the conceptualization of the action scheme, therefore presents a delay in relation to successful action; therefore, there is cognitive development (and a production of novelty) when the subject manages, in addition to successfully performing his action, to verbally explain how he did it. But how does this cognitive development occur? We will continue using the experiment *Crawling* to explain the cognitive development that occurs when the subject, in addition to being successful in his action, is able to explain it verbally.

When a person walks perfectly on all fours, he performs his action in a way that allows him to crawl, but until he is able to crawl, babies do not know how to act in order to be successful in his action. Success is achieved by babies through trial and error; actions are successive and, therefore, they are not linked to each other: when there is a success that allows him to crawl, the baby does not relate this successful movement with the countless incorrect movements that he performed before the success. It is because he does not relate his errors with his success (which would require conceptualization) that the baby does not know the difference between the movement that allowed him to crawl and the movements that made this action impossible. He only knows how to recognize the success and this recognition allows him to create a crawling action scheme. It is this crawling action scheme that will guarantee the success of the crawling action every time it is requested of him; the creation of this scheme is the expression of cognitive development.

The subjects interviewed in the experiment *Crawling* had already created the crawling action scheme, which is why all the subjects in the examples were successful in their action. The main objective of this experiment is precisely to investigate how the transformation of this crawling action scheme into conceptualization occurs. To carry out this investigation, the subject is asked to verbally explain his action. This request allows such investigation to be carried out since the verbalization of the explanation is, ultimately, the expression of the conceptualization.

The conceptualization of an action scheme occurs when the subject becomes aware of the choices that were made throughout his/her action so that its execution is successful. Becoming aware of the choices and intentionally choosing how to proceed is, according to Piaget, making active regulations;⁵ therefore, becoming aware of how to proceed in order to crawl successfully is to intentionally choose the actions that must be taken. But to choose which actions must be performed in order to be successful (and not act automatically as occurred in the case of subjects who acted using the action scheme) requires an awareness of which actions should not be performed. When the subject chooses what must be done - through active regulations - to the detriment of what should not be done, he establishes a relationship between all the actions that were performed before success and the successful action, which allows him to glimpse and understand the difference between these actions. It is important to emphasize that establishing a relationship of difference between the actions that make crawling impossible and the action that makes it possible is, in fact, producing something new, since this relationship is not in the action itself, but is the product of an abstraction.

In short, the subject who only has the crawling action scheme achieves success through trial and error (automatically and without intentional choices) and is unable to verbalize an explanation for his success.

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Verbalizing what is done in a successful action is a cognitive development that is achieved when the subject is able to actively regulate their actions through choices since, when the subject chooses what to do, they know how to verbalize that choice.

As we can see, there is a close relationship between intentionally choosing through regulations

4 Ibid., p. 197

5 Piaget draws a distinction between active regulations and sensorimotor regulations: "The taking of of consciousness depends on active regulations that involve more or less intentional choices and not on more or less automatic sensorimotor regulations (PIAGET, 1977, p. 13)"

active actions and awareness of successful action. This is because, according to Piaget, awareness depends on active regulations. Actively regulating one's actions is what allows the subject to become aware of what he did right and what he did wrong and to establish a relationship of simultaneity between these actions and not of succession (as was the case with the action scheme). The relationship of simultaneity allows the subject to group all successive actions into a whole, which we call conceptualization. Conceptualization is, ultimately, awareness of all actions that involve an action; awareness of this whole is something that is not in the action, but is produced by the subject who, through constructions and reconstructions, produces a scheme that encompasses all successive actions (successes and errors) in a conceptualization.

We can make a genesis⁶ of the cognitive development that occurs with the awareness of the action, we will divide this development into six stages: (i) The small subject, when he begins his attempts to crawl, already has some schemes that are a condition and that allow him to seek to crawl; (ii) the subject when trying to crawl has preexisting schemes that are modified by accommodation, which allows the construction of the crawling action scheme; (iii) the construction of the crawling scheme is a condition for the subject to crawl successfully; (iv) having successfully crawled and being asked to give an explanation of how he performed his action, the subject does not offer the questioner a correct explanation of how he proceeded in his action; (v) the action schemes that allow the subject to only successfully perform his action need to be modified by accommodation so that the subject can verbalize the explanation of his successful action; (vi) the modification of the action scheme occurs when there is awareness, and awareness is a conceptualization of the action scheme and only occurs because the subject makes active regulations (regulations that are chosen intentionally).

Having presented the explanation that Jean Piaget offers in the work *The Awareness* about how knowledge development occurs, in the next paragraphs Piaget's theory on the development of knowledge, which is contained in the book, will be presented *Doing and Understanding*; we will specifically dedicate ourselves to the introduction of this work that deals with the relationship between technology and science.

Many thinkers have set out to explain the relationship between technology and science. Essertier was a thinker who dedicated some pages of his work "*Les forms inférieures de l'explication* (1927)" to explain how he understands this relationship to occur.

On the one hand, [Essertier] downplays these relationships: "*The homo faber* will be... for a very long time, a mechanic who does not know mechanics", because it is necessary "to recognize that the manufacture of artificial instruments was not necessarily the primitive form of intelligence; that this form was not, in any case, the only one in origin and that the others could not have been derived from it". But, on the other hand, "the first form of *to know* would have been, in a way, the *to do*. We must not forget that we are not here at the origin of the evolution of thought: this first "physics" arose relatively late" and "science is contained in the tool. But let us observe carefully: it was not from the tool that it was deduced, it was from intelligence itself, which is defined in terms of science". In short, the "tenacious illusion of continuity masks the very problem of evolution." (PIAGET, 1978, p. 9)

In order to minimize the relationship between technique and science, Essertier states: it is possible to have technique without having science, as is the case of the mechanic who performs his functions successfully and who is unaware of the principles of mechanics as a science. On the other hand, Essertier maximizes, narrowing the relationship between technique and science when he states: (i) the first form of knowing (science) would have been doing (technique), (ii) science is contained in the tool and (iii) science was not deduced from the tool, but from intelligence itself. By narrowing the relationship between technique and science, Essertier ultimately argues that there is a relationship of filiation between them. When analyzing the excerpt from Essertier above, Piaget states that it is a hesitant excerpt since the author does not have a precise definition of how the relationship in question occurs. According to Piagetian theory, Essertier is correct when he establishes a qualitative difference between "doing" and "knowing", but at the same time

Piaget recognizes that there is a relationship of filiation between them, but a filiation with transformation.

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Piaget (PIAGET, 1978) transcribed these passages from a serious author to demonstrate that

The combined lights of the history of ideas are not sufficient to determine a solution to the problem of the relations between action (technique) and thought (science); according to the biologist, it is necessary that these lights be complemented by an analysis of the data of psychogenesis:

⁶ We will not look for absolute beginnings, but a beginning that allows us to analyze how this happens. development.

However, to reconcile this affiliation of “knowing” from “doing”, with its qualitative differences, **the central problem consists in understanding the mechanism of this affiliation with transformation:** now, this is precisely what psychogenetic study can offer us, while history or comparative ethnology can only offer us relations of succession or differences in levels, without reaching the formative or transformative processes. (PIAGET, 1978)

Carrying out this psychogenetic analysis to clarify the relationship of affiliation with transformation that exists between action and thought is the objective of the books *A Tomada de Consciência* and *Fazer e Compreender*.

MATERIAL AND METHOD

The research that resulted in this article is theoretical in nature. This means that the arguments are demonstrated through a theoretical basis extracted from the works that are mentioned in the bibliographical references. The main instrument that we will use in our research is the reading and filing of these works; these readings and filings will be used to make our theoretical analyses.

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