



THE KNOWLEDGE THAT IS CONSTRUCTED BY THE SUBJECT IN DETERMINING COLOR QUALITY

THE KNOWLEDGE THAT IS BUILT BY THE SUBJECT IN DETERMINING THE QUALITY OF CO-LOR.

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SUMMARY

The purpose of this article is to bring to light the reflection on the knowledge that is constructed by the subject when he determines the quality of color in objects. To fulfill this purpose, the article clarifies the concept of quality. The second part of the article explains how the thinker Gaston Bachelard understands that the subject knows and determines the quality of color in objects; and the third part establishes a relationship between Gaston Bachelard's thesis on the quality of color and Jean Piaget's Genetic Epistemology. **Keywords:**color quality; knowledge; constructivism

ABSTRACT

The purpose of this article is: to bring to light the reflection on the knowledge that is built by the subject when he determines the quality of color in objects. To fulfill this intention, the article clarifies the concept of quality, The second part of the article exposes how the thinker Gaston Bachelard understands that the subject knows and determines the quality of color in objects; and the third part, establishes a relationship between Gaston Bachelard's thesis on the quality of color and Jean Piaget's Genetic Epistemology.

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1.INTRODUCTION

From their first interactions, the subject seeks to adapt to the environment. The environment is composed of objects and phenomena; in this sense, adapting to the environment for human beings is, ultimately, adapting to the objects and phenomena that surround them. Adaptation occurs when the subject sufficiently knows the objects and phenomena that are around him. It is possible to state that knowing objects and phenomena is determining their qualities and that adapting to the objects and phenomena that make up the environment is knowing their qualities. In short, the subject seeks to know the qualities of the objects and the qualities of the phenomena in order to be able to adapt to the environment in which he is inserted.

The subject builds knowledge about objects when he determines the qualities of these objects; for example, when the subject comes across a tree he seeks to know this object and the way he knows it is through determining the qualities of the tree; that is, it is when the subject determines qualities such as: the size of the tree, its color, what fruits it produces, that he begins to build his knowledge about this object. The more qualities about the tree the subject is able to determine, the greater his knowledge about it will be.²

The purpose of this article is to bring to light the reflection (which has occurred throughout the history of ideas) on how knowledge is constructed by the subject when he determines the quality of color in objects. To fulfill this purpose, the article first clarifies the concept of quality. This part of the essay presents a definition of the concept of quality, primary quality and secondary quality; the second part of the essay explains how the thinker Gaston Bachelard understands that the subject knows and determines the quality of color in objects; and the third part establishes a relationship between Gaston's thesis Bachelard on the quality of color and Jean Piaget's Genetic Epistemology.

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2.THEORETICAL FRAMEWORK

Quality is any determination of an object, quality characterizes or individualizes the object

¹ Throughout the essay, when we use the concept "object" we are referring to everything that belongs to the environment; this includes: animals, vegetables, minerals, mountains, oceans, rivers, etc. 2

In this essay, we follow the Kantian idea (which Piaget also adopted in his theory) that it is impossible to list all (all here in a strong sense) the qualities of an object, but the more qualities we determine about it, the greater will be our knowledge.



being, therefore, its own. The concept of quality comprises a family of concepts and can hardly be reduced to a unitary concept. Aristotle (Greek philosopher Stagira, 384 BC - Athens, 322 BC) realized that it would be impossible to amalgamate all the meanings of the concept of quality in a single definition and distinguished four ways of signifying this notion. According to Abbagnano, this distinction proposed by Aristotle is, even today, the best exposition ever made on the concept of quality (ABBAGNANO, 2007).

Aristotle states that, firstly (i), quality is understood as habits and dispositions such as temperance, for example; in short, this first Aristotelian definition of quality refers to virtues; quality can also refer to (ii) natural capacity or incapacity, for example, the natural capacity of the subject to be sick or healthy; the third kind of quality (iii) concerns the sensible qualities themselves: colors, flavors, sounds, textures; the fourth member of the family of the notion of quality (iv) refers to quality as constituted by geometric forms or determinations, for example: quality as form (rectilinear, curvilinear) or by figure (triangle, rectangle). It is important to emphasize that, in this essay, whenever the concept of quality is used, it will be used as sensible quality (iii) or quality as geometric forms or determinations (iv).

The discussion about the clarification of the concept of quality was resumed centuries later by Galileo, Descartes and John Locke. However, it was the conceptual clarification proposed by Locke (English philosopher, 17th century) that spread throughout European philosophy. According to Locke, we can distinguish the notion of quality into primary qualities and secondary qualities. Primary qualities are those that can be subjected to objective methods of measurement; numbers, movement, extension can be measured through objective methods, for this reason, Locke classified them as primary qualities of objects; these qualities are stable, universal and are determined independently of the representations that different subjects make of them. Secondary qualities are those qualities that cannot be subjected to objective methods of measurement; flavors, sounds and colors cannot be measured through objective methods and, for this reason, these qualities are defined by Locke as secondary qualities; secondary qualities presuppose a constructive activity of the subject's mind, and what determines these qualities is precisely this activity. What underpins the distinction proposed by Locke is the possibility of quantification that primary qualities have and that secondary qualities do not. This possibility of quantification is what allows Locke to affirm that primary qualities are objective and universal and that secondary qualities are subjective and contingent.

Taking into account the conceptual clarification proposed by Locke, we can say that the subject constructs knowledge about objects by determining qualities that are objectively measurable (primary qualities, such as extension, figure, movement) as well as determining qualities that are subjectively sensible (secondary qualities, such as colors, flavors, sounds, etc.); in order to know a tree, for example, the subject determines primary qualities (extension) and secondary qualities (color and texture). John Locke, with his definitions of quality, makes a contribution to the reflection (which occurred throughout the history of ideas) about knowledge constructed by the subject when he determines the quality of color in objects, which is this contribution: the quality of color, which is a secondary quality, is determined subjectively by the subject.

John Locke's contribution, although widely disseminated in European philosophy, was not unanimous. The English philosopher George Berkeley (17th century) denied the classical classification proposed by John Locke, which based the distinction between primary and secondary qualities on the possibility of objective quantification (a possibility that primary qualities have and secondary qualities do not); Berkeley also denied Locke's assertion that primary qualities are stable, universal and independent of the representations that different subjects make of them.

Berkeley argues that both primary and secondary qualities are subjectively determined by the subject when he constructs his knowledge about objects. In the work *The Principles of Human Knowledge* (1710), Berkeley makes public a thought that summarizes his thesis that states that it is not possible to distinguish primary qualities from secondary qualities:

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"I wish any person to consider whether he is capable, by any abstraction of thought, of conceiving the extension and motion of a body without any of the other sensible qualities. For my part, I clearly perceive that it is not in my power to present an idea of a body extended and in motion, but I must in any case give it some color or some other sensible quality which we recognize to exist in the mind. In a word, extension, figure, and motion, abstracted from all [sensible] qualities, are inconceivable."
(BERKELEY, 1980)".

Berkeley's thesis on the determination of qualities by the subject who seeks to know them objects states, in short, that *all* the qualities of objects are determined subjectively by the subject and that, for this reason, there are no reasons to distinguish qualities into primary and secondary - as Aristotle and Locke did. Berkeley, by providing a conceptual clarification on the notion of quality by offering a definition of this concept, contributed to the reflection (which occurred throughout the history of ideas) on knowledge constructed by the subject when he determines the quality of color in objects, which is this contribution: the quality of color - as well as all other qualities - is determined subjectively by the subject.

It is possible to say that the reflections on the determination of qualities that have been produced throughout the history of ideas can be amalgamated into two large groups: (i) the group of those who adhere to the Lockean thesis, a thesis that claims that it is possible to distinguish qualities into primary qualities and secondary qualities, and (ii) the group of those who adhere to the Berckeleian thesis, a thesis that claims that it is not necessary to make such a distinction.

The French philosopher Gaston Bachelard dedicates a chapter of his work *Rational Materialism* to make public the way in which he understands that the subject determines the qualities of objects. The chapter that offers his thesis on quality is entitled *The Rationalism of Color* and deals specifically with how the subject determines the quality of color in objects. The following paragraphs aim to present how Bachelard presents his understanding of how humans determine the quality of color in objects.

At the beginning of the chapter *The Rationalism of Color*, Bachelard already reveals to the reader his position regarding the classical distinction of quality proposed by John Locke, which is:

"[...] it would be necessary to review the traditional distinction between first and second qualities. It would be necessary to ask ourselves whether this distinction is not a quick simplification based on the ideality of forms and the sensuality of certain qualities. (BACHELARD, 1953, p. 225)".

The philosopher proposes that such a review could allow inversions in which secondary qualities would become primary qualities and primary qualities would become secondary qualities. It is important to emphasize that this possibility of inverting qualities is innovative in the history of ideas. Another innovation made by Bachelard is to explain the determination of the quality of color based on a specific object: a piece of gold; this is an innovation since, throughout the history of thought, philosophers have sought to explain the determination of the quality of color using numerous objects. Gaston states: "[philosophers] when [...] give examples, they are not paid attention to: they go from a cherry to a flame, from a burning flame to a pin that pierces. For the philosopher, it does not matter what matter raises the problem of matter." (BACHELARD, 1953, p. 227)

According to Bachelard, by a kind of tautology³ Ontologically, common sense believes it is correct to say that gold is golden yellow. But in the first chemistry courses, this science discovered that, in the form of a thin sheet, gold lets green light pass through. Here we clearly see a contradiction between statements based on the intuition of common sense (the color of gold is golden yellow) and scientific statements (thin sheets of gold let green light pass through). Regarding this contradiction, Bachelard states: "It was in this doubly dogmatic form of a substance with two colors that the "color of gold" was known (BACHELARD, 1953, p. 228)".

In order to understand this contradiction, discoveries about the quality of the color of gold have multiplied. Through these discoveries, scientists have come to the conclusion that thin sheets do not have a well-defined color and have established a color standard for gold according to the thickness of the sheet: "It is yellow-green above 4 μm ; it becomes blue-green, then frankly green at about 2.7 μm and finally violet-pink at about 1.5 μm (ROUARD loc., p. 122)". In short, the definition of color is related to a definition of the thickness of matter. "The color of matter is a phenomenon of material extension or, more precisely, of the extension of matter (Bachelard, 1953, p. 229). Although, according to Bachelard, the color of gold is determined according to the thickness of the gold sheet, the determination of the color of gold by the subject does not occur *just* by an observation of the gold foil, but through the production of a phenomenon (result of the experience of gold in foils of different thicknesses) that allows the subject to observe the experience with the gold foil; that is, the subject who does the experience with the gold foils produces the color of the gold taking with consideration the knowledge he acquired about the color patterns of the blades of

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³ Tautology: analytical proposition that always remains true, since the attribute is a repetition of the subject, for example, salt is salty (Google Feedback)



gold. Since it was the subject who produced the colors of the gold (based on the thickness of the gold sheet), it is possible to affirm that in determining the color of the gold, the activity of the subject is manifest.

Regarding the activity of the subject that is manifested in the production of the phenomenon of color in gold, Bachelard affirms bad:

“Nature does not know green gold, much less blue gold, much less violet-pink gold. There is only one gold in Nature: heavy, opaque, yellow gold, the gold that alchemists and astrologers symbolically combined in the sun, undertaking excessive daydreams. due to a naive materialism, rooted in the given (BACHELARD, 1953, p.229)”

Gaston Bachelard, with the chapter *The Rationalism of Color* contributed to the reflection (which occurred throughout the history of ideas) about knowledge constructed by the subject when he determines the quality of color in objects, which is this contribution: the quality of color is not a true attribute of the object; it is, in fact, an activity - or rather, a reactivity⁴, which manifests itself under specific conditions. Unlike traditional positions (Locke's and Berkeley's positions), Bachelard attributes to the knowing subject an active role in determining the quality of color. The genetic epistemology proposed by the biologist Jean Piaget also attributes to the subject an active role in the construction of knowledge, for this reason it is possible to establish a relationship between the color theory proposed by Bachelard and Piaget's epistemology.

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.

FINAL CONSIDERATIONS

Jean Piaget states that knowledge “cannot be conceived as something predetermined either in the internal structures of the subject [...] or in the preexisting characteristics of the object (PIAGET, 2007, p.1)”. In the following lines, we will attempt to apply this Piagetian statement to the reflection on the determination of the quality of color. The determination that the subject makes of the quality of the color of an object can be understood as knowledge that is constructed by the subject about this object. If, according to Piaget, knowledge is not something preexisting in the object, then knowledge about the color of an object cannot be determined in the preexisting characteristics of the object, that is, the quality of the color does not preexist in objects. In the same way that the quality of color is not a characteristic that preexists in objects, knowledge of the quality of the color of an object cannot be predetermined in the internal structures of the subject before he or she has contact with the object, and this is because the construction of knowledge about the color of an object requires that the subject have sensitive contact with it. In short, even though color quality is not a preexisting characteristic of objects, determining the color of an object requires interaction between the subject and the object. Taking Piaget's theory into consideration, it is possible to state that, according to the thinker, determining color quality occurs through an activity of the knowing subject. and that, contrary to what philosophical tradition thinks, color is not an attribute of objects.

REFERENCES

- ABBAGNANO, Nicola. **Dictionary of Philosophy**. Translation: Alfredo Bossi. New York: Routledge, 2007.
- BACHELARD, Gaston. **Rational Materialism**. Translation: João Gama. Rio de Janeiro: Editions 70, 1953.
- BERKELEY, G. **Treaty On the Principles of Human Knowledge**. Translation: Antonio Sergio. New York: Oxford University Press, 1980.
- PIAGET, Jean. **Genetic Epistemology**. Translation: Alvaro Cabral. New York: Routledge, 2007.

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⁴ Reactivity, because it is a reaction to an activity of the subject and not an “action” of the object on the subject.

⁵ It is possible to make this statement, because according to Piaget all knowledge that is constructed by the subject is the product of an activity of the knowing subject.