The Structure of Concepts

Jean Piaget and Implicit Definition

Dr M A Winstanley[1]

[1]Unaffiliated

Keywords: Structuralism, Implicit Definition, Concepts, Classes, Grouping, Operations of thought

Abstract

Concepts are crucial for cognition, yet there is very little consensus on their nature. At the risk of fueling controversy, I present a conception of concepts that I believe is inherent in Jean Piaget's work. Research on the psychogenesis of intelligence led Piaget to structuralism, but he was also inspired by the structuralism emerging in mathematics at the turn of the 20th century. Some mathematicians began to regard structures rather than concepts as primary; concepts were then considered to be defined implicitly via the relations they have to each other in the structure they are part of. In this paper, I argue that Piaget developed a similar theory of concepts but based his theory on cognitive rather than mathematical structures. Accordingly, concepts are not isolated atoms but parts of a structured whole, and they define each other implicitly via the relations they have with each other in the structured whole. Finally, having briefly contrasted Piaget's theory with other theories of concepts, I conclude that his theory of concepts has the most common ground with the theory theory of concepts.

Outline

1 Introduction to Structure and Implicit Definition

Since Antiquity, mathematics has been the source of many riddles, and it was once again posing conundrums at the turn of the 20th century. In *Philosophy of mathematics: Structure and ontology* [1] Stewart Shapiro advocates structuralism in mathematics, and in chapter 5 he draws attention to a structural turn that took place in mathematics at the turn of 20th century via the written correspondence of two pairs of antagonists. According to Shapiro, the challenge was to understand the nature of mathematical structures and the implicit definitions they entail. I draw on this historical context to introduce the notions 'structure' and 'implicit definition'.

2 Jean Piaget and Structuralism

The 20th century was the heyday of structuralism, and Jean Piaget became an advocate. However, he was not simply swept along by the tide of enthusiasm rising from a school of thought *en vogue*; in fact, he was unhappy with the inflationary use of 'structure' at the time, and he distilled wholeness, transformation and self-regulation as the three essential ideas characterizing a structure [2]. Although Piaget's conversion came because of his research into the psychogenesis of intelligence, mathematics served as his role model, and the group was his exemplar [2]. In this section, I clarify the essential characteristics of a structure and implicit definition using the group of integers under addition.

3 Interpropositional Grouping

I show how the interpropositional grouping, the structure at the heart of Piaget's psychological theory of reasoning, implicitly defines the 16 logical operators of propositional logic as propositions about the truth conditions of propositions.[3]

4 Intrapropositional Grouping. Classes and Relations

I focus on classes and show how an intrapropositional grouping defines classes implicitly. Since the classes defined are not merely collections of objects but have both intention and extension, I argue that these classes actually constitute concepts.[3]

5 Discussion

On the assumption that Piaget's conception of classes represents concepts, I elaborate some implications and briefly compare them with other conceptions of concepts.[4]

6 Conclusion

I conclude that Piaget's conception of classes has many similarities with the theory theory of concepts, and, by distinguishing between diffuse background theories on the one hand and scientific theories with inherent structures on the other, I suggest how the theory theory and Piaget's theory might complement each other and perhaps explain the historical transience of some concepts in contrast to others.

References

1. Shapiro, Stewart. 1997. *Philosophy of mathematics: Structure and ontology*. New York: Oxford University Press.
2. Piaget, Jean. 1970. *Structuralism*. Translated by Chaninah Maschler. New York: Basic Books Inc.
3. Piaget, Jean, and Jean-Blaise Grize. 1972. *Essai de logique opératoire*. 2e éd. du Traité de logique, essai de logistique opératoire (1949). Vol. 15. Collection Sciences Du Comportement. Paris: Dunod.
4. Margolis, Eric, and Stephen Laurence. 2021. Concepts. In *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta, Spring 2021. Metaphysics Research Lab, Stanford University.