# Chapter 45
# Cognitive Process Elements of People Decision-Making

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## ABSTRACT

*The ability to make choices is regarded as essential to human action and to modern life, individually, collectively, and in the corporate context, and is crucial to the concept of freedom. This chapter examines individual decision-making processes. In this respect, it is important to distinguish between the task of deciding, described as a system of events and relationships in the external, "objective" world and the system of cognitive processes that take place in the "psychological world." The study of decision making has a long history that spans a variety of perspectives, philosophical positions, and prescriptions—amidst a great deal of controversy—that have evolved into descriptive processes and approximated how decisions are actually taken. This exploratory study builds on the premise that, in order for decision making to be understood completely and improved, the underlying cognitive processes must be examined. It thus sets out to identify how decision making is shaped by the cognitive processes of the agents involved.*

## INTRODUCTION

With computers and the interest in information processing, a new image of man begins to emerge. In the 1950s, studies of Broadbent (1954), continuing the Cherry (1953) model, culminate in the model of human thought processes. A model that began with the information received by the senses, but concentrated on a new and important feature: the individual has a limited capacity for receiving and storing information (Gardner, 2003).

These results were related to the work of George Miller. Miller (1956) in "The magical number seven, plus or minus two: some limits on our capacity for processing information", when referring to classification and coding, indicates that there are limitations to the ability to process sensory signals on the order of about seven. At the same time, Bruner led the "Cognition Project" at Harvard. Faced with the observations of human performance in tasks of formation and acquisition of concepts, Bruner, Goodnow and Austin (1956) suggest that individuals suffered a state of "cognitive strain" and tried to reduce it through strategies of simplification.

In the study of decision-making, the classical view of behavioral appropriateness or rationality was also challenged by psychological reasons. One major example was Simon's theory (1957) of "bounded rationality", in which it is proposed that cognitive limitations lead decision-makers to construct simplified models for dealing with the world. In the same study, Simon (1957) suggests several cognitive strategies, the average, the sum and subtraction, to explain the behavior of different economic agents. The best known example is the "satisfaction" one, which explains the behavior of consumers looking for a "good enough" option in an uncertain environment, where the search for alternatives is costly. To satisfy is a heuristic decision which involves choosing the first alternative that meets its minimum requirements. To satisfy is simple in terms of cognitive operators; therefore it makes smaller demands to the scarce mental resources. However, it can lead to sub-optimal behavior, given that finding an acceptable option, the search and evaluation of other alternatives, possibly better ones, ceases.

When asked by Gigerenzer about why bounded rationality is not the same as irrationality, Simon responded with an analogy. "Bounded rationality is like scissors: the mind is a blade and the structure of the environment is the other blade. To understand the behavior, we have to look at both and in how they fit." (Simon, 1990:7 *apud* Gigerenzer, 2004:397). In other words, in order to assess the cognitive strategies as rational or irrational, one must also consider the environment because a strategy is rational or irrational only with respect to a physical or social environment (Simon, 1990). Thus, models of bounded rationality bring the reality and consider how human with little time and knowledge behave. This term, coined by Simon (1955) is associated with three distinct programs: the study of optimization under constraints, the study of cognitive illusions and the study of fast and frugal heuristics.

In the search for descriptions that adhere more closely to the human decision-making process, this text briefly contextualizes the human perspective in the study of decision-making. It then proceeds, on the basis of a review of the literature on cognition during decision-making, to propose the formulation of a model that identifies the roles of aspects of cognition, and their inter-relations, during the decision-making process.

## BACKGROUND

Some models of decision-making involved in descriptive approaches, approximating to how decisions are really taken. In the heuristics and biases program, the focus is on the individual's process to reach a conclusion, i.e. in the judgment that leads to the decision. It can be said that the central input is to indicate the existence of particular types of processing, covering certain areas in greater or lesser extent, and that in their function there is a set of trends in decisions made. It is relevant to point out that people do not decide rationally. It refers to a set of evidences of bounded rationality and systematic deviation from the optimal model, the expected decisions. However, it fails to explain why the heuristics manifest, how they operate in cognitive terms.

The program of fast and frugal heuristics is particularly interesting as it locates individuals in the context, and considers the rooted empirical knowledge that they have. With the ecological rationality reinforces the kinds of decision-making process before which the heuristic, of specific domain, change. This direction to the context is done without losing the object of analysis - the decision-maker. It goes on, however, without explaining how the cognitive process works. Explanations relating the types of environments with cognitive functions are not formulated, for example.

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