Heuristics used by Cognitive Systems

While it is plausible that decisions made by cognitive systems are solely formed from deductive reasoning, this is usually not the case and instead guided by heuristics. A cognitive system can be defined as a natural or artificial information processing system, including those responsible for perception, learning, and reasoning for communication and action [1]. While a heuristic is any approach to problem solving that employs a practical method to make quicker decisions, which are not necessarily optimal [2]. This essay explores three different types of heuristics: recognition heuristic, scarcity heuristic and affect heuristic which are utilized by humans.

Recognition heuristic places higher value on the choice that is recognized when presented with two choices, one of which is unknown to the cognitive system. An example being a person faced with two menu choices, choosing a recognizable pasta dish over an unknown Mediterranean dish, based on it being recognizable. The effectiveness of this heuristics lies in the fact that if we choose something based on information associated with recognizing it, the choice is probably not a bad option, whereas choosing the unknown option runs the risk of it being a poor choice.

Another heuristic used by humans in decision making is the scarcity heuristic, which says the scarcer an object, the more desirable it is to obtain. An example being the high price paid for limited edition products, where people are more inclined to pay extra for scarce products even when the product does not have extra functionality. This heuristic is somewhat effective since acquiring it makes you the beneficiary of an object most people don’t have (since it is rare), possibly providing you with some advantage over others.

Finally, the affect heuristic involves an involuntary emotional reaction to information in a decision problem which is used to influence the decision-making process. This heuristic applies to situations where emotions are triggered from information in the decision problem. An example is someone deciding to pet a dog based on a positive emotional reaction to the dog, which could be elicited from a previous pleasant experience with a dog. This heuristic is reasonably effective since it can prevent us from engaging in risky or harmful activities when our initial emotional reaction is fear or apprehension.

The three heuristics provided give light to the fact that decision making is not always a deductive, rational process in cognitive systems and instead relies on heuristic approaches to guide it.

References:
1. Cognitive Systems Engineering @ Cambridge University, mlg.eng.cam.ac.uk/cogssysl.