

Chapter 2

Leaders, Decisions, and the Neuro–Knowledge System

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ABSTRACT

Every decision-maker has a self-organizing, hierarchical set of theories (and consistent relationship among those theories) that guide their decision-making process. In support of this thesis the authors explore the following: (1) the development of invariant hierarchical patterns removed from the context and content of a specific situation; (2) the connections among values, beliefs, assumptions and those patterns (a personal theory); and (3) the robustness of those patterns and connections in a complex decision situation. These focus areas are addressed through the following chapter sections: baseline definitions; surface, shallow and deep knowledge; the decision-making process; decision-making viewed from outside the decision-maker; decision-making viewed from inside the decision-maker; anticipating the outcome of actions; hierarchy as a basic property of the decision-making system; advanced decision-making: the cortex; and final thoughts. It is also forwarded that the workings of our mind/brain provide a model for decision-making in a complex situation.

INTRODUCTION

This chapter focuses on (1) the development of invariant hierarchical patterns removed from the context and content of a specific situation; (2) the connections among values, beliefs, assumptions and those patterns (a personal theory); and (3) the robustness of those patterns and connections in a

complex decision situation. It is forwarded that every decision-maker has a self-organizing, hierarchical set of theories (and consistent relationships among those theories) that guide their decision-making process. Further, the decision-making process within the mind/brain can serve as a model for the decision-making process we must now learn in order to deal with complex situations in a complex world.

To support this thesis, we first provide baseline definitions for information and knowledge,

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then introduce the concepts of Knowledge (Informing) and Knowledge (Proceeding) before discussing surface, shallow and deep knowledge with specific reference to decision-making. The decision-making process is then introduced, and decision-making explored as viewed from both outside and inside the decision-maker. We then focus on anticipating the outcome of actions and hierarchy as a basic property of the internal and external decision-making processes. Finally, we build an understanding of the human cortex, and relate this understanding to the generation of neuro-knowledge.

We begin.

BASELINE DEFINITIONS

Embracing Stonier's description of information as a basic property of the Universe—as fundamental as matter and energy (Stonier, 1990; Stonier, 1997)—we take information to be a measure of the degree of organization expressed by any non-random pattern or set of patterns. The order within a system is a reflection of the information content of the system. Data (a form of information) would then be simple patterns, and while data and information are both patterns, they have no meaning until some organism recognizes and interprets the patterns (Stonier, 1997; Bennet and Bennet, 2008b). Thus knowledge exists in the human brain in the form of stored or expressed neuronal patterns that may be activated and reflected upon through conscious thought. This is a high-level description of knowledge that is consistent with the operation of the brain and is applicable in varying degrees to all living organisms.

For purposes of this paper the brain consists of an atomic and molecular structure and the fluids that flow through this structure. The mind is the totality of the patterns in the brain created by neurons, their firings and their connections. These patterns include all of our thoughts. Neuronal (and the prefix neuro-) refers to any of the

impulse-conducting cells that constitute the brain, spinal column, and nerves.

As a functional definition, knowledge is considered *the capacity (potential or actual) to take effective action in varied and uncertain situations* (Bennet & Bennet, 2004), and consists of understanding, insights, meaning, creativity, judgment, and the ability to anticipate the outcome of our actions. Knowledge itself is neither true nor false, and its value in terms of good or poor is difficult to measure other than by the outcomes of its actions. Hence, good knowledge would have a high probability of producing the desired (anticipated) outcome, and poor knowledge would have a low probability of producing the expected result. For complex situations the quality of knowledge (from good to poor) may be hard to estimate before the action is taken because of the system's unpredictability. After the outcome has occurred, the quality of knowledge can be assessed by comparing the actual outcome to the expected outcome.

We consider knowledge as comprised of two parts: Knowledge (Informing) and Knowledge (Proceeding) (Bennet & Bennet, 2008b). This builds on the distinction made by Ryle (1949) between “knowing that” and “knowing how”. Knowledge (Informing), or Kn_i , is the *information (or content)* part of knowledge. While this information part of knowledge is still generically information (organized patterns), it is special because of its structure and relationships with other information. Kn_i consists of information that may represent understanding, meaning, insights, expectations, theories and principles that support or lead to effective action. When viewed separately this is information even though it *may* lead to effective action. It is considered knowledge when used as *part of the knowledge process*.

Knowledge (Proceeding), Kn_p , represents the *process and action* part of knowledge. Kn_p is the process of selecting and associating or applying the relevant information (Kn_i) from which specific actions can be identified and implemented, that is, actions that result in some level of anticipated

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