There are various metaphors used to understand the functioning of the human mind. But the one used extensively was "information processing metaphor," so I will try to provide a deeper insight into this. For understanding the functioning of the human mind, we have used the "information processing metaphor." In brief, this analogy compares the information received from the external world to the input to the system and the responses received after processing the information to the output from the system. In Cognitive Psychology, we are trying to understand how the workings of the brain underpin the mind. The intermediate processing step is further analysed to understand how various mental states are represented and processed inside the mind. We have to begin by accepting in the first place that the brain is more complicated than thermostats & beam balances, then we talk about concerns relating to mental states, representations & processes (i.e., mental entities). By analogy, they seem akin to computer states, representations & processes. Hence, metal software analogy! or the idea that the brain is characterized as an information processing system.

Cognitive Psychology follows the human closely as an information processing system view or that, "the mind is to brain what the software is to the computer" analogy. The classical information processing view is that the human organism consists of certain sensory systems (eyes, ears, etc.), which operate as receivers of external inputs; these receivers operate to encode these inputs via sensory transduction. The encoded information is then passed on, via abstract information processing channels, to more central systems.

Information is picked by sensory inputs, but the brain is not able to process this information instantaneously, the inputs of initial stages are retained in our memory, and it will slowly vanish. We can save information by constantly revising or repeating information in memory or can be saved if we are able to associate the new information to pre-saved knowledge related to new knowledge.

Understanding the functioning of the human mind, various techniques are used by Cognitive psychologists to analyse the mind from a physical perspective and abstract perspective. Talking about the abstract perspective, psychologists have various point of view to capture the meaning such as perception , cognition, memory, etc. These analogies are compared with actual working of the mind by studying them thoroughly in depth and are further used to enhance our understanding.

The information processing task carried out by a machine is divided into three levels by David Marr, namely: -

1. The level of computational theory
2. The level of the representation & the algorithm
3. The level of the hardware implementation

At the level of **computational theory**, the concern is with what the device does & why it does it. The machine here is seen as a black box from which information is extracted. E.g., how does a calculator carry out arithmetic operations? Analysis at this level will address the fact that the calculator carries out various arithmetic calculations to carry these operations out.

At the **representation & algorithm** level, detailed questions are asked about the nature of the calculator's operating system & the manner in which numbers & arithmetic processes are embodied in the device. Here, the operating system of the machine is

carefully examined, which helps understand the internal representation of the machine, e.g., how information is stored (i.e., represented) & also how arithmetic operations are instantiated. More simply put, how in any information processing device, information from the outside world is represented internally within the device. So, for example, when the number 2 is entered into the calculator, it is represented via some form of electronic code. By analogy, where the mind is concerned, such internal stand for actual states in the world, what happens to such information is a matter for the algorithm or the set of operations that are carried out on these representations. In terms of understanding human cognition, then, we need to consider both mental representations & mental processes.

At the **hardware implementation** level, concerns are about how the designated representations & processes are implemented physically. For example, the components of a computer system would consist of wires, transistors, etc., which make up different circuits for the storage of memory, etc.

This shows the appropriateness and usefulness in our understanding the story of cognition.

Resources: 1.

1. https://www.researchgate.net/publication/228794438_Moving_Beyond_Metaphors_Understanding_the_Mind_for_What_It_Is
2. https://pdfcoffee.com/philip-quinlan-ben-dyson-cognitive-psychology-2008-pdf-free.html