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Cognitive Features of Perception as a Kind of Cognition

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Annotation: *This article deals with cognitive features which are related to a type of cognition. There are several types of perception in this paper. In addition, this article gives data about cognitive information by the right and left hemispheres of the brain. Especially, differentiation between perception and thinking is mentioned in this work.*

Keywords: *cognitive psychology, left hemisphere, symbolic (logical-verbal) thinking, cognitive functions, motion coordination, fuzzy concept operation.*

I. INTRODUCTION

In cognitive science (especially cognitive psychology) perception is usually defined as the stage of cognitive processing information related to detection, extraction and interpretation of sensory stimuli. It is assumed that the cognition process can be decomposed into a number of stages, each of which is a hypothetical unit that includes a set of unique operations performed on the input information. It is assumed that the reaction to the event (for example, the answer: «A, yes, I know where this exhibition») is the result of a series of such stages and operations (for example, perceptions, encoding of information, reproduction of information from memory, formation of concepts, judgment and formation of utterances). At each stage the information for this phase of the operation is received» [1:31-32].

II. Literature review

Differentiation of cognition into stages is essentially only a computer metaphor, a consequence of the application in cognitive psychology of the ideal model of sequential processing of information. The effectiveness of such a computer metaphor at a certain stage of the study of human knowledge is undeniable. But this does not mean, of course, that our cognitive system as a whole works in the same way as a digital computer, which is only capable of sequential, step-by-step processing of information. With the discovery of cognitive types of thinking and research into the processing of cognitive information by the right and left hemispheres of the brain, it is clear that the digital computer metaphor is applicable only to the strategies of our left hemisphere, symbolic (logical-verbal) thinking. As a result, its use in cognitive science is currently limited to a relatively small number of specific tasks.

III. Analysis

In recent decades, very impressive advances have been made in the development of artificial intelligent devices to meet the challenges of processing enormous amounts of sensory information (for example, pattern recognition, technical vision, motion coordination, fuzzy concept operation, etc.). The creation of such devices has opened up new possibilities for successful computer simulation of

certain cognitive behaviors. In addition, neuroscientists have been able to trace the pathways of neural connections (nerve cell responses at individual stages of these pathways) that transmit data from sensory organs to different areas of the brain and shape our perceptions (such as color, motion, etc.). The obtained experimental results of neurobiological and neuro cybernetic research suggest that the work of our cognitive system, leading to the creation of perceptual images and their sequences-perceptions, much more similar to the functioning of modern neurons using the principle of parallel and distributed information processing. Cognitive information in our brain is most likely not localized in individual neurons or neural nodes - the action of complex patterns resulting from a large number of neural connections is distributed over relatively large areas of the cerebral cortex. The individual sensory systems (visual, auditory, tactile, etc.) based on the respective cortex zones largely functionally duplicate each other and interact as part of a single system of orientation and perception. Thus, perception mechanisms seem to involve the joint and almost simultaneous functioning of highly complex cognitive structures. By extracting sensory data, reacting to changes in sensory signals, they launch and maintain multiple parallel cognitive programs and meta programs. Of course, our consciousness, our conscious control cannot significantly affect the processing of cognitive information from sensory filters to perception. These processes are governed by «embedded» cognitive programs in our cognitive system that have been formed and genetically consolidated as a result of the prior biological (cognitive) evolution of human hominid and non-menoid ancestors. Only the relatively complete results of cognitive mechanisms of perception - perceptual images and their sequences - are directly accessible to our consciousness, which serve as our most important tool for information control of the environment, surviving human populations. But the immediate empirical reality to our consciousness of the sequences of perceptual images allows us to analyze the perception as relatively separate, autonomously functioning cognitive ability and even consider it from an epistemic point of view as a separate species human knowledge. Of course, this distinction is very conditional - cognitive mechanisms of perception involve the work of other cognitive abilities, such as attention, certain types of memory and pattern recognition, Perception cannot always be differentiated from thinking, etc. Therefore, the separation of perception as a separate species of human cognition is justified only as a useful tool of epistemic analysis. The perception of the outside world by living beings is inextricably linked to their perception of themselves, i.e. self-perception: according to the American psychologist John Gibson, «the perception of the outside world entails the self-perception of where in this world is the observer and the self-perception of his presence in the outside world at this place». [2:286]

IV. Discussion

Morphology and cognitive systems limit the behavioral capabilities of specific species as regards movements and manipulations of objects they are able to perform (e.g., wings are needed to fly, and racemes are needed to crack nuts at the extremities) and the adaptive cognitive information they can generate and process. The great achievement of biological evolution seems to have turned out to be the ability to move, to move in space, acquired by many hundreds of millions of years ago by living beings. Initially, this locomotor capacity was probably very limited, based most likely on some pre adaptive changes in the morphology of organisms, which gave them a relatively high propensity and served as a starting point for the further biological evolution of living beings that already had morphological capacity to travel through space. However, the emergence of moving organisms has presented their cognitive system with a number of new challenges that have directly affected their adaptation and survival. It can be assumed, for example, that these organisms had a need for cognitive programs, which would control the mechanisms of perception in the process of motion (location), would allow them to orient themselves in space, to recognize their location, store the space, i.e. store the relevant information in short-term and long-term memory, etc. These programs had to provide both exteroception and proprioception at the same time, perceiving the world around us and perceiving

ourselves as a moving observer in the middle of this world, a continuous scanning of the environment based on the self-feelings of the body. Of course, the self-perception of organisms depends not only on their physiology, but also on the contours of bodies, anatomical features - the shape of the nose, head and extremities, which are also an element of the field of perception. If, for example, an animal moves in space on the surface of the ground, it not only sees those areas of the environment to which it is moving, but at the same time perceives its body as moving relative to this surface - sees the movement of its legs, you have your head, etc. All incoming proprioceptive signals must be matched, coordinated and integrated almost instantly by the cognitive system with extra circuitry signals - adaptability of perception depends on their co-processing, The effectiveness of self-reflective centers for managing the cognitive functions and behaviors of organisms, and hence their survival.

Thus, the ability of living beings to move in space, to locomotion has led to the evolution of their perception and self-perception as a tool of information control of the environment. Moving system perception is adaptively adapted to locomotion, and involves cognitive mechanisms of self-perception. The further evolution of perception and self-perception seems to have been due to the development of the ability of higher primates to manipulate objects, which evolved through the evolutionary transformation of the forelimb morphology, formation of hands, fingers, etc. Exceptional dexterity and acrobatic skill of monkeys, easily moving in search of food in dense trees of tropical forests, as well as amazing ability of anthropoids (especially chimpanzees) to create simple tools of hunting (termite rods, truncheons, etc.), nut crackers, etc. - all these very complex forms of adaptive behaviour have emerged and become entrenched in the behavioral repertoire of the great apes only through the evolution of the respective cognitive abilities, including perception and self-perception.

V. CONCLUSION

Cognitive information generated from sensory signals from the environment is continuously correlated and coordinated by the cognitive system with information on the internal states of the organism produced by the complex of its proprioceptive internal reactions (this information allows, for example, to perceive its position in space, to react emotionally to this situation, to the perception of itself as an acting living being, etc.), which makes a very significant contribution to the perceptual representation of perceived objects and events and the management of the behavior of organisms. It seems that cognitive self-perception programs are directly involved at almost all higher levels of sensory processing. Thus, the distinction between internal and external experience is very relative and is purely analytical. For living organisms cognitive information about the external perceived world is an integral component of their internal perceptual representations, their internal experience, which probably can only very little (mainly to learning) vary in individuals of the same population. Due to the close integration of cognitive mechanisms of perception and self-perception in genome populations, these individuals have the same invariants, correlations, and changes in signals extracted from the environment. All of them are internally representative and perceive the same structures of the outside world.

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