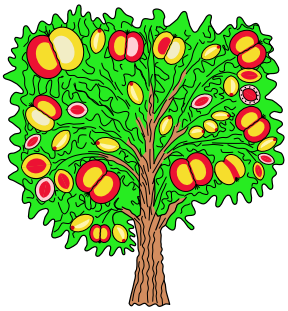

The Path of Knowing

Author: VÉGHELYI Péterné

2024

In the course of my research, I am studying the epistemological structure of student thinking, and the mode of knowledge is generated in the cognitive mind of the person. How the movements of the spirit may be realized and be recognized by the students in their increasing body of knowledge. During in-depth interviews with secondary school students, I observed that new knowledge is not permanently embedded in their memory Among the various assessment forms Mind Maps are applied for mental representation, however, learners acquire partial knowledge and elements of knowledge in a segmented manner and thus bypassing the interface faculty of the mind, the mental stages of imagery. Consequently, their cognition is superficial, since the actual forms, the interrelationships between the different elements of knowledge cannot be recognized in the process of conceptualization. In my presentation, I will attempt to introduce the three modes of experience: physical/sensory; mental; and most importantly, the movements of the highest order of cognition, in the following order of division:

1. The intellect scans the variety of knowledge gained from sensually generated objects, and as certain forms are appropriated in the reason faculty, it defines its most important traits, and differentiates them from one another. Thus, the first stage of human cognition is on primarily available, a priori qualities, without which neither cognition nor knowledge acquisition is possible. The primarily available a priori forms in human reason are available without any prior experience, as a set of universals available to all humans as an original predisposition. Such a priori epistemes, forms, are numbers, space, time, and the most important, being.

What are these a priori forms, and how could they be demonstrated? If we take the analogy of the personal computer, we could firmly claim that the processor of the PC is the part which correlates with the faculty of human reasoning.

The processor is indeed the part of the machine which, during the operation, decodes the data as according to the built-in and predetermined circuit logic, thus it runs the data received through its sensors (in the case of humans, these are the senses) and decodes them in a certain predetermined mode, that is, processes it.

This predetermined method is the internal circuit logic of the processor, the set of instructions, which are embedded by the manufacturer of the processor. In the case of human intellect, these are the a priori forms, which can be found in created reality, thus enabling the determination of their most important properties.

Therefore, the intellect is the part of the soul which is capable of abstracting the distinguishing features of things, generating concepts from them, and storing them in the

memory. Thus, is capable of analysis, division, synthesis, and of assembly.

2. It recalls the various interrelated characteristics and combines them into the unity of a higher (intellectual) image, thus forming a concept from them. In the ancient Greek language, the root of the word "spirit" is πνευμα from πνεω (to blow), or in Latin, spiritus from spiro (to breathe) - derived from the wind in nature, as the wind, although invisible, is indeed perceptible in its effects. The spirit is the higher characteristic of the soul, its thinking capacity.
   The basis and essence of the activity of the mind, its controller, is the spirit. The spirit, like the wind, is therefore the noblest part of the soul. At the same time, the spirit of the human soul cannot exist on its own; it requires the soul to carry it and provides its existence, since it is only a part of the soul. During the process of intellectual conception, the mind significantly builds upon already existent knowledge and concepts stored in the memory, which it has to associate with new knowledge according to the epistemological principle; "the similar is recognized by the similar".
   Returning to the computer analogy, the human spirit may be likened to the applications of a computer. However, just as with the human spirit, these applications do not exist on their own right. To be operatable, they require a computer capable of running them (in the case of humans, that is the soul), otherwise, we are merely talking about holes, such as in the case of a CD (compact disc). The application can only be interpreted and, in a way, brought to life by the computer running it, thereby acting as the computer's noblest part, influencing, and even controlling it. Similarly, this applies to the spirit as well, for without the soul, there is no spirit; however, since it is the noblest part of the soul, it also controls that.
   Memory, as a repository of knowledge, stores forms, and thus, the form actually is what we call a mode of thinking; or as a modality of thinking actualized, is a mode of behavior. This can essentially be understood as a modality of existence. However, what exists necessarily also moves because what is alive is dynamic. In view of this explanation, movement can be regarded as a kind of side effect or inherent characteristic of existence. The movement of the human soul is reason. Therefore, reason is the capability by which we form concepts, judge, and infer (intellectus), and through which we comprehend objects (facultas cognoscendi). Ultimately, it is the work of the spirit, its movement, through which the soul is capable of grasping objective reality (reality).
   Computers are always used for achieving some sort of goal. Achieving a target, however, always implies movement. A computer becomes 'alive' when the software, which is static, and thus 'not alive' on the storage device, is transferred to the memory and starts to run, or in other words, begins to move. This movement, or the running of the software, enables the computer to process incoming signals (analyze/synthesize), and ultimately process them, storing the results in memory and then in storage. This concept mirrors the idea that activity or movement – in this case, the operation of software – is what brings a system to a state of functional existence, similar to how thought or reason animates the human soul.
   Movement is a characteristic of all living things, as evidenced by animated films, which are named after the soul or "anima" due to their movement. Thinking, too, is an action, which signifies opinion or "opinatio", characterized by the operation of selecting among knowledge.
   Memory always stores some sort of a relational system, forms. This concept underscores the dynamic nature of thought and memory, where the interaction of stored forms and their relational systems underpins our understanding and interpretation of knowledge.
3. The concepts are traced back by the perceiver to the sensorily formed objects, by which they are defined or confined within boundaries, and distinguished from each other as distinct objects. Each naming process and concept formation is also a delimitation, a prerequisite for

the recording of knowledge in memory. This is realized through intellectual vision, which is judgment of which the result is delimitation, the actual formation of concepts as such. The concepts in memory are projected back onto the objects by the perceiver, in other words the concept is thus grasped. However, the expansion of knowledge only occurs if behind the association of images there are mental image-forms.

This final action is the responsibility of the mind, which encompasses both the perceptive ability (facultas percipiendi) and the thinking ability, including the spirit. In a narrower sense, it refers to the intellectual thinking power (mens), which includes both the intellect (intellectus) and reason (ratio).

In computing terms, the mind represents the entire computer environment, including both the tangible hardware and the software existing as the state of the hardware. Only these two components together are capable of operation. The hardware without the controlling software, although it contains all prior knowledge, is still inoperative. The software, without hardware as its carrier, does not even exist. Thus, these two cannot be separated from each other; in fact, we can only speak of a real computer when both of these elements are present. This analogy underscores the interdependence and essential union of hardware (physical structure) and software (operational intelligence) in computing, mirroring the relationship between the brain (hardware) and the mind (software) in human cognition.

Through thinking, the mind, utilizing memory, associates the shapes and forms within it during the cognition process. This occurs partly through the reception and formation of sensory knowledge and partly through the formation of a priori knowledge as potential forms. The concepts that emerge in this manner are the results of this formative process, which can be viewed in relation through associative thinking. This relation exists both between the image and reality, and among the various images (concepts) within the mind. The outcome is a type of knowledge within the mind, stored through memory, which makes us rational beings because we understand the cause-and-effect relationships between our various concepts.

The above three types of activities makes the composite (synthetic) thinking, which is the prerequisite for a mental representation of a certain body of knowledge to be depicted by a mind-map.

My research results confirm that during the socialization of the digital visual world, students encounter images that do not exist in reality, therefore, the inherent fundamental forms of these images cannot intersect with the forms of sensory perceptions. This is the digital transfer effect, which hinders students' associative learning and themental tracking of their cognitive structures, making it impossible to create a mind map.

A person accustomed to processing the artificial, non-existent machine world will have their memory filled with images that do not exist in reality. These artificial forms are indeed built upon the a priori basic forms of creation, as otherwise, one wouldn't be able to interpret or remember them. However, this means they won't be able to relate these forms to the shapes of reality, essentially requiring the acquisition of entirely new knowledge during the learning process. Learning, on the other hand, can only be easy and effective if the new knowledge to be acquired is not entirely of new forms, but rather has similarities already present in memory, thus necessitating only the creation of the new intellectual form by supplementing and expanding upon it.

However, this does not apply to young people, thus they find the real world, being more difficult to comprehend, exhausting and ultimately boring unlike the virtual world. They do not navigate the real world comfortably, instead they actively try to avoid it as if it were an unfamiliar environment, and as a result of this mode of rejection, the new material cannot be firmly established in their memory. It is not just because there is no similar image in their minds, but also because remembering without a similar image is exceptionally tiresome.

Artificial intelligence operates in a similar fashion and makes its choices based on statistical analysis, thus in case in the machine's memory there is no similar, analogous data (data form, or structure), the answer provided will not be suitable.

As a final conclusion, it can be posited that the machine analogy serves primarily as a heuristic tool for elucidation. Machine processing is, indeed, devised to emulate the cognitive functions of the human mind, in consonance with the historical trend of many groundbreaking innovations originating from observations in the natural environment. Nevertheless, it remains a cardinal axiom in the realm of computing that the resultant artifact perpetually remains subordinate to the creative intellect that engendered it. Thus, our disposition towards machines ought to be one of emulation rather than aspiration towards mechanistic cogitation. The latter course would invariably entail a regression to intellectual parsimony, a trajectory antithetical to both personal and collective progress within the broader context of humanity.

Was given:

February 5, 2024
on-line conference
(Magyar Szociológiai Társaság Oktatásszociológiai Szakosztálya
Az oktatáskutatás új nemzedéke)