The Four Isomorphic Couplets Passive Mind/Active Mind, Definition/Syllogism, Tasawwur/Tasdiq and Perception/Thinking

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Abstract Interchangeable terms in philosophy and psychology -as introduced in this article- are supposed to help in clarifying one another in order to provide a better understanding of human intellect. The two intellectual functions of learning; perception and thinking -as illustrated- are capable of describing the process of conceptual learning through which a multi-component image schema or a meaningful whole (gestalt) is constructed in our consciousness. Aristotelian logic, Aristotle mind, definition and syllogism as well as tasawwur and tasdiq can provide features of the frame within which perception/thinking couplet is assumed to fulfill its function. The aim of this mini-review is to highlight the way in which the Intellectual style Inventory (ISI) and the Integrated Model of Mind (IMM) are supposed to introduce the detailed description of how perception/thinking dichotomy actually behaves guided by the latest findings of the scientific research in the different fields dedicated for the study of the human mind.

Keywords: *aristotle mind, syllogism, conceptual learning, gestalt, memory, learning styles, thinking, perception, ISI, IMM, conceptualization, assent*

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1. Pairing between 'Aristotelian logic' and 'learning and memory'

Aristotle, in his efforts to develop a *'procedure for learning about any discipline'* introduced logic as *"the instrument (organon) by means of which we come to know anything"* (http://www.philosophypages.com/hy/2n.htm). Aristotle described his logic in terms of two focal points; the 'definition' and the 'syllogism' (Black, 1998). According to Aristotelian logic 'definition' is referred to as *"an account which signifies what it is to be for something"* while 'syllogism' is widely known to be *"form of reasoning in which two statements are made and a logical conclusion is drawn from them"* http://plato.stanford.edu/entries/aristotle-logic/#Def.

Decades later, principal Islamic Aristotelians regarded 'definition' and 'syllogism' as the main states of knowledge that logic aims to produce in the intellect and reintroduced them in terms of the two acts of the mind; 'conceptualization' (tasawwur) and 'assent' (tasdiq), respectively. Islamic Aristotelians estimated that the purpose of the 'definition' is the production of an act of conceptualization, and the purpose of the 'syllogism' is causing assent to the truth of a proposition. They defined the former (tasawwur) as *"the act of the mind by which it grasps singular (though not necessarily simple) essences or quiddities,"* and the latter (tasdiq) as *'the act of the intellect whereby it makes a*

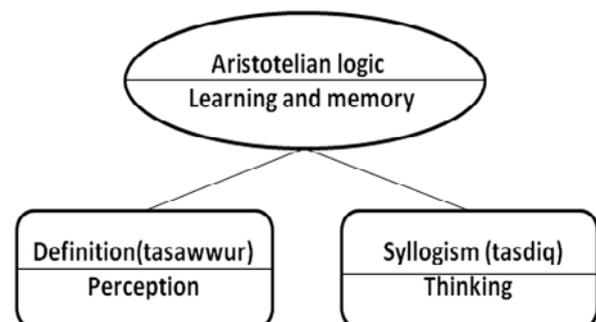*determinate judgment to which a truth-value can be assigned'* (Black, 1998).

Figure 1. Ancient philosophers investigated the epistemological foundations for knowledge acquisition through the study of definition (tasawwur) and syllogism (tasdiq) which represent the two main arms of logic. Recent sciences target the main issue by exploration of the two corresponding and interwoven terms learning and memory. The psychological functions and the memory systems involved in the mental processes of learning and memory could be more clarified in terms of better understanding of perception and thinking which correspond to definition (tsawwur) and syllogism (tasdiq), respectively

Nowadays, and after the great evolution in the different fields of scientific research that study the human mind, including –but not limited to- psychology, lot of theories, terms and concepts struggle for explaining the different cognitive phenomena and intellectual functions that try to explore the deep meaning after 'definition' and 'syllogism' or 'tasawwur' and 'tasdiq'. 'Perception' (synonymic to

'definition' and 'tasawwur') and 'thinking' (synonymic to 'syllogism' and 'tasdiq') as per their description by the Intellectual Style Inventory (ISI) (Saleh et al, 2014) and the Integrated Model of Mind (IMM) (Saleh, 2014) can provide a new extension for better understanding of the isomorphic couplets. With the emphasis on the fact that the main goal of the three dichotomies (definition/syllogism, tasawwur/tasdiq and perception/thinking) is knowledge acquisition. And knowledge acquisition is regarded as the main function of mind represented by 'Aristotelian logic' far ago and 'learning and memory' in the recent days (Figure 1).

2. Perception/Thinking, Definition/Syllogism and Tasawwur/Tasdiq Couplets as Described by the ISI and the IMM

According to the ISI –a psychometric tool for learning style assessment- 'perception' is the specialized screens or filters needed to perceive selectively what it needs to perceive to do its job, and 'thinking' is the highly specialized processing modes that use the information perceived to accomplish tasks in its specific way. The ISI suggests four different styles of 'perception' and four different styles of 'thinking' distributed over the four cortical lobes of the human brain. Each lobe -as introduced- is characterized by its specific psychological tasks to perform 'perception' and 'thinking' processes which are distinct to it and different from those of the other three lobes. At the same time, the two intellectual functions; 'perception' and 'thinking' in each lobe are completely separate and discriminated from each others. As stated by the ISI people differ in their preferential lobe used in 'perception' and the one used in 'thinking', and for the same individual the predominant lobe in 'perception' may or may not be the same as that used in 'thinking'.
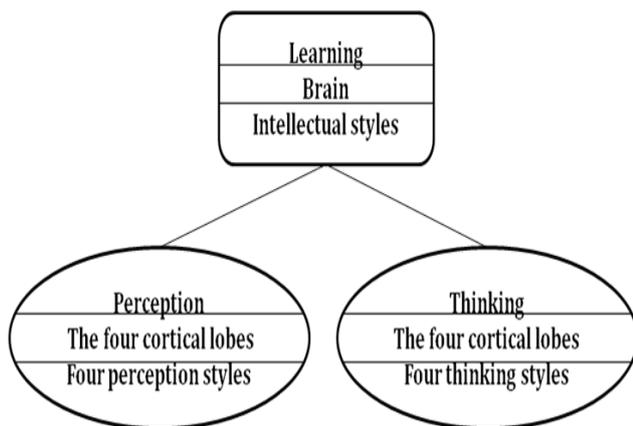
'tasawwur', respectively). Similarly, its four 'thinking styles' rooted in the same four lobes provide us with four different ways of human 'reasoning' (back to definition) through which 'truth-value' could be assigned for a perfect judgment (Figure 2).

The IMM -on the other hand- is a psychological multisystem memory model which is able to introduce a more detailed description of 'perception' and 'thinking' after their roles in the mental process of conceptual learning (after the *Britannica Concise Encyclopedia* conceptual learning is the process of developing abstract rules or mental constructs based on sensory experience). Functionally, the IMM emphasizes the fact that 'perception' is the mental faculty concerned with construction of elementary concepts to answer the question "What?" which takes us back to the Aristotelian 'definition' that is mainly concerned with *what it is to be for something'*. The model also regards 'elementary concepts' as simple, compound, and complex elementary concepts in consistence with 'tasawwur' which means to *'grasp singular essences or quiddities'* which are *'not necessarily simple'* i.e. which could be compound or complex.

Similarly, the IMM clarifies the main role of 'thinking' which is to answer the subsequent question "Why?". 'Thinking' as introduced by the IMM is the process of 'understanding' that is essential to extend the process of conceptualization, where 'understanding' is typically synonymic to 'reasoning' (see for 'definition') and to searching for the 'truth-value' (see for 'tasdiq'). Moreover, the IMM ensures that 'perception' and 'thinking' are two distinct and complementary mental facets responsible for conceptual learning that interact in accordance to the sequence stated earlier by Islamic philosophers who suggested that *"assent presupposes some prior act of conceptualization, although conceptualization does not presuppose assent"*.
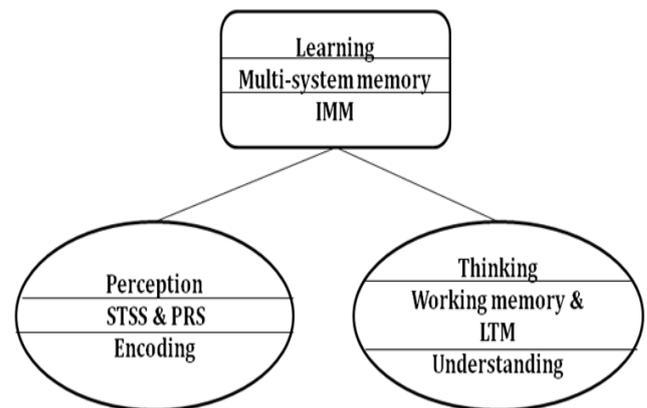

Figure 2. The Intellectual Style Inventory (ISI) describes learning in terms of the four different styles of perception in correspondence to definition and tasawwur, and the four different styles of thinking which improve our understanding of syllogism and tasdiq. The four perception styles as well as the four thinking styles are rooted in the four cortical lobes of the brain according to recent findings of neuroscience

Hence, the four 'perception styles' distributed over the four cortical lobes and described by the ISI are supposed to explain how the human mind could know *'what it is to be for something'* and how could it *'grasps singular essences or quiddities'* (as stated by 'definition' and

Figure 3. The Integrated Model of Mind (IMM) describes learning in terms of the memory systems involved in perception and thinking. The Short Term sensory Store (STSS) and the Perceptual Representation System (PRS) control the encoding process as a main function of perception. Image schema construction and automation throughout thinking are mainly applied by the working memory and the long term memory (LTM) systems, with a continuous dynamic interaction between perception and thinking for concept formation

In addition, the IMM is able to describe the role of the different memory systems in the process of encoding as the main function of 'perception' and how they integrate and interact to accomplish perfect conceptualization. The IMM suggests the short term sensory store (STSS) and the

perceptual representation system (PRS) as the key memory systems that represent perception with the working memory and the different long term memory (LTM) systems playing the secondary roles. While the dynamic interaction between LTM systems and the working memory compartment represent the key systems for 'thinking' with the participation of the other memory systems incorporated in the IMM.

3. Aristotle Mind in Terms of Perception/Thinking, Definition/Syllogism and Tasawwur/Tasdiq Dichotomies

If we return back to Aristotle, we will find that Aristotle differentiated between two types of mind; the 'active mind' and the 'passive mind'. After his words, the 'active mind' is the one which *'produces all things'*. It is characterized by being *'distinct'*, *'fixed'*, *'superior'* and with *'separate identity'*. According to Aristotle, this type of mind can apply change but is not changed itself. It is *'deathless'* and *'everlasting'* as well as being *'unforgettable'* (Ross, 61).

Within the Aristotelian description of the 'active mind' a good match could be done between it and the process 'thinking'. And consequently the 'active mind' could be described in terms of the different thinking strategies and mechanisms manifested by the aforementioned 'thinking styles' introduced by the ISI. In this context, such a simulation could perfectly describe how the 'active mind' is suited to apply reasoning and search for the truth value within the synonymic terms 'syllogism' and 'tasdiq' to apply accurate judgment. The different memory systems (working memory & LTM) used in the process of 'thinking' for image schema construction and automation (Pass et al., 2012) -as described in details by the IMM- could offer a better clarification of the exact features of mental processes used by the 'active mind' to perform the different ways of judgment (Figure 4).
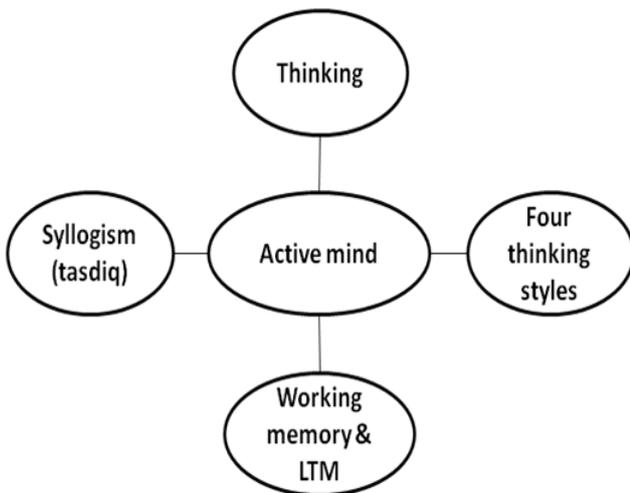
Figure 4. Aristotelian active mind in simulation to the learning process thinking can describe how syllogism (tasdiq) could be attained through the different strategies and mechanisms of the four different thinking styles by the help of the various memory systems (LTM=long term memory). Aristotle description of the active mind is of great significance for a better understanding of the synonymic terms syllogism, tasdiq and thinking

The 'passive mind' on the other hand is the one affected by the 'active mind'. It represents *'all things'* which can be *'forgotten'*. After Aristotle, without 'passive mind' there is nothing to think about (Ross, 1961). Hence, it could be assumed that 'perception' might perfectly describe the 'passive mind' where the STSS & the PRS as introduced by the IMM provide screens or filters needed to perceive 'essences or quiddities' (see for 'tasawwur'). And their further mutual interaction with the other memory systems within the IMM encode the perceived stimuli and convert them to *'all things'* which is the subject matter for 'thinking'. Besides, the four different 'perception styles' as introduced by the ISI can describe the individual variation regarding attention, encoding and storage which represent the main functions of 'perception' or 'passive mind' (Figure 5).
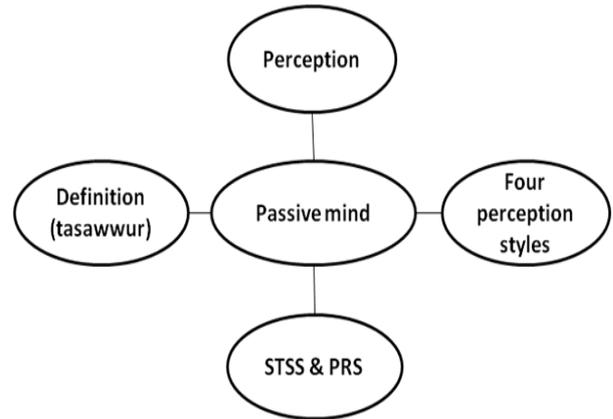
Figure 5. Aristotelian passive mind in simulation to the learning process perception can describe how definition (tasawwur) prepares the dictionary of mind in light of the four perception styles and by the help of the short term sensory store (STSS) and the perceptual representation system (PRS). Aristotle description of the passive mind is of great significance for a better understanding of the synonymic terms definition, tasawwur and perception
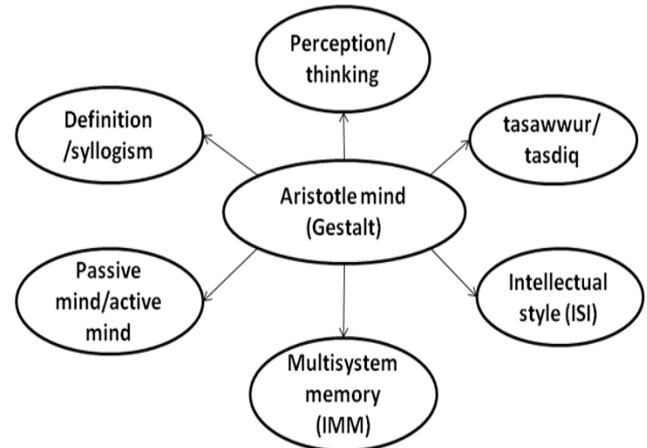
Figure 6. Aristotle mind through the process of conceptual learning makes use of the different memory systems to apply perception and thinking. The end result is the gestalt which is specific to each person and highly influenced by his preferential intellectual style. Definition/syllogism, tasawwur/tasdiq and passive mind/active mind are three isomorphic couplets that introduce a great help for better understanding of Aristotle mind and/or conceptual learning

Therefore, Aristotle mind which encompasses both the active mind and the passive mind could be described in terms of the detailed descriptions of thinking and perception as introduced by the ISI and the IMM. The four different thinking styles and those denoted for perception apply their function through the different memory systems to acquire knowledge through the process of conceptual

learning to shape what is known as the gestalt (Heider, 1977). The gestalt is the *'global whole'* where *'the whole is other than the sum of its parts'*. Each person has his own inner world in which he shapes the same reality with the taste of his embedded beliefs or concepts (Figure 6).

4. Interchangeable Terms in Philosophy and Psychology

As long as humans live on earth, they keep searching the meaning of their existence. Mind, knowledge and learning have always been mysteries despite the great effort exerted by the man kind exploring them in depth to reach the whole truth after them. Aristotelian logic, passive mind/active mind, definition/syllogism and tasawwur/tasdiq as described by philosophers in the far days and over the long decades deserve to have a second look from scientists today. A new innovative reading of the meanings and inspirations illuminated by such terms and others could open new avenues for better understanding of how the human intellect behaves. Matching between these concepts and the synonymic terms; learning and memory, perception/thinking and human brain -as described in this article- can provide new explanation to speculations introduced ago by the great philosophers and the ancient scientists.
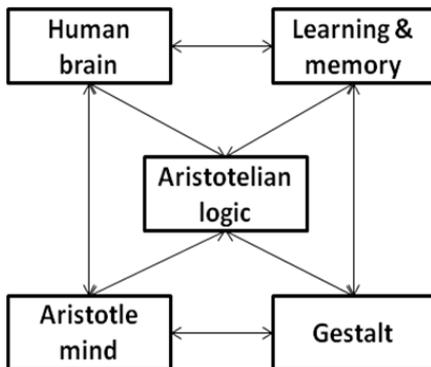

Figure 7. The Aristotelian logic is assumed to describe the mental functions performed by Aristotle mind within the different styles of perception and thinking to acquire learning where the various memory systems interact at the four lobes of the brain to obtain the gestalt
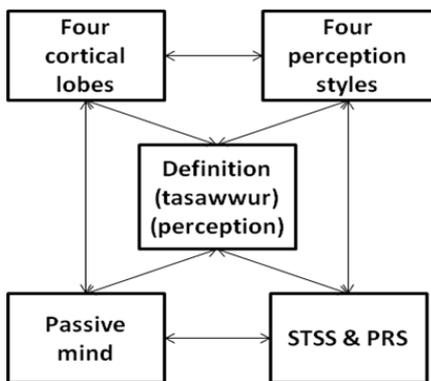

Figure 8. The passive mind is responsible for perception where the four perception styles are applied by the short term sensory store (STSS) and the perceptual representation system (PRS) within the four cortical lobes of the brain to ensure Aristotelian definition and tasawwur

In this context and in light of the aforementioned simulations we can construct three sets of synonymic terms such that the meaning of each term within the same set can describe the other synonymic terms. The first set (Figure 7) includes Aristotelian logic, Aristotle mind, learning and memory, gestalt and the human brain, the second set (Figure 8) includes definition, tasawwur, passive mind, perception, the four perception styles after the ISI, and the STSS and the PRS as described by the IMM for encoding sensory stimuli, while the third set of terms (Figure 9) includes syllogism, tasdiq, active mind, thinking, the four thinking styles after the ISI and the working memory with the LTM systems as described by the IMM for image schema construction and automation within the process of understanding.
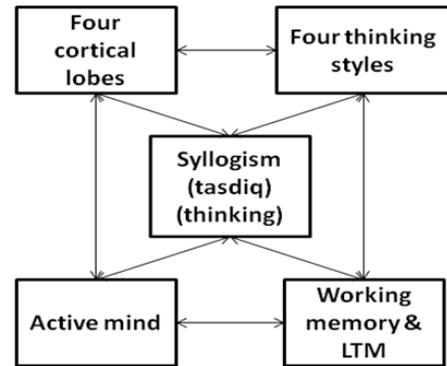

Figure 9. The active mind is responsible for thinking where the four thinking styles are applied by the working memory and the long term memory (LTM) systems within the four cortical lobes of the brain to ensure Aristotelian syllogism and tasdiq

Insight of these three sets and with respect to the isomorphic couplets introduced in this article, the perception/thinking dichotomy as described by the ISI and the IMM is believed to provide a highly promising platform that could gather the latest findings and the evidence based data of the most specialized scientific research to draw a more clear picture of how the human mind works.

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