

A Comparative Analysis of the Stages of Theoretical Reason in Avicenna's Thoughts with Jean Piaget's Stages of Cognitive Development

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ABSTRACT

New psychology became an independent field of science as a result of a series of scientific, philosophical and industrial developments in Europe after the Renaissance. Although this new-founded science differs from elm un-nafs (which translates as "the science of the self", better known as psychology) in its topics and methods, a careful study in some areas may point out certain common domains. One of such subjects is reason and the stages of reason as seen by Avicenna, which seem to have many points in common with Piaget's stages of cognitive development. Thus, the present research has endeavored to discover the aspects shared by these two fields.

KEYWORDS: Avicenna; reason; elm un-nafs; Piaget; new psychology; cognitive development

INTRODUCTION

Psychology is one of the sciences that can be regarded as having a long history from one aspect, whereas it can be regarded as a quite new field of science from another; if philosophical psychology is taken into consideration, it dates back to many years ago, but empirical psychology has a short historical background. Philosophical psychology, therefore, endeavors to discover and explore the conditions of the self by means of reasoning, and is regarded as a part of natural sciences based on an age-old Aristotelian tradition; empirical psychology, on the other hand, uses experiments and observations in order to achieve tangible, assessable results. Thus, empirical philosophy differs from philosophical psychology in not only its methods but also the topics it concerns. Nonetheless, it seems that common points of view can be found in issues such as reason; the type of discussions existing in the current thoughts of psychologists has apparently had roots in philosophical psychology, such as Avicenna's philosophy. Therefore, our aim in the present study has been to make a comparative analysis of Avicenna's viewpoints on the stages of theoretical reason and Jean Piaget's stages of cognitive development.

Reason and the Various Kinds of Reason as seen in Avicenna's Philosophy

Avicenna's philosophy has dealt with reason and its various stages in the field of elm un-nafs ("the science of the self," which is in fact psychology). Although Farabi is regarded as the hero of the domain of reason, Avicenna has also done a great deal of work on the nafs ("the self") and various relevant issues, and has thus been named "the philosopher of the self." Avicenna studied and learned all of the work previously done regarding the nafs and subsequently began his own discussions (Malekshahi, p.153) and also wrote numerous books on the subject. Although his earlier works depict thoughts similar to those of Aristotle's, his later books point out his own points of view and his independent thoughts on philosophical issues (Malekshahi, p.154).

As Avicenna saw it, apart from its many powers and faculties, the human self also has a special capability known as reason. He sees reason as a truth which does not involve various forms – as in animal powers – but involves nonetheless secondary levels of perfection from which various acts arise.

Avicenna believes human reason to have two aspects: theoretical and practical.

Theoretical reason is the source of receptions and is influenced by the heavens. Reception can be categorized into two forms – first, there are receptions independent of the act concerned, such as knowledge of the skies, the world, etc; this is the basis for theoretical reason. The second form of reception depends on the action, such as realizing that justice is good – this provides the base for practical reason. In contrast to theoretical reason, practical reason is the source of various actions which affect the body and the universe. However, the fulfillment of an inevitable action must seek aid from theoretical reason and be guided by it; for instance, it is with the aid of theoretical reason that the general premise "Committing any good deed is appropriate and proper" leads to the rule that honesty is a good and proper act (Malekshahi, p.188).

As Avicenna has stated in The Book of Psychology, "Practical reason is what moral ethics arise from, it is what make the perception of crafts possible. Whoever can overcome lusts, rage and other bodily powers, will achieve good ethics, whereas one who succumbs to lusts and rage will be unethical." (Avicenna, 1950, p.10) Furthermore, in The Book of Healing, he defines theoretical and practical reason as, "The first faculty of the

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human self pertains to thoughts and opinions and is known as theoretical reason, whereas man's second faculty, which pertains to actions, is known as practical reason." (Avicenna, 1949, p.127)

Practical reason deals with crafts and moral issues; it makes detailed distinctions between good and bad, advantages and disadvantages. Theoretical reason, on the other hand, oversees scientific matters. We will now provide an analysis of theoretical reason.

Theoretical Reason and the Stages of Theoretical Reason

Theoretical reason is a faculty of the rational soul which makes no use of bodily powers and acts in an abstract fashion in order to produce results by means of unification, multiplication, analysis and combination. Thus, theoretical and scientific material is brought about. If the results are not innately abstract, it abstracts them, but if they are abstract from material forms, it accepts them as they are (Davoudi, p.300).

Avicenna regards theoretical reason to consist of the four following stages:

1. Material reason
2. Innate reason
3. Actualized reason
4. Acquired reason

Material Reason

Material reason is a stage in which no form has been taken but the potential to undertake any intelligible exists. "It is named material reason because it has been regarded as similar to the original being which innately is not perceivable in any form and can be considered as the subject for any form" (Siasi, p.110).

Innate Reason

The second stage of reason occurs when the rational soul proceeds from the stage of material reason, steps beyond the realm of pure capabilities and talents and reaches a cognition of initial intelligibles. By initial intelligibles, we are referring to preliminary bases which aid us in confirming things. One does not acquire them; although he confirms them, he is unaware that he may neglect their confirmation. For example, we believe that "the whole is greater than its parts," and an object is equal to something equivalent to it. Therefore, when theoretical reason achieves such an extent of preliminary intelligibles, innate reason has been reached. Compared to material reason, it can also be appropriately called the "actualized action," for material reason was incapable of actually reasoning something, whereas these faculties can (Siasi, p.111)

Actualized Reason

The third stage, "actualized" reason, occurs when reason – aided by initial, obvious intelligibles – achieves the cognition of secondary intelligibles, which are acquired. Man stores such knowledge in the self, and is conscious of the fact that he has achieved them through reasoning, and he can retain and study them whenever he pleases. This stage of the rational soul has been known as "actualized" because knowledge in it is in an actualized form and there is no need to acquire such knowledge once again. In fact, this is the stage of "perfect faculty." (Siasi, p.111)

Acquired Reason

Having gone through the three stages mentioned above, acquired reason is achieved, in which reason truly and actually begins to observe intelligibles but is aware that it is engaged in reasoning about them. In this stage, "reason becomes absolute" – as the first stage, in which reason is material and absolute. The purpose of the name "acquired" for this stage of the rational soul lies in the fact that its intelligibles are "acquired" by another form of reason which is constantly actualized. This is the result of going through the four stages mentioned; it is through such a connection that reasoning about intelligibles becomes feasible. In brief, this form of reason to the rational soul is like sunshine to eyesight. (Siasi, p.112)

According to the definitions provided for each of the four stages of reason, it is observed that the first and second stages involve the talent for acquisition, whereas the third stage concerns the talent for summoning secondary intelligibles, and the fourth stage pertains to the presence of secondary intelligibles (Malekshahi, p.191).

Active Intelligence

In order to perceive intelligibles, reason must go through four stages (material reason, innate reason, actualized reason and acquired reason). In all of these stages, however, the aid of active intelligence is required; science and knowledge cannot be achieved without the help of this exceptional gem. In fact, as seen in Avicenna's thoughts, intelligibles can all be found in an actualized form in active intelligence and in a potential form in the rational soul. If the rational soul is to make them actualized, it must prepare itself to connect to this form of intelligence, and that will only occur when it has gone through the stages of reason (material, innate,

actualized and acquired) by means of its powers of perception and with the help of active intelligence itself; only then will intelligibles be actively present in reason and appear whenever the soul prepares itself to accept them through preliminary measures so that the intelligibles can be reflected in the soul like images reflected by a mirror. In brief, active intelligence affects the rational soul by both bringing it out of its still, purely potential state and provides it with the capability to understand intelligibles and also adds more intelligibles as soon as the rational soul was willing to connect, for the soul itself is unable to preserve and store intelligibles itself.

Piaget's Stages of Cognitive Development

Piaget believes that man is active, curious and innovative throughout his life and is constantly in search, contact and mutual interaction with his environment, interpreting various phenomena. He sees a child's development in cognitive areas as synchronous with the development of the child's mental patterns; in other words, the child's patterns of thought evolve toward perfection, and also bring about cognitive development with them.

Mental and psychological development is seen by Piaget to be comparable to the development of other body parts; Piaget believes them to move on the same path toward evolution. When various body organs and systems reach the required balance and maturation, their physical development has been completed; likewise, mental development also achieves gradual evolution and reaches its final balance – the adult mind. Obviously, such a development takes place in a gradual fashion, and each stage of mental development is a transition from one stage to a more balanced one.

Piaget believes his stages of development to be not confined to a specific culture and thus applicable to children all over the world. Moreover, the sequence and order of the stages are also interchangeable. As time passes and the individual progresses through his cognitive development, he proceeds from simple mental structures to complicated ones, progressing from sensory-motor actions to abstract thinking (Ahadi and Jamhari, p.86).

Piaget presents a qualitative chain consisting of four distinct stages. In general, he has categorized cognitive stages into the following stages: 1. the sensory-motor stage (from birth to the age of 2), the pre-operational stage (ages 2 to 7), 3. concrete operations (from 7 to 12), and 4. formal operations (from age 12 and on). Piaget believes that all normal children go through the same stages equally, and no child can proceed to a certain stage without having gone through the former one, for each stage is founded upon and arises from the completion of the previous one. In each of these stages, the child achieves newer and more different cognitive abilities and learns more than before. Each of these four stages is unique and distinct from the others; although all children go through the same sequence of stages, they differ in the speed they pass through them. In general, children and adolescents' cognition and capabilities achieve their required development and evolution during these stages (Nejati, p.110).

The Sensory-motor Stage

During this stage, children make contact with and become aware of their environment by means of actions such as sucking, handling, and looking. The child's knowledge is initially dependent upon his sensory experiences, which occur through reflexive actions. Thus, this stage of cognitive development is known as the sensory-motor stage.

One of the major features of the sensory-motor stage is children's gradual awareness of object permanency. Until infants turn 9 months old, infants generally believe that an object out of their sight does not exist. From that age, however, children gradually become aware of the permanent existence of objects. When the sensory-motor stage ends, if we move an object – even secretly – to a different place, they will search for it in the appropriate place. Having gained awareness of object permanency, children also become capable of deferred imitation – in other words, if they observe a certain action today, they will be able to imitate the same action the following day in the absence of the model. This capability emerges simultaneously with children's knowledge of their own physical self.

The end of the sensory-motor stage indicates the start of the preliminary grounds for thought and the cognition of basic actions and concepts. Such a development prepares the child to enter the next stage, the pre-operational stage.

The Pre-operational Stage

In this stage, children attain new cognitive skills; for example, they can use words or expressions to describe objects or events and do symbolic actions (such as use a stick as a gun or use a box of matches as a toy car). Nevertheless, they still lack logical thought.

Piaget's studies indicate that children's thoughts and deductions during this stage are quite egocentric; they cannot put themselves in someone else's position or consider events occurring in their surroundings from someone else's point of view. He sees – particularly during childhood – himself as the center of the universe, and imagines every occurrence is based on him (Ahadi and Jamhari, p.96). During this stage, most children consider everything to have life. Due to their egocentrism, children believe that natural events are the result of

human control; they think that the sun, the moon and the stars have been created by man and put in the sky. In this stage, children's language skills are also developing; their ability to use symbolic language in their thoughts, problem solving and creative games also improves. Nevertheless, the child's ability for thoughts is still limited at this stage (Nejati, p.90). Moreover, children cannot comprehend concepts such as a whole and its parts or class inclusion during this stage. In other words, if we show a 5-year-old child a bunch of flowers consisting of 4 carnations and two tuberoses and ask the child whether the number of the carnations is higher or the whole number of flowers, Piaget would expect the child to answer, "The number of the carnations."

Another feature of these children is their incapability of conservation; they find it difficult to make judgments about concepts such as matter, length, numbers, liquids, area, weight and volume, because they are easily influenced by the qualities concerning the appearance of objects (Ahadi and Jamhari, p.113).

The Concrete Operations Stage

In this stage, children acquire the capability to do certain mental activities – or "operations," as Piaget calls it. He sees operations as mental activities that have two characteristics – reversibility (every operation has a reverse version) and flexibility. The capability to perform operations provides children with new abilities, enables them to comprehend and conserve mental concepts and decreased features caused by cognitive limitations in children (such as geocentrism, imagining all objects as being alive, and the inability to comprehend a whole and its parts). In this stage, they are able to mentally understand comparisons. Although children need fewer tangible data when solving problems at this stage, they are still unable to think in an abstract fashion – a feature which indicates the highest level of cognitive development and emerges in the next stage, young adulthood (Ahadi and Jamhari, p.115).

The Formal or Abstract Operations Stage

During this stage, the young adult creates hypotheses by means of his new skills, and uses the hypotheses to predict events in his surroundings. He also makes plans to test his hypothesis or potential guesses, and ponders about their consequences. In contrary to children, young adults think about all of the potential solutions to a problem and act more systematically when testing their solutions. Therefore, they can deduct more sophisticated principles from their observations. In the formal operations stage, children are able to manipulate potential situations and make logical and interesting conclusions. During this stage, the child can make systematic searches and also correct his own mistakes. It is particularly in this stage that young adults think about and do tests about a variety of subjects such as philosophy, politics, religion, and moral ethics, and cast doubt on their own beliefs and points of view. They are in fact in search of new values and philosophies for life (Nejati, p.90).

Self-normalized moral ethics, which are observed in inter-individual behaviors from the age of 7 to 12, finds a new dimension by means of formal thoughts and by achieving supra-individual or ideal values. A study on this concept conducted in collaboration with Weill indicates that it is only after the age of 12 that the idea gains importance as a complete emotional value.

The same point is also applicable for the concept of social justice, intellectual ideals or aesthetics. New values provide youth with new facilities, for young people differ from children in two fundamental aspects – the youth not only are capable of theorizing, but they also have their future professions in mind as well – a profession that is compatible to their talents and interests, creates new ideas and fulfills youth's wishes about social reforms (Piaget and Inhelder, p.56)

A Comparison of Avicenna's and Piaget's Points of View

In new psychology, and in Piaget's thoughts in particular, cognition is regarded as reflection of reality – an in fact the construction and reconstruction of facts – and man is actively involved in the stages of cognitive development from the very beginning. As Avicenna's philosophy sees it, however, cognition is a passive process which occurs through connections made to active intelligence. Thus, Avicenna's knowledge of cognition has the ability to turn into something beyond a mere theory concerning the study of cognition; in fact, the process of cognition turns into an oriental trend. As a result, human involvement in the cognition of reason is seen in Avicenna's thoughts to be of passive nature. It can even be stated that the term "reason" is used in a virtual sense about it; it is merely a faculty to perceive intelligibles, whereas the active intelligence is in charge of all initiatives. Such a theory is in sharp contrast with Piaget's theory on cognition, in which the individual is seen to be in total charge. In fact, Piaget – as other new psychologists – sees cognition as the result of interactions between the senses and reason, and does not regard them as being separated at all (Siasi, p.124). According to Avicenna, as human reason merely receives intelligibles from active intelligence, it cannot store them. As a result, it must receive the form of the intelligible from the domain of active intelligence. In Piaget's cognitive development, however, concepts which are constructed are occasionally restored and used in cognitive combinations of the mind. Avoiding philosophical discussions and relying on observations and experiences

instead, Piaget not only sees no distinction between the faculties of cognition and reason, but he also sees them as equal to the soul. Thus, he sees no need for active intelligence for the cognition of intelligibles.

Piaget sees cognitive development as being comparable to the development of other body organs; they all progress toward balance. When various body organs and systems reach the required balance and maturation, their physical development has been completed; likewise, mental development also achieves gradual evolution and reaches its final balance – the adult mind. It is obvious that such progress occurs gradually, and each stage of cognitive development is a transition from one stage to another. For instance, if we compare the behavior of a 3-year-old child with a 7-year-old child, we will see that the 7-year-old shows more balance than the 3-year-old in all aspects (intelligence, logical judgment, reasoning, etc.). Avicenna's four stages of theoretical reason are also comparable to the individual's physical and bodily development; in other words, progress from material reason to innate, actualized and eventually acquired reason is a trend of progress toward balance, as observed in sensory organs. Nonetheless, the stages of cognitive development and the development of body organs do not follow the same rules as the stages of reason in various individuals.

The "body" is seen in Avicenna's view on cognition and thought as having an insignificant role, and sometimes even an interfering inhibitor of the cognition of intelligibles. However, Avicenna has taken the role of the body into consideration in the preliminary stages of cognition, for he believes that the soul begins functioning through the senses, and in order to achieve high stages, the soul needs the body and bodily functions which are its tools of cognition. In other words, the first stage of the human soul – material reason – is not feasible without the body's attainment of the required sensory and empirical preliminaries. Thus, it is surprising that Avicenna regards the body's faculties as interfering parts of the stages toward progress. As he has stated in *Shafa* ("Healing"), "Once the soul achieves perfection and becomes powerful, it will have absolute capability to manage its own affairs; thus, not only will it have no need for sensory powers, imagination and other bodily faculties, it will in fact be inhibited by them as well. It is like man needs a horse and dome tools to reach a destination, but when he arrives, he no longer requires them, the horse and the tools will get in his way if he fails to dispose of them." (Avicenna, p.352) On the other hand, Piaget regards our sensory faculties, imagination and other animal powers of the soul as preliminary parts of our character and necessary in all aspects; if they are discarded and eliminated from the soul, our extent of cognition will be diminished, and our cognitive powers will be weakened.

The four stages presented by Avicenna for theoretical reason show the same trend of progress as Piaget's stages of cognitive development. In fact, the qualities and components included in Jean Piaget's stages of cognitive development can be traced in the four stages of theoretical reason. Material reason, for instance, is a stage or stages of the child-like, preliminary soul which – through constant contact with the environment, sensing, experiencing, and the cognition of minor intelligibles and concepts – has become ready for higher levels of mental functions (supreme stages of abstracting, education, judgment and reasoning) without having been able to take any steps along this path; he has not yet attained the required preliminaries including the fundamentals for imagination and confirmation – maybe because his senses and experiences have not matured enough so as to make such basics abstract parts engraved in the mind (as believed by the empirical school), or perhaps the development of the mind has not reached a level in which the innate fundamentals are not yet ready to emerge and arise (as believed by the intellectual school). In the sensory-motor stage also, we observe reflexive actions (innate reflexes) and initial habits. The child's innate reflexes have no awareness of the existence of anything other than himself; it is only through innate reflexes that contact is made. Reflexes such as crying, sucking, moving the limbs, etc. as well as initial habits lead to higher harmony in innate reflexes. Thus, we see that in the sensory-motor stage, there is no sign of judgment, deduction and judgmental cognition; this stage involves the same things included in the stage of material reason.

The second stage of theoretical reason, innate reason, is similar to Piaget's pre-operational stage, for in the stage of innate reason, the rational soul has gone through the stage of material reason and is no longer in a state of pure potentials and talents; having received the initial intelligibles, it is ready to attain secondary intelligibles by means of thoughts or guesses. It is like an illiterate man's talent for writing. When such an amount of science enters and emerges in theoretical reason – i.e., when the initial intelligible have been comprehended – innate reason has been achieved. Initial intelligibles are the fundamentals which aid confirmation and man believes without acquiring, thinking about or learning them – for instance, we believe that the whole is greater than its parts. Likewise, in Piaget's pre-operational stage, we see issues which can be regarded as equivalent to innate reason, for the child may use an object as another object while playing in the stage of pre-operational thoughts. The child may use his doll as an individual, a box as a bed, table, etc – a form of symbolization. In the pre-operational stage, the child's reasoning involves similes rather than comparisons and deductions. Thus, the child sees all men as "Daddy" and all women as "Mommy." The fact that the child substitutes something for another in this stage indicates that the child has learned that object A and object B are the same size, or are both objects, or perhaps he has found no point in common between them at all – this is the initial intelligible innate reason is concerned with.

The third stage of theoretical reason involves actualized reason, in which secondary intelligibles are acquired with help of initial, obvious intelligibles. Then, the knowledge is stored in the soul, which is conscious that it has received the knowledge and can retain and study them whenever it wishes to. Thus, actualized reason is the talent for the retention of secondary intelligible. Having acquired secondary intelligibles is like someone who is able to write and has completely mastered writing and can write whenever he intends to. In fact, this stage is what new psychology – in particular Freud’s psychoanalysis – regards as the “subconscious” or “the dark side of the self.” However, in new psychology, the “subconscious” is where all issues pertaining to the self are stored – whether sensory, intellectual, passive or voluntary – whereas “actualized reason” focuses solely upon intelligibles. Jean Piaget’s stage of concrete operations involves individuals performing changeable and reversible mental operations based upon what they have learned. In other words, individuals can use their internal sense to discover what they want and reveal their pursuits in an actualized form; this is when the “subconscious,” as Freud calls it, arises. In fact, Piaget also believes that children in this stage can comprehend logical rules and certain basics by means of their cognitive construct, and are able to think deductively and reasonably and make deductions to a slight extent. As a result, the stage of actualized reason can be regarded as occasionally similar to the stage of concrete operations.

The fourth stage of reason, acquired reason, is not dissimilar from Piaget’s stage of formal operations, for both involve similar parts. Avicenna believes that acquired reason occurs when the rational soul observes secondary intelligibles and knows that it has acquired them in an actualized way. In this stage, theoretical reason has become “absolute reason,” as it was regarded as “absolute power” in the first stage. However, naming reason as “acquired” in this stage is due to the fact that the rational soul acquires knowledge and sciences from another form of intelligence outside the human soul – “active intelligence” – which is not accepted in new psychology and Piaget’s thoughts in particular. Acquired reason consciously has what actualized reason had unconsciously; it possesses everything in an actualized form, which is the highest stage possible. Likewise, the stage of formal operations was more advanced than the other stages. In the formal operations stage, the child achieves the highest stage of intelligence and cognition, and the limitations of the sensory stage have gone away. In the stage of acquired reason also, the soul has reached its highest level of capability in deductions and thoughts, and has overcome all limitations due to its contact with active intelligence. The individual can observe and interpret things from different points of view in the stage of formal operations; likewise, in the stage of acquired reason, the rational soul is able to make logical deductions and solve any problem in a reasonable and systematic fashion. Furthermore, in formal operations stage, the individual is in search of new values and philosophies for his life; in fact, mental preoccupation is a major characteristic of this stage. Such issues also arise in the stage of acquired reason.

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