

Session XI

Developmental Psychology : The Need for a New Epistemological Foundation

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I. Introduction

One of the greatest challenges facing us as human beings is the understanding of our own human nature. We all agree that the human psyche has great complexity, yet philosophers and psychologists alike certainly do not agree on any model of human nature and development. This paper addresses the question of what type of epistemological foundation is needed to support a developmental psychology that is able to deal with all the complexities of the human psyche.

A number of different philosophical views have been adopted by psychologists, and the resulting models of human development show very different characteristics. In fact, it is common in psychological

literature to see long debates between competing schools of research that are based on opposing philosophical approaches. In order to resolve the validity of the psychological models it is necessary to return to their philosophical foundations.

The close relationship between epistemology and developmental psychology has been acknowledged by some philosophers and psychologists :

... psychologists do not regard epistemology as a purely philosophical preserve : the ways in which children come to acquire that knowledge of the physical and social world which adults take for granted is investigated empirically by psychologists, and some of them (for example, Piaget) would argue that these investigations have important implications for epistemology. The acquisition and use of concepts, the growth and development of knowledge, clearly are areas in which the interests of philosophers, concerned with conceptual analysis and the theory of knowledge, seem to overlap with those of psychologists interested in cognitive development and "conceptual behavior."¹

However, the relationship between philosophy and psychology should be such that philosophy provides the theoretical framework which guides psychologists' empirical research. Therefore, the nature of the epistemological foundation and the assumptions underlying it have significant impact on the developmental psychology which results. The adequacy of the underlying structure is therefore crucial to the success of developmental psychology.

Although we now know a considerable amount about child development, and especially infant development,² it appears that we are not yet able to understand the totality nor the uniqueness of human development. Following the above reasoning, we must conclude that the problem lies not so much in the quality of the empirical research as in the epistemological basis. In this paper I will analyze the requirements that the construction of an effective model of human development places on the underlying epistemology, and show that

Unification Epistemology fulfills these requirements.

II. An Epistemological Foundation for the Psychology of Human Development

A. The Challenge

To illustrate the challenge in constructing a model of human development, let us look at a number of quotations from a variety of people addressing issues pertinent to this topic. First, from two religious thinkers : Sun Myung Moon :

Each man* is a microcosm of the universe. Your body is made of all the elements of the world. Nature supplied all the ingredients that make your body, which means that the universe made you by donating itself. If nature demanded that you refund everything that nature loaned you, would there be anything left of you? You can feel that the universe gave you birth and made you, so nature is your first parent. Do you feel good that you are a microcosm of the universe? All the universal formats or formulas can be found in you. You could accurately say that you are a small walking universe that can move, whereas the cosmic universe is stationary. Because you can move and act, you can govern the universe. The universe would want you to exercise dominion over it, so your first duty would be to love nature. Then, wherever you are, you can love the creation and appreciate it.³

Hyo Jin Moon :

... I think it's important for us to recognize the existence of two intelligences. ... the first intelligence is the inner spiritual intelligence, which is realized through spiritual truth. The second intelligence is physical intelligence, which is realized through physical means or tactile truth. Just as we gain greater physical intelligence by understanding physical truth, we can ultimately gain spiritual intelligence as we truly tap into spiritual truth, which means God's will, or the inner desire of

God.

... Many of you understand conceptually, but you may lack deep spiritual wisdom because you simply don't practice your understanding enough. Or you don't have sufficient belief to push yourself to endure the process required to reach this position of understanding God's truth. You can't stop at just realizing what truth is. To absorb that truth into your intelligence, you have to live it. Without experience, it is not going to be yours. ... You have to apply it, and your heart has to be within that process. Your mind and body must absolutely unite in making the concept work in reality in order for the understanding to become part of you.⁴

These quotations place strong emphasis on the position of God as creator and His presence in this world, as well as on the importance of spiritual values in our lives. Clearly, love and truth are essential elements. There is also the understanding that we can gain true knowledge of this world because God created us to know and love all things in creation.

Secondly, a quotation from Jean Piaget, who has been the most influential force in developmental psychology:

I recall one evening of profound revelation. The identification of God with life itself was an idea that stirred me almost to ecstasy because it now enabled me to see in biology the explanation of all things and of the mind itself ... The problem of knowing (properly called the epistemological problem) suddenly appeared to me in entirely new perspective and as an absorbing topic of study. It made me decide to consecrate my life to the biological explanation of knowledge.⁵

This quotation is interesting in that it shows Piaget's starting point and initial motivation in developing his genetic epistemology included a religious component. Thus Piaget also began with faith in God as creator of a world which we could come to know fully through interaction with it.

Finally, two quotations from psychologists, showing their efforts to subscribe to scientific rigor in their study of complex psychological phenomena, in this case the attempt to objectively characterize learning.

From a standard introductory text on learning:

Learning has a number of defining characteristics.

1. Learning may result in a change in behavior...
2. Learning comes about as a result of practice or experience. This characteristic eliminates sources of change such as illness or maturation.
3. Learning is a relatively permanent change. This characteristic eliminates changes in behavior that are temporary and easily reversible, such as those caused by extreme motivation...
4. Learning is not directly observable. Herein lies the crucial difference between learning and performance. The differentiating element is that you can see performance. ... Learning is only one of the many variable sinfluencing performance.⁶

And from a well-known developmental psychologist, writing on the concept of learning in psychology:

... the basic form of all learning is association or connection between events that were not associated or connected prior to learning. ... All theorists believed that an act performed in a certain stimulus context was most likely to recur if it was followed by some rewarding consequence. ... All agreed that reinforcement was important for performance, and that the measurement of performance was the only way to measure learning. ... The definition of the word "reinforcement" has varied from theorist to theorist. ... The most neutral definition would seem to be that offered by Skinner: a positive reinforcer is anything that increases the probability of a preceding, associated response. ... The terminology I find most useful here is that of Krechevsky⁷ "Learning ... is a ... process in which the learner theoretically tests and rejects a series of hypotheses until the correct one is hit upon." ... a learning organism is

formulating and testing hypotheses about contingent relations between events."

Thus psychologists have struggled to define learning, in many cases the learning of a simple motor response, which can perhaps be considered as a low level of knowledge. How then can psychologists using this type of approach explain the higher levels of knowledge and thinking that are uniquely human, particularly those aspects of human nature relating to spirituality?

B. An Analysis of Existing Epistemologies

Let us now turn to the epistemological bases that are available to developmental psychologists and try to determine their adequacy as the foundation for a satisfactory model of human development.

Approaches in epistemology have been divided into those emphasizing the *subject*, or perceiver of the world, and those emphasizing the *object* of cognition. The *Empiricist* tradition, espoused by such philosophers as Locke⁹ and Hume,¹⁰ and developed into the field of psychology by Helmholtz,¹¹ stresses the importance of the object and claims that all knowledge comes directly through the senses. This approach supports scientific study in that the source of cognition is observable, i.e., the object itself and the sensory data received by the subject. However, just as the extreme Empiricist viewpoint in philosophy, Locke's concept of the mind as a *tabula rasa* or slate, was found to be inadequate, also in psychology theories of cognition have been found inadequate if they do not include some contribution by the subject to the acquisition of knowledge.

On the other hand, the school of *Rationalism*, founded by Descartes,¹² emphasizes only the subject, saying that knowledge comes through reason. This approach includes a religious component in that reason is seen as the means for discovering universal and eternal truth which comes from God. In psychology this has led to the nativist approach. Nativist theories of cognition, assuming that everything is innate, have been found inadequate in dealing with development and learning. The conclusion that must be drawn from the failure of these two extreme philosophical positions is that

cognition results from an interaction between subject and object. A viewpoint which stresses the contribution of both subject and object is the Marxist-Leninist philosophy of Dialectical Materialism. This approach can be regarded as one of *objective realism*, in that the external world is considered to have a reality independent of the subject. According to this view, cognition consists of a reflection, or "motor copy"¹³ of the object. This reflection is obtained and tested through "practice" which permits the subject to obtain truer reflections of the world.¹⁴ As with the Empiricist approach, the Dialectical model fails to provide support for the findings of developmental psychology that there is also structure in the mind of the subject.

What is required is an epistemology that maintains structure in the mind of the subject who interacts with a real world. Such an epistemology was proposed by Kant.¹⁵ His Transcendental approach views cognition as the result of the application of a priori forms from within the subject to the sensation of matter (from outside). Thus Kant proposed that our cognition is not of the world directly, but rather a construction imposed by the subject onto sensation. Kant's view sees the object as essentially unknowable in itself, as its form comes solely from within the subject.

Another proponent of interaction between subject and object as the basis of cognition is Jean Piaget. While carrying out empirical investigations as a developmental psychologist, he nonetheless saw his contribution as equally relevant to philosophy, his goal being to produce a "genetic epistemology."¹⁶ In Piaget's view, both Empiricism and Rationalism, or "apriorism" as he called it,¹⁷ are inadequate, as are the types of psychology based on these philosophical approaches. He called the former "geneticism without structure" and the latter "structuralism without genesis," implying that some reconciliation between the two is necessary. Piaget's position has been likened to Kant's, although Piaget himself denied this. Indeed, for Piaget, unlike Kant, the object is knowable by the subject. For him, "That which is knowable and that which changes during the genesis of knowledge is the relation between the knowing subject and the object known."¹⁸ _____ This knowledge of the object is gained

through the operation of an internal self-regulating mechanism, "equilibration," through which two processes are balanced. These are the process of "assimilation" in which "environmental data (through physical or mental activity) are incorporated into existing cognitive structures . . . to the extent that they are consistent with those structures:"¹⁹ and the process of "accommodation" by which "the individual adapts, modifies or applies its inner organization to the particular environmental reality."²⁰

Thus Piaget's work seems to parallel Kant's rather than be based on his epistemology. Piaget, therefore, does not fall into idealism, losing knowability of the object. However, his theory does fall short in another area. Piaget's model of development leads to a final stage of logico-mathematical knowledge or formal operations in which abstract inferential thought occurs. The content of thought at this stage becomes increasingly abstract and unrelated to the aims and desires of most people. Piaget's theory, therefore, contains no acceptable view of development in adulthood,²¹ a problem to which no satisfactory solution has been proposed.²²

What is the root of this problem in Piaget's theory? I would like to propose that the problem comes from Piaget's loss of the transcendent God. Although his initial motivation and starting point, as we have seen, included God in transcendent form, Piaget's later writings strongly rejected this:

I believe therefore that the transcendent God, a spiritual substance, creator of the world, source of miracle, . . . is nothing but a symbol which can be attributed to mythological and infantile imagination. It has no relation to the God in spirit and in truth which the consciousness postulates.²³

Piaget's shift from religious to secular has been analyzed in detail by Vander Goot.²⁴ In her view:

Relinquishing the view of divine transcendence and replacing it with a view of divine immanence resolved the problem of finding a basis for faith and morality, according to Piaget.

By turning inward to scrutinize the conditions of our own thought activity we find God. This immanent God is no less real than an objective, supernatural, transcendent God because thought is no less real than things, claims Piaget. God can be known through the norms for thought, and scientific thought best exemplifies these norms.²⁵

In his quest for scientific rigor Piaget removed the role of the transcendent God and thus removed the goal of human development as given by God the creator, and also the spiritual values that make humans unique. Piaget's model thus is ultimately unsatisfactory in its final stage, which more closely resembles a computer or robot than an adult human being.

Several contemporary psychologists have proposed the need to reawaken psychology to the study of the soul. James Hillman²⁶ argues for the revitalization of psychology through the broadening of its vision to include the spirit of religious thought. Similarly, Scott Peck makes

no distinction between the mind and the spirit, and therefore no distinction between the process of achieving spiritual growth and achieving mental growth.²⁷

Although not contemporary herself, Montessori's writings on education²⁸ include an emphasis on the spiritual development of the child. She sees the child as possessing at birth the senses that respond to the emotional and spiritual environment, and thereby developing the capacity for loving and understanding others and God. Thus, an important feature of the epistemological foundation for a theory of child development must be its religious base.

The conclusion that must be drawn from this analysis is that no traditional epistemology provides an adequate basis for developmental psychology to explain all the complexities of the human psyche. Piaget's approach was able to solve the problems faced by both the transcendental and materialist theories in permitting the subject to gain true knowledge of the object. However, Piaget fell into other

difficulties. A satisfactory theory, therefore, is still awaited.

C. Requirements for Supporting a Psychology of Human Development

Having analyzed the ability of various epistemologies to support a model of human development, we can now list a number of requirements that must be met. Since Piaget's Genetic Epistemology has proved successful in several areas, a new epistemological foundation must include Piaget's solutions to traditional philosophical positions and also go further and solve the problems in Piaget's model. Six requirements follow, the first three are points covered by Piaget, and the second three go beyond his theory :

1. Psychologies that are based on either the Empiricist or Rationalist positions are inadequate. In Piaget's words, the former can be described as "geneticism without structure" and the latter as "structuralism without genesis." Clearly the first requirement that must be met is the recognition that both experience and innate ideas play important roles in human development. In philosophical terms, the Empiricist and Rationalist positions must be reconciled.
2. Again, Piaget's theory acknowledges the reality of the object of cognition and the subject's ability to acquire knowledge of that real object. Yet, such knowledge is constructed by the subject through the development of "schemas," or concepts in the mind. Thus the second requirement is that the object is real and knowable by the subject who constructs such knowledge in the mind. In philosophical terms, the opposing views of Realism and Subjective Idealism must be reconciled.
3. In Piaget's theory there are processes of assimilation and accommodation, the former emphasizing the existing a priori categories and the latter the subject's activity in relation to the environment. Thus the third requirement is that there exist cognitive structures in the mind of the subject which are universal or transcendent of the individual's experience ; and that a process involving the activity of the subject in relation to real objects also be involved in cognition. Again, in terms of traditional philosophies, there must be reconciliation between

Kant's Transcendental method and the Dialectical method (Reflection Theory).

4. The existence of God the creator, transcendent and immanent, must be maintained, and the process of acquisition of knowledge must be linked to God's plan for His creation.
5. The importance of spiritual values must be acknowledged and some process for awareness of spirituality must be identified.
6. While including religious components, scientific rigor must not be lost. Thus the objective analysis of cognitive phenomena must be supported.

This list is by no means exhaustive. However, based on the foregoing discussion, it appears that an epistemology that satisfies these requirements would be a good foundation for a psychology of human development. In the next section I will introduce an epistemology which does satisfy these requirements : Unification Epistemology.

III. UNIFICATION EPISTEMOLOGY

A. Overview

Unification Epistemology is theistic in origin, based on the Unification Principle, which was received as revelation by Sun Myung Moon,²⁹ and developed as Unification Thought.³⁰ Seven points are given as the basis of Unification Epistemology :

- # 1 "God created man to be the ruler of the universe (Gen 1 : 28)."³¹ "When perfected man as subject, and the physical world, as his object, become one united body centered on God ... man attains direct dominion over all things."³²
 ---> Necessary relationship between man and the Creation (all things), i.e., between subject and object.
- # 2 "God created man as the substantial microcosm of the whole macrocosm. . . . Consequently, man is a microcosm, the encapsulation of the whole macrocosm."³³ "Life and consciousness exist in man's cells as well, containing a mystery of the universe."³⁴

---> Protoconsciousness and prototype concepts.

- # 3 "When ... the dual essentialities of God enter into give and take action by forming a reciprocal relationship, the force of give and take action causes multiplication."³⁶ "Multiplication occurs .. by the action of give and take."³⁶

---> Increase of knowledge through give and take action.

- # 4 "God's third blessing to man signifies man's qualification to dominate the whole creation."³⁷ "In the universe as a whole, man is the subject, who gives love to the rest of the creation, the object which responds in beauty."³⁸ "God created all things to be objects for man's joy so that man could always feel joy."³⁹

---> Cognition and dominion (practice) are inseparable; the purpose of cognition and dominion is the actualization of joy.

- # 5 "There are various types of give and take action, which includes the collation type."⁴⁰

---> Collation action in cognition.

- # 6 "Man's physical body acts in response to his mind's command."⁴¹ "Thinking is also a kind of give and take action."⁴² "Give and take action between mind and body."⁴³ "Inner give and take action within the mind."⁴⁴

---> The movement of physical man following man's will; judgment of information by the mind.

- # 7 "The spirit man can grow only in the soil of the physical man."⁴⁵ "The goodness or evil in the conduct of the physical man influences his spirit man to become either good or evil."⁴⁶

---> Cognition through physical five senses is always accompanied by spiritual cognition through spiritual senses.

B. Fulfillment of Requirements

Let us now look at how Unification Epistemology fulfills each of the requirements set out in the previous section.

1. Reconciliation of Empiricism and Rationalism

According to the Empiricist and Rationalist approaches the origin of cognition is found in either the object (Empiricism) or subject (Rationalism) alone. Unification Epistemology says that the question to be asked is not where does the object of cognition exist, but what is the nature of the relationship between the subject and object of cognition. Is this relationship accidental or necessary? The Unification Principle holds the position that all things were created to be the object of humankind. Thus we were created with sense organs to experience objects, and objects were created to be experienced by us. The relationship between subject and object is therefore one of necessity, with the common purpose of producing joy (Point # 1 above).

In the act of cognition, both experience and reason are therefore involved. The object must be experienced, and the subject must use reason to make a value judgment on the object in order to produce joy. Thus Unification Epistemology unites experience and reason in cognition.

2. Reconciliation of Realism and Subjective Idealism

Unification Epistemology also seeks to unite two opposing views of the object of cognition, those of Realism and Subjective Idealism. This is done through the assertion of the real existence of the object, the "outer object," but also the presence of the "inner object" in the mind of the subject.⁴⁷

This inner object in the mind of the subject is the "prototype." The concept of prototypes is based on the Unification Principle position that we are created as a microcosm of the universe, containing the elements of all things, which were created in resemblance to humankind (Point # 2 above). Thus prototypes have a priori components, i.e. they exist in some form prior to experience. However they are not limited to innate ideas as they also develop through the accumulation of empirical elements gained through

experience.⁴⁸

Closely tied to prototypes is the concept of "protoconsciousness", which can be defined as "the autonomy of the principle (perceptiveness and purpose) received by the cell from the cosmic consciousness of the universe."⁴⁹ The relationship between prototypes and protoconsciousness is as follows :

When consciousness enters a cell, becoming its life, it also comes to know the contents and structure of that cell. Protoconsciousness has the capacity to know the structure of the cell because it has perceptiveness, . . . [which] can be described as a transparent homogeneous screen of consciousness (or a film of consciousness), where the image of the structure of the cell is projected. Thus projected, the image of the cell is called "protoimage," which is the foundation for the development of prototypes.⁵⁰

Prototypes thus have within them images of content and images of form. Images of content are transformed and synthesized to correspond to the content of objects perceived. Images of form give rise to "thinking forms" or "categories" which influence judgment in cognition.⁵¹ Thus Unification Epistemology upholds both the real existence of the object, which has content and form, and the existence of ideas in the mind of the subject, which also have content and form. Unification Epistemology can therefore be described as a union of Realism and Subjective Idealism.

3. *Reconciliation of Transcendental and Dialectical Methods*

Unification Epistemology also offers a solution to the two opposing positions of Kant's Transcendental method and the Dialectical method (reflection theory). Unification Epistemology is based on give and take through the two-stage structure of creation,⁵² i.e. outer and inner give and take action (Point # 3 above).

The outer image, or perceptual image, is formed first through give and take between the subject and object. In order for this give and take to occur there are certain prerequisites for both subject and

object. The object must have content (attributes) and form (relationship among attributes), and the subject must have prototypes and interest in the object.⁵³ Cognition, however, is not completed just by the formation of the outer image (reflection theory), but a second stage of comparison between this outer image and prototypes occurs (transcendental position). The outer image produced in the first stage becomes the object in this second stage.

The prototypes in the subject, which also have content and form, are then compared with the outer image, through collation type give and take action⁵⁴ (point # 5 above). Cognition is thus a judgment of the object (point # 6 above), and the prototypes are the standard or criteria for this judgment.

The method of cognition in Unification Epistemology is thus a union of the Dialectical method, forming the outer image, and the Transcendental method of inner give and take resulting in judgment in the subject's mind.

4. *The Existence of God*

The basic tenets of Unification Thought are theistic, and thus God's creatorship of this world is the foundation of the epistemology. The Unification Principle states that God created the universe to be the substantial object of joy to humankind, created as God's children. Joy is experienced when we come to know the objects of creation fully.

Thus Unification Epistemology holds that human beings were created with the ability to cognize all objects, gaining true knowledge of them, as part of God's plan for His creation (point # 4 above).

5. *Spirituality*

The cognition of God is a question that a theistic philosophy must address. While it is understood throughout Unification Thought that God is both immanent and transcendent, the question of how we relate to God is not articulated clearly. The cognition of God is mentioned in one footnote :

Not only things, but also man, and even God, can be the objects of cognition. In status (position), God is the subject of man. But so far as cognition is concerned, since the one who

recognizes is regarded as the subject, God becomes the object. However, one can not see God as a concrete image; God can only be known spiritually through Heart.⁵⁶

As a theistic philosophy, Unification Thought has both the responsibility and the means to deal with questions concerning spiritual cognition (point # 7 above). However, this area also has not yet been developed. Spiritual cognition is mentioned briefly in the following passages :

... there are the spiritual cognitions belonging to the senses of the spirit man such as spiritual intuition, inspiration and ESP (extrasensory perception). In order to clarify the meaning of cognition perfectly we must enter these fields.⁵⁶

Spiritual influence can be exerted in all three stages of cognition - i.e., in the perceptual stage, the understanding stage, and the rational stage. Cognition with spiritual accompaniment is finer and faster than ordinary cognition.⁵⁷

Man has self-consciousness, and also the mind to seek for eternity. These derive from the spirit mind in the spirit man. Man's mind is the union of the spirit mind and physical mind ... That is, man's mind includes the mind of the spirit man. Therefore, there is something different in man's cognition from that of animals. ... Animals have also consciousness, and engage in the action of collation in cognition, but that is on a lower level, compared with man ... the spirit mind has self-consciousness, and has the function to seek for absoluteness, universality, eternity, etc. The role of spirit mind in cognition is not only involved with cognition in the stage of understanding, but also enables cognition in the stage of reason. In the case of animals, there is no cognition in the stage of reason.⁵⁸

6. Religion and Science

Obviously Unification Epistemology maintains the religious

component, the question now is how well is scientific rigor supported. Psychologists have considered that the inclusion of religious concepts makes scientific rigor impossible :

I personally am persuaded that modern scientific views of the person cannot be merged with religious views because science is intentionally secular, i.e., it deliberately excludes attention to the very dimensions of human nature that a religiously informed view emphasizes. Piaget understood this tension and very articulately narrated the transition in his own thought.⁵⁹

However, Unification Epistemology succeeds in maintaining both, and, I believe, provides the foundation for a developmental psychology that can include human spirituality and the existence of God.

The question of maintaining scientific rigor while including religious aspects is vital, I believe, for the successful advancement of work in not only developmental psychology but in all areas of scientific endeavor. For this reason, the ability of Unification Epistemology to achieve this will be examined in more detail.

C. A Model of Human Development Centered on God

1. Purpose in Cognition

Unification Thought upholds the position of God as creator of this world. The most essential attribute of God is heart, which is defined as "the emotional impulse to seek joy through love."⁶⁰ In the creation of the universe give-and-take action is centered on purpose based on God's heart.⁶¹ The process of cognition also occurs through give-and-take action between the subject and object centered on purpose; "the more explicit our purpose, the more exact the resulting cognition. . . A flower is much more beautiful if we look at it in order to see beauty."⁶² Thus this model predicts that the quality and nature of cognition depends on the purpose of the subject, and that purpose should be centered on heart.

2. Three Stages of Cognition

In Unification Epistemology there are three stages of cognition :

the formation stage of perception, the growth stage of understanding, and the completion stage of reason.⁶⁸

a. The Stage of Perception

This stage consists of the formation of the outer image through give and take between the mind of the subject and the real object. In this stage the prototypes in the subject are not actually used. Thus the subject can form a perceptual (outer) image of an object without having a corresponding prototype.

b. The Stage of Understanding

In this stage of cognition the outer perceptual image is compared with prototypes through collation type give and take action. Collation (or contrast) type give and take action is the comparison of correlative elements. In art, i.e. the appreciation of beauty, there is comparison between correlative elements in an object in the external world. In cognition, however, there is collation type give and take within the mind, since the object is an image in the mind and not the object itself. In this stage of cognition both the prototypes in the subject, and the outer image from the object, are put in the object position to "spiritual apperception" in the subject.⁶⁴ Spiritual apperception is the ability of the mind to analyze sensory images and make value judgments. At this stage, "thinking forms" are applied so that the information is cognized.

If the subject has a prototype which corresponds to the image recognition of the object occurs. No new knowledge is involved.

The subject merely recognizes the object as one for which there is a corresponding prototype. However, if no corresponding prototype exists in the subject, the image is "undetermined" and may be stored in memory for future occasions.

c. The Stage of Reason

In this stage there is further give and take of the collation type. This operates on the existing images in the mind and leads to the development of new knowledge. The subject can repeat this process using the results of previous cognitions. As many repetitions as desired can be formed, each producing new knowledge.

In order to check the validity of such new knowledge, the subject interacts with the real world through practice. Thus *subjective knowledge*, gained through reason, is verified by *objective knowledge*, gained through scientific experiment.

Let us now return to the "undetermined" images, where no recognition occurred in the understanding stage because no corresponding prototype was present. Although we are created as the microcosm of the universe, i.e. all elements of creation are represented in us, these elements are not organized into prototypes for every existing being but rather are scattered. Thus a process of synthesis must occur to develop prototypes for most objects.

This development occurs either by a function of synthesis within the subject, or by the help of others. In the first case, the subject, through manipulation of existing elements, forms a prototype which corresponds to the perceptual image. This leads to cognition as new knowledge, the formation of the new prototype.

This method would obviously be very time consuming, and would not permit much development if all people had to learn about every object in this fashion. Thus Unification Thought proposes that we can also benefit from the knowledge of others.⁶⁵ If we perceive an object that we do not recognize, we store this as an undetermined image and then ask others what it is. Thus the judgement of others is used to facilitate the synthesis of elements in the development of new prototypes. This is the basis for the education of children.

3. Application to the Development of Visuo-Motor Coordination

Let us now see how this model applies to a particular area, the development of visuo-motor coordination. This topic has been studied in great detail by psychologists, both those who would be categorized as developmental psychologists (e.g. Piaget⁶⁶ and Bower⁶⁷) and those who would be categorized as perceptual psychologists (e.g. J.J. Gibson⁶⁸ and Held⁶⁹). However, there is still dispute concerning a model of the processes involved.

Visuo-motor coordination, or the capacity to produce motor behavior appropriate to the perceived world, obviously requires the subject to have knowledge of his immediate environment with which he is

attempting to interact, e.g. the nature and location of an object to be reached for. The nature of such knowledge of the world, and how it is gained, can be articulated as follows based on Unification Epistemology.

First is the stage of perception in which information is gathered through the senses and a perceptual image is generated. Second is the stage of understanding or recognition of the object. In this stage, success is determined by the quality of information both within the subject (prototypes) and that received from outside. In the third stage of reason, or information using inference occurs and thinking advances freely without limit.

Therefore, in learning about the location of objects in the environment, an initial perceptual stage of simply acquiring information concerning the object must be gone through. At this stage the information may not be acted on efficiently, as for example when two-year-olds are unable to retrieve hidden objects without the help of search strategies imposed by an adult.⁷⁰ Increased informational efficiency has been regarded as a hallmark of perceptual development.⁷¹

In the second stage of understanding or recognition, information is processed and correspondence between the internal ideas of the subject and the stimulation from the external world is achieved. At this point, if both external information and internal prototypes are sufficiently clear and developed then appropriate behavior may follow.⁷²

At the final stage of reason or information use, the subject will not be so easily confused by transformations of the stimulus situation, and will be able to make inferences concerning the location of objects moved by invisible transformation.⁷³

Thus Unification Epistemology appears able to support a model of human development that is in accord with the findings of psychologists who have striven to maintain scientific rigor in their research. At the same time, this model is not limited to only intellectual development of logico-mathematical reasoning as is Piaget's model, but through emphasizing God's purpose of creation centered on heart, the process of cognition is broadened to include

the subject's pursuit of truth based on intellectual purpose, beauty based on emotional purpose, and goodness based on volitional purpose.

IV. CONCLUSION

In conclusion, I would like to emphasize that while Unification Epistemology has been presented here in only an introductory fashion, nevertheless its tenets appear to satisfy the needs of developmental psychology and it appears to be a stimulating foundation upon which to base psychological research. Clearly, further work must be done to develop certain aspects of Unification Epistemology, e.g. the development of prototypes, spiritual cognition, etc. Equally, developmental psychology must be extended to encompass those characteristics, particularly religious and spiritual, that have been ignored in the quest for scientific acceptability.

I hope that this paper has provided a stimulating beginning for others to join us in these areas of research.

End Notes

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