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found in the child's development. An historical or genetic perspective must be introduced into the experimental analysis. On the other hand, we must attempt to clarify the actual process involved in the development of the child's thinking using data obtained through experimental analysis. Bringing experimental and genetic forms of analysis together in this way -- finding a rapprochement between the experiment and reality -- leads us from the morphological analysis of complexive thinking to the investigation of complexes in action, to the investigation of complexes in their actual functional significance and in their actual genetic structure.

What is opening up before us here is the task of bringing together morphological and functional, or experimental and genetic, forms of analysis. The data from experimental analysis must be verified on the basis of data on the child's actual development. Correspondingly, the actual course of concept development must be illuminated through experimental data.

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We can summarize our study of the second stage of concept development in the following way. When the child is at the stage of complexive thinking, he thinks of the same objects as the adult in connection with a word's meaning. This creates a potential for understanding between the child and adult. However, the child thinks the same thing in a different way, on the basis of different intellectual operations.

The validity of this position can be demonstrated functionally. If we analyze the adult's concepts and the child's complexes in action, the differences in their mental nature will emerge clearly. If the child's complex differs from the concept, *the activity of thinking in complexes will unfold differently than the activity of thinking in concepts.* We will briefly compare our results with psychological data on the characteristics of the child's thinking and with data on the development of primitive thinking. This will permit a functional verification of the characteristics of complexive thinking which we have identified.

The first phenomenon that attracts our attention in what we know of the development of the child's thinking is the purely associative manner in which word meanings are transferred. If we consider the child's first words, study the groups of objects they designate, and study the way that the child forms these groups through the transfer of word meaning, we find something very similar to what we have called the syncretic image and associative complex.

Consider the following example, which we take from the work of Idel'berger. At 251 days, a child uses the word "vau-vau" to designate a porcelain figure of a girl. At 307 days, this child uses the same word to designate a dog lying in the yard, a portrait of a grandmother and grandfather, a toy horse, and a wall clock. At 331 days, he uses the word to designate a fur boa with a dog's head and another boa without a dog's head (in this context, he paid special attention to the glass eyes). At 334 days, the same name was given to a rubber toy man that squeaked when it was squeezed. At 396 days, it was used to refer to a black button on the child's father's shirt. At 433 days, the child pronounced the same word when he saw pearls on a dress as well as when he noticed a bath thermometer.

Analyzing this example, Werner concluded that by using the word "vau-vau" the child is designating a multitude of objects that can be ordered in the following way. First, we have living and toy dogs and small, oblong, doll-like objects (i.e., the rubber doll, the thermometer for the bath, etc.). Second, we have buttons, pearls, and similar

small objects. Underlying this unification are the oblong form and bright objects with surfaces similar to the eye.

It is apparent, then, that these concrete objects are united by the child in accordance with the *principle of complexes*. These natural complexes fill the entire first chapter in the history of the development of the word in the child.

To take another example, the child initially used the word "kva" to refer to a duck swimming in a pond. He then used it to refer to any liquid, including the milk that he drank from his bottle. Later, when he saw a picture of an eagle on a coin, he used the same name to refer to the coin. This was sufficient for the subsequent use of the term to refer to all circular objects similar to coins. Here we see a typical example of the chained complex. Each object is included in the complex on the basis of a feature that it has in common with some other link. The result, of course, is that the character of this feature can change indefinitely.

It is because of the complexive character of the child's thinking that a single word can have different meanings and can indicate different objects in different situations. In certain situations which are of particular interest to us, a single word can unite contradictory meanings if they are related to one another in the way that a knife and fork are related to one another.

The fact that the child uses the word "before" to designate the temporal relationships "before" and "after," or uses the word "tomorrow" to designate both "tomorrow" and "yesterday," is analogous to the fact that two contradictory meanings are often united in a single word in ancient languages (for example, Hebrew, Chinese, and Latin). In the Roman language, for example, a single word designated both "high" and "deep." This combining of opposing meanings in one word is possible only on the basis of complexive thinking, because the concrete objects included in the complex preserve their concrete independence rather than merging with other elements of the complex.

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There is one very interesting characteristic of the child's thinking that is an excellent means of verifying complexive thinking in functional terms. In children at a somewhat higher stage of development than those represented in the examples we have just discussed, complexive thinking is usually based on the pseudoconcept. Despite its external similarity with the true concept, the pseudoconcept is a complex. The difference between the concept and the complex will be reflected in action.

Researchers have long been aware of an extremely interesting characteristic of thinking that was first described by Levy-Bruhl in primitive peoples, by Shtorkh in the mentally ill, and by Piaget in children. This characteristic of primitive thinking, of thinking in its early genetic stages, is usually called participation. This word designates the relationship that primitive thought establishes between two objects or phenomena that are partially identified, objects that are seen as having a very close influence on one another although no spatial contact or other conceptual causal connection exists between them.

Piaget has made very interesting observations relevant to this kind of participation in the child's thinking. These observations relate to the child's establishment of connections between objects and actions that seem incomprehensible from a logical point of view and that have no basis in the objective connections among things.

As an example of participation in the thinking of primitive man, Levy-Bruhl used the following case. According to von den Steinen, a northern Brazilian tribe called the Borora take pride in the fact that tribal members are red parrots called "arara." Ac-

cording to Levy-Bruhl, this means something more than that tribal members become red parrots after their death and that red parrots are transformed into Borora following theirs. Von den Steinen writes that:

> There are Borora who do not want to believe in this but who become convinced because of their categorical assertion. They calmly claim that they are actually red parrots, as a caterpillar might say that she is a butterfly. This is not a name that the Borora have appropriated for themselves. It is a kinship upon which they insist. What they have in mind here is identity of being (Levy-Bruhl, 1930, pp. 48-49).

Shtorkh, who conducted a very careful analysis of archaic primitive thinking in schizophrenia, observed the same phenomenon of participation in this population.

The phenomenon of participation has not, however, been explained sufficiently for psychological purposes. In our view, there are two reasons for this.

First, researchers have generally studied this phenomenon by focusing on content. They have studied the unique connections that are established in this type of thinking while ignoring the functions and forms of thinking and the intellectual operations through which these connections are developed and established. In other words, they have studied the final product rather than the process through which this product emerges. As a result, the product itself has acquired a mysterious and obscure character.

Second, researchers have not sufficiently integrated their knowledge of this phenomenon with the knowledge of the other types of connections and relationships that are established by primitive thinking. The connections characteristic of primitive thinking have generally attracted researcher's attention only when they are extremely unusual or diverge sharply from the logical forms of thinking to which we are accustomed. The Borora's assertion that they are red parrots attracts the researcher's attention because it seems so absurd.

A careful analysis of the kinds of connections that are established by primitive thinking that do not seem, on the surface, to diverge from our own logic, convinces us that the mechanisms of complexive thinking provide the foundation for these connections as well as those characteristic of what is called participation.

If we remember that the child (at a given stage of development) possesses complexive thinking, that the word is for him a means of designating complexes of concrete objects, and that the basic form of generalization or connection that he establishes is the pseudoconcept, it becomes clear that the product of such complexive thinking must necessarily be participation. In this form of thinking, connections and relationships between things will inevitably arise that are impossible and unthinkable from the perspective of thinking in concepts.

From this perspective, we can also understand how a single thing can enter into different complexes in accordance with its various concrete characteristics and how it can, consequently, receive a variety of names in accordance with the complexes in which it is included.

In our own experimental research we frequently observed this type of participation, that is, the process of simultaneously relating a concrete object to two or more complexes and referring to it by multiple names. For complexive thinking, participation is more the rule than the exception. It would be odd if these connections, connections which are impossible for our own logic, failed to arise at every step in primitive thinking.

The key to understanding participation and the thinking of primitive peoples is the fact that this thinking is carried out in complexes rather than concepts. Conse-

quently, in these languages the functional application of the word is entirely different than it is in our own. The word is used in a different manner. It is not a means for forming and carrying concepts. It is a family name. It is a means of naming groups of concrete objects that are united in accordance with some type of empirical kinship.

As in the child, this complexive thinking (as Werner correctly calls it) will inevitably lead to the kind of interweaving of complexes that gives birth to participation. At the foundation of this form of thinking lies a concrete group of objects. Werner's outstanding analysis of primitive thinking convinces us that the key to understanding participation lies in the unique combination of speech and thinking that characterizes this stage in the historical development of the human intellect.

Finally, schizophrenic thinking is also complexive in character. We find many unique motives and tendencies in schizophrenic thinking which Shtorkh believes share the common feature that they are associated with a primitive stage of thinking. The isolated representations that emerge among the ill are connected in a complexive, aggregated manner. From thinking in concepts, the schizophrenic turns to a more primitive stage characterized (as Bleuler has noted) by an abundance of images and symbols. Shtorkh emphasized that the distinguishing feature of primitive thinking is probably the fact that concrete images are used alongside abstract concepts.

Turnvald[57] sees this as the critical characteristic of the thinking of primitive people. In his view, this thinking relies on aggregated and undifferentiated impressions of phenomena. Primitive people think in completely concrete images that retain the form they are given in reality. The concrete, aggregated formations that become predominant and replace concepts in schizophrenic thinking are analogous to the concepts and images that take the place of our logical categorical structures in primitive stages of thinking.

Given all the unique characteristics that differentiate the thinking of the ill, primitive peoples, and the child, it is nonetheless apparent that participation is the common formal symptom of the primitive stage in the development of thinking and that it is a symptom of complexive thinking. The mechanism of complexive thinking, and the functional use of the word as a familial sign or name, always lies at the foundation of participation. Therefore, Levy Bruhl's interpretation of participation seems to us to be mistaken. In his analysis of the assertion that the Borora are red parrots, he consistently operates on the basis of the concepts that are characteristic of our own logic. That is, he assumes that in primitive thinking this kind of assertion indicates identity of being or substance. A more profound mistake in the interpretation of this phenomenon is, in our view, impossible. If Borora thought were mediated by logical concepts, there could be no other consistent interpretation of their assertion. However, since for the Borora the word is not the carrier of a concept but a formal designation for concrete objects, the assertion that they are parrots has an entirely different significance for them. The word "arara" which designates the red parrot that they relate themselves to is a general name for a complex to which both the bird and the tribe are related. Thus, this assertion does not imply an identification of parrot and people any more than identification is implied by the fact that two people related by kinship have the same family name.