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Robert P. Craig*

*St. Mary's College

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Abstract

As Piaget consistently acknowledges, all learning is an active process. Reading, then, is an activity, a proecess of confrontation between an individual and a text (3). For both Piaget and Chomsky, language is highly strcutured. In Chomsky's terms, there is a linguistic relationship between the surface structure and the phonological aspects of language.

DEVELOPING A PHILOSOPHY OF READING: PIAGET AND CHOMSKY

Robert P. Craig
ST. MARY'S COLLEGE, ORCHARD LAKE, MICHIGAN

Since I have recently in this journal attempted to develop a specific Piagetian framework for the understanding of and teaching of reading (1), I would like to take a further step and combine current research on linguistics and reading with this Piagetian perspective (2). As Piaget consistently acknowledges, all learning is an active process. Reading, then, is an activity, a process of confrontation between an individual and a text (3). There is a sense in which reading is a confrontation in a similar way in which humans confront all reality. Reading constitutes an interaction with a text in the same way that human existence constitutes a confrontation with various environments, both physical and cultural.

Reading, then, consists of basically two processes, one perceptual, the other cognitive. This means, among other things, that for a theory of reading to be consistent, it must attempt to synthesize theories of cognition, language and perception. Contemporary linguistics and cognitive-developmental psychology supply such a synthesis. Noam Chomsky considers this issue when he writes:

> Knowledge of a language involves the ability to assign deep and surface structures to an infinite range of sentences, to relate these structures appropriately, and to assign a semantic interpretation and a phonetic interpretation to the paired deep and surface structure. (4)

For both Piaget and Chomsky, language is highly structured. In Chomsky's terms, there is a linguistic relationship between the surface structure and the phonological aspects of language. But, at the level of written langugae, the surface structure is represented by ordinary alphabetic letters. The deep structure of language is quite different. The deep structure (what I shall later term, depth structure) represent the semantical, as opposed to the syntactical, component of language—spoken or written. This necessitates, obviously, a bridge between the phonological component and the semantical. This is bridged by the syntactical. The syntax of a language, for Chomsky, creates a transformation of the deep and surface structures.

When discussing the nature of language, then, Chomsky consistently refers to its "structure." At the surface level language has a phonological aspect. But, how does Chomsky's insight relate to written language? Except for oral reading in elementary school,

it appears that the schools (reading teachers in particular) neglect to notice much connection. Chomsky assures us that in written communication the phonological component of spoken language is best depicted by letters, what he refers to as graphemes. Let us note the implications of Chomsky's insights for the teaching of reading.

As any reading teacher knows, reading involves much more than merely seeing and pronouncing words, much more than phonological and semantic aspects, to put the matter more technically. For instance, consider the sentence, "John loves Mary." One point to note is the importance of the positioning of the two proper names. But, even though their semantical positioning has importance, at least in regard to answering "who-type" questions, there is more than this surface aspect which supplies one with information even about "who-type" questions.

What is occurring here is a transformation from the surface structure, written components merely representing the position of words on the printed page, to depth structure—or to the transformation to "meaning identification," as I have discussed elsewhere (5). Chomsky's theory of language will be considered in more detail shortly, but let us move to a theory of cognition in an initial attempt to develop this wholistic account of a theory of reading, and at this point the work of Piaget is useful.

Piaget analyzes perception and cognition as separate processes. According to Piaget, the perceptual and the conceptual processes differ fundamentally. In fact, he often finds them to be contrasting processes. Take the example of two individuals attending a nuclear freeze rally. The perceived properties of stimuli may differ for each person, perhaps due to the context or situation they find themselves in. For instance, one person may have a history of involvement in peace demonstrations, and thus perceives the various stimuli with this history in mind. This context of perception Piaget refers to as a conception, or, more technically, as "field-effects"(6).

Perception, then, involves a centering process. One pays attention to this rather than that. At the organic level, for example, the eye focuses on particulars or on specific aspects of complex configurations. For Piaget, this perceptual process or centering occurs within a specific context—thus separating perception from conceptualization.

As theoretical as Piaget's views may sound, there are direct implications for reading. It is obvious that reading ability is a developmental process. During one's early childhood, the centering process may inhibit reading, for the child may pay strict attention to the upper half of a letter, for instance. The perceptual activities include the centering; and the "field effects" (conceptualization processes) include the letters on a particular sort of page, with specific colors, letter configurations, etc.

As is well known, Piaget's theory of cognitive development is stage specific. Piaget terms the four stages sensorimotor, preoperational, concrete operational and formal operational. And, for Piaget, this cognitive development is best understood in rela-

tion to the concepts of content and structure. This is important in developing both a theory and practice of reading instruction.

According to Piaget, the content of any intellectual activity, including reading, suggests observable criteria of assessment. This is necessary, or the teacher would not be able to assess "progress" in reading. But, there is also a structural aspect to any intellectual development. These include mental constructs--"within the mind" as it were--that is, they cannot be observed. The development of the structural aspects of intellectual growth demands an understanding of the present structure of one's intellectual progress—a knowledge of the particular stage of cognitive growth the individual has acquired. It is obvious, then, that reading ability incorporates such a developmental process.

Put in more general terms, Piaget is insisting that cognitive ability demands two processes, that of adaptation and that of organization. As Piaget stresses, the tremendous amount of stimuli presented to the individual is organized through the cognitive processes of assimilation and accommodation. It is through these basic processes that we process stimuli—make sense of it. This is done in a quantifiable manner through assimilation and in a qualitative way through accommodation. This means that we take in stimuli through assimilation and we adjust the stimuli, put it into categories, develop schemata for understanding it, etc., through accommodation. Through assimilation we adapt to a world of stimuli; through accommodation we organize the stimuli.

What specifically does all of this cognitive psychology have to do with language learning and reading? The relationship(s) between our perceptual processes and reading is almost too obvious to belabor. Even though reading involves perception, perception is entirely relatedto the surface of the printed page. This was referred to as the surface structure of reading, as distinct from the depth structure, which is related to the cognitive processes —conceptualization, and so on.

Reading any sentence, then, involves much more than a familiarity with the surface structure. For instance, reading "Go home," involves the recognition that a pronoun is being referred to, namely, "You, go home." This type of recognition is involved in the depth structure of reading (7).

Piaget's cognitive developmental psychology, likewise, has other implications for reading, for Piaget suggests that humans have a reading schemata—similar to the depth structures of cognition Chomsky discusses. There is an innateness about the reading schemata—one knows more about language than s/he can enumerate (depth structure). Also, similar to Chomsky's analysis of language and cognition, Piaget informs us that reading schemata (and their development) have both a surface and a depth structure. Sound-letter relationships (phonemes-graphemes) are an example of surface structure; units of meaning (morphemes) are depth structure.

Finally, for Piaget, there are cognitive structures. These various stages of intellectual growth allow one to bring intelligence to language, and thus initiate the process of reading. It is through the cognitive structures that one translates printed

matter into meaning-structures.

There are four factors which aid in the development of one's cognitive structures, for Piaget. Translated into the development of one's reading schemata, this development is influenced by the level of one's maturation, the person's physical development, his/her social interaction and the growth in cognitive equilibrium through assimilation and accommodation.

How, though, can a teacher know that the reading schemata of a particular student is sufficiently developed to allow for variations and developments within the process of reading? Practically, how do the ideas we have been discussing translate into application? The teacher does not necessarily have to give the student a test to know that s/he has made progress in reading. There are two different, but related, factors from which a teacher can infer that the student's reading schemata are developed well enough to initiate a program of systematic reading instruction.

They are: 1) That the schemata go beyond the student's ability to grasp the surface structure of language. This occurs as soon as the individual begins to read with any consistency at all. And, 2) as the student is exposed to varied types of reading experiences, the reading schemata are further developed—within the processes of assimilation and accommodation. What is interesting about Piaget's and Chomsky's insights from the point of view of instruction is that reading is a highly personal, individual act; to be able to read, and to progress in reading, means that the student needs to develop his/her personal reading schemata on an individual basis. The schemata are not developed through group instruction—reading instruction must be individualized.

As we know, growth in reading ability cannot be accounted for simply by the development of cognitive structures. There is also an affective component to all human behavior. In regard to the development of and use of one's affective ability, Piaget stresses motivation, which is heightened through curiosity and exploration on the individual's part. As adaptation is important for the growth of the cognitive structures, so it is also essential for the positive development of the affective life. Both cognitive and affective abilities develop because the individual has an innate tendency (Chomsky) to adapt and to organize, be it the elements of one's cognitive or one's affective experience.

It is not being suggested that affect is strictly separate from cognition. Neither Piaget nor Chomsky said nor implied this. Rather, they develop hand in hand. One cannot read (the development of the cognitive schemata) without having some "feeling for" the material. Reading can never be a mindless activity, nor devoid of an affective component (the affective schemata). Teachers who get students "excited about reading" know the necessity of affect in the student's growth in reading ability. Reading obviously is not an abstract, objective, intellectual process; it also involves commitment, interest and emotional interaction with the material. Without this, the cognitive structures remain static--indeed they can't develop at all.

In summaray, then, we have attempted to develop a wholistic theory of reading. The space given to "how to", therefore, has

been minimal, although some practical implications for reading instruction have been suggested. The main point is that (following Piaget and Chomsky) reading is a form of adaptive behavior, but adaptation (the confrontation with a text) can only be understood in terms of the student as a whole person—in all his/her cognitive /affective complexity.

Regarding the above, Grant writes "...reading is a whole phenomena, performed by an active, intelligent human being, entire and complete."(8) With such a theory in mind, reading keeps its practical, adaptive aspects, while retaining (or illuminating) something of the mysterious. Perhaps noticing the "mysterious" aspects of the process of reading, those aspects which cannot be quantified, may not be of immense help to teachers of reading. Yet, noticing this element affords a great deal of optimism—for the ability to read is never completed; it is an ongoing activity.

NOTES

1) Robert P. Craig, "Piaget's Theory of Conceptual Development As It Applies to the Teaching of Reading." READING HORIZONS, Vol. 23, No. 2, (Winter 1983), pp. 119-124.

2) Numerous articles in Piagetian Theory and the Helping Professions, Univ. of So. Calif., are directly related to this issue. See Vol.II, 7th Interdisciplinary Conference, and the Proceedings of the Sixth Interdisciplinary Conference, 1977.

3) It is obvious that I am indebted to the work of Professor Grant. Cf., F. A. Grant, "Set Theory, Psycholinguistics and Second Grade", in Reading for a Changing World. (Iowa Council, IRA 1974) Also, "Reading: From Function to Schemata—A Theory of Reading Based on Linguistics and Piaget's Theory of Cognitive Development", in The Proceedings of the Seventh Interdisciplinary Conference: Piagetian Theory and Its Implications for the Helping Professions, Vol. II. (Los Angeles: Univ. of S. CA, 1978, 318).

4) N. Chomsky, Language and Mind. (New York: Harcourt Brace Jovanovich, Inc., 1968, p. 30.

5) Rob't P. Craig, "The Child's Construction of Space and Time," in Science and Children, Vol. 19, No. 3, (Nov/Dec 1981) pp. 36-37.

6) Piaget discusses this concept in many places. See, Jean Piaget, The Origins of Intelligence in Children. NY: W. W. Norton and Co., 1952, especially chapter two.

7. Chomsky, for instance, often uses the terms surface/deep when distinguishing between perception and cognition; cognition being related to deep structures. Following Wittgenstein, though, I am using the adjective depth, which makes more grammatical sense, while not doing injustice to Chomsky's insights. Wittgenstein discusses his views of language in, Ludwig Wittgenstein, Philosophical Investigations, trans. by G. E. M. Anscombe, New York: The Macmillan Co., 1965.

8) Grant, "Reading: From Function to Schemata," page 327.