# Beyond IQ: A Triarchic Theory Of Human Intelligence

Robert J. Stornberg
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*Beyond IQ,* as the title suggests, is about intelligence and the way it is measured. Why is a book about intelligence important to those of us concerned with analytic teaching, with teaching in general? What is it that we call IQ and why should anyone want to go beyond it? These questions will be addressed before examining the specific issues raised and addressed by the book under review and then examined again in the light of this new theory of intelligence.

Intelligence is a concept which we all carry with us and use in our judgments of the world and people in it. The way we think about intelligence affects the way we think about education, about learning and about ourselves. Intelligence, unfortunately, in most of our minds, is also tied to IQ. This measure of intelligence is, as most beginning psychology books tell us, mental age/chronological age x 100. Mental age is a score which is based on the number of correct answers on a test which would be typically answered by persons of a particular age. For example, a six year old who answers correctly the number of questions which a nine year old might ordinarily answer would have an IQ of 150 or 9/6 x 100. But these simple numbers are very misleading. What do they mean about how well a student will do in school, about how well the child will do in a profession or how good they are at "figuring people out"? First, IQ's are quite good at helping us predict how well kids will do in school. However, IQ is not so useful in helping us understand how well these same students will do after school and tells us even less about the social sense of students. We all know of students with high IQs who do poorly in social situations. These gaps in the usefulness of IQs, in part, lead Robert Sternberg to ask many questions about the nature of intelligence as it is perceived by "the person on the street" as well as the student of intelligence and as it is measured by standard tests of intelligence. "Intelligence is a concept we invented in order to provide a useful way of evaluating and, occasionally, ordering people in terms of their performance on tasks and in situations that are valued by the culture; however, this performance is based upon cognitive (as well as motivational and affective) functioning, a point that seems not explicitly to be dealt with by many existing contextural accounts . . ." of intelligence. (Sternberg, p. 336, 1985)

A theory of intelligence should not only be able to tell us something about how we can distinguish persons with more intelligence from persons with less intelligence but should also tell us something about how the mind works as it acquires new knowledge and uses existing knowledge to solve new problems. Therefore, intelligence theories should, either implicitly or explicitly, help us to understand how we might improve our own acquisition of knowledge and also how we might teach others. IQ tests as understood by both lay persons and professionals in the study of intelligence are fairly good at sorting people (the emphasis must be on the fairly, however, for the reasons cited above), but it may be said to be less than helpful, if not downright misleading, when is comes to understanding "cognitive functioning" or how we think. One of the most obvious and unhelpful associations is between intelligence and quickness. To be quick is almost a synonym for intelligence. As we intuitively know, and will see later, this is not always the case. Even though we know that intelligence is not always the same as quickness, we have little clear understanding of when quickness may be associated with intelligence and when it is counter-intelligent to be quick. This is but one of the important issues which Sternberg's theory address.

Intelligence is among the most elusive of concepts (p. 3). To pin down this concept, Sternberg talks about explicit and implicit theories of intelligence. This is typical of Sternberg's style. Sternberg in his development of a theory of intelligence looks at both these definitions of intelligence and much more. As he states a number of times throughout the book, many theories of intelligence are not wrong, they are merely incomplete. Sternberg, therefore, sees his work as building on much of what has gone on before, but his work is not just a re-organizing of previous pieces, it is a thorough re-thinking of intelligence, coupled with imaginative ways of testing his subtheories and combining elements in ways that make his theory not only solid but also helpful; helpful to other researchers in intelligence but, more importantly, for many of the readers of *Analytic Teaching,* helpful in understanding the teaching/learning process better as one of understanding problems and potential problems which students in our classrooms may have.

Let us take an overview of the Triarchic Theory of Intelligence. That theory consists of three subtheories. They are the contextual, the experiential, and the componential subtheories. Each subtheory will be examined in turn.

Contextual subtheory is the first of the subtheories. It is concerned with adaptation to "the present environment, selection of a more nearly optimal environment, and shaping of present environment so as to render it a better fit to one's skills, interests and values." (p. xi) In this section, Sternberg asks an important question. ". . . (I)f intelligence is not identical to what the (IQ) tests measure, then what is it." (Sternberg, 1985, p. 43). His answer simply put: intelligence is mental activity directed toward purposive adaptation to, and selection and shaping of, real-world environments relevant to one's life. He goes on to say that he includes testing situations in the real world and believes that it is as much a mistake to exclude testlike behavior from one's view of intelligence as it is to rely upon it exclusively. (p. 47). Sternberg begins by examining some of the assumptions of intelligence and IQ. One of the questions which he asks is, "Is there a difference between what 'ordinary folks' mean when they talk about intelligence and what scholars in the field of intelligence mean when then examine and test intelligence?" What "ordinary folks" and what experts define as intelligence provide the background for building a context for intelligence. Sternberg list what he calls the content of the proposed contextually based implicit theory of intelligence. (Implicit because, until now, these points have not been publicly made explicit among researchers in

intelligence.) These components are: practical problem solving, verbal ability, and social competence. These three contents are a part of three major functions: adaptive, selection and shaping.

The experiential subtheory is the second part of the theory. In this section, Sternberg states that intelligence is demonstrated best in one of two types of tasks: novel and automatized. Experience and intelligence is the relationship to be understood in this subtheory. We act intelligently in two different ways depending whether the task is novel or whether it has been "automatized". Without going into detail, it may be fair to say that in examining intelligence and, indeed, in the expectations we have for children in the classroom, we do not pay very close attention to which task are novel for the student and which tasks are automatized. The importance of these different types of tasks will become more clear as we begin to explore the componential subtheory.

The Triarchic Theory of Intelligence is an outgrowth of Sternberg's earlier componential theory of intelligence. The componential theory is now one of the subtheories of the triarchic theory. The componential subtheory has metacomponents, performance components and knowledge-acquisition components. What is a component?

> "A component is an elementary information process that operates upon internal representations of objects or symbols. The components may translate a sensory input into a conceptual representation, transform one conceptual representation into another, or translates a conceptual representation into a motor output." (Sternberg, 1985, pp. 97-98)

Metacomponents are often referred to as "executive" processes in that executives make big decisions such as: the selection of problems which need to be be solved, the selection of the lower-order components, the selection of the way the information is to be organized, the selection of a strategy for combining lower-order components, the making of a decision regarding allocation of attention of resources, the keeping track or monitoring the solution as it occurs, and being aware of external feedback. An example of this process might help to make this component clear. Let us say the task is to get from point "A" to point "B". The step task is to define the problem. It may appear to be overly simple in this situation but some of the things to consider in defining the problem are: 1) can I locate where I am?, 2) what modes of transportation are available, 3) which is the most efficient use of time and resources. These are just a few of the problem selection issues OK, now we have a problem, what is next? The next step is selection of lower-order components. This is a process of figuring out what comes next, which task precedes which task, both logically and/or functionally. Rather than going through all of the metacomponents, I invite the readers to look to Sternberg's examples and explanations. My purpose here is to give the reader some idea of what metacomponents are so that later in the review, we will be able to examine some of the implications for teaching.

The two other components of the componential subtheory will be examined: first, the performance component and later, the knowledge-acquisition component. Performance components tend to organize themselves into stages of task solutions. These stages include encoding of stimuli, combinations of or comparison between stimuli, and response (Sternberg, 1095, p. 105). Again an example: in order to complete an analogy on a standardized test, one begins with encoding the pairs on the left of the problem, e.g., apples are to oranges as row boats are to _____ . Assume the three possible answers are sailboat, cars, or horses; then, the next step is to combine and compare. The final step is to make the choice or to make a response.
or to make a response.

Knowledge-acquisition is the last component. It also has three components: selective encoding, selective combining and selective comparison. Sternberg states: It is proposed that three components are relevant to acquisition of declarative and procedural knowledge in virtually all domains of knowledge (Sternberg, 1985, p. 107). These components will be examined in some detail when insight is discussed.

In pulling together our thoughts on this theory it might be helpful to focus on the name briefly - triarchic, that is, three arches. In exploring arch in the dictionary, one finds arch meaning "to cover" and "principle" (as in archenemy). Both of these meanings shed light on the theory as it is about three principle coverings of intelligence. This completes the overview of the triarchic theory of human intelligence.

Now to re-ask our original questions: why does a book about intelligence concern us as teachers? Furthermore, why should anyone want to go beyond IQ? Sternberg mentions Philosophy for Children only once. "I believe that many of the most innovative and successful programs, such as Lipman's Philosophy for Children and Feuerstein's Instructional Enrichment (IE), are successful in large part because of their training of children in new ways of thinking. The less successful programs often merely re-hash presentation of skills that children have already been taught in greater or lesser degree. Such programs tend to train to particular tests rather than to generalizable skills that underlie performance on these tests." (Sternberg, 1985, p. 339) That information alone is helpful as it provides us a tool for presenting reasons to parents, school boards and others as we discuss the benefits of Philosophy for Children.

Earlier I raised two other points which are important in understanding intelligences: quickness and insight. Quickness is addressed in two different contexts. The first has to do with novelty, the second with encoding. Novelty, as related to our discussion, occurs when a person is presented with a situation which is new but not totally unfamiliar. Good thinkers, or intelligent thinkers spend considerable time figuring out what the problem is; that is, they spend time on the executive function or on global processing and relatively less time on local processes. The opposite is true for poor thinkers, they move too quickly to and spend too much time on the local processing level. This is a phenomena which we have all observed but perhaps have not articulated. The encoding approaches of good thinkers and poor thinker works in a similar manner. Good thinkers spend relatively more time getting to know the

elements say of an analogy and relatively less time making the comparisons and the final response.

Sternberg also give us a perspective on creativity via insight. Insight may be defined by Sternberg as having three psychological processes: selective encoding, selective combination and selective comparison (Sternberg, 1985, p. 80). Insight may be one of those new skills which students are exposed to and taught through Philosophy for Children which may not be taught or taught poorly in other situations. Some reflection will provide many examples. The *Harry* students are invited to think about the nature of the mind and of thinking. The novel provides the students with a background from which to draw insight via selective encoding, selective combination and selective comparison.

To answer directly the questions raise in this review: intelligence beyond IQ is important for us to understand as it gives us a better perspective on teaching and learning. One hopes this review will invite readers to examine Sternberg's work for themselves, but stand warned, the ideas in the book are exciting but the presentation is primarily for psychologist with interest in intelligence, how it is tested, and the empirical support for a theoretical position. It is one of those rare works which, despite the "bone dry prose", is in fact exciting and hard to put down because the ideas presented are so exciting.

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