

## The Three Faces of Intelligence

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Once at a Renaissance Weekend, I found myself on a panel with a U.S. Senator, a Congressman, and a policy wonk. As a cognitive psychologist with an interest in education, I was nonplused to be surrounded by this distinguished but (to me) exotic company. About half way through the hour, the mystery was abruptly solved. One of the panelists used the word *intelligence* and another immediately responded by citing the failures of the CIA during the last quarter century. As was later confirmed, the panels had been constituted by noting key words in our biographies, and both I and the other panelists had described themselves as experts on "intelligence".

While individuals from many backgrounds describe themselves as interested in intelligence, for those of us trained in psychology, "intelligence" has a quite specific history and connotation. For nearly a century, *intelligence* has largely been owned by psychometricians. These individuals devise, administer, and score short-answer tests of intelligence that require subjects to perform tasks associated with school: define words, select antonyms, remember passages, supply general information, manipulate geometric shapes, and the like. Those who consistently do well on measures of intelligence (often called I.Q. tests) are considered smart--and indeed, so long as they remain in school, they are likely to have that characterization confirmed.

A surrounding web of assertions often accompanies this seemingly objective information. As stated sharply in the best-selling book The Bell Curve, individuals are thought to be born with a certain intellectual potential, it is difficult to change that potential, and psychometricians can tell us from an early age how smart we are. Authors Richard Herrnstein and Charles Murray went on to trace various social ills to those with low intelligence levels and to hint that I.Q. scores may be related to race. The latter claims led to the sales and the furor surrounding the book.

During the last two decades, the psychometric hegemony over intelligence has been increasingly challenged. Computer specialists have begun to develop theories and applications of artificial intelligence; some of their systems are general problem-solvers, while others have well-delineated expertise. Neuroscientists and geneticists have focussed on the evolutionary origins and the neural representations of various mental faculties. And within the field of psychology, alternative perspectives have been introduced as well: Daniel Goleman has written extensively and persuasively about emotional intelligence; Robert Sternberg has added practical and creative intelligence to the more familiar notion of analytic intelligence. And over the past twenty years I have developed a pluralistic "theory of multiple intelligences."

According to my theory, it is misleading to think of humans as possessing but a single intellectual capacity, which almost always amounts to an amalgam of linguistic and logical-mathematical skills. Rather, examined from an evolutionary perspective, it makes more sense to conceptualize human beings as having several relatively autonomous mental faculties, including musical intelligence, spatial intelligence, bodily kinesthetic intelligence and

naturalist intelligence. I also propose two forms of personal intelligence--interpersonal and intrapersonal: these latter are close to what Goleman means by emotional intelligence.

When I was developing the theory, I thought that I was encompassing all of intelligence. It has taken me until now to realize the importance of distinguishing among three distinct meanings of intelligence, which are captured in the following sentences:

1. In view of the close resemblance between chimpanzee and human genetic material, it has become challenging to delineate the defining characteristics of human intelligence.
2. On most dimensions of interest, Susan simply displays more intelligence than John.
3. What distinguishes Alfred Brendel's piano playing is not his technique *per se*, but the sheer intelligence of his interpretations.

When invoking the first meaning of intelligence, we attempt a general characterization of human (or nonhuman) capacities. We might, for example, speak of human intelligence as the capacity to solve complex problems, or to anticipate the future, or to analyze patterns, or to synthesize disparate pieces of information. A major disciplinary tradition, begun with Charles Darwin's studies of the "descent of man" and continuing with Jean Piaget's investigation of children's minds, seeks to capture what is unique and generic about intelligence.

The second meaning of intelligence is the one that has been most widely employed by psychologists. Those in the psychometric tradition--whether unitarians or pluralists--assume that intelligence is a trait, like height or extroversion. Individuals can be usefully compared with one another on the extent to which they exhibit this trait or ensemble of traits. I term this tack the examination of individual differences on a trait of interest. Much of my own work on multiple intelligences has entailed descriptions of the differing profiles of intelligence across individuals.

The third meaning of intelligence has been the least explored though it may be the most intriguing. As suggested in the Brendel example, the focus here falls on the manner in which a task is executed. We often speak in this way: we talk about whether a decision was wise or ill-advised, whether the manner in which the decision was reached was clever or foolish, whether a leadership transition was handled intelligently or ineptly, whether a new concept was introduced intelligently into lecture, and so forth.

What distinguishes this third connotation of intelligence? We cannot characterize an act or decision as intelligent without some sense of the goal or purpose at issue, the choices involved in a genre, and the particular value system of the participants. Alfred Brendel's playing may not be technically more accurate on some objective index. Rather, in view of his own goals, the choices available in piano performance, and the values of the listener, one can validly speak of his interpretations as intelligent or wanting in intelligence. Moreover, I could dislike Brendel's interpretations and still concur that they were intelligent, if you could convince me of what he was trying to achieve and why it made sense in his terms. Or, I could convince you that Glenn Gould's performance of the same piece was intelligent,

whether or not you personally liked it. There do not exist example-independent criteria for what constitutes a wise or foolish decision, planning process, leadership transition, introduction of a topic in a class, and so on. Yet, armed with information about goals, genres, and values, we can make assessments about whether these tasks have been performed intelligently--even as we can even agree to disagree about the conclusions reached.

How does the third sense of intelligence relate to multiple intelligences? I speculate that different tasks call on different intelligences or combinations of intelligence. To perform music intelligently involves a different set of intelligences than preparing a meal, planning a course, or resolving a quarrel.

So, one might ask, what is achieved by this exercise in the "semantics of intelligence"? Let me suggest three possible dividends. The first is indeed lexical. It is useful and important to distinguish these three distinct definitions; otherwise we risk speaking past one another, with a Piagetian needlessly clashing with a psychometrician, or an critic believing that she is engaged in the same kind of endeavor as a school psychologist.

The second dividend concerns research. There is little question that scholars and researchers will continue to examine the nature of intelligence. We can expect to read about new tests of intelligence, new forms of artificially intelligent machinery, and even about genes for intelligence. Some researchers will be quite clear about what they mean in using the term intelligence; but we can expect there to be considerable confusion as well, unless scholars

take care in indicating which aspect of intelligence they are studying and how (or whether) it relates to the other ones.

Finally, and most important for me, are implications for education. When an educator speaks about intelligence in the first sense, she is referring to a capacity that can be assumed to exist in all human beings. Perhaps it is manifest more quickly or dramatically in one person than another, but ultimately we are dealing with part of the human birthright and so no special measures are needed. In contrast, intelligence in the "individual difference" sense involves judgment about the potentials of individuals and how each might be taught in the most effective manner. If (following Herrnstein and Murray) one assumes that Sally has little intellectual potential in general, or (following the theory of multiple intelligences) little potential for the development of spatial intelligence, one is faced with clearcut educational choices. These can range from giving up, to working much harder, to searching for alternative ways to deliver instruction, be the topic geometry, ancient history, or classical music.

And what of doing something intelligently or stupidly? The greatest educational progress could be achieved here. All too often, we ignore goals, genres, or values; or we assume that they are so apparent that we do not bother to highlight them. Yet, judgments about whether an exercise--a paper, a project, an essay response on an examination--has been done intelligently or stupidly are often difficult for students to fathom. And since these evaluations are not well understood, few if any lessons can be drawn from them. Laying out the criteria by which judgments of quality are made may not suffice in itself to improve

quality; but in the absence of such clarification, we have little reason to expect our students to go about their work intelligently.