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MULTIPLE INTELLIGENCES

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HOWARD GARDNER (b. 1943) is a leading critic of traditional ideas about intelligence and IQ testing. He graduated and obtained a Ph.D. from Harvard University, where he teaches education and developmental psychology. Among his many influential works are *Frames of Mind* (1983) and *Multiple Intelligences: The Theory in Practice* (1993), from which the following selection is excerpted. Gardner has received a MacArthur Fellowship and other awards.

In a traditional view, intelligence is defined operationally as the ability 1
to answer items on tests of intelligence. The inference from the test scores to some underlying ability is supported by statistical techniques that compare responses of subjects at different ages; the apparent correlation of these test scores across ages and across different tests corroborates the notion that the general faculty of intelligence, g, does not change much with age or with training or experience. It is an inborn attribute or faculty of the individual.

Multiple intelligences theory, on the other hand, pluralizes the tradi- 2
tional concept. An intelligence entails the ability to solve problems or fashion products that are of consequence in a particular cultural setting or community. The problem-solving skill allows one to approach a situation in which a goal is to be obtained and to locate the appropriate route to that goal. The creation of a *cultural* product is crucial to such functions as capturing and transmitting knowledge or expressing one's views or feelings. The problems to be solved range from creating an end for a story to anticipating a mating move in chess to repairing a quilt. Products range from scientific theories to musical compositions to successful political campaigns.

MI theory is framed in light of the biological origins of each problem- 3
solving skill. Only those skills that are universal to the human species are treated. Even so, the biological proclivity to participate in a particular form of problem solving must also be coupled with the cultural nurturing of that domain. For example, language, a universal skill, may manifest itself particularly as writing in one culture as oratory in another & as the secret language of anagrams in a 3rd

Given the desire of selecting intelligences that are rooted in biology, and that are valued in one or more cultural settings, how does one actually identify an "intelligence"? In coming up with our list, we consulted evidence from several different sources: knowledge about normal development and development in gifted individuals; information about the breakdown of cognitive skills under conditions of brain damage; studies of exceptional populations, including prodigies, idiots savants, and autistic children; data about the evolution of cognition over the millennia; cross-cultural accounts of cognition; psychometric studies, including examinations of correlations among tests; and psychological training studies, particularly measures of transfer and generalization across tasks. Only those candidate intelligences that satisfied all or a majority of the criteria were selected as bona fide intelligences. A more complete discussion of each of these criteria for an "intelligence" and the seven intelligences that have been proposed so far, is found in *Frames of Mind*.[1] This book also considers how the theory might be disproven and compares it to competing theories of intelligence....

An intelligence must also be susceptible to encoding in a symbol system—a culturally contrived system of meaning, which captures and conveys important forms of information. Language, picturing, and mathematics are but three nearly worldwide symbol systems that are necessary for human survival and productivity. The relationship of a candidate intelligence to a human symbol system is no accident. In fact, the existence of a core computational capacity anticipates the existence of a symbol system that exploits that capacity. While it may be possible for an intelligence to proceed without an accompanying symbol system, a primary characteristic of human intelligence may well be its gravitation toward such an embodiment.

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The Seven Intelligences

Having sketched the characteristics and criteria of an intelligence, we turn now to a brief consideration of each of the seven intelligences. We begin each sketch with a thumbnail biography of a person who demonstrates an unusual facility with that intelligence. These biographies illustrate some of the abilities that are central to the fluent operation of a given intelligence. Although each biography illustrates a particular intelligence, we do not wish to imply that in adulthood intelligences operate in isolation. Indeed, except for abnormal individuals, intelligences always work in concert, and any sophisticated adult role will involve a melding of several of them. Following each biography we survey the various sources of data that support each candidate as an "intelligence."

Group 4

Interpersonal Intelligence

With little formal training in special education and nearly blind herself, Anne Sullivan began the intimidating task of instructing a blind and deaf seven-year-old Helen Keller. Sullivan's efforts at communication were complicated by the child's emotional struggle with the world around her. At their first meal together, this scene occurred:

> Annie did not allow Helen to put her hand into Annie's plate and take what she wanted, as she had been accustomed to do with her family. It became a test of wills—hand thrust into plate, hand firmly put aside. The family, much upset, left the dining room. Annie locked the door and proceeded to eat her breakfast while Helen lay on the floor kicking and screaming, pushing and pulling at Annie's chair. [After half an hour] Helen went around the table looking for her family. She discovered no one else was there and that bewildered her. Finally, she sat down and began to eat her breakfast, but with her hands. Annie gave her a spoon. Down on the floor it clattered, and the contest of wills began anew.[9]

Anne Sullivan sensitively responded to the child's behavior. She wrote home: "The greatest problem I shall have to solve is how to discipline and

[8]Selfe, L. (1977). *Nadia: A case of extraordinary drawing in an autistic child.* New York: Academic Press

control her without breaking her spirit. I shall go rather slowly at first and try to win her love."

In fact, the first "miracle" occurred two weeks later, well before the famous incident at the pumphouse. Annie had taken Helen to a small cottage near the family's house, where they could live alone. After seven days together, Helen's personality suddenly underwent a profound change — the therapy had worked:

> My heart is singing with joy this morning. A miracle has happened! The wild little creature of two weeks ago has been transformed into a gentle child.[10]

It was just two weeks after this that the first breakthrough in Helen's grasp of language occurred; and from that point on, she progressed with incredible speed. The key to the miracle of language was Anne Sullivan's insight into the *person* of Helen Keller.

Interpersonal intelligence builds on a core capacity to notice distinctions among others; in particular, contrasts in their moods, temperaments, motivations, and intentions. In more advanced forms, this intelligence permits a skilled adult to read the intentions and desires of others, even when these have been hidden. This skill appears in a highly sophisticated form in religious or political leaders, teachers, therapists, and parents. The Helen Keller–Anne Sullivan story suggests that this interpersonal intelligence does not depend on language.

All indices in brain research suggest that the frontal lobes play a prominent role in interpersonal knowledge. Damage in this area can cause profound personality changes while leaving other forms of problem solving unharmed — a person is often "not the same person" after such an injury.

Alzheimer's disease, a form of presenile dementia, appears to attack posterior brain zones with a special ferocity, leaving spatial, logical, and linguistic computations severely impaired. Yet, Alzheimer's patients will often remain well groomed, socially proper, and continually apologetic for their errors. In contrast, Pick's disease, another variety of presenile dementia that is more frontally oriented, entails a rapid loss of social graces.

Biological evidence for interpersonal intelligence encompasses two additional factors often cited as unique to humans. One factor is the prolonged childhood of primates, including the close attachment to the mother. In those cases where the mother is removed from early development, normal interpersonal development is in serious jeopardy. The second factor is the relative importance in humans of social interaction. Skills such as hunting, tracking, and killing in prehistoric societies required participation and cooperation of large numbers of people. The need for group cohesion, leadership, organization, and solidarity follows naturally from this.

Group 4

Intrapersonal Intelligence

In an essay called "A Sketch of the Past," written almost as a diary entry, Virginia Woolf discusses the "cotton wool of existence" — the various mundane events of life. She contrasts this "cotton wool" with three specific and poignant memories from her childhood: a fight with her brother, seeing a particular flower in the garden, and hearing of the suicide of a past visitor.

> These are three instances of exceptional moments. I often tell them over, or rather they come to the surface unexpectedly. But now for the first time I have written them down, and I realize something that I have never realized before. Two of these moments ended in a state of despair. The other ended, on the contrary, in a state of satisfaction.
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> The sense of horror (in hearing of the suicide) held me powerless. But in the case of the flower, I found a reason; and was thus able to deal with the sensation. I was not powerless.
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> Though I still have the peculiarity that I receive these sudden shocks, they are now always welcome; after the first surprise, I always feel instantly that they are particularly valuable. And so I go on to suppose that the shock-receiving capacity is what makes me a writer. I hazard the explanation that a shock is at once in my case followed by the desire to explain it. I feel that I have had a blow; but it is not, as I thought as a child, simply a blow from an enemy hidden behind the cotton wool of daily life; it is or will become a revelation of some order: it is a token of some real thing behind appearances: and I make it real by putting it into words.[11]

This quotation vividly illustrates the intrapersonal intelligence — knowledge of the internal aspects of a person: access to one's own feeling life, one's range of emotions, the capacity to effect discriminations among these emotions and eventually to label them and to draw upon them as a means of understanding and guiding one's own behavior. A person with good intrapersonal intelligence has a viable and effective model of himself or herself. Since this intelligence is the most private, it requires evidence from language, music, or some other more expressive form of intelligence if the observer is to detect it at work. In the above quotation, for example, linguistic intelligence is drawn upon to convey intrapersonal knowledge; it embodies the interaction of intelligences, a common phenomenon to which we will return later.

We see the familiar criteria at work in the intrapersonal intelligence. As with the interpersonal intelligence, the frontal lobes play a central role in personality change. Injury to the lower area of the frontal lobes is likely to produce irritability or euphoria; while injury to the higher regions is more likely to produce indifference, listlessness, slowness, and apathy — a kind of depressive personality. In such "frontal-lobe" individuals, the other cognitive functions often remain preserved. In contrast, among aphasics who have recovered sufficiently to describe their experiences, we find consistent

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testimony: while there may have been a diminution of general alertness and considerable depression about the condition, the individual in no way felt himself to be a different person. He recognized his own needs, wants, and desires and tried as best he could to achieve them.

The autistic child is a prototypical example of an individual with impaired intrapersonal intelligence; indeed, the child may not even be able to refer to himself. At the same time, such children often exhibit remarkable abilities in the musical, computational, spatial, or mechanical realms.

Evolutionary evidence for an intrapersonal faculty is more difficult to come by, but we might speculate that the capacity to transcend the satisfaction of instinctual drives is relevant. This becomes increasingly important in a species not perennially involved in the struggle for survival.

In sum, then, both interpersonal and intrapersonal faculties pass the tests of an intelligence. They both feature problem-solving endeavors with significance for the individual and the species. Interpersonal intelligence allows one to understand and work with others; intrapersonal intelligence allows one to understand and work with oneself. In the individual's sense of self, one encounters a melding of inter- and intrapersonal components. Indeed, the sense of self emerges as one of the most marvelous of human inventions — a symbol that represents all kinds of information about a person and that is at the same time an invention that all individuals construct for themselves.

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Summary: The Unique Contributions of the Theory

As human beings, we all have a repertoire of skills for solving different kinds of problems. Our investigation has begun, therefore, with a consideration of these problems, the contexts they are found in, and the culturally significant products that are the outcome. We have not approached "intelligence" as a reified human faculty that is brought to bear in literally any problem setting; rather, we have begun with the problems that humans *solve* and worked back to the "intelligences" that must be responsible.

Evidence from brain research, human development, evolution, and cross-cultural comparisons was brought to bear in our search for the relevant human intelligences: a candidate was included only if reasonable evidence to support its membership was found across these diverse fields. Again, this tack differs from the traditional one: since no candidate faculty is *necessarily* an intelligence, we could choose on a motivated basis. In the traditional approach to "intelligence," there is no opportunity for this type of empirical decision.

We have also determined that these multiple human faculties, the intelligences, are to a significant extent *independent*. For example, research with brain-damaged adults repeatedly demonstrates that particular faculties can

that a particularly high level of ability in one intelligence, say mathematics, does not require a similarly high level in another intelligence, like language or music. This independence of intelligences contrasts sharply with traditional measures of IQ that find high correlations among test scores. We speculate that the usual correlations among subtests of IQ tests come about because all of these tasks in fact measure the ability to respond rapidly to items of a logical-mathematical or linguistic sort; we believe that these correlations would be substantially reduced if one were to survey in a contextually appropriate way the full range of human problem-solving skills.

Until now, we have supported the fiction that adult roles depend largely on the flowering of a single intelligence. In fact, however, nearly every cultural role of any degree of sophistication requires a combination of intelligences. Thus, even an apparently straightforward role, like playing the violin, transcends a reliance on simple musical intelligence. To become a successful violinist requires bodily-kinesthetic dexterity and the interpersonal skills of relating to an audience and, in a different way, choosing a manager; quite possibly it involves an intrapersonal intelligence as well. Dance requires skills in bodily-kinesthetic, musical, interpersonal, and spatial intelligences in varying degrees. Politics requires an interpersonal skill, a linguistic facility, and perhaps some logical aptitude. Inasmuch as nearly every cultural role requires several intelligences, it becomes important to consider individuals as a collection of aptitudes rather than as having a singular problem-solving faculty that can be measured directly through pencil-and-paper tests. Even given a relatively small number of such intelligences, the diversity of human ability is created through the differences in these profiles. In fact, it may well be that the "total is greater than the sum of the parts." An individual may not be particularly gifted in any intelligence; and yet, because of a particular combination or blend of skills, he or she may be able to fill some niche uniquely well. Thus it is of paramount importance to assess the particular combination of skills that may earmark an individual for a certain vocational or avocational niche.

Analyzing This Selection

1. Gardner's theory includes seven independent intelligences. Do you think they are all separable even in theory? Which, if any, would you combine?
2. **THE WRITER'S METHOD** Gardner's paragraphs are usually short and he highlights topics, but along with these journalistic customs, he provides footnotes. Who is his intended audience? How does his audience differ from yours?
3. How do Gardner's criteria for selecting an intelligence guard against over-