

# COURSE GRADE COVER SHEET

Complete student information portion, make copies, and submit one form with each course.  
(In the event you are not able to make copies, please hand-write this page with each course.)

I have read the frequently asked questions on the back of this page: ☒ Yes ☐ No.

Student Number (Same as Inmate Number) 180161

Student Name: Eric St. George

Student Address: c/o CCF--180161; PO Box 600

City: Cañon City State: CO Zip Code: 81215

Unit Number: Fox Name of Prison: Centennial

Degree you are working toward: Masters of Ministry & Christian Counseling

My records indicate this is my 4th course. 3 of 3

Course Number & Title: or Name of Book From the Bible: APC551 Individual Appraisal

Book Title: Frames of Mind: The Theory of Multiple Intelligences

Author: Howard Gardner

Begin/End Date of Enclosed Course: Jan 1 / Jun 30 2024

**Please note that if you are turning in a course that involves textbooks you need to turn in a complete course that normally has three books.**

## To Be Completed By Student:

Do you need us to send you your next course? ☐ YES ☒ NO

(This question applies only to those working on books of the Bible)

If no, what books will you use for your next course?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please give us the name and ID number of a few people that are interested in receiving information on attending our college. Thanks and God Bless You!

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_



International Christian College and Seminary  
P.O. Box 530212 • Debary, Florida 32753-0212  
[www.iccscampus.org](http://www.iccscampus.org)





**Q: Can you send me another grade coversheet?**

A: You can handwrite your grade cover page.

**Q: How long does it take to grade my work?**

A: We normally send correspondence out once per month. However, you do not need to wait on us to grade your work to continue your courses. If you are doing books from the Bible, we can e-mail them to your loved ones and they can print and send them to you. Just ask them to e-mail us.

**Q: Can I do my courses in pencil?**

A: Yes, but only if you have access to nothing else.

**Q: Should I staple or paperclip my work?**

A: If you do it is ok. However, we prefer that you do not use staples or paperclips because we scan your work and it takes time to remove them from the papers.

**Q: What course will books from the Bible substitute for?**

A: We use the books from the Bible as foundation courses. You need 20 courses to graduate. We will determine which courses they will substitute for as you get closer to graduating.

**Q: Is there a way I can contact you other than by mail?**

A: If you are a federal inmate in good standing you can send me an invitation on Corrlinks and I will accept. If you are a state inmate you can have your loved ones forward an e-mail to me and I will respond. My e-mail is [drmccorkle@icccampus.org](mailto:drmccorkle@icccampus.org). You, your family or friends are welcome to call me. My cell number is (407) 760-5616. The office number is (877) 391-3741 ext. 700. As long as I do not have to pay, I will accept all calls. If for any reason you do not reach me on your first attempt, please keep trying. I will pick up.

**Q: How do I know if books I have available are acceptable to use as substitutions?**

A: As you know, we have a list of suggested books for your degree. However, we can customize some of your future courses to assist you in obtaining your goal. Everyone knows what they need help with. Please pray about it and once you have identified an area where you would like to improve, look in your chapel library or psychology department for a combination of books that are 900 pages. Once you find the books give me the name of the book, the author and the page numbers and I will enter these as a custom course for you.

**Q: Is there a time limit for each course?**

A: No, you can work at your own pace.

**Q: Can I send in my work if my tuition is not current?**

A: Please do not send in your work if your tuition is not current. If your tuition is not current your student file is flagged on hold in our system and we are unable to grade any work until the tuition is current. If the college does not receive a payment within 90 days the student file is permanently closed.

**Q: I have been writing sponsor letters but have not obtained a sponsor.**

A: Some students have to write 50-100 letters before they received a positive response. It depends on your letters. You need to pray and write each one individually from your heart. Also, ask family and friends to help find sponsors.

**Q: Will I receive feedback from the graders/readers?**

A: Courses are graded by graduate students. They jot down notes for me to read about each of your papers. They normally put down opinions that are highlighted to advise that this is interesting. Unless they point out a problem on the paper, I will accept it as-is. If they provide a problem, I return the paper with their notes asking you to re-do and re-submit. In the past I would write down some comments and students would brag to other students in their dorm making them feel inferior. For that reason, I normally just keep to the basic comments. I know some of you put a lot in your papers and deserve complete feedback. You can call me from your chaplain's or unit manager's office and I will be glad to discuss your papers in full detail.

**Q: Can you send back my original work?**

A: When we receive your work, your courses and correspondence are scanned into your student records. If you want your original work sent back to you, you must send us a self-addressed, stamped brown envelope with as many stamps as you used to send your original work to us, clearly stating that you want all of your work returned. Once your tuition is paid, if you want a copy of your work, we will email it to you upon your release or you can have your sponsor send a request and we will email it to them.

**Q: How long can I use the Books from the Bible?**

A: You can use books/questions from the Bible up to your Bachelor's Degree.

**Q: Tell me again about your accreditation**

A: We are accredited by the International Theological Accountability Association (ITAA) and are recognized by the Department of Education in Florida. ICCS has been privileged to work with several regionally accredited colleges and universities that do accept some ICCS course transfer credits into their programs. This offers our students the option of benefitting from their ICCS training when pursuing a formal degree at various academic institutions.

There are different kinds of accreditation. Governmental Accreditation and non-governmental accreditation. Governmental accreditation is requested in order to receive student aid money. We, along with Rhema Bible College and many more, choose non-governmental accreditation. With governmental accreditation, we would not be able to offer higher degrees unless the student took some courses on campus. That would make our prison program ineffective to you and many others.

**Q: How many credits are each course?**

A: Three (3) credits or one (1) course is equivalent to 45 contact hours, 60 credits or 20 courses is equivalent to 900 contact hours.

A contact hour is a measure that represents an hour of scheduled instruction given to students. A semester credit hour is normally granted for satisfactory completion of one 50-minute session (contact hour) of classroom instruction per week for a semester of not less than fifteen weeks.

**Q: Do I have to start with my Associate's degree or can I go directly to my Doctorate degree?**

A: If you have college credits, we need to see the official transcripts and we will enroll you in the appropriate degree program. If you have no college credits you need to start with the Associate's degree. The undergraduate degrees (Associate's and Bachelor's) each require 60 credits or 20 courses to graduate. For graduate degrees, the Master's requires 48 credits or 16 courses plus a Master's thesis and the Doctorate requires 36 credits or 12 courses plus a dissertation paper to graduate.

**Q: Will you write a letter to the Parole board for me?**

A: Yes. If you are a student in good standing with us, we will gladly help with Parole and Letters to the court. You must have a hearing date. If the date is near, I suggest you have your family or friends get in contact with us so we can have the rough draft approved and we can obtain the name and address of who you want it addressed to. Otherwise, you can write to us with the information.

**Q: How can I help ICCS?**

A: Help us spread the word about our college by sharing the school's flyer wherever you can i.e. your prison chapel, library or common area. You can also support us through prayer and by recommending us to your friends who are interested in pursuing a theological degree. To go a step further, consider "paying it forward" by sponsoring a new student.

**Q: Why is my coursework postmarked from Austin, Texas?**

A: Our grading center is in Austin, Texas. All of your correspondence is to be sent to:

International Christian College and Seminary  
P.O. Box 530212  
DeBary, FL 32753

**Q: Can I continue my degree when I am released?**

A: Yes. You are welcome to continue upon your release. We will keep your tuition at the same price for the first two years. You will have an option of taking your classes online or textbooks or a combination of the two. It will be your choice.

**Q: What is the cost for my next degree?**

A: We offer men and women in prison an 85% discount from our normal tuition. Our current tuition is \$9,497.00 (It continues to go up each year). We offer it to inmates at \$1,425. If you pre-pay you receive an additional discount and only pay \$997. Please note that the rate you will be paying is \$22.00 per credit hour. The standard community college charges between \$150 - \$300 per credit hour. There is no additional discount.



INDIVIDUAL APPRAISAL  
APC551  
(paper 3 of 3)

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Text Read: Frames of Mind: The Theory of Multiple Intelligences  
Twentieth-Anniversary Edition by Howard Gardner (2004)  
ISBN: 978-0-465-02510-7, 440 pages in 3 parts and 14 chapters

CONTENTS: 2004 Introduction; Introduction to the Tenth-Anniversary Edition;  
Preface; Note on the Project on Human Potential PART I: BACKGROUND (ch 1) The  
Idea of Multiple Intelligences (ch 2) Intelligence: Earlier Views (ch 3) Bio-  
logical Foundations of Intelligence (ch 4) What is an Intelligence? PART II:  
THE THEORY (ch 5) Linguistic Intelligence (ch 6) Musical Intelligence (ch 7)  
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#### OVERVIEW

We are all, laypeople and those who study psychology, familiar with IQ, or Intelligence Quotient. IQ is understood to be a measure of a person's intelligence. IQ takes its name from its original meaning, a ratio of mental age over chronological age. The theory of a singular intelligence, or "g" for general intelligence stands in contrast to the subject of this text which is MI Theory, the theory of Multiple Intelligences. Our text names seven intelligences: Linguistic Intelligence, Musical Intelligence, Logical-Mathematical Intelligence, Spatial Intelligence, Bodily-Kinesthetic Intelligence, Inter-personal Intelligence and Intrapersonal Intelligence.

#### WHY THIS TEXT WAS CHOSEN FOR USE IN THIS COURSE

This course on Individual Appraisal is described as an overview of assessment used by professional counselors. The syllabus says that students will evaluate instruments and demonstrate knowledge of psychometric properties. IQ is such a psychometric property and is commonly measured using standardized exams such as the Stanford-Binet or the Wechsler Adult Intelligence Scale (WAIS) IQ test. Having been a precocious child myself, having been in "Gifted" classes throughout primary school and advanced and International Baccalaureate classes in high school; the concept of intelligence testing is one with which I am familiar and interested.



I have been administered a large number of IQ exams in my life. I've also always had enough self-awareness to recognize that while I may test 2 standard deviations above the mean, there are many skills at which I am not adept. How can this be? If IQ were indeed the panacea of measuring intellect, how are there skills that I cannot master that many people of average IQ perform with ease. I've been familiar with this concept of Multiple Intelligences on a superficial level for years. I was drawn to read this text because it is written by Howard Gardner who developed the Theory of Multiple Intelligences, and I believed that reading the text would offer a broader view of intelligence and how people differ in intelligence. The idea of intelligence as a single metric, and to believe that all people can exist on a single continuum, is troubling. As a comparison, were there a single metric of "beauty" or "strength" and it were asserted that all people could be tested and placed on a continuum with a number relating a measure of these qualities; such a thing would be rejected by all. There is no question that IQ exams do measure some trait -- called "g" or otherwise -- in a statistically significant, repeatable, predictive, and accurate way. The Multiple Intelligences theory promises a more detailed picture of what is intelligence.

#### THE SEVEN INTELLIGENCES

Where the text begins by defining Intelligence, we'll begin by identifying the seven intelligences that comprise MI theory and then explain what makes them "Intelligences."

#### LINGUISTIC INTELLIGENCE

Our text says that linguistic competence is "the intellectual competence that seems most widely and most democratically shared across the human species." In contrast to a mathematician, or a gymnast, whose abilities seem mysterious and remote to the average person, use of language is a competency that even the subnormal have within their grasp. The author invests much of the chapter on this subject, holding the poet up as the pinnacle of linguistic competency.

Simply, linguistic intelligence is defined as the intelligence necessary to have competence in the use of language in reading, writing and speech. One dimension of linguistic intelligence is semantics, which considers the knowledge of meanings and connotations of words. Another dimension is syntax, the rules governing ordering of words and their inflections. Phonology is the domain of language that considers the sounds of words and their "musical" interactions upon one another. The fourth dimension is termed pragmatics which contemplates the uses of language to which it may be put into service. Considering these four



dimensions of language one can understand why a poet is deemed to be the genius of linguistic intelligence.

Critical to every one of the intelligences is that it is possible for the neurobiologist to identify where in the brain that the intelligence is located; however that aspects of the competency are spread into more than one isolated region. Language competency in Western nations where the written language represents the sound of the spoken one (like ours), the language "piggybacks" on oral language regions of the brain. This is why some read aloud inside their minds (subvocalize) and why people who are aphasic have difficulty reading. Aphasia is the "loss of the faculty or power of articulate speech. A condition in which the patient while retaining intelligence and understanding and with the organs of speech unimpaired, is unable to utter articulate words, or unable to vocalize the particular word which is in his mind and which he wishes to use, or is unable to understand spoken or written language." (Black's Law Dictionary, 6th ed.) Aphasia is evidence that written and spoken language are co-located in the brain.

Another piece of evidence is how in Eastern nations where language is coded as ideographic systems, the ability to read can be varied to an aphasic person. The Japanese language, which features a phonologic system called "kana" and an ideographic writing system called "kanji." In some patients who suffer some form of brain damage, the ability to read in the phonographic system may be hampered where reading in the ideographic system is not, or vice versa. [Sasnuma, S., "Kana and Kanji Processing in Japanese Aphasics," Brain and Language 2:369-82 (1975)] This same contrast in decoding language may occur in a deaf person who reads, where a brain injury may have adverse effect on one language system and allow the alternate system to function without trouble. The brain houses auditory and image decoding in different locations.

Research shows that in language competency, the syntax is more localized in the left hemisphere. In patients who have suffered injury to the left hemisphere, or have had a hemispherectomy removing it altogether, their use of language will suffer dramatically in terms of grammar. The semantic system is more dependant on the right hemisphere. Where the meaning of the sentence can be decoded by using the meanings of the substantives, the right hemisphere is up to the task alone. Example: "The cheese was eaten by the mouse." But, only those who retain a functioning left hemisphere can decode a sentence where the meaning depends more wholly on syntax. Example: "The truck was hit by the bus."



Language functions are more strongly localized to the left hemisphere in men as compared to women. The cause of this was not understood at the time the text was written. [Wittig, M.H., and Peterson, A.C., Sex-Related Differences in Cognitive Functioning (New York: Academic Press, 1979)]

The text offers also the examples of "hyperlexic" children. The book, written well before the age of political correctness, uses the term "retarded," which would be frowned upon today. I will change this to "low-functioning" as a more polite euphemism, with the understanding that we are speaking of mentally handicapped or low-intelligence people. There are hyperlexic children that are otherwise autistic or low-functioning. A hyperlexic child will begin to read at only two or three years old whereas typical children will begin to read at five or six. This reading may be of any reading material and may be aloud in a ritualistic fashion. This will occur despite a lack of understanding of the semantic information of that which is being read. The child may be incapable of meaningful conversation, limited to parroting those around him. The example of the hyperlexic is demonstrative of a separate linguistic intelligence that exists in the brain that is independent of general intelligence. [Elliott, D.E., and Needleman, R.M., "The Syndrome of Hyperlexia," Brain and Language 3:339-49 (1976)]

The author concludes that he's been cautious to not term linguistic intelligence as an auditory-oral form of intelligence because the example of the deaf person who acquires natural language is decisive that linguistics is not explicitly an auditory-oral intelligence. Our minds are undoubtedly adapted to develop language, as can be seen in the facility with which children do so.

### MUSICAL INTELLIGENCE

Of course musical intelligence is competency in performing and/or composing music. The elements of music as defined in the text are pitch (or melody), rhythm, and timbre. Although music experts may debate the precise definitions of these elements, they are defined here as the "auditory frequency" of emitted sounds, the "grouping" thereof, and the "characteristic qualities of a tone," respectively. Our text quotes Arnold Schoenberg: "Music is a succession of tones and tone combinations so organized as to have an agreeable impression on the ear and the impression on the intelligence is comprehensible... These impressions have the power to influence occult parts of our soul and of our sentimental spheres and... this influence makes us live in a dreamland of fulfilled desires or in a dreamed hell." [Stein, E., Letters (New York: St. Martin's Press, 1965) p. 186]



In another quote, I believe the author summarizes what makes use of music an intelligence: "Music cannot express fear, which is certainly an authentic emotion. But its movement, in tones, accents, and rhythmic design, can be restless, sharply agitated, violent, and even suspenseful... It cannot express despair, but it can move slowly, in a prevailing downward direction; its texture can become heavy and, as we are wont to say, dark-- or it can vanish entirely." [Sessions, R., Questions about Music (New York: W.W. Norton, 1970) p. 14] This communication of emotion through music that is confirmed in experimentation is in my mind evidence of an intelligence. There is an intelligence on both ends, the sender and the receiver. To the listener, while scary music is not frightening (as above), but in hearing the scary music one can "read" the fear if they have musical intellect. This intelligence is far more distributed in the populous. To create music that listeners will understand the feeling you mean to invoke; that's genius.

Another feature of musical competency that the author describes is that all but the most naive or disabled can judge whether music remains "in key" or if it is out of key. Here the text becomes more technical making reference to "dominant" and "subdominant" keys and their relationships to "the tonic." I've heard these terms before, but don't have enough musical competency myself to understand them. The text also spends some time talking about how in Eastern music it steps in "quarter tones" and that this differs from our Western tradition. I have studied music enough to be familiar with do-re-mi and notes A through G. I was always thrown when sharps and flats were added in and the music teacher tried to explain that these represented half-steps that came at (what I thought unexpected) times in the scale. Eastern music, I've been told, uses more notes in a scale between octaves. These matters are beyond the scope of this paper, and were not explained in the text.

The text devotes a large portion of the chapter on musical intelligence discussing early development of musical ability in children. Of the intelligences, musical intelligence is one where emergence of talent occurs very young. The disparate early appearance of musical competency in children is a fact that supports its being an intelligence. Our author talks at length about the Suzuki Talent Education program that begins to train children to perform musically at two years of age. [Holland, B., "Among Pros, More go Suzuki," The New York Times, 11 July 1982, E9] The existence of this early competency in some children lends support to the premise that there is a neurobiological root cause. Musical ability has



a congenital predetermination; genetically based and running in families.

More support lies for a musical intelligence in studies of those people who have suffered from stroke or other brain injury. While there are cases where individuals have shown aphasia with damaged musical ability, the more interesting cases are those where a patient can become musically deficient while retaining linguistic ability or vice-versa. "Whereas linguistic abilities are lateralized almost exclusively to the left hemisphere in right-handed individuals, the majority of musical capacities, including the central capacity of sensitivity to pitch, are localized in most normal individuals in the right hemisphere. Thus, injury to the right frontal and temporal lobes causes pronounced difficulties in discriminating tones and in reproducing them correctly, even as injuries in the homologous areas in the left hemisphere (which cause devastating difficulties in natural language) generally leave musical abilities relatively unimpaired. Appreciation of music also seems to be compromised by right hemisphere disease." ("amusia is a disorder distinct from aphasia.") [Botez, Botez, and Aube, "Amusia: Clinical and Computerized Scanning (CT) Correlations," *Neurology* 30:359 (April 1980)] The text offers a similar fact of Russian composer Shubert who continued to compose music despite suffering a severe Wernicke's aphasia. Writing music and writing language must be located separately in the brain.

In an experiment by Harold Gordon it was found that individuals were superior at processing musical tones to the left ear (right hemisphere of the brain) and language to the right ear (left hemisphere of the brain). This effect reduced slightly for trained musicians, perhaps suggesting they process music in a formal written manner (as notes on a staff -- a linguistic aid). [Gordon, H., "Degree of Ear Asymmetries for Perceptions of Dichotic Chords and for Illusory Chord Localization in Musicians of Different Levels of Competence." *Journal of Experimental Psychology: Human Perception and Performance* 6:516-27 (1980)]

The author concludes the discussion of musical intelligence by stating that a comparison of musical intelligence to linguistic or logical-mathematical intelligence have differing "developmental trajector[ies]" and "neurological representation[s]." [Lerdahl, F., and Jackendoff, R., "Toward a Formal Theory of Tonal Music." *Journal of Music Theory* Spring 1977, pp. 111-71] [Rothstein, E., "Math and Music: The Deeper Links," *The New York Times*, 29 August 1982]

#### LOGICAL-MATHEMATICAL INTELLIGENCE

The simple tautology that logical-mathematical intelligence relates to being skilled in logic and in math would mean that it would be scarcely differentiable



from linguistic intelligence. In order to define logical-mathematical intelligence our author relies upon Piagetian developmental psychology. Recalling from my own memory what I learned in Developmental Psychology while earning my B.A. in the late 90's, Piaget was a Swiss psychologist who had a developmental theory that I always thought was a similar-but-different adjunct to Freud's psychosexual development theory but without Freud's focus on sexuality. The text assumes some level of familiarity with Piaget. The foundation of the intelligence begins in infancy only after attainment of object permanence. Object permanence is when a child comes to recognize that objects have an existence separate from his/her interaction with the object in a particular moment. This occurs around eighteen months of age. Building on object permanence a child will recognize more-less relationship of very small numbers of objects. (eg. a preference for 3 candies over 2 candies) but still he hasn't an understanding of the counting number system. Then he learns to count the cardinal numbers by rote memorization without equating these to the symbolic meanings of quantity of objects. This counting number recitation is linguistic intelligence, and has not yet become part of his logical-mathematical intelligence.

An example experiment that demonstrates a child's faulty mathematical competency at this stage is to offer two arrays of candies -- one array of five objects spread wide apart and another dense pile of ten -- and ask which the child prefers. The young child will choose the five spread out because it still looks like more by occupying more space. By age six or seven Piaget says that the child will master counting the quantity without being confused by spatial quantity.

Once the child can count, he becomes able to do additions and subtractions of objects, such as candies, where, if I add two candies to my pile I will have X.... Formal operations comes later where  $X + 2 = Y$  as symbolic mathematics stand in for objects without the objects. This is where higher forms of mathematics can take root and logical-mathematical intelligence becomes the intelligence we recognize.

The unequal distribution of mathematical ability gives rise to the recognition of the logical-mathematical intelligence. One example is the idiot savant calculator, familiar from the Dustin Hoffman portrayal in the movie Rain Man. Similar to the hyperlexic example from linguistic intelligence, there exist people for whom other intelligences are diminished who have extraordinary talents in mathematical calculation. Some are capable of rapidly adding, subtracting,



multiplying or dividing. Others are "calendar calculators" who can tell you the day of the week from some distant date. Such savants don't apply these talents to solving scientific problems or other puzzles as they lack the other intelligences necessary to do so. Their mathematical intelligence exists "in isolation" from other intelligences.

Similar as there are people who are otherwise of normative intelligence with difficulty reading, called dyslexia, and in speech, called aphasia, are those with relative weakness in mathematical ability. An example of this is found in "Gerstmann Syndrome," eponymously named for an adult who suffered with mathematical impairment. The disorder also resulted in difficulty identifying fingers and telling left from right. [Gardner, H., *The Shattered Mind: The Person After Brain Damage* (New York: Vintage, 1974) ch. 6]]

Another group that demonstrates difficulty with math are those who struggle with the steps of logical thinking, a skill necessary for progressing beyond mere counting and basic calculations. One educator'squip that was quoted by the author, "What must it be like to have so little idea of the way the world works, so little feeling for the regularity, the orderliness, the sensibleness of things?" [Holt, J., *How Children Fail* (New York: Delta Books, Dell Publishing, 1964) p. 92] The logical-mathematical intelligence depends on strings of steps that build upon the previous ones. This intelligence is capable of existing apart from the other intelligences which is one of the defining characteristics of an intelligence. Having demonstrated that the logical-mathematical intelligence is able to exist as superior or diminished free of influence from other forms of intelligences solidifies its place in MI Theory.

### SPATIAL INTELLIGENCE

The author feels challenged in defining spatial intelligence, opening the chapter with a series of examples of tests used to measure a subject's spatial intelligence. In the same way that linguistic intelligence is not merely seeing words to read, or hearing words to decode speech -- Intelligences are not senses. The author is clear to distinguish intelligences from the senses. He tells us that, "the most elementary operation, upon which other aspects of spatial intelligence rest, is the ability to perceive a form or an object... once one is asked to manipulate the form or the object, appreciating how it will be apprehended from another viewing angle, or how it would look (or feel) were it turned around, one enters fully into the spatial realm."

Because there are problems that are posed and can be solved in strictly



linguistic or logical manner, finding what set the spatial intelligence apart took some energy. Psychometrician L.L. Thurstone described three components: "the ability to recognize the identity of an object when it is seen from different angles; the ability to imagine movement or internal displacement among the parts of a configuration; and the ability to think about those spatial relations in which the body orientation of the observer is an essential part of the problem. [Thurstone, L.L., "Primary Mental Abilities," Psychometric Monographs, 1 (1938)] Experimental evidence shows that given a problem people will solve them through mental imagery and manipulating the object in their imaginations. [Neisser, U. and Kerr, N., "Spatial and Mnemonic Properties of Visual Images," Cognitive Psychology 5:138-50 (1973)]

This linguistic description of which an explanation of Einstein's Theory of Relativity is constructed is offered as a challenge: "Imagine a large mass, A, travelling in a straight line through space. The direction of travel is North from South. The mass is surrounded by a huge glass sphere etched with circles parallel to each other and perpendicular to the line of travel, like a Christmas tree ornament. There exists a second mass, B, in contact with the glass sphere at one of the etched circles. B's contact with the sphere is at some point below the largest circle which is the middle circle. Both Mass A and B are travelling in the same direction. As A and B continue their motion, B will be continually displaced along the etched circle which is the point of contact with the sphere. Since B is continually displaced, it is actually tracing a spiral path through space-time, time being the North-bound movement. Yet this path, when viewed from someone on Mass A from inside the glass sphere, appears to be a circle, not a spiral." [Eliot, E.J., and Salkind, N., Children's Spatial Development (Springfield, Ill.: Charles C. Thomas, 1975) p. 118]

Our author tells us that "there has probably been more established about Spatial abilities in the brain than about any other human faculty." The research shows that the spatial intelligence is highly located in the posterior portions of the right hemisphere to nearly but not quite the degree that linguistic intelligence is located in the left hemisphere. Damage due to stroke or other injury to the right parietal region is very harmful to spatial intelligence -- in conjunction with even a tiny injury to the left hemisphere can render spatial function devastated. [The Shattered Mind, supra, @ ch. 8] The difference in the sexes as to spatial intelligence is well documented. This is widely attributed to the selective advantage for men to evolve highly developed visual-spatial abilities



in service of hunting and wandering -- and a likely early death for males who lacked this skill set. [Holloway, R.L., "Sexual Dimorphism in the Human Corpus Collosum." Science 216:1431-32 (1982)]

More evidence that the spatial intelligence is not wholly an adjunct to the visual sense comes from the studies of those born blind. For the congenitally blind, spatial intelligence is exerted through tactile experience. We are offered an account of a University of Pennsylvania investigation. Studying 2 1/2 year old blind children it was found that they were able to navigate between two objects after visiting each from a third location. Thus, they were able to deduce the angle and distance using their spatial intelligence despite having no visual ability. [Spelke, E., "Spatial Knowledge and Geometric Representation in a Child Blind from Birth" Science 213:1275-78 (1981)]

In order to further develop what spatial intelligence amounts to, the text invites us: "thinking in three dimensions is like learning a foreign language. The number four is no longer a digit larger than three and less than five, it is the number of vertices as well as the faces of a tetrahedron. Six is the number of edges of a tetrahedron, the number of faces of a cube, or the number of vertices of an octahedron." This form of number as geometry reminds me personally of Greek thinking or Euclidian geometrical proof. The text wraps up with reasoning on spatial intelligence that feels most obvious; navigation. Specifically ancient sea-faring by astronomical indicators is an example used. This is a skill that people still marvel at in the modern world, where drivers navigate the urban landscape using their GPS. The idea of navigation is foreign to many. To those who lack this form of intelligence, it is near magical how those who are able navigate by envisioning themselves in a mental map.

### BODILY-KINESTHETIC INTELLIGENCE

As a man who has excelled throughout his life in traditional tests of intelligence and struggled in athletics, this concept of a bodily-kinesthetic intelligence fascinates me. The author delineates two capacities as comprising this intelligence, "control of one's bodily motions and capacity to handle objects skillfully." In furtherance of definition-by-example the author offers these occupations as masters of this intelligence: dancers, swimmers, artisans, ballplayers, instrumentalists, inventors, actors, and even the famous mime Marcel Marceau. He says, "skilled use of one's body has been important in the history of the species for thousands if not millions, of years. In speaking of masterful use of the body, it is natural to think of the Greeks, and there is a sense in which this form of intelligence



reached its apogee in the West during the Classical Era."

The author goes on to quote novelist Norman Mailer who relates prizefighting as a form of bodily-kinesthetic intelligence: "There are languages other than words, language of symbol and languages of nature. There are languages of the body, and prizefighting is one of them. A prizefighter... speaks with a command of the body which is as detached, subtle, and comprehensive in its intelligence as any exercise of the mind. [He expresses] himself with wit, style, and an aesthetic flair for surprise when he boxes with his body. Boxing is a dialogue between bodies, [it] is a rapid debate between two sets of intelligences." [Lowe, B., *The Beauty of Sport: A Cross-Disciplinary Inquiry* (Englewood Cliffs, NJ: Prentice-Hall, 1977), p. 255]

While the movement of bodies engages a broad swath of our brains and nervous system, it is considered less of a "high cortical function." Where the other intelligences we've covered are located in the cerebral cortex, the part of our brains that is the latest and largest portion in evolutionary terms, the bodily-kinesthetic intelligence relies on lower, more primal, brain locales. The cerebellum, the basal ganglia, and the thalamus are the motor cortex that execute muscular movements via the spinal cord.

Just as localized brain damage causes aphasia, dyslexia, and amusia, it is possible for patients to suffer from apraxia. An apraxia is any one of a "set of related disorders, in which an individual who is physically capable of carrying out a set of motor sequences, and cognitively capable of understanding a request to do so, is nonetheless unable to carry them out in the proper order or in a proper manner." These apraxias may be a limb-kinetic apraxia which results in an inability to use one of the hands. Ideomotor apraxia results in clumsy execution of actions and use of a body part as an object, ie.: when pretending to cut with a saw, the patient will "saw" with the edge of their hand rather than pantomiming grasping a saw handle. [Edith Kaplan in an anecdote personally shared with the author, February 1975] In ideational apraxia the patient has difficulty performing a series of actions smoothly and in order.

As our author held poets up to be the acme of linguistic intelligence, he does the same with dancers in bodily-kinesthetic intelligence. This seems fairly obvious. One must have more than physical strength and stamina to be a good dancer; a dancer must have a feel for the position of their own body that is par excellence. The feedback of the muscles allow the brain to know the body's location in space. Athletes are also highest in this form of intelligence, and just like traditional



"heady" intelligences, athletics requires study as practice. NHL pro Wayne Gretzky says, "Nine out of ten people think what I do is instinct... It isn't. Nobody would ever say a doctor had learned his profession by instinct; yet in my own way I've spent almost as much time studying hockey as a med student puts in studying medicine." [Gzowski, P., "The Great Gretzky," Inside Sports 3:90-96 (Nov. 1981)]

The Bodily-Kinesthetic Intelligence doesn't apply only to gross bodily movements, but also to fine motor skills. The text gives examples of the typist, the juggler, the chess player and the computer programmer. These are examples of fine motor skill and use of bodily-kinesthetic intelligence; I would add examples of the diamond cutter, one who ties flyfishing lures, and the whittler. While some would call these skills art, I might argue that a person who lacked a proclivity to these skills would never engage in them. This falls into the same category that short people generally don't gravitate toward the NBA, and those who lack linguistic intelligence don't become poets and those who lack an innate congenital supremacy of logical-mathematical intelligence don't take up theoretical physics.

The text has well established the bodily-kinesthetic intelligence through evidence of unequal distribution in the population and demonstration of specific location in the brain.

### THE PERSONAL INTELLIGENCES

The Interpersonal and Intrapersonal Intelligences are discussed together in the text, deliberately juxtaposed for clarity as they are similar but for their locus of attention. The Interpersonal Intelligence core capacity is defined as "the ability to notice and make distinctions among other individuals, and in particular, among their moods, temperments, motivations, and intentions." The Intrapersonal Intelligence core capacity is defined as "access to one's own feeling life -- one's range of affects on emotions: the capacity instantly to effect discriminations among these feelings and, eventually, to label them, to enmesh them in symbolic codes, to draw upon them as a means of understanding and guiding one's behavior." These intelligences are deeply intertwined with emotion.

The author says, "Whereas each of our other intelligences has been comfortably discussed independently of the others, I have here linked two forms of intelligence. To be sure each form has its own pull, with the intrapersonal intelligence involved chiefly in an individual's examination and knowledge of his own feelings, while the interpersonal intelligence looks outward, toward the behavior, feelings, and motivations of other. Moreover, as we shall see, each form has its characteristic



neurological representation and pattern of breakdown. The reason, then, for treating them together is chiefly expositional. In the course of development, these two forms of knowledge are intimately intermingled in any culture, with knowledge of one's own person perennially dependant upon the ability to apply lessons learned from the observation of other people, while knowledge of others draws upon the internal discriminations the individual routinely makes."

These forms of personal intelligence are more prevalent in some individuals compared to others. We all know someone in our lives who is really empathetic and always seems to know how the people around her feel. Often in the same person, but not necessarily, war are familiar with those who seem to be keenly aware of themselves, who are more attuned to their own feelings. As with the other intelligences, some people excel at the skills that having a greater level of personal intelligence permits.

Also, what we've learned about the other intelligences, the personal intelligences are located in a specific area of the brain. A damaged pre-frontal cortex results in an individual who is no longer recognizable as the "same person." Effectively, the individual's identity exists in the pre-frontal cortex.

The text gives us an example of a soldier wounded in World War II named Zasetsky. This man was severely crippled by an injury to his left parietal-occipital lobe; he was unable to write words, hammer a nail, do basic chores, perform simple additions of two digits, or see anything in his right-hand visual field. Despite these symptoms of his injury, he retained his "will, desire, sensitivity to experience, and the treasured ability to form and sustain plans and carry through as effectively as his condition permitted." [Luria, A.R., *The Man With a Shattered World: The History of a Brain Wound*. Lynn Solotaroff, trans. (New York: Basic Books, 1972)] Having not suffered injury to his prefrontal cortex, Zasetsky retained his sense of self.

Contrast this to the example of Phineas Gage, which was not offered in this text but is a familiar case to me and very well known to the field; oft-referenced in the literature. In 1848, Phineas Gage suffered an injury wherein his skull was impaled by a railroad spike while he labored as a railroad worker. The spike went through his face into his brain, injuring his prefrontal cortex. He survived. However, his personality did not. Known as a congenial man before, following the injury he became notably rude. To his friends, family and co-workers, he was no longer the "same person." [Hodges, J. "An Odd Kind of Fame: Stories of Phineas Gage." *Journal of Neurology, Neurosurgery and Psychology* 71(1):136 (2001)]



The injury to the prefrontal cortex, where the intrapersonal intelligence is located, destroyed Phineas Gage's sense of self.

There exists a common pathology that hampers the Interpersonal Intelligence, which is autism. Autistic people are largely spared impaired competency in other intelligences. Indeed, many autistic people have superior intelligence, especially in music or mathematics, even to the extent of being "idiot savants." Notwithstanding, these cases result in symptoms "defined by an inability to communicate with others and by so impaired a sense of self that the [individual] has singular difficulties in deploying the words 'I' and 'me.'" [Rimland, B., *Infantile Autism* (New York: Appleton-Century-Crofts, 1964)]

The text also offers us the dichotomy of Alzheimer's Disease and Pick's Disease. These are two forms of presenile dementia. In Alzheimer's, there is marked breakdown of the linguistic, logical, and spatial intelligences. Meanwhile, the patient maintains personal grooming, social norms, and is apologetic for other mental failures. Contrarily, in Pick's Disease, which is oriented more toward the frontal lobes, patients have a "rapid loss of social appropriateness, a symptom picture more reminiscent of the irascible forms of frontal lobe pathology." [Shattered Mind, supra, ch. 7]

The author has offered ample evidence to support his assertion that there does exist a pair of personal intelligences, the interpersonal and intrapersonal. Because these intelligences can be shown to exist in a unique location in the brain, and exist separately from the other intelligences, their existence can be considered to be proven.

### CONCLUSION

This text was chosen for this course in order to explore intelligence testing more deeply -- a deliberate counterpoint to the general intelligence theory of intelligence. The IQ test of today primarily is predictive of success in a school setting. This is attributed to the fact that in all likelihood it tests not "g" but rather a composite of the linguistic and logical-mathematical intelligences. In school, we learn to read and then read to learn. Reading is driven by linguistic intelligence. Our logical-mathematical intelligence lends itself to the remainder of a school curriculum. Our text gives an example of an individual who tests at a genius level in IQ having lost his entire frontal lobes. Such a person would be completely inept in the world at large, but would be highly capable in a school setting.

The biggest takeaway from the text's analysis was that where an intelligence



can be shown to exist in isolation to other intelligences and to be localized to a unique portion of the brain, that this is the evidence needed to include it as one of the intelligences.

The author conceded in his book that the idea of multiple intelligences was not original at the time he developed his theory. He also stated that his particular list of seven was not necessarily exhaustive or certain. He left the possibility for addition or amendment to his list of intelligences open. He even went so far as to mention the suggestion of a possible spiritual intelligence.



