FORGET THE BELL CURVE!

A Simple Practical Way to Improve Education and Overcome the Achievement Gap of Racial Minorities

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Acknowledgements

My first acknowledgement is to my wife of forty-two years, Ann. Without her this book would never have been written. She is one of the few people in the world who has always had full faith in my idea and that my project could have a beneficial effect for other people.

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Doug knows his computers even though I seem to be too old to learn any electronic technology new tricks. Microsoft Word seems like a devil to me and without him I would not have been able to tame it.

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And I knew Donna Garner by email contact long before we had the chance to become telephone friends, too. Donna has done many years of teaching from fifth-grade through high school. Her main teaching interests have been Spanish and high school English. Donna is the author of the Texas Alternative Document, which almost made it through a vote of the Texas School Board to edge out the more progressive curriculum it still has. It was Donna who helped me understand just how convoluted the relationship between politics and education reform can be. She has also traveled all around our country as an appointee on the Federal Commission to study the education of the children of migrant farm workers. Donna has been laboring forever it seems to help make life better for everyone.

Kate Gladstone of Albany, New York, and I have been co-subscribers on a number of listservs. Kate is a professional handwriting remedialist and an expert on the subject of how to teach people to write. One poll I read somewhere showed that almost all kindergarten and first-grade teachers feel they are inadequately instructed on this subject in education school. Kate and

I have chatted many times on the telephone. She graciously shared her valuable knowledge with the other members of the *k1writing* project and this help was most valuable.

I met Kate in person when she came to Atlanta to make presentations to the physicians of the local Kaiser Permanente group in 2003. She was invited to come help the doctors ashamed of their illegible chicken scratch. Communicating with Kate showed me how much there is to know about how to teaching writing. Kate favors a fantastically logical alternative to the traditional "school cursive" that children learn in the third-grade. Some day everyone will be writing her way. Anyone who would like Kate to present at their own school district should see her website at https://www.handwritingrepair.info.

It was also Kate who put me in contact with Susan Bowen, editor of Pen World International Magazine based in Houston. I have had both email and telephone contact with Susan who visited Libby Rhoden's classroom in nearby Pasadena, witnessed Libby's teaching techniques, and wrote an article on it in the December 2003 issue of her magazine. I believe this is history's first published article describing a teaching technique for youngsters involving directly measuring the fluency of pupils' printing skills, and the relationship between teaching penmanship and teaching literacy.

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Chapter One – The Bell Curve

Richard J. Herrnstein and Charles Murray published the hardcover version of their famous book, *The Bell Curve,* in 1994. My copy of the First Free Press Paperback edition has a quotation by Michael Novak of the National Review on the front cover. In bright white letters on a black background it flashes this line: "Our intellectual landscape has been disrupted by the equivalent of an earthquake."

Yes, it was sort of an earthquake. The book made a big splash and stimulated much discussion before its subject became politically incorrect and discussion fell off into silence. But most literate members of the disadvantaged minorities it slandered still remember its message well.

I was scandalized upon my own reading of this book. Rather than an earthquake analogy, I considered it a literary volcanic eruption with the potential of spewing enough intellectual ash into the atmosphere to produce a dangerous philosophical night around the globe.

There is a theory that a real volcanic eruption eon ago had something to do with the disappearance of some dinosaur species. But it is an ill wind that blows no good. Just as the rampaging and murderous hoards of Mongols under Genghis Khan achieved the unintended beneficial effect of destabilizing medieval European culture and helping to make the Renaissance possible, the publication of *The Bell Curve* will hopefully help bring on the fresh scrutiny of the issue it studies and will make true social progress throughout the world a reality.

The book, including footnotes and an index, is the better part of 900 pages long. It requires concentration and time to read the whole thing carefully enough to understand the authors' message exactly.

A brief overview of the sections, 22 chapters and Afterward of the book will give readers a sufficient feeling for its contents. The four sections are titled, "The Emergence of a Cognitive Elite," "Cognitive Classes and Social Behavior," "The National Context," and "Living Together."

In the first chapter it is pointed out America's education system has been stratified according to the level of intelligence represented by Spearman's famous "g". In the universities since the 1950s the very brightest students have become segregated into a relatively small number of elite schools. The mean IQs of graduates from these universities are higher than those of average colleges and much higher than those of the college-age population in general.

The second chapter describes how occupations have also become stratified on the basis of intelligence, which the authors generally refer to as "cognitive ability" throughout the book. Physicians, attorneys and other professionals tend to be of much higher intelligence than members of less intellectually demanding occupations.

The third chapter explains how the economic realities of the twentieth century have driven this Balkanization of society. Smart people are more productive. The bottom line drives our world as it presently is, and intelligence is what determines the bottom line.

The fourth chapter describes how it is becoming more and more difficult for those with lower intelligences to have successful and rewarding careers and lives. More than ever before, social success is determined by genes rather than by the luck or accident of birth into a successful family. The authors report that identical twins tend to have almost identical intelligences, but although the proportionate contributions of genetics and environment to intelligence have not been definitively finalized, it is definitely a disadvantage to be conceived without genes for high intelligence.

The fifth chapter documents how poverty is basically the result of poor genes. And one cannot change one's genes.

Then sequential chapters describe, in voluminous statistical detail, how schooling, unemployment, job injuries and disability compensation, family structure, welfare dependency, quality parenting, tendencies to crime and violence and the level of social civility and good citizenship are all massively correlated with intelligence.

The third section of the book is titled, "The National Context." Its chapters delineate the social effects of low intelligence on the pressing national social problems associated with the emergence and growth of a cognitive underclass.

This section of the book also contains a discussion of the sensitive issue of differences in intelligence between different ethnic groups. The IQ of the average white American is 100. That is not due to a coincidence, because IQ tests are designed to give that result.

The average intelligence of blacks is about one full standard deviation lower than that of whites. The average black citizen has intelligence equal to or higher than only sixteen percent of white Americans.

For those of Ashkenazi or European Jewish ancestry, the average intelligence is somewhere in the range of another full standard deviation above that of non-Jewish whites. East Asians such as Chinese and Japanese have about the same IQs as whites, though the mathematical component tends to be higher and the verbal scores correspondingly lower.

The average intelligence of Latino immigrants is more difficult to ascertain. This group is racially heterogeneous and many Latinos have varying amounts of American Indian ancestry.

The authors conclude the third section of the book by emphasizing how the worst social problems of our time tend to be problems of the less intelligent stratum of our society. At this point the book begins its primary philosophical and political message. It is titled, "Living Together." The message throughout the rest of the book is we make a terrible mistake in falsely assuming members of all races are equally capable of developing and capitalizing on the level of high intelligence necessary to partake in the modern American dream.

They go into detail about how schooling cannot help raise IQ. Although not specifically stated in these words, the message seems to be "biology is destiny," even if environmental and educational efforts make some component contribution to the final intelligence of a citizen.

The authors then prescribe an equal treatment of all individuals irrespective of race or ethnicity. They point out affirmative action only helps the blacks lucky enough to have been born with relatively higher intelligence than average for their race.

With regard to education, they favor shifting money away from ineffective programs trying to educate the less intelligent and diverting it to helping the gifted achieve their full potential. They will be tomorrow's leaders and they require education designed at making them compassionate and wise as well as at making them academically successful.

The book claims "dumbed down" education is actually better for the less intelligent students. It is the cognitively elite students who are damaged by the expectation education could possibly have equal results for all children.

The authors specifically state that only a minority of children are capable of being "well educated" in the traditional sense of the term. They believe attempts at raising low intelligence are actually harmful to the less intelligent. In support they cite a study, which showed black infants adopted by whites shortly after birth in the north central United States actually grow up with lower intelligences than blacks raised by blacks in that area.

Murray and the late Herrnstein predicted dire consequences for our society if their recommendations are not heeded. As the cognitive gap in society widens as a result of our continued tacit beliefs and the continued influx of lower-intelligence immigrants, hatred and

hostility between the different social classes will increase. Our Democracy will disappear and be replaced by a hideous totalitarian dictatorship.

To avoid this, the authors want a modification of the Jeffersonian assumption that all men are created cognitively equal. Jefferson's declaration of all men being created equal was tactically imperative as a rationalization for a war against an aristocratic colonial power but the authors prefer to accept a modified definition of equality. What should be equal, they proclaim, is that society should provide each individual to live a life of dignity even if many unintelligent citizens cannot be educated, trusted to handle money, be able to produce as much wealth as they consume during their lifetimes or participate in the complex and weighty decisions of statecraft.

At the end of my edition is a new Afterward written by Charles Murray in 1995. Although the book is prefaced by a quotation of Edmund Burke, the darling of conservative thinkers, stating that virtue depends on knowledge, Murray's main message here is one of surprise his book has been interpreted as representing right wing political philosophy.

Murray actually expected to be received as a Leftist, espousing a "Rawlsian" view of social ethics. John Rawls, author of *A Theory of Justice*, has been one of the most influential social thinkers and writers of the 20th century.

Aristotle pointed out in his *Politics*, men leave their hypothetical state of freedom in nature and join into the partial subjugation of society not only to survive, but also to survive and live well. Aristotle taught that the governance of a society should be no problem in theory, because all men predictably agree the guiding principle of society should be that each individual gets his due. The practical problem arises, according to Aristotle, because "each of us tends to over-estimate the value of our own just due."

He also pointed out there would always be differences of opinion as to which course of action would be in the best interest of a society as a whole at any given point in time. Although *Politics* is a bit complicated to read for those of us more familiar with a different more modern world than Aristotle's, his summary conclusion seemed to be that rule by a voting majority, as it had been done in the Athens of Pericles, was for all its shortcomings the best way to go.

Aristotle ends his classic treatise on governance with a chapter on the importance of teaching music to children. According to him, a person's character and virtues are determined to a great extent by the type of music a child is exposed to and learns to enjoy. This is a most interesting chapter. It is not probable that human nature has changed much in the two millennia since Aristotle.

The great Polish composer, patriot and concert pianist, Ignaz Jan Paderewski, wrote not that long ago that in order to be a successful creative artist one must be well cultured and educated, having deeply studied art, science, geography and philosophy. It is surprising how many great concert pianists have also been fluent in a number of different foreign languages.

Rawls disagreed with Aristotle. Believing success and quality of existence would differ among individuals, depending on the luck of their intelligence genes, he suggested a modification of the suggestion a constitution should be based on majority vote.

The key to the ideally ethical constitution, wrote Rawls, "would be determined by a majority of voters taken before they themselves knew how intelligent they would after their births." In quoting Rawls, most people refer to this principle as "the veil of ignorance."

I personally view Murray's politics as more left wing than right. It was from Karl Marx's *Communist Manifesto* that emerged the dictum, "From each according to his ability – to each according to his need."

Now having summarized *The Bell Curve* for the reader, I will use the remainder of this book to explore an alternative outlook diametrically opposed to that of Herrnstein and Murray.

I will describe, the best I can, how modern educational philosophy has evolved from moral, political and psychological philosophy throughout the centuries. I will review this subject and present what I believe to be a more future oriented and appropriate alternative to these ideas, which presently frustrate our social progress and our current system of education.

Chapter Two – The Origin of This Idea

The philosophy outlined in *The Bell Curve* is by no means new. The first major writer to describe it systematically was Plato in *The Republic*. Plato described how Socrates had spoken of an ideal hypothetical society. Dictatorial powers would be given to the man who proved himself most naturally adept at civic leadership. Normal citizens were not considered wise or intelligent enough to participate in government, and their "philosopher king" would have to resort to subterfuge and the popularization of "myths" to get his subjects to accept the bizarre rules necessary to maintain such a state.

Aristotle, in his *Politics*, devoted several pages to denigrating Plato's proposal, which included the abolition of private property. At the end of his comments Aristotle added the question was moot because no society of men would ever willingly adopt so unfeasible a program as Plato's. Aristotle would have remained correct, but he did not foresee that in the distant future there would be the concomitant appearance of the Industrial Revolution and the abolition of slavery.

Plato was the world's first proponent of communism, but even he admitted such a society would be impossible with mature adults. Many people now dismiss philosophy altogether as incomprehensible and unwise. Plato wrote many other more intelligent essays. Besides his famous dialogues, his *Symposium* stands as one of the most brilliantly prescient in the history of literature.

Plato also wrote in his *Republic* that philosophy is essential for any society. To the critics of philosophy, he offered the analogy of the ship's navigator.

On a ship at sea any observer can immediately see every sailor on board has an obvious and important task. The sole exception is the navigator. Instead of doing anything helpful, he stands and stares at the sea, the winds, the sun and the stars. Yet without the skillful guidance of an expert navigator, no seagoing vessel would ever reach its destination.

Philosophy is simply the love of truth. Any of us with an opinion about the way affairs in general should be conducted may be said to be a philosopher. We are all philosophers and we all equally want our society to be governed by truth. But as George Orwell, author of *Animal Farm* observed, all animals are equal but some are more equal than others.

Psychology and philosophy are intimately related and intertwined. Philosophers seek truth and throughout history their main goal has been to seek the ideal system of ethics upon which to found a society. Most tried to find a non-religious foundation.

Thinking about morality and society must involve a basic view of who people are, how they gain knowledge, how they treat one another and what instincts they have. Psychology is by definition the study of the psyche, mind, or soul.

Up until about the end of the Second World War the major psychologists actually did try to figure out human nature by thoughtful and scientific investigation of the nature of the mind. I believe modern psychology is not at all scientific. It is a science waiting to be born. Twentieth century psychology has the situation exactly backwards. It is now common gospel that human nature is malleable, but that inherent intelligence varies from individual to individual and is immutable. The opposite is actually true but this distortion is logically necessary to support the

view some are born to rule and others are born to follow orders and to have their opinions molded by their intellectual superiors.

During the past sixty years there has been a strange pulling back from this quest. The emphasis has since not been the elucidation of human nature, but rather, it has been on forming systems of analysis which justify the preconceived political views of the respective writers. It is authoritatively claimed that twentieth-century philosophy is nothing more than a bankrupt salad of nonsense. With its advent all of the humanities represented in universities have followed philosophy into the morass of mindlessness. One existentialist modern philosopher wrote nonsense like, "The concept of non-being itself disproves the existence of the concept of nothing." Modern music and so-called modern art, along with popular music and culture, have followed the social sciences into the abyss.

As many have written, all of philosophy is nothing but footnotes to Plato and Aristotle. In the time of Henry VIII, Sir Thomas Moore wrote an updated version of Plato's *Republic* in his *Utopia*.

Plato and Moore are still read by those with an inclination to such literature. But in spite of their historical contributions to modern thought the most important writer of modern times was Jean-Jacque Rousseau (1712-78).

Rousseau was a genius. He was a musician and composer who some believe to have influenced the composition of Mozart. He was an associate and companion of a number of the great French encyclopedists of the era and he came close to having been selected to write an encyclopedia entry on music which would have wisely recommended the abandonment of the French system of naming scale notes in favor of the British.

Rousseau is best remembered for his *On The Social Contract*, a murky and difficult tome in which he recommended the guiding principle in government should be finding and acting in accordance with the "general will." He did not mean majority rule as determined by open elections. The "general will" meant what the people would desire if they were as smart as their brainy rulers. Elections were certainly to be held, but only after the leaders of the society had assured themselves they had convinced the public to vote in accordance with their own thinking.

This is reminiscent of the communist concept of "brain washing" and was referred to by Rousseau as "the hidden hand of the government." In this work Rousseau also prescribes that the individuals who dissent from the will of the state must be executed. Rousseau also outlined a "civil religion" to instill the virtues of altruism and support of the state into citizens. His book was so influential that Louis XVI specifically blamed the revolution on Voltaire and Rousseau before his execution. And for a while in the 1790s the revolutionary government of France, after guillotining about 60,000 innocent people, actually did attempt to institute an official state civil religion.

In *On the Origins of the Inequalities of Man,* Rousseau reveals all of society's ills can be traced back to the original invention of the concept of private property. In this book he also states the attraction and affection of a man toward a specific woman is unnatural. Natural men, he asserted, have a sex drive, but the specific identity of the woman has nothing to do with the gratification one derives from the sex act. To Rousseau, the whole trick of discovering human nature was to figure out what "natural man" was like.

Reading the above well-known treatises is difficult and confusing. If one wants to clearly understand Rousseau's psychology and political philosophy, it is necessary to read his *Emile: or On Education*. I think this was the first modern book to give intellectuals the idea socialism and communism were the way to go.

This book definitely is the source of ideas from a pragmatist and educational philosopher, John Dewey, and all the progressive education theories that followed. In his book, Rousseau

wrote that goodness is in the child, you just have to be nice to him, stand back and let the sun shine. He wrote he didn't care if students still couldn't read by the time they were fifteen.

Like Dewey, Rousseau taught that the only education children require was derived from the simple experiences of rural life.

The late Allan Bloom, one of our great minds of the 20th century, translated *Emile* into English in 1979. It is available in paperback and is essential reading for anyone who would like to fully understand modern political and educational philosophy.

Rousseau reveals in this book his goal is to update Plato and to make *The Republic* into a modern reality. According to Bloom *Emile* is the most influential book ever written. This book gave impetus to the subsequent and influential writings of Kant, Hegel and Marx. One might add it also gave rise to Schopenhauer, Nietzsche and Hitler in Europe, and to Ralph Waldo Emerson, David Thoreau, Charles Peirce, and John Dewey in America.

Modern ethologists understand there is a "parliament of emotions" governing animal and human behavior. Such instinctual emotions include aggressiveness, hopefulness, status seeking, nurturance, pair bonding, and etcetera.

But Rousseau believed there was only one instinctual and God-given emotion, and it was the natural drive toward a loving and selfless effort to benefit other people. According to him, all other less desirable human traits were wholly the result of the evil influence of human society. He believed people are happier dead than alive, so his proposed execution of those unfit for society did not seem like much of a punishment to him.

He dictated children must not be raised in towns. The French word *bourg* means a town larger than a hamlet. Rousseau raged against "bourgeois values" and was the first writer in history to do so.

Most of the points in Marx's *Communist Manifesto* actually are contained in *Emile*. In the killing field of Cambodia, the executed victims had been forcibly evacuated from the nation's cities. Any sign of lack of selflessness was a capital offense and about one third of the population of the country died. The motive for this was Karl Marx's idea the population should leave cities and live in rural communes. This is where the idea came from Marx, but the philosophy came from Rousseau's *Emile*.

The modern idea of progressive education, now dominant in the schools of much of the world, comes straight from Rousseau. All education was to be "natural" and aimed at fostering the natural altruistic tendencies polluted by a materialistic and commercial society.

Rousseau felt children should be educated by allowing them to do what they wanted to do, and learned to enjoy doing under the ever-watchful eye of the teacher, who should be the child's father. He believed the sole natural function of woman is to serve man. This may have reflected the view of France's Shakespearean author, Racine, who had lived in the preceding century and had written, "The goal of all women is to be pleasing."

There may be some biological truth in Rousseau's belief about women. The male secondary sexual characteristics acquired in adolescence (broad shoulders, trapezoidal shapes of face and torso) instinctively signify dominance to all human eyes. The heart-shapes repeated in a woman's face and torso are the same as the Asian symbolic lotus leaf. Both symbolically represent the desirable, the true and the eternal.

It is probable that these secondary sexual characteristics underlie the human mating instinct. The instinct would dictate that strong, dominant and protective male gets desirable, beautiful female. The instinct is probably common to all humans, even though knowledge of one's own sex is not instinctively known at birth, and must be learned.

It has been noted that our schools are set up to conform to the personality needs of little girls, and that boys have difficulty succeeding at school unless they first succeed at learning to

act like little girls. This is a fertile area of research, which may change the way we decide to organize education.

In 1992, Steven Goldberg wrote, *Why Men Rule: A Theory of Male Dominance*. In this book he reports that all societies ever studied carefully were ruled by men. He did extensive research on the many reports of exceptions to this rule, and found none of them to be historically adequately validated. Even in ostensible matriarchal societies it is always men in the background who wield the real power. Goldberg's provocative thesis made a stir for a while and then receded under the surface of contemporary feminist ideology.

That particular idea was certainly not consistent with Marx or with our contemporary "politically correct" ways of thinking. Perhaps that's why Rousseau is not given due credit for his historical contribution.

Rousseau did not believe writing and reading should be taught specifically. He believed if children were going to pick it up, they would do so spontaneously. This is exactly the feeling underlying the recent "whole language" idea of progressive education.

Like the Americans, Emerson and Dewey, he did not believe education should involve the required reading of specific books. He would only recommend the novel *Robinson Crusoe*, and he wrote he wouldn't mind if students were still unable to read at the age of fifteen.

Rousseau's educational philosophy could be summed up by the dictum, "Never teach the child anything, but make sure he never learns anything you don't want him to learn." This is exactly the educational philosophy of communist countries.

The most influential philosophical psychologist in America was B. F. Skinner. He was an avid Maoist Communist and his principle psychological idea was that individuals don't have minds. Not ones worth mentioning, anyway. This is a figure admired by the *Bell Curve* authors, even as they misinterpret Skinner's thought. Skinner was a self-proclaimed Maoist Communist and wrote a novel, *Walden Two*, detailing how he believed the ideal communist community could be organized. Skinner happened to be an arch critic of progressive education. But contrary to Murray and Herrnstein's contention, Skinner by no means insisted on the "malleability" of IQ. The fact is Skinner openly wrote it is not possible to determine how much of intelligence is innate. He just favored a collectivist approach to society, which could have come straight from Rousseau's *Emile, or On Education.*

In the 1940s Skinner wrote a description of his own plan for the ideal communist community. In the preface to a revised addition, which appeared in the 1970s, he wrote he has stopped admiring the Soviet version of communism because it had "become too materialistic". He wrote he had therefore come to favor the Chinese variety.

Although Skinner personally hated modern American progressive education because it fails to educate our youngsters, in his book he describes a social organization and method of educating the elite of a communist community in a way equally consistent with Rousseau or Dewey.

Rousseau's philosophy is particularly deeply ingrained in France. The great literary figure and once president of the French Academy, Bernadin de Saint-Pierre, was an associate and disciple of Rousseau's.

Saint-Pierre wrote a novelette called *Paul et Virginie,* which is an enduring classic of French literature read by anyone educated in France's upper echelon schools. It is the fictional story of a young man and woman who are raised together on a remote and exotic tropical island in the Indian Ocean. They are raised in strict accordance with Rousseau's prescriptions and grow to become ideally selfless and altruistic adults. Saint-Pierre also wrote other works of fiction reinforcing Rousseau's views.

In September 2004, the well-known French television personality and political commentator, Claude Imbert, gave an address in Atlanta, which I attended. Unlike many French he is politically conservative and began his journalistic career covering the war in Algeria. During his lecture he pointed out the French claim of Algerian territory neglected the fact the country was inhabited by Algerians even before it was colonized by the French.

Imbert said the French are almost uniformly proud of their history and proud of their revolution, even though the revolution itself was hardly an admirable event. He believes the French want others to recognize their achievements and to emulate their revolution. He explained that when the Russian peasants revolted in 1917 and established communism, a major modern nation had actually done this. Because of this the French people tend to equate Yasser Arafat and Che Guevara with Lenin and with goodness, and to equate George W. Bush and the leaders of Israel with Hitler and with evil.

In the twentieth century, Maurice Mauriac, 1952 winner of the Nobel Prize for literature, wrote the charming novelette *Le Drôle*. In it a notorious "enfant terrible" is tamed, motivated and set squarely on the road to becoming well educated by the sage private teacher hired by his parents, Mademoiselle Thibaud.

The best way to teach things to school children is to first decide what is to be taught, and then teach it, and thereafter check to make sure the student has learned the lesson. That is not rocket science, but Mauriac has the teacher in his work demonstrate that teaching often is a matter of wisely winning a child instead of driving him.

Our society is using Rousseau's philosophy and Rousseau's methods. We must learn to use Mlle. Thibaud's, instead.

Chapter Three – The Will to Believe

While listening to National Public Radio yesterday I heard a woman read an essay she had written for the "In This I Believe" contest. She wrote a list of reasons she decided why to suppress her annoyance at the rude and aggressive driving of pizza delivery vehicles on the highways. She believes the drivers of such vehicles symbolize the personal qualities we should admire in all good citizens. For instance, they work for a living and are not on welfare, they ask for little out of life except for the right to make a modest honest living while waiting for fate to deliver them a more generous livelihood. They never manipulate the paper values of large corporations in order to become fabulously wealthy at the expense of thousands of employees and their retirement funds.

According to this essay winner, each individual needs and deserves a dignified life irrespective of how productive they are in the market economy. She crystallizes the essence of modern civic values.

The shibboleth of contemporary American society is "the celebration of diversity." In times past Americans typically emphasized their cultural and national unity, but no more. Our collective mind has been poisoned by Rousseau.

There is diversity among school students only in one significant way. Some students are being successfully educated and many others are not. Since this is today's diversity, we should stop celebrating it and get rid of it.

Back toward the end of the nineteenth century, William James (1842-1910), became the father of American psychology. He is famous for his "stream of consciousness" theory, although I have never been able to figure out exactly what that exactly means.

James also called for the acceptance of a new public philosophy, which he called "meliorism", or the campaign to make a better society. He believed men could be divided into two camps: The "hard hearted" and the "soft hearted".

The "hard hearted" are industrious, productive and business-like. The problem with them is they tend to be self-centered and consider their own individual lives to be more important than the good of society as a whole. The "soft hearted" are willing to be content with just an adequate material standard of living, and they are willing to put in extra effort to lend a helping hand to the other guy and to be concerned more with the common good of society. James wanted to make us all soft hearted.

John Dewey almost concomitantly also sought to radically reform capitalist society with a new philosophy of his own. He called his "pragmatism".

Dewey is most famous for his education philosophy. As the head of the philosophy department at Columbia University, his major contribution to history and to thought was actually as a moral philosopher.

Dewey dwelt heavily on the conception of truth. The standard understanding of truth had been the scientific definition provided in the early seventeenth century by Sir Francis Bacon. Bacon ushered in our modern scientific era by stating truth could be ascertained by doing objective observations of the phenomena of nature. Such studies must give statistically valid results, which are reproducible by different disinterested experimenters. We may never be able

to know the absolute truth known only to God, but by degrees through science, we will get closer and closer to it.

Dewey is often quoted as having said, "There is no such thing as truth." That is not exactly what he said. That would have been tantamount to publicly denying the existence of God, and Dewey was even too timid at that point in his life to publicly admit his socialist leanings.

Instead Dewey offered a new way of defining truth. He accepted that certain things could clearly be demonstrated to be scientifically valid and therefore as true. Things fall downward, not upward. Water freezes at 32 degrees Fahrenheit and boils at 212.

Just as some things are obviously true, certain others are certainly false. The moon is not made of green cheese. There is not a pot of gold at the end of each rainbow.

But Dewey's main idea about truth involved propositions neither in one of these clear categories nor in the other. There are certain propositions, which have at the present time not yet been scientifically proven to be either right or wrong. Dewey proposed we should give propositions in this third zone the effective value of true statements if we find them to be practically helpful toward achieving our desired goals.

Dewey and James collaborated in the promotion of the new philosophy of pragmatism. It was in light of this philosophy Dewey tried to use school philosophy as a tool of destroying capitalism and bringing in a new era of socialism.

James, in an essay on immortality, betrayed the same notion of pantheism that Emerson had in his earlier writings. James Peirce is considered an intellectual precursor of Dewey's, too. Peirce spent years trying to construct a logical philosophic foundation for Emerson's more intuitive pantheistic philosophy. (Pantheism is the idea that God is the "collective mind of mankind," an idea almost synonymous with the Romantic era then about a century old.)

The main difference between Dewey and James philosophically was the latter considered meliorism and pragmatism to be a new religion. Dewey believed his idea was "scientific" just as he considered the notion consciousness is a socially constructed entity and not something single individuals can possess. Karl Marx expressed the same belief.

James delivered a famous lecture titled, *The Will to Believe,* in which defended our intellectual right to accept religious beliefs on the basis of faith even if we cannot justify the beliefs by scientific method. That is fair enough.

But I think Dewey's thinking has a serious logical flaw. We don't need a new category for ideas, which are proposed but not yet tested. We call them suggestions or hypotheses. And as for whether are not they are useful or worthy of being desirable goals, that is something which can and should be tested according to Bacon's dicta. I strongly suspect Dewey was trying to argue with Aristotle's dismissal of Plato's collectivism. Dewey had the "will to believe" socialism would usher in a workers' paradise, but this was really a simple act of faith.

Dewey's pragmatism is actually more religion than social science. The idea of socialism has been tested in many countries in Europe and Asia. We already have proof of its worthlessness.

Rousseau's ideas were also more of a religious nature and the reader of *Emile* quickly learns Rousseau understood this. He talks constantly about the divine origin of human nature. There is a long chapter about what he learned from "The Savoyard Vicar."

Rousseau was born a Protestant in Geneva. He later lived for some years as the guest of a woman in the Savoy province town of Lescheraines, France, and he accepted her Catholicism.

Later in life he reconverted to Protestantism. Although he outlined a civil religion in *On the Social Contract*, in *Emile,* he concluded that each citizen does well to accept the particular religion of his forefathers.

I was raised Catholic but have not been a regular churchgoer in recent years. I consider myself a religious person and intend to begin practicing my religion formally in the near future.

That is not to say I accept the magical stories of the Bible. But as George Santayana wrote, "Christianity may be historically wrong, but it is morally right."

Besides, if humanity is going to cease to believe in God it would seem best to let the meekest and most suffering peoples decide that first. The rest of us can wait and see how they adjust to the change.

But I believe religion is for relating personally to the unknowable Almighty. I do not think it is a good idea to apply the tenets of any revealed religion to the affairs of politics.

Unfortunately, the world seems to be tending too much in that direction. Today's newspaper contains stories about the government investigating possible desecration of the Koran at Guantanamo and the arrest in Israel of several citizens charged with conspiring to blow up a mosque.

The world has had enough of this. Peter Farb wrote a most informative book about the mores and life styles of the various indigenous pre-Columbian Indian tribes of North America. It turns out that mores, social customs, and even religions throughout the world can be fairly reliably predicted just by knowing the technological level and population density of the various ethnic groups. These in turn determine the type of social organization or government of each. He illustrates this by giving examples of similar tribes throughout the Americas and shows how there are or were parallel groups on all the continents.

If Farb is right, it means our mores are actually controlled by our genes and instincts. We automatically shift belief systems and customs as we move upward from simple and ancient social organizations toward more complex ones.

It appears humanity is on the cusp of another historic quantum leap in social organization. We have passed from the tribal era to the era of nation states and are about to enter the era of the global village.

It is possible in the future the most common religion, whatever it will be called, will be based on the simple truth. In this world there are people who believe in acknowledging, respecting and worshipping some great unknowable entity in the universe. The only scientific question to be answered by individuals will be whether or not such belief adds to the quality of individual and social life, or whether it doesn't.

In 1991 Pope John Paul II issued an encyclical titled *centesimus annus*. In it he outlines the need to find an ethical basis for a future based neither on socialism nor the extreme form of consumerism. It is accessible on the Vatican website at www.vatican.va and is worth studying.

Chapter Four – Would Education Help?

I am a retired physician, a Board-Certified Internist, a graduate of Syracuse University for my undergraduate study and of the New York University School of Medicine at Bellevue Hospital in Manhattan for my medical education. I was blessed with excellent parents who I feel were smart, even though neither had a college degree. They married in the depths of the Great Depression and had values typical of their era. With their help I did well in school and I feel I did well in life. I practiced medicine ever since we medical students put on little white coats and entered Bellevue's clinical wards as third year students in 1961.

Since then I practiced medicine a total of 35 years. The final 27 years I spent in private medical practice in Patchogue on Long Island in New York State.

When I was a teenager, I spent two of my summer school vacations working on merchant ships traveling to South America. The first was an oil tanker registered in Liberia with a West Indian crew. The second summer I worked on a Swedish tramp freighter with a European crew. I was the only American on board and I had to learn to speak Spanish to talk to the members of the crew with whom I became friends.

I like reading about all sorts of things. In medicine my strongest areas were neurology and psychiatry. I can get along pretty well in Spanish, French and German. I have studied Swahili pretty hard, and know enough Russian and Italian to impress people from those countries I meet.

I retired from medical practice in 1996, at the age of 58. Since then I have been doing a lot of reading and a lot of thinking about the world we live in.

After having spent my life in contact with people of all races and many different nationalities I am of the strongest conviction that human beings are human beings. Observations of autopsies done at the New York City Medical Examiner's office on the grounds of our medical school taught me all human brains are the same color.

Now the traditional view for thousands of years has always been that some people are naturally better than others. "We" are always better than "they". As the genius Konrad Lorenz wrote years ago, "Humans tend to be humane but they also tend to view out groups as sub-human."

That certainly could be said about our country today. We are a nation of Caucasians, African-Americans, Hispanics, Asians, Indians and American Indians including millions of people with at least some American Indian racial heritage.

It seems to me our situation could at very best be described as a courteous standoff. We don't really like or respect each other very much, but we all want our rights assured.

The question now is whether this can change and if so, how? Would race relations in America improve dramatically if the average African-American child were just as well educated and as intelligent as the average white child?

Such is certainly not the situation today. The newspapers and Internet are full of articles and comments about the "achievement gap". According to a branch of the Federal government called National Assessment of Education Progress, 28 per cent of white American fourth-graders read with a comprehension level described at "below basic." That can only be translated as

"functionally illiterate." The corresponding percentage for African-American fourth-graders is 62%.

Reading comprehension scores closely correlate with the social futures of elementary school students. Prisoners incarcerated, people involved in arrests, violence, illegal drug use and single parenthood all have very high rates of academic and reading deficiencies in their pasts. In this the authors of *The Bell Curve* are quite right.

But millions of Americans believe even perfect success in closing the achievement gap, a subject now getting the highest political attention in the form of the administration's "No Child Left Behind" policy, would not help the unpleasant state of inter-race relations. Many people, including many educators I've communicated with, believe "our system requires victims." They believe capitalism and racism are both intertwined and so deeply ingrained in our society that nothing minorities could do would possibly help the social stresses they must live with. A friend of mine once put it: "Whitey just loves to keep his heel on the black man's neck."

I personally don't believe that, but different opinions are what make a horse race. The black comedian, Bill Cosby, is making an even bigger name for himself by publicly claiming, "Blacks have not kept their half of the bargain following Brown vs. the Board of Education."

African-American professor and author, John McWhorter, author of *Losing the Race: Self-Sabotage in Black America,* claims victimology has become part of the mind set of African Americans. He once remarked successful black Americans tend to believe they could have made themselves successful in America even without special help. But he claimed that many of those same successful black African-Americans harbor secret doubts about many other less fortunate blacks. If McWhorter is correct, then anti-black racism on the part of blacks is a serious social problem in this country.

I don't think it makes any difference whether he is right or not. In my own mind he is answering the wrong question.

The question should not be, "If the average black child were so well educated that there was no achievement gap, would that help the plight of their race?" Instead, we need only question whether such education would hurt their position in society.

The answer is it couldn't possibly hurt anyone. If one sees benefit in appearing uneducated, it is easy enough to play dumb. But it is hard to appear well educated if one is not.

The only other remaining question is, "Are blacks and Latinos inherently intellectually inferior or are they not?" The only way to answer that question is to try to educate them correctly and to find out what happens as a result.

Chapter Five – As the Twig is Inclined

There is an old saying, "As the twig is inclined, so grows the tree." This cliché could be applied to the education of children. Connie Juel of University of Texas at Austin did an academic study some years ago, which is often quoted in the education literature.

What her study found is that there is a correlation coefficient of 0.8 between how well children score on reading comprehension tests at the end of first-grade and how they score many years later. That roughly means if a child is a good reader at the end of first-grade there is an approximately eighty percent chance he will always be a good reader. And if the child is a poor reader at the end of first-grade there is only one chance in five he will ever be a good reader.

People tend to like to do the things the do well and not like to do the things they don't do well. My dad used to take my brother and me fishing when we were children. They caught fish and I didn't. They liked to fish and I still don't.

If children read well, they like to read. If they like to read when they are young, they read a lot. If they read a lot, they learn a lot, they get smart, and they do well in school.

Two years ago, President Bush proposed a plan for the education of preschool children in a speech at Pennsylvania State University. In this televised speech he said, "It has been shown that how well children read in the tenth-grade can be predicted, and predicted with amazing accuracy, just by knowing how well they knew their alphabet letters when they were in kindergarten." I doubt if the president thought that up by himself. I feel sure he had some experts from the department of education find that fact for him. If this general principle is correct, then educating children well and making them smart in elementary school is the key to making children good students in middle school, high school, college and life.

This is certainly not a new or unique idea. In 1987 E.D. Hirsch, Jr. published a book called *Cultural Literacy*. Hirsch is an emeritus professor of English at the University of Virginia in Charlotte, founded by Thomas Jefferson, one of the most prestigious universities in the United States. He himself is certainly well educated. His own area of expertise is the literature of the Romantic era of the early 1800s.

Hirsch first started teaching at a community college in Virginia. He was horrified to find most of the university students at the school could not identify the names Robert E. Lee and Ulysses S. Grant. This was particularly shocking to him because the state of Virginia had been the scene of much of the most horrific combat and carnage in our struggle to rid ourselves of the institution of slavery.

He kept wondering thereafter what had gone wrong with the education of students in America, and trying to devise a way to straighten things out. Apparently, he came to the same conclusion I came to years ago. The problem is, "We don't make it clear to our school students what it is they have to know in order to become well-educated."

Hirsch began to study the legally mandated school curricula in American school districts. He found they basically didn't specify that the children should learn any specific things at all. Everything is principle, but nothing is substance. The curricula tell teachers they should teach children to be "expressive," "analytical" and "to think for themselves." But they don't tell teachers in any particular grade that children must know who Alexander Hamilton was, which of America's rivers is the largest, or where Los Angeles is on a map.

Some years ago, Rita Kramer wrote a book called *Ed School Follies*. In order to write the book, she contacted over a dozen well known colleges of education across the country. She said she wanted to learn more about how future teachers are trained.

And chapter-by-chapter she gave readers the account of what she found at each college and university. To make the story simple, future teachers were being taught that students don't want or need skills and knowledge. What they should be taught it to "be good citizens."

During the years I practiced medicine I made it a habit to check out the knowledge level of my younger patients. I felt about the same way Hirsch did on his first job. Children and young adults didn't seem to know anything. I asked high school and older students when the Civil War had occurred, why the Second World War was fought, and how the United States came to be a free country in the first place. I even asked them on which continent we were standing. The ignorance was simply incredible.

In 1989 the National Geographic Society paid one million dollars to have a reputable polling firm do a study to find out how much Americans know about the geography of this planet we happen to inhabit. The ignorance was again staggering. The most blatant statistic to emerge from the study was that somewhat over fifty percent of American adults between the ages of 18 and 26 could not locate the United States on a map of the world.

My own favorite question was, "Where is England?" I didn't expect the exact latitude and longitude reply, but would have been satisfied with an answer like, "England is on an island near the coast of the European continent."

But generally, I got, "I have no idea." Many young people could not even say whether England is the name of a country or of a city. And a patient of mine who was a high school English teacher asked me, "Why is it so important they know where England is?" Another patient, a high school principal, asked me, "Doctor Rose, you certainly don't believe we teach students anything about wars, do you?"

E.D. Hirsch, Jr. came up with a reasonable solution to what should be taught in schools. In his book he wrote that in order to be well educated children must learn the things well-educated people know.

And he wrote it is not hard to figure out what educated people know. Writers who write things know what American readers know and what they don't know. Most American readers know a beech is a kind of a tree. But they don't know that beech trees have unusually smooth bark. If an American writer feels his readers must know that in to understand the text message, he will subtly slip the information into his text.

Hirsch said there are three kinds of words in the language of any country, including ours. The first level contains words any normal person who was raised here already knows. Everyone knows what a dog is, that grass is green and that red light means stop. There is no reason to teach children these things in school because children already know them. Most children will tell us much of the material they are required to learn in school is just a waste of time.

The third top layer of words is words used by highly trained specialists. Doctors know that the hamate bone is in the wrist, that the Circle of Willis distributes the arteries that nourish the brain, and that integument is another word for skin.

Doctors have to know what words like these are and mean because otherwise they wouldn't understand the articles in medical journals and textbooks. But the rest of the population has no need to memorize these words in order to be considered well-educated any more than they would have to learn the professional jargons of electronic engineers, corporation lawyers or Navy officers. But most people don't need this kind of knowledge. Specialty jargon does not have to be taught in our public schools.

The remaining words in our language are words literate people know, but illiterates don't know. In the olden days they would have been words aristocrats knew but peasants would not understand or be able to use themselves. Hirsch demystified education because he showed what children must learn need not depend on the political, philosophical or pedagogic theories of educators. The curriculum can be learned just by studying what authors obviously assume their readers know when they write for the newspapers, books, and media presentations aimed at the American literate public.

He also demonstrated that the information in a school's curriculum tends to be stable over time and changes at a rate of perhaps only ten percent per century. The geographical features and remote history of the world do not change significantly, and the learning of them doesn't change, either. Hirsch recommended inclusion of commonly known facts that have an apparent life expectancy of at least fifteen years.

After Professor Hirsch wrote his book, an organization sprang up consisting of people who thought his was a great idea whose time had come, and it could revolutionize American education. The organization formed committees to design curricula for American school beginning at kindergarten and going through middle school. They had faith that if children are smart in the eighth-grade, they won't have any trouble with high school, college or beyond.

Someone gave a test of the material of their proposed elementary school curriculum to six hundred people in San Diego, California. The subjects were selected to represent a demographic cross section of the American public.

After the tests were taken and scored it was found the median household income of the San Diegans who had scored in the top third of the test takers was $64,000 per year. The average for the middle scorers was $42,000, and for the lowest third is was $27,000 per year. Education may not cure racism but most people would rather earn $64K than 27K.

This Core Knowledge (CK) curriculum was begun at an elementary school in Fort Meyers, Florida, in 1991. The next year another school was added and for a while the number of schools doubled every year, such as from eight schools to sixteen, thirty-two, and so forth.

By the end of the 1990s about a thousand schools across the country were registered as CK schools by the Core Knowledge Foundation. But then the growth stopped, and after that two of the largest school districts to try it, Nashville, Tennessee and the Polk County Schools in Florida, dropped the CK curriculum. It had seemed like a good idea, but it just didn't work out.

The problem: Hirsch was a university professor and not a kindergarten teacher. He didn't know anything about teaching children to read and the best of curricula will not educate children whose reading comprehension skills are "below basic."

Hirsch simply quotes the "best research" and believes in the "phonics" approach now so popular. His son is an elementary school teacher and has written a monograph on the subject. E.D. Hirsch Jr. believes reading comprehension problems arise because children lack the common knowledge assumed by the authors of texts. The whole Core Knowledge Foundation curriculum is designed solely to remedy this knowledge gap. However, The National Institute of Child Health and Human Development (NICHD) studies have shown the most common reason for low scores on reading comprehension tests at the elementary school level is lack of fluency in converting written text into inner language. For this reason, the National Literacy Council has issued specific reading fluency guidelines for various elementary grade levels. These fluency rates are measured in correct words per minute of unrehearsed grade-level text when read aloud. Unfortunately, there are no recommendations at all for fluency in writing letters, words and essays.

The question of why certain children seems to have unusual difficulty in becoming good readers is a bit complicated. Formerly it wasn't really recognized as a common condition. The

first time a description of such a child was published it was by a doctor in England about the year 1900. He described and reported the case of a boy who seemed to be perfectly normal in every other way, but he just couldn't seem to learn to read. It was as if he could identify all normal things, but not just written words.

For a few decades after that this reported word blindness was considered to be a rare condition. But in the 1920s a psychiatrist, Samuel Orton, became interested in how children learned to read. Orton was a first cousin of the American president Howard Taft, and although he practiced psychiatry in New York City for most of his career, as a student he had carefully studied what was then known about the human brain and how it worked.

Orton studied the students in some public schools in the Midwest and to his surprise he found between five and fifteen percent of the students were unacceptably poor readers. It turned out this problem was not rare at all. The name of the condition was later changed from "word blindness" to "dyslexia."

Orton formed a theory about what causes dyslexia. He knew the human eye functions as a camera. The images thrown onto the retina at the back of the eye are upside down and backwards just like the images on camera film.

Orton also knew the part of the image projected onto the left side of the retina winds up being finally processed in the right side of the brain and vice versa. So he postulated in order to read well the brain would have to learn to forget about what one side of a written word looks like and concentrate on the other. Otherwise letters would appear as double-vision overlays of their mirror images. Some dyslexic children would write "b" instead of "d" and "p" instead of "q", and the theory emerged from this observation.

This idea some children tend to see things backwards persisted for a long time. Many people still believe they are "a little dyslexic" if they notice a tendency to reverse the order of number pairs on occasion. Orton felt the best way to cure it would be to have children never switch hands when they write. That way the correct side of the brain would always get the same feel for each letter and this would avoid the confusion. An Orton Society was formed by people who had faith in this theory, and it still exists, now called the International Dyslexia Association.

The problem with Orton's theory was that it's wrong. As the decades went by many researchers tried to find out exactly what was wrong with the visual mechanism in the brains of children with reading problems. What they proved is there are absolutely no different than any other children in this regard. They can draw or copy figures of all examined types perfectly normally.

The notion that there is something "different" about the brains of children who have learning problems is entrenched everywhere. There was and is a tendency to believe the "discrepancy" between some children's low reading scores and their relatively high measured IQs. This was considered to be proof the part of the brain controlling intelligence is not the same mechanism as the one that enables children to learn to read normally. Many laws mandating how children with "developmental disorder" of the brain should be educated specifically require the demonstration of such a discrepancy before a diagnosis of Learning Disabled (LD) can be validly established.

A few years ago, P. G. Aaron, of the University of Indiana, published an article on the "impending demise of the discrepancy formula." He pointed out the idea had first originated when a study done in England showed that the peak of the IQ bell curve was not located at the same point as the reading skill bell curve in a group of studied children. This gave rise to the "discrepancy" idea, but Aaron explained the position of the lower reading score hump had been caused by erroneous experimental technique. The "floor" of the reading score had been placed

too high. This made a disproportionate number of children to score at the bottom of the test scale, giving the appearance of a "spike" at that end of the scale.

Aaron went on to point out that no specific cognitive difference between reading disabled and normal children has ever been experimentally demonstrated. The NICHD is currently recommending the discrepancy definition be abandoned. They emphasize struggling young readers need maximal academic assistance irrespective of whether they happen to have relatively high IQs or not.

But the idea of "reading disability" is now so thoroughly entrenched in the minds of teachers, school psychologists and the general public that it doesn't seem this idea will die until some way to teach all children to read well is found and becomes current practice. The explanation of why these children had a tendency to reverse and confuse some letters, like "b" and "d" or "p" and "q" is all children have a tendency to do this when they are not yet very good at all at reading and writing alphabet letters.

It doesn't matter how old the child is, five or fifteen. People just learning to do something new are bound to make mistakes. That's all there is to it.

So if dyslexic children don't see things backwards, then why on earth are they dyslexic? The psychology scientists went to work on this problem. They finally reasoned, "Well, if there's nothing wrong with the way they see, there must be something wrong with the way they hear."

In order to spell words with alphabet letters, you have to understand that each letter stands for a little sound, which is part of the spoken word. The word "cat" is a perfect example of this and that's why it is often the first word little children are taught to write.

And the scientists reasoned that in order to understand how words are written, you have to know the letters and what they look like, and you also have to be able to hear the little sounds inside words as we say them so you'll know how to read the letters and come up with the right word. The result was they figured there must be something wrong with the part of the brains of children who don't do well with reading in school. They call it "Central Auditory Processing Disorder" (CAPD). They even convinced the doctors of the American Psychiatric Society to include this diagnosis in their official list of mental disorders.

So now millions of children seem to have mental disorders. But of course, the scientists can't demonstrate any problem with the way these children hear any different kinds of sounds in a laboratory. They keep trying to find some evidence for this, but they never have succeeded.

This does not bother the professional psychologists who make their livings by writing about this subject. They theorize that when humans evolved from lower animals, their ability to talk was one of the last to evolve and therefore, it is the hardest thing to learn to do. There must be some defect in that part of the population having difficulty in learning to read putting them at the lower end of the scale of relative ability to handle spoken language. Yes, they seem to be able to speak okay and understand what you say usually. But there is no other explanation. Their mental defect must be small enough to allow them to learn to talk but severe enough to prevent them from learning to read well.

People who accept this baseless reasoning have coined a saying, which they love to repeat: "Talking is natural but reading and writing are unnatural."

There is a government employee near our capital named G. Reid Lyon. He is the chief of the Childhood Development section of the National Institute of Child Health and Human Development branch of the National Institutes of Health.

When he was young, he earned a degree with a major in psychology. He taught third-grade for a while, and then taught a class of dyslexic children.

Then he left education and advanced to the career of an experimental psychologist. His first project was to find out which part of a macaque monkey's brain is responsible for a

monkey's tendency to make typical vocalizations. The scientists working on this would operate on monkeys and stimulate areas on the surface of the brains with tiny electrical currents in order to observe the results. It is possible to do this without injuring an animal's brain tissue at all.

There is a belief that reading problems in children are basically language problems. And Dr. Lyon followed the idea there must be something wrong in the language parts of the brains of those children having trouble learning to read. Psychologists these days have whole books about problems in this or that part of children's brains causing all sorts of different problems. They call these "cognitive deficits." In plain English that obviously just means "mental defects."

Then one of the nicest things that happened to Lyon is that a pediatrician named Sally Shaywitz had become interested in elementary education while she was the class mother at her daughter's school. She decided she would do research on dyslexic children to help find out exactly where the defects were in their brains.

Scanning machines, which are able to make pictures of the living brain, had been developed, so Dr. Shaywitz began doing scans of the brains of dyslexic children as they tried the best they could to read. Then she compared these scans to the scans of the brains of children who already were good readers.

What they found was when normally reading children read, the part of their brains that need more blood when they talk work harder than usual. This doesn't happen with children who are dyslexic. It's as if normal children talk to themselves silently when they read, and the dyslexic children don't.

Everyone then felt the issue was resolved. They felt they had really proved there is something wrong with the brains of dyslexic children. Noticing that often more than one person in the same family had trouble reading, it was concluded that this brain defect is hereditary and has something to do with the DNA in their genes.

But by now they have done many brain scans on children who were once dyslexic but now have learned to read. What they found is after the children learn to read their brains appear to be perfectly normal.

Dr. Lyon has subsequently publicly said, "When the reading of dyslexic children normalizes, the brain normalizes too." But he doesn't understand what has been proved is just that there was nothing at all wrong with their brains in the first place. As a physician I know no brain disease can be cured simply by the impartation of knowledge or skill. (Think of skill as "knowledge in action.")

But the psychologists are still saying, "These children' brains only became normal when they learned to read. They must have learned to read by paying more attention to those little letter sounds in spoken words."

This is all nonsense. We also learned in medical school scientists examining human brains carefully under the most technologically sophisticated microscopes in the world cannot find any difference between the brain of a genius and the brain of a normal ignoramus.

The cognitive scientists still like to say, "Experience can cause new circuits to form in the brain." Of course it can. If you memorize my telephone number, it produces new functional circuits in your brain. But it doesn't change your brain any more than singing a song into your tape recorder changes the tape.

There was at one time an elementary school principal in Houston, Texas, who got almost unbelievably good success in educating the children of his school, who were mostly African-American children. The test results of the children at this school were so good that some education authorities actually sent spies into the school while the children were taking their standardized tests. They thought the principal was having his teachers cheat to make it look as if the children were doing so well, but his teachers were not cheating.

In time the principal, Thaddeus Lott, was widely recognized for his achievement. Lott was a devotee of a method of classroom instruction called Direct Instruction (DI), a method devised by a famous psychologist Siegfried Engelmann, the author of a book called, *Teach Your Child to Read in 100 Easy Lessons*. This method puts great emphasis on teaching children to listen for the letter sounds in spoken words.

Many teachers who use the DI method are enthusiastic about it. There is a DI Internet listserv where they exchange ideas and opinions about their method of teaching. These educators are proud of the results they achieve in their classrooms and they tend to be hostile to those who espouse more progressive educational theories.

Not all schools using the DI program have the same success. A good number of schools in the Houston area and elsewhere tried it for a while and later wound up giving it up.

But in time an admirer of Thaddeus Lott and his methods, Rod Paige, became the superintendent of the Houston schools. He was also a devotee of G. Reid Lyon, the important educational figure I've already mentioned.

The schools in Houston have a large percentage of minority students. Their drop out rates and test scores tend to be far from admirable. But under Page's leadership, the schools did seem to improve, even though there is presently some controversy about the authenticity of some of the evidence of the academic improvement during his tenure.

When Paige was school superintendent in Houston, George W. Bush was the governor of Texas. According to the autobiography of Barbara Bush, Governor Bush's brother, Neil, had a history of dyslexia when he was young.

Governor Bush was interested in improving the education of the children in Texas and in America. When he became president of the United States, he appointed Rod Paige as the United States Secretary of Education to oversee the U.S. Department of Education.

Because of the connection between Paige and Lyon, Lyon has effectively become the unofficial reading guru of our nation. Now, besides inspiring the collective educators and psychologists, he also has the approval and support of the most powerful man in the world.

If it is true the tree grows as the twig is inclined, then it is most important to start children off on the right academic foot in the earliest grades of elementary school. Of highest importance is the need to make them all good readers by the end of first grade. NICHD studies have proven, if nothing else, that if children aren't good readers by then it begins to give them serious problems with their self-image and all sorts of psychological problems begin to arise. It also becomes very difficult to get them to catch up later on after an apparent reading problem has become recognized, which is a stressful diagnosis to carry.

Reading is so important because it is the key to doing well in all school subjects thereafter. This is certainly true with learning the so-called humanities such as geography, history, civics, English literature, philosophy, economics and so forth.

And a good early beginning in mathematics is the key to subsequent success not only in more advanced math, but in all the sciences too. An email contact of mine interested in education once mailed me a study done by scholars at a well-known remediation school in Seattle. This school is so effective they have a money back guarantee they will get any lagging student up to grade level within a specified number of months. When the article was written, no one had yet ever asked for his or her money back. They found the secret with getting young children off to a good start in math was simply getting them fluent at delivering the right answers to simple addition facts by the end of second-grade.

This turns out to be not that hard to do. There are basically only 28 such single digit addition facts children have to memorize. We can forget the ones involving adding zero or one to another number. They are no-brainers. And we can also forget reversals. Children don't have

to be rocket scientists to realize that if three plus two make five, then two plus three gives the same answer. And the eight numbers, which can be added to nine, don't have to be memorized at first either. The reason for this is slightly complicated, but if children get good at the other addition facts, the nine-plusses take care of themselves.

The magic fluency rate for second-graders turns out to be forty to fifty correct addition answers per minute to the basic facts presented either as flash cards or on written paper tests. The key is just practice. As they say, perfect practice makes perfect. It's best to get children fast at the number combinations they already know and then introduce the remaining pairs gradually, a few at a time, until they are up to snuff with them all.

Amazingly, if children get this good at addition facts before they enter third grade, all the rest of math takes care of itself. Subtraction is just backwards addition. Long division and the multiplication of multi-digit numbers all require addition as part of their actions. And if good at adding, multiplication takes care of itself.

I have personally tutored a number of elementary school children who had been diagnosed as being "learning disabled." It only took practicing a few minutes a day for just a few weeks to get them all up to my target level of addition fluency.

Learning a foreign language is also something best learned before our student twigs get too old. They say it is harder for older people to really learn a foreign tongue like a native. This isn't because their brains are too old. It is because by the age of fourteen or so, we have learned our native language so well it's impossible to stop putting a bit of the rhythm and timber of it into any other language we try to learn later. So for children who enter school unable to speak English it is crucial to get them speaking English fluently by the end of one year. And a good way to teach them to speak English is just to teach them to read and write it.

Chapter Six – Science and Politics

The one thing I think I dislike more than anything else in this world is what I would call elitism. That's the idea that some people have that they are better than other people. Like the kings and aristocrats used to think in the old days.

If you really want someone to dislike you, just somehow let him now you think you are better than he is. I think that's a major reason why so many foreign people tend to dislike Americans. Too many of us feel or unwittingly give the impression of being born and living in the world's richest and most powerful nation makes us individually better than the people of other countries. It is easy to understand why such an attitude is resented.

In our Declaration of Independence, Thomas Jefferson wrote all men are created equal. If you study history it turns out he probably didn't actually believe that himself. He had several black children himself and he kept even them in slavery. But whether he believed all men are really equal or not, I certainly do believe it.

If you want to read a good book explaining the white race isn't inherently superior to other races, read Jared Diamond's book, *Guns, Germs and Steel.* The reason why Europeans became the dominant culture in the world had everything to do with geography and botany and nothing at all to do with race or genes.

But of course, people have always liked to personally feel important. It must just be natural to want to feel that way. That's why everyone seems to think mostly of covering their backs these days. If someone gets caught with his or her hand in a cookie jar, the response seems to usually be, "It couldn't possibly be me who did this," or else, "It's someone else's fault."

This tendency definitely shows up in the behavior of the people who try to tell us how to teach children in school and it also shows up with the so-called researchers who try to make what educators do seem scientific. There is a widespread belief these days that how successful you are doesn't have anything to do with how hard you work, how well you parents raised you, or how well you're educated. Oh, no! People now think it's the way you're born. That was the whole message of the *Bell Curve* book.

This is the idea which made them set up special classes in the schools for "the gifted and talented" children and this is a very old idea. In Ancient Greece, when Plato wrote *The Republic*, the whole notion of this book was that we should just find out who the smartest born people are, convince them to be good, and accept them as dictators. Plenty of people still believe that. It is the idea behind communism, and was the main idea of Jean-Jacque Rousseau back in the 1700s when he wrote *Emile, or On Education*, as previously discussed.

One famous person who writes in favor of progressive education emailed me saying, "The question is not what kind of readers the schools turn out but rather what kind of people they turn out." This individual certainly seems to believe that he's superior to other people and he clearly doesn't understand anything about the way "twigs" grow.

Back in the 1960s, the Johnson administration commissioned a government committee to write a report after inquiring why some schools get better results educating children than others. The findings of the Coleman Report were a real shocker, showing that the quality of the school

has almost nothing to do with how well the children in it are educated. It all boiled down to what they called "the socio-economic status" of the child's family.

This finding was almost unbelievable to educators, but easy to understand. The children of rich people get well educated no matter what and the children of poor people just don't. The authors of *The Bell Curve* understood this perfectly even if they didn't understand why this is the case.

Our respected leaders have completely misunderstood this. One famous liberal writer writes the answer to the academic achievement gap it simply to hand $60,000 per year to every ghetto family and every poor family in the country. If they raised taxes high enough to do this our economy would drop back to a medieval level and we'd all live like peasants.

The best way to be quickly successful is to get a PhD degree somewhere. That is your passport and guarantee to success. But to get that degree you have to write a successful and intellectually impressive doctoral dissertation, which is the equivalent of a highly academic and well-written book.

And your dissertation won't pass unless you can be innovative with your ideas. Writing ideas everyone already knows is not innovative. So if some area of our society is governed by common sense everyone knows and understands, forget about that for your research topic.

In order to get ahead in the world of intellectual influence you've got to write something that is counter to common sense. I think that is one of the main reasons the world is the way it is, which is to say, stupid and crazy. If you don't believe me just watch the evening news on TV tonight.

The schools set up classes for socially and genetically superior children they call "gifted and talented." Is this the way tax dollars should be spent in a Democracy?

If some children are "gifted" it's just God's gift of having given them wise parents. How much money parents make actually has nothing to do with it. The whole secret is to have parents who are smart. If you're smart you are going to raise smart children. And you get smart by either being educated or by educating yourself. As the Core Knowledge study showed, smart people tend to be more productive in a market economy and it's not the other way around. *The Bell Curve* is correct here, too.

As Hirsch frequently repeats in his lectures and writings, each child actually goes to two schools. One is in the nearby schoolhouse and the other school is the child's home. Going to two good schools will always be better than just one. But what about children who have parents who are not well educated and intelligent?

The only logical answer is to make the schoolhouse as good a school as possible. If children start school when they're five, there is plenty of time to get every single child just as smart as he has to be to have a good life in this world. We just have to make it happen.

Instead of a social gap I would say what makes so many poor children suffer is the "privilege gap" of not having good parents that separates the lucky from the unlucky in this regard. The only two things we can do to help them is to insist on good schools and to keep trying to educate our own selves as life goes on just as well as we can. We do this for ourselves, our families, our grandchildren, and for our country and world.

As I began to say, people have a sad way of wanting to feel important and this leads them to tend to think they are better than other people. One of the easiest ways to suggest you are better than other people is to keep telling people how much you feel sorry for and try to help people who aren't as good as you. It's the old "compassion routine." Back in the eighties, Alan Bloom wrote an excellent book on the way we would think if we could just get rid of an item of ubiquitous acceptance. It was called *The Closing of the American Mind*. For the last two hundred years liberals have always gotten ahead by claiming how compassionate they are for the

little people. But as Bloom wrote, "There has never been the slightest doubt as to who will give the compassion, or as to who is going to receive it."

No, there isn't. The naturally superior people are going to give it and the rest of us are just standing here waiting for a handout.

The schools reek with this kind of hypocrisy. At the same time teachers are shedding floods of compassion on the poor little children, they are constantly saying things like: "You can't make a purse out of a pig's ear," and "The apple never falls far from the tree."

Instead of labeling little children with bogus psychiatric diagnoses to act as excuses, teachers should tell children what they need to know in order to be educated. That's the easy part, but then comes the hard part separating the "wheat from the chaff" among teachers. That is to motivate children to work at learning what they should learn. School is a child's job and knowledge and skills are the child's pay.

Unfortunately, motivating children to work at education is not much in style at all these days. Teachers make up phrases like "drill and kill." They seem to start to climb walls if anyone says we should test children to make sure they are successfully doing their jobs as teachers. Maybe they would buy a car from a company that doesn't believe in quality control inspections because getting fired could hurt the self-esteems of inspectors fired for incompetence.

And if some little child turns out to learn almost nothing in her class in spite or all her superiority and compassion, what does the teacher do? Forgo her paycheck that week and make an act of contrition?

No, the teacher doesn't. Instead he or she sends the child to the school psychologist for an evaluation. The psychologist's job is to provide an authoritative written proof that the teacher's failure is not the teacher's fault. It's either the parents' fault because they don't respect and obey the teacher enough, or else it's the child's own fault. Lousy genes, broken wires inside his little brain are blamed.

Another seminal book of the 1980s was Leonard Peikoff's, *Ominous Parallels*. He explained altruism literally means "otherism" and it is the belief you are less important than other people. Peikoff showed how this concept of altruism was developed as an ideal by European philosophers, and how it led inexorably to the rise of Hitler and the Nazi rule. His National Socialism simply did not tolerate actions not deemed for the common good.

That other people are better than you is just as silly an idea as the one that you are naturally better than other people. Bloom was a philosophy professor at some really excellent universities. He claimed the one thing that virtually every single child believes when entering an elite university in America is that "there is no such thing as truth."

This is truly a presumed fact we hear often, but Bloom wrote, "Sometime during the eighteenth-century western philosophers decided to eject God from a role in national governments. That may have been necessary and a wise thing to do, but if it means that people will no longer believe that some things are good and true, it will spell the end of civilization."

To say there is no such thing as truth is just saying there is no God. That is a silly and unscientific thing to say. To be logical and scientific, you should only believe things you can prove. No one can prove there is no God. And if it is correct, "there is no such thing as truth," then logically that philosophic statement itself would not be true.

The next question to come up is, "What is God?" I think I believe in God as much as the next guy, but I am thoroughly suspicious of anyone who says he can tell me what God is thinking right now.

When the French philosopher, Voltaire, was dying a Catholic priest came to visit him. Voltaire asked who had sent him and the priest answered, "Why God himself!" Voltaire responded, "Then please show me you paper credentials."

People sometimes thought Voltaire was an atheist, but I don't think he was. As he was dying the American Benjamin Franklin was in Paris as the Ambassador of the new Confederation of the United States. Franklin had studied French and he took his grandson to meet Voltaire and asked the great man to bless his grandson. Voltaire put his hand on the boy's head and said, "God and Freedom!"

It is natural to believe in God. Plato may have been history's first silly communist, but he wasn't stupid and he certainly could write. To better understand why anyone would believe in God, read Plato's *Symposium*.

People talk about good and evil. I say those just mean smart and versus unwise. All the great formal religions in the world teach the way to be happy in this world or the next is to treat other people as if they were your brothers and sisters. You certainly can't be a good doctor if you don't do so.

Each of the Ten Commandments is just common sense. Is it really a good idea to rob a convenience store on a Saturday night if you and your friend have nothing else to do? Is it a good idea to get the reputation of being a liar or a cheat? How wise would it be to alienate your own parents and family members?

The gospel of St. John tells of a rich man named Nicodemus who had heard of Jesus. But he didn't want to lower himself by going to sit on a dusty hillside to listen with the common people.

He invited Jesus to come to his home and explain His message personally. Jesus arrived in the evening. Servants greeted him, had him sit in the parlor, and brought him a cup of tea.

Then Nicodemus entered the room he sat down and asked Jesus to explain his basic message. Jesus answered with one sentence that everyone is born of the flesh, but to enter the kingdom of heaven one must be born again, of the spirit. I think he meant to be born a second time of the mind.

Although many presumably religious people don't see it that way, God obviously gave us our brains and minds for a good reason. As the ancient Greek poet Pindar wrote, "Man seeks God and in seeking finds Him." Just as Jesus said, "Seek and thou shalt find."

Now the principle that other people are more important than you are doesn't make sense. Can they talk to God more directly than you can? Are you less of an individual than others?

In the late 1800s, William Graham Sumner wrote a book called *What the Social Classes Owe One Another.* Liberals and socialists really disliked his book because he wrote what rich people owe poor people is to think of them as brothers. And what poor people owe to society is to produce as much wealth during their lifetimes as they and their families consume. Anyone who consumes more than he produces is living on someone else's labor, which is basically an act of theft. But Murray and Herrnstein wrote this is impossible without developing education and intelligence. They specifically state this is impossible. Proving them wrong is an important task for us to accomplish.

Graham's was an unpopular idea but it is just common sense. The way to be productive in the old days for most people was to use a strong back. But now we live in the knowledge era. Knowledge has become a more important factor in modern production than the traditional land, labor and capital.

The way to be able to be productive is to be smart. The way to make children smart is to educate them.

No one wants to live in a society where the rich let the poor die in the streets without food or medical care. Any rational society would certainly want the luckier educated and productive citizens to make sure the basic principles of ethical life are followed. It is a basic law of human life that the strong have to help take care of the weak.

The only thing to argue about is what reason we choose to justify this helping activity.

In a collectivist society, doing good for others is commanded by the state, and the dispensed benefits are considered entitlements. In a democracy, good deeds are done because the majority of voters, having the power to make laws believe they should be done, and entitlement is here thought of as charity.

Collectivists claim that individuals and individual minds don't count except as little cogs in the vast social machine. In *The School and Society,* John Dewey wrote explicitly individuals don't have minds, only societies do. Under Stalin, the communist philosopher, Vygotsky, claimed the same thing.

B. F. Skinner founded a branch of psychology called Behaviorism and is most famous for his "anti-mentalism," his denial of any importance in postulating people have individual minds. That is why you don't see words like "mind" or "thinking" in the psychology literature any more. Instead they substitute inappropriate substitute words like "cognitive" and "cognition." We really do have minds, and to believe otherwise is not as scientific as John Dewey believed. We should acknowledge this fact.

There are only two possible ways to govern a society. One is by majority rule and the other is by dictatorship. The dictator could be a person, a clique, or a whole class of people who believe they are aristocrats and better than other people. The choice is a majority rule or an autocracy.

Plato even realized how illogical his own proposition was when he wrote *The Republic*. Therefore, he explained how a naturally superior dictator would have to lie to the public in order to get them to obey his rule. He believed that would be best for the community as a whole. The making of "myths" was central to his plan of governance and this myth making is going strong to this day.

But in the end truth and myth will have to square off and fight. One will win and one will loose. We can explain the world in the light of common sense, intelligence, rational observation and majority consensus, or we can resort to rationalization involving belief in magic. There are no other alternatives. According to the collectivist propaganda of the schools, children must be taught to respect others, and they must have their sense of self-esteem fortified. It seems silly to include figures like Hitler and Saddam Hussein on our respect list, but myth is blind.

One wonders about teaching children about the importance of unearned respect. On a TV news program, I once saw an adolescent boy being dragged into court after his arrest for the senseless murder of an acquaintance. A reporter put a microphone in front of his face and asked, "Why did you shoot your friend?" The perpetrator answered, "Because he disrespected me."

One study has shown incarcerated criminals tend to have better self-esteems than men in college do. I would now like to get into the topic of how the establishment perverts science in the cause of keeping their positions intact. Remember, success in academia depends on innovativeness, and not on common sense.

If you wanted teachers to be more successful in teaching, the logical way to do it would be to go find some successful teachers and then observe exactly how they go about getting the results they do. Once you find out, tell all the other teachers what you found.

But that isn't the way they go about it. There are several million school teachers in America, and the minority of really successful teachers is actually a pretty large group of people. The way researchers go about it is to keep coming up with innovative theories, and then "testing" them in the hopes they will eventually find one acceptably good.

The current conventional wisdom is that many poor children just can't hear the letter sounds in spoken words. The logical thing to do then is to get them to practice listening to these little bits of sound.

Over the decades the government has spend truly huge amounts of public money designing and testing this theory. The NICHD actually funded a study, published by Scanlon and Vellutino, where researchers went into many early grade classrooms and observed what the teachers did minute by minute. They then compared the school success of the respective students so they could find out which teacher techniques were most successful.

What the study showed is that there are two different most successful ways to teach children to read, depending on which type of child you are teaching. They had done psychological tests on the little children first to find out which ones were "reading ready" and which ones were "at risk for failure." The tests they do to find this out include finding out how quickly children can identify alphabet letters by name when they see them, and testing to see which children already understand the principle of representing spoken words graphically, by means of series of arbitrarily chosen abstract symbols (commonly known as alphabet letters). Sometimes children have been tested to see if they can use small patches of colored felt to symbolize sequences of alphabet-letter sounds.

For children who were "reading ready" it turned out the best way to get them to be good readers was to have them read along in their own copies of a text at the same time the teacher was reading it aloud. For the children "at risk" the best practice was found to be to have the children spend a lot of time writing words on paper while they are still in kindergarten.

Now my main idea to be presented shortly in this book is that teaching kindergartners to write alphabet letters fluently is the key to reforming our schools. So one would think I'd be happy to learn that the NICHD found the same thing, right?

That is what they found, but it's not what they said they found. Scanlon and Vellutino began and ended their article by saying that all along they had figured the best way to handle problem students was to have them practice hearing letter sounds. And they pointed out that when little children write words, they say the sounds of the letters to themselves as they write each one.

So instead of saying they had found we should get kindergartners good at printing letters, words, and sentences, they claimed they had proved what they were saying in the first place: that children should be taught "phonemic awareness." That means having them learn letter sounds and "phonics" so they will learn to "decode" words instead of just learning how they are phonetically encoded and how to recognize them instantly when they see them.

I am anxious to get on to the subject of teaching children to read well in the earliest school grades, but first I will write a bit about how hypocrisy and nonsense intrude into the sphere of politics, too. I think most of us would rather live in a Democracy ruled by majority vote and law rather than in a dictatorship. Dictatorships always wind up as nightmares because absolute power really does corrupt absolutely. Their governments often begin benignly enough, and the public is happy to see their initial ascendancy. But as their stupidity emerges, they must choose between resigning or resorting to brutal countermeasures to opposition, and they always choose the latter.

Winston Churchill remarked that democracy is a terrible way to govern a nation, but it happens to be much better than any other imaginable way. He also said there are three preconditions for a successful democracy: education, education, and education.

In a nation where the majority rules, government and society will be good so long as a majority of the voters are intelligent and wise. Uneducated people living in democracies produce terrible results, which risk shortening the life of democratic societies.

The people who believe in each of the many theories and methods out there for teaching children to read tend to hold to their ideas as if they were the tenets of their favorite fundamentalist religions. These people simply cannot change their opinions no matter what the

evidence. They will grow old and die without changing their minds. So real social progress will be only possible when that happens and more enlightened young people become mature enough to replace them in positions of authority and leadership. The same tends to be true with people's political beliefs, though these are probably a little less rigid than formal religious or educational beliefs.

I grew up with parents who despised socialism and communism. Since I grew up agreeing with them, I figured I was a conservative. That's what I told my liberal Civics professor when I got to college.

But now I am older and have read more and hopefully am not any more ignorant than I was. I have come to realize conservatives are people who substitute some formal religion for the religion of socialism. I think the worst of liberalism or conservatism is simply the most powerful one at the moment.

Society let religion rule for centuries and the results were disastrous. Religion is wonderful if it makes each of us respect and worship the infinitely good and the unknowable, but if anyone suggested formal religion have anything to do with how a state should be governed, it should be viewed as simply a form of illegitimate magic. The same applies to those who play cute by substituting the word "spirituality" for "religion." Life of the spirit is life of the mind. Maybe it really does continue after death. We will have to wait and see. "Evil" is not a supernatural spirit either. It is just a synonym of stupid, wrong and unwise.

For some strange reason most of the enthusiasts of progressive education are liberal democrats. The word "progressive" as it came to be used in the early decades of the 20th century was generally understood to mean "socialist."

Since I have rejected liberalism and conservatism, I had to inspect libertarianism. I do find the economic theories of Adam Smith and the Austrian School to be logical and valid, but at the same time von Mises himself wrote, "Mine is an economic theory and not an ethical one."

So I am not a libertarian either. It is quite the opposite of ethical. It is elitist. It seems to me they are essentially social Darwinists who believe in the economic survival of the fittest.

Their unspoken motto is, "If God made me superior to others, He must certainly have wanted me to keep what I earn for myself, and I have no desire or need to help pay for the charity toward the naturally weak."

In a democracy one is obligated to pay taxes to help the poor if the mandate of the voting majority is to do so. Democracy means majority rule, the opposite of dictatorship. This was not how John Dewey or the communist states defined the term. To them, Democracy is simply what is best for the *demos* or people. And they believe their own insane prescription was best for the people, because they were superior.

As Churchill implied, a stupid electorate will produce a stupid Democracy. Politicians cannot get reelected without the popular will, so if they don't do what the majority wants, stupid or otherwise, then they are no longer politicians.

In a speech a few years ago, John Kerry, Presidential candidate who lost to George W. Bush in 2004, said he believed the only thing able to improve education in America would be to give a big raise to teachers so the profession would attract the best people. The members of the huge and politically most powerful teacher unions who are already teachers would get the raises also, of course. Is this intelligent reasoning or politics as usual?

One of my correspondents is an educational activist in the state of Texas. She tried to get a more knowledge-based curriculum past the Texas Board of Education about the time Governor Bush was considering a run for the presidency.

She told me her curriculum lost out to the more progressive one as a result of Republican political pressure because of the importance of the education establishment in politics. Is this intelligent reasoning or politics as usual?

If all children are capable of being successfully educated so they can become productive citizens in the knowledge era, does it make sense to encourage child to join a "Schools to Work" program so they can receive training in menial professions while they are still young adolescents? From what I've read, Hillary Clinton was in favor of just that. Considered reason? It is either politics as usual or compassionate-elitism.

I once spoke to a seventh-grade remedial teacher who confessed many of her students could not easily and quickly deliver answers to the basic addition facts. I commented such students were unlikely to ever become doctors, lawyers, scientists or accountants. She answered, "Someone has to do the menial jobs in order to keep our society going." I didn't answer but I thought, "Deciding children's future professions should not be done by first-grade teachers."

Chapter Seven – Writing Relates to Reading

When I retired from medicine in 1996, and my wife and I moved from New York to Georgia, my main interest in life was to try to help popularize the Core Knowledge Foundation's curriculum organized on the principles in E.D. Hirsch, Jr.'s book. We now live in Cobb County, a northwest suburb of Atlanta. It has over 600,000 residents and there are now over 100,000 students in its school district.

I first made a presentation to the Cobb Board of Education on this topic. I introduced myself to a number of the board members and I began to attend most of the meetings open to the public that the school district sponsored. The tempo of these meetings picked up after a while because the district began the process of introducing its own new curriculum. It seemed to me to be nearly identical to the Georgia Quality Core Curriculum, or state-mandated QCC, which I felt was the very kind of progressive curriculum Hirsch was upset about in the first place.

The superintendent of the district came to know my name and notice my critical attendance at these meetings. Eventually I got a call from his secretary saying the superintendent was interested in getting feedback from members of the community. He therefore had invited me to a personal meeting with him in his office.

By coincidence I had Internet contacts who gave me their personal viewpoints about his time spent as the superintendent of school districts in two other states before he moved to Georgia. These individuals informed me they believed this man was the last person who would ever approve of a knowledge and skills based, non progressive curriculum for the schools. But they correctly predicted he would be extremely polite and attentive to anything I said.

The education reform folks on many of the education Internet listservs I had joined all described this as standard operating technique for American public schools and their public relations departments. It is true the Cobb superintendent was polite and attentive. He listened to me argue on behalf of a meaningful and traditional education for each and every child in the country for well over an hour.

At the end of the interview this man admitted he personally also agreed "in theory" such a universal education for all children would be a wonderful thing. "But in practice," he said, "too many children just couldn't handle it."

I had been interested in the subject of how children learn to read for a long time, but at this point I realized teaching children to read well in the earliest grades is of paramount importance and must be accomplished before meaningful curricular reform will occur. I threw myself into a full-time reading and pondering schedule of the study of the available literature on the subject.

When our second son had entered second-grade, his teacher telephoned us with the news she believed he was dyslexic and she wanted him to be evaluated by the school psychologist to see if any formal learning disability could be established. I didn't believe in the existence of learning disabilities, so I thanked her and told her I would personally take care of any psychological problems I could identify with my son.

That evening I sat on the living room floor with him and observed his ability to read really was terrible. My wife and I had been completely unaware of any developing problem at all. His report cards throughout his kindergarten and first-grade years had all been fine.

It seemed he just couldn't read the word "from". We bumped into the same word in each of the first three sentences of the little children's book we had. Each time he would laboriously sound it out as "frome," pronouncing it as if the "o" were pronounced the long way. Each time I complimented him on his sounding out skill, but told him the word was actually the word "from".

Finally, I asked him why he had difficulty remembering the identity of the word from one minute to the next. He indignantly told me there was no problem with his memory but he couldn't understand *why* a word sounded as "frome" was used to represent the word "from" in writing.

I explained there is no "why" when it comes to learning how many of our words are spelled. They are just spelled the way they are spelled and one must simply remember what each word looks like so one will remember what it is when one sees it.

My son found that hard to believe. He said there were too many words for anyone to remember what they all look like.

I told him to just try, and he would succeed. He did succeed. Now he has a Master's degree in Intellectual History from a good university and he can read better than I can.

I don't think that completely ended his problem though. I think the teacher must have put something unpleasant about him into his secret school record. His teachers always seemed to think less of him than we thought they should. It was only due to the efforts of a saintly and much respected eleventh-grade English teacher he had that he learned to really compose English the way a university bound child of his age should be able to do.

This left an impression with me. I had a fair number of dyslexic patients during the years I was in medical practice. I always took a few moments extra with each of them to share my own personal views as to how they could learn to read better.

And the idea that it's impossible to become familiar with all written words in our language happens to be very prevalent. It is a major point made by Diane McGuinness in her book, *Why Our Children Can't Read and What We Can Do About It.* Diane's daughter-in-law, Carmen McGuinness, makes the same point even more forcefully in her own book, *PhonoGraphix*. According to its theme, it is impossible to learn to recognize words by their visible spellings. As a retort to that idea I will ask the reader if he or she can find any written words on this page, which seem unfamiliar.

After my talk with the then-superintendent of Cobb Schools, I tutored three or four different dyslexic children diagnosed with learning disabilities who were in "special education" classes. I set up a personal listserv of my own and encouraged people with relationships with dyslexic children of their own to participate in a common sharing of our experiences in tutoring them. I learned a great deal from the few folks on that listserv. It remained active for about a year. But we never did work out a surefire way of remediation for dyslexics who had already been diagnosed and who had already come to believe they were "different" than other children.

But I kept on the subject. I was amazed to learn it is possible for dyslexic children to learn to touch type successfully. I personally exchanged email with two such individuals. They could type fine and I could read what they wrote, even though they themselves could not read it.

One of them told me he had flunked a high school keyboarding class just because the final examination required students to copy a text by typing. Since he couldn't read, he couldn't copy. If someone had read the test text to him, he would have been able to type it. Of course, the teacher hadn't allowed him to take the test that way.

But thinking it through, I realized here I had absolute proof "hearing letter sounds in words" was not the problem with dyslexics. In order to type a word easily and automatically, one has to say the sounds the letters make just exactly as one does when one is writing with a pen

or pencil. I knew I was right, but none of the hundreds of email contacts I had on all the education-related listservs I belonged to would agree with me. On listserv after listserv members openly insulted me by insisting that I was trying to perpetrate some sort of a hoax, or that I didn't understand science, or even that I was crazy. One by one I was involuntarily ejected from membership or else firmly and unanimously asked to refrain from making further comments unwelcome to the other members, and to withdraw myself from the list.

One PhD in education at a large and famous university wrote I obviously didn't understand how science works, because "real" scientists never believe or imply their opinions are correct and others wrong. Understanding there is "no such thing as truth," she continued: "Real" scientists realize all possible opinions are worthy of equal respect and acceptance no matter how violently they disagree with one's own reproducible observations of reality. All I could think was, "This woman has obviously been hanging around with different scientists than I have."

Over and over I kept bumping into statements and quotations by famous educators throughout history who insisted the practice of writing alphabet letters is most important for young children working to become literate. One nice woman sent me a quotation presumably written by Aristotle saying, "When it comes to learning to read, too slow a hand impedes the mind." According to her reference, Aristotle had favored having children repeatedly run their fingers along groves in wood outlining the trajectories needed to form the letters. Maria Montessori apparently couldn't budget paper and pencils at her preschool in Rome, so she wrote the letters on paper with paste and sprinkled sand on top. The children used them as Aristotle would have suggested.

None other than the famous hero of whole language teachers, Ken Goodman, wrote in his book, "Children learn the alphabetic principle through writing." Marie Clay, an expert associated with a program called Reading Recovery (similar to whole language in philosophy) had written, "When teaching children to read, the importance of having them practice writing simply cannot be overstated."

It is peculiar how most teachers seem to apply the word "writing" to children as early as kindergarten and first-grade. It seems to be the practice to define their writing as the writing of sentences and stories. To me teaching a complete beginner to write must begin with the writing of the alphabet letters themselves. And it doesn't make sense to me to try to teach children to do that unless we specify a specific level of fluency or proficiency at the task. The average American child enters first-grade able to write alphabet letters at a rate of about 20 per minute. If that is so then that rate is "grade level" by definition. Should children advance to first-grade if they are below grade level for exiting kindergartners?

One of the people I met on the Internet was a semi-retired gentleman, R. John Blakley of Lexington, Virginia, who had been the archivist at a private elementary school in Baltimore, the Calvert School. On the occasion of the school's centennial anniversary in 1996, he had written a monolog on the founder of the school that the school published and distributed privately.

He was kind enough to send me a copy. The founder was Virgil Hillyer, who had been the headmaster at the school from 1896 until his death in 1931. Hillyer wrote his school had never failed to teach a normal child to read and write.

His motto was, "If you teach a child to write, you needn't bother teaching him to read." If children learn to write, they are always able to read what they have written, and therefore anything anyone else writes. There was no kindergarten in his school. On the first day of the first-grade children were given pencils and paper and taught to write the sentence, "I see a tree." Then they learned to write, "The tree is green." And so on. Within a few months all the first graders were literate and they then began to be educated in literature and composition in the traditional way successfully. Hillyer's motto became my motto.

Then I finally read the most famous book on reading of all. Harvard's Marilyn Adams had written, *Beginning to Read*, in 1990. She had written it as the lead writer of a congressionally commissioned panel of experts summoned to report on the best way to teach phonics.

As I read it, I was surprised to see she seemed to be describing the very same theory I had come to. She didn't actually believe in phonics at all. She wrote the most important thing is not for children to learn to sound out written words they don't know, but rather to learn how the spoken words they do know are phonetically encoded with alphabet letters. She insisted the main thing is to learn to recognize them at sight so the do *not* have to be sounded out, or "decoded." Why decode something if you already know what it is the instant you see it? It would be like counting fingers to remember that two plus two is four! Adams also wrote that the only thing that all successful reading programs share is that they all emphasize writing practice, "No matter how disparate their pedagogic philosophies may be."

Another famous authority from Harvard, Jeanne S. Chall, had written the book, *Learning to Read: The Great Debate*, pointing out it is imperative for children to learn how phonemes and alphabet letters correspond with one another in order to become readers. But she could find no difference between the various methods of this teaching.

Chall had done an exhaustive study of the various methods used to teach children to read. She found they could be broadly categorized into "code emphasis" and "meaning emphasis." Chall came down firmly on the side of code emphasis, emphasizing no amount of searching for meaning could be effective unless the children could first identify written words. She and many others believed de-emphasis on phonics in schools was the cause of the declining reading performance of American school children. Chall followed the lead of Rudolf Flesch, who had made the same point in his 1955 book *Why Johnny Can't Read.*

Adams certainly expressed the commonplace that literacy requires knowledge of how alphabet letters correspond to the sounds in the words they represent, but it seemed to me, phonics advocates would be just as offended by her ideas as the whole language enthusiasts who only could say they believe children should learn "naturally" and without any specific methods used to make them literate. Those who favor teaching children the correspondences between the letter sequences in written words and the sound, or phoneme, sequences in spoken words have won their argument in the field of public and professional opinion. The only remaining argument is as to *how* children will learn this essential application of the alphabetic principle.

Adams talked about the same "schema theory" that Hirsch and computer engineers specializing in artificial intelligence talk about. In essence schema theory means it is easier to learn something complex if you already know each of the less complicated components making up the aggregate whole.

I also began to engage in long and exhaustive email exchanges with reading experts in New York and in England. The woman in New York had a theory that the way to cure dyslexia was to get children to make mental images of the action described in a written text. I told her that yes that would work fine, because it forces children to *stop* trying to sound out, and just let time pass so their brains can kick in with the memory of what the word was the last time it was seen.

We all know it often takes a second for our computers to respond to a keyed command. It appears to be this phenomenon is operative in our computer brains too. We often recognize a person or thing several seconds before we come up with a name for it. We get good at remembering by remembering. If we don't let a bit of time pass for this attempt to occur, we miss essential practice and have difficulty ever attaining fluency with a memory task. This is important to educational techniques at any level and is critical for teaching the three R's to tykes.

Adams had written that after a child sounds out an unknown word, the most important thing is for the child to do is to glance back at the word an instant and verify how the letters and spelling match up with the sounds in the corresponding word. That way they won't have to sound our or decode after a few contacts with the word.

The woman in N.Y. was an experienced teacher and successful reading remedialist, but she was a devoted admirer of the Swiss philosopher Ferdinand de Saussure. This man had written a book early in the twentieth century claiming that words are not symbols for ideas. He believed people can't think unless they use words. Same idea as Vygotsky's in Russia: If you can control the brain washing, you can control the student, and you can radically reform society away from the nightmare of capitalism.

What poppycock! But she also thought I was crazy. She knew kindergarten children who learn to print well all became successful readers, but the last time I had contact with her she was still insisting, "But it doesn't make any difference and it doesn't prove anything!"

But it proves everything! As Adams wrote, there are about five thousand different written syllables in the English language. Chinese people have to memorize what five thousand different characters look like in order to become fully literate. If the Chinese can do it, our children can do it. Once you can recognize all of our syllables, learning how they are pronounced in all our words is no problem. Of course, you have to look at the whole word or phrase before you can know how to say it. The first syllable in "nation" and "national" are written the same, but the pronunciation depends of the word and not on any phonics rule.

This correspondent wrote up her own method for teaching and remediation in reading and it was published in the popular teacher newspaper, *Education Week.* Yes, her method of having children form images in their minds actually does work. But she is doing the right thing for the wrong reason. Saussure teaches us nothing. The only thing imagining the action of a text does to help children is to get their minds away from "sounding out."

Adams disappointed me more recently because she has now written, "It is true some children have a very hard time hearing phonemes." (Phonemes are basically letter-sounds, the shortest sounds in words that change meaning of word if they differ, as in "cat" and "cut.")

Now Marilyn Jager Adams seems to contradict her more famous work. In her *Phonemic Awareness in Young Children: A Classroom Curriculum* (1997), Adams writes as if she clearly believes an inherent difficulty in "hearing" the component letter-sounds in spoken words is a common and important problem.

This both disappointed and surprised me. To my reading of her first book, *Beginning to Read*, Adams was still strongly entertaining the possibility that learning to read confers phonemic awareness, and not the reverse.

I don't know if Adams has changed her opinion since 1990 or whether I somehow misunderstood what I was reading. I did once get an email response from her to one of my messages. In it is she wrote she was troubled by "the ubiquitous assumption that letter-sound correspondences are the be-all and end-all of phonics, all that need be taught, all that's hard and all that need be practiced." She added she felt such an assumption is, "One of the more frustrating and inhibiting headaches around."

Adams also once wrote a most insightful article on, "The Three-Cueing System." Many teachers take serious note of the fact that reading involves the ability to identify words at sight, the knowledge of how sounds and letters correspond, and knowledge as to what given words in a text actually mean in our language. Each of these modalities is considered a "cue" to the reading child. Adams agrees all three are logically necessary for a child to read with comprehension. But she has found it popular among teachers to assume that comprehension of a spoken word can substitute for the ability to recognize the word at sight or learn its phonetic dynamics. Adams

rightfully maintained this belief among early grade teachers has caused a great problem in education. A written word simply cannot be comprehended if it is not first correctly identified, and no amount of abstract theory can change this fact.

It is a commonplace that reading words and P. A., or the awareness of the sound sequences in spoken words, should be taught simultaneously rather than sequentially. None-the-less, the real emphasis seems to be on the notion P. A. is a necessary prerequisite for learning to read.

I believe the whole debate is a tempest in a teapot. If we are asked if we can "hear" the sounds in simple written words such as "man" or "hat," we assert we can do so. But when most literate people are asked to indicate the sequence of sounds in somewhat more complex written words, they report they resort to the strategy of mentally envisioning the written word. Then one simply announces the "sound" of each mentally seen letter in sequence, and gets credit for having "heard" the sounds spontaneously. Segmenting or synthesizing letter sounds to form spoken or written words is a no-brainer for any child who has learned to mentally envision entire written syllables.

Then I read an article by Sofia Vernon in Queretaro, Mexico. It's referenced in my article in an appendix to this book. She wrote children there learn to read fine, and learn "phonemic awareness," even though they are taught nothing the English-speaking scientists believe they must be taught. In the Spanish-speaking world children are just taught to write the alphabet during their first year in school. The next year they learn to write all possible syllables starting with a consonant and ending with a vowel: "ba be bi bo bu, ma me mi mo mu", etcetera. Within a few months they are all reading and writing fine. And significantly, the Mexican children also do very well at that point on tests of the phonemic awareness considered to be so important in the Anglophone world. Vernon showed this is demonstrable even though in Mexico phonemic awareness per se is not taught at all!

It is often expressed that the English language is so difficult to spell and sound out that English-speaking children are at a special disadvantage when it comes to learning to read. According to my own study of the situation this is probably not true at all. Studies in Austria have shown it is unusual for German-speaking children to remain completely unable to identify simple written words. But it is not at all unusual for German students to have difficulty with longer words. Such children have problems identifying the individual syllables within words and typically have to make several failed attempts before such words are successfully pronounced. The strain of translating print to intelligible inner silent speech is great enough to be distracting and these children suffer academically. There is great concern in France, Germany, and Japan that the younger generations are slipping behind academically in general and with literacy specifically. A fairly recent poll in Germany revealed that fewer than half of German school students ever read a book for pleasure.

In Japanese the indigenous writing system represents syllables rather than phonemes. This is practical there because there are only slightly over 100 syllables existing in the language. Since alphabet letters are not used, the ability to hear phonemes is immaterial to Japanese literacy. Children who can write and identify the hundred syllabic symbols can read and write any word in Japanese. Yet it has been estimated the percentage of Japanese school children at least two years behind grade level in reading comprehension in Japan is almost exactly the same as it is in the United States.

It would seem to me America's prestige is leading to the acceptance of John Dewey's principles far beyond our shores. If children do not get adequate writing practice early on, they

are trapped in the habit of reading symbol-by-symbol, rather than phrase-by-phrase, as normal readers do. Our problem may actually be worldwide!

In 1912, Maria Montessori wrote a book reporting that children learn to read spontaneously once they get enough practice writing alphabet letters, even those children too young to go to school. Montessori also believed in communism, but when the English translation appeared a Harvard professor praised her ideas in general but wrote, "That might work with reading for Italian children, but it could never work for our children". And since then no one has ever checked this out to see if it's true.

Another email contact of mine, reading authority and Professor Emeritus at California State University at San Diego, Patrick Groff, published an article in which he pointed out everyone claims they teach children to write, but no one defines what they mean by the term. He pointed out one could theoretically either teach children the alphabetic principle by having them decode unknown written words or else by having them learn to encode known spoken words by means of alphabet letters and a pencil. No one has ever checked to see which is best, so everything now is just "personal intuition and armchair philosophy."

A few years ago, the government commissioned a National Reading Panel to report to Congress on the best way to teach reading. Most members were Lyon associates. The only teacher on the panel was Joanne Yatvin. The Panel reported that phonics and phonemic awareness was the way to go. Yatvin's sole voice in her dissenting report claimed the panel had just tried to justify things they themselves believed beforehand. Later she wrote the reason the panel did not study a possible connection between writing practice and reading success was that no one had ever formally studied this possibility.

What an unusual situation to find ourselves in the year 2005! Immense sums of money have been spent on studying how literacy should be taught in our schools.

Chapter Eight – Research Proving the Point

By this time, I was getting pretty tired of being told I was either stupid or crazy. I think the reader can certainly sense that by my words.

My choices were to give up or keep batting my head against this wall. I didn't know which alternative was best, but I kept remembering we have lost more young men dying to senseless gunfire in our cities in the past few decades than we lost in Vietnam. And virtually none of those killers had been properly taught in grade school.

This is a familiar story, emphasized by *The Bell Curve* authors. One example involved the assassination of President John F. Kennedy, as is meticulously detailed in the Warren Commission Report and in Gerald Posner's definitive wrap-up of the story, *Case Closed* (1995). Lee Harvey Oswald shot the president because he was a "nobody" who wanted to become a "somebody." He was raised by a single mother, bounced from school district to school district and was an educational basket case. As a teenager he tried to gain a sense of importance by reading Marxist literature. He joined the Marines and scored "marksman", between "rifleman" and "expert" on his boot camp rifle test. The rest is history.

I monitored Internet listservs of both Lyon's persuasion and of the liberals. One of them was the Teachers Applying Whole Language (TAWL) listserv. They are extremely progressive in their philosophy, but they are experienced and dedicated teachers who earnestly do their best to be good teachers.

I fairly begged the first-grade teachers on the listserv to check their classrooms and see if there is a correlation between the speed with which children write the alphabet on one hand and how well they read on the other. Then I asked to have them test the children by asking the children to write as much of the alphabet as they could during a timed twenty-second period of time. We multiplied the number of different legible letters each child wrote by three in order to get a "letters per minute" rate of alphabet letter printing fluency of each child. We did it this way instead of having them write for a full minute because another email contact of mine, who was an expert in teaching autistic young children, had explained children so young can't really concentrate well for a whole minute.

I wanted to investigate the possibility there is a positive correlation between emphasis on printing practice in the earliest school grades and the successful acquisition of literacy. At first it occurred to me to simply poll teachers, asking them how many minutes, on average, they had their pupils writing with a pencil each school day. But then I realized such a poll could give skewed results. Teachers might have a tendency to exaggerate the way they followed their district's guidelines on teaching children to print the alphabet. It dawned on me the proof would be in the pudding. Children who practiced more would be better at printing. The answer was to use a stopwatch or the sweep hand on the teachers' wristwatches.

When the results came in the correlation was amazing. I had expected the correlation to be positive, but I didn't expect it to be nearly perfect. And it was!

Still, no one would listen to me. I sent our findings to the school superintendents in over a dozen school districts around Atlanta. These schools educate the children of four million people.

Not a single superintendent showed any real interest. The attitude of the few I even heard from them seemed to be, "Who do you think *you* are to be telling *us* how to teach children?"

On the listservs I still belonged to I was again told I didn't understand science and I was wrong. They said, "Correlation doesn't prove causation," and "You must have controls and standardized tests of reading comprehension."

One professor of education psychology wrote me the only way to perform such a study validly would be to emphasize printing practice with one group of students and find a control group having no printing instruction at all. I answered it would be "concentration camp science." Printing practice is mandated in K-1 by the education departments of every state in the country. Withholding printing practice could conceivably harm children, contrary to the most basic rule of conducting scientific research on human beings. I didn't feel I was the one who didn't understand science, but I had to admit to be scientifically valid an experiment must be reproducible and get essentially the same result on different tries.

The Whole Language teachers were not interested further and I was about to leave their list. My idea is counter to their most basic progressive principles: "Every child is different"; "We don't believe in teaching specific things"; "We don't believe in testing"; "We don't want cookie-cutter children and we don't believe in one-size-fits-all." All of them demanded I quit the list and stop bothering them. "Even if we made our students the best readers in the world, evil capitalistic society would never give a break to poor minorities. Our system requires victims."

So once again I went to the website of yahoogroups.com. I started another personal listserv and named it "*k1writing*". I advertised it on a number of teacher lists, including *kinderkorner* with over 2,000 kindergarten teachers.

Finally, about 120 people had joined my list. They all knew my purpose was to try to reproduce a powerful correlation between fluency at writing alphabet letters and success at learning to read rapidly and with good comprehension. Five kindergarten teachers from across the country turned out to be faithful at periodically doing the "twenty-second-test" of alphabet printing on their students and posting the results on the list with simultaneous reports as to how well each one was learning to read.

We began at the beginning of the school year. By the end of February some important results had emerged. I suddenly realized these teachers were not just people wondering about my project. They were very successful teachers with decades of experience teaching kindergarten. They already knew how important writing practice is, but since no one would listen to them, they wanted to participate in a study, which would prove it.

I knew the results should be published but I knew no psychology or educational journal would publish it. It would just prove they had all been incompetent.

But a fellow on the National Association of School Psychologists listserv egged me into trying. He couldn't believe no one would print my study if it truly contained interesting findings.

I emailed the editors of about fourteen reputable psychology and education journals. I only got reasonable responses from two of them. Someone at the *Journal of the American Psychological Association* wrote me email saying the study I outlined could not possibly have found something worthwhile. Everyone knows that teaching children to write alphabet letters couldn't help them learn to read.

As I discussed my project on the Internet, one teacher wrote me an email, which simply read, "Pitiful waste of time!" This was exactly the message I had from Sue Lloyd, the author of Jolly Phonics, the most widely used reading instruction program used in schools in England. They believe they teach "true phonics." That means they don't let the children learn the names of the letters at first. The children learn to identify them by making phoneme sounds. They hold this belief strongly even though no study has ever shown teaching letter sounds is more effective than teaching traditional letter names to beginning students.

In the contemporary literature on the subject of teaching children phonics and literacy there is an endless discussion and debate as to whether children should be taught "from sounds to letters" or "from setters to sounds." Jolly Phonics is definitely on the former side. Sue knew the more fluent writers are always good readers, but she told me she believed the phonics and reading makes good writers, and not the other way around.

Only the manuscript editor of the Harvard Educational Review wrote me cordially their editors would be delighted to consider my article for publication if I would just write it up and sent it to them with triplicate copies. I wrote up the report of our study and had it off by Priority Mail within three days. I received an acknowledgement of their receipt and I was informed a decision regarding publication could take up to from three to nine months. The articles submitted to the journal are first read by independent review peer referee judges, and it takes them time to digest the articles and make up their minds.

It was a month after that I had a mild stroke one afternoon and was hospitalized for thirteen days. Following my discharge, I began a program of outpatient physiotherapy for rehabilitation.

While I was doing that my mother-in-law, who lived near us and was 89 years old, had a much more severe stroke and lay dying in the hospital. At that point, I got a simple form letter from the Harvard Education Review telling me my paper had been rejected. My paper would have been the first published study on this educational topic, but I think the reviewers must have considered it a joke or an attempted hoax. After all, if experts don't know something it can't be true.

But actually, there was one article published about our study. Susan Bowen, the editor of *Pen World International*, a magazine for serious collectors of writing instruments, visited the classroom of one of the teachers in our study and faithfully described the apparent kindergarten miracle she witnessed. But I think the number of pen collectors isn't big enough to change the world alone.

I still refused to give up. I began to email copies of my article to every imaginable person I thought might pay attention. I sent it to newspaper journalists, TV personalities, and people in the highest university education and government levels. But I found no demonstrable interest at all.

Four months after I had received the rejection letter, I read an article by a journalist writing in the newspaper of a medium sized city in another state. The article mentioned the city school system had a new school superintendent who was well qualified, enthusiastic, and determined to do whatever it would take to raise the quality of education there to the highest level.

Immediately, I emailed a copy of my article to the journalist and I told her I hoped her new superintendent would find it interesting. Just a few hours later I got email from the superintendent himself. He wrote his district was going to host an education conference in a few months and he invited me to travel to his state and give a presentation.

But I had already given a presentation to a superintendent here in Cobb County with 100,000 students. This was a district about the same size, so I was still interested. But I didn't want to drive to a distant state only to waste an hour helping the man demonstrate he was willing to listen to the ideas of a stranger for an hour.

I wrote him I could easily describe my suggestion to him on the telephone and that one of the teachers participating in my study lived in a town just an hour or so away from his city. She had just retired after 34 years as a kindergarten teacher and I felt she would be happy to come and share her own experience with the staff of his school district.

The superintendent was too busy to talk to me on the phone, but he offered to arrange for me to talk to several members of his administrative staff on a telephone conference call. His secretary called the next day and set up a time and date three weeks later. Then, my wife, Ann, and I were going to be down at the Georgia shore with one of our sons and his wife, but I gave her the telephone number for where I would be staying.

When the day finally arrived, a hurricane was traversing Florida and heading for Georgia. The eye of the storm passed to our west. Although the wind and sea were agitated, we didn't loose electrical power or telephone connections.

The phone rang exactly as planned and I talked to some reading experts, student affairs people, and their head of elementary curriculum design. I talked for forty minutes straight and I urged them to just try to teach their youngest students to print well and see what happened.

One of them said, "We'll see how the people in our elementary schools feel about doing it." I answered that I felt sure the only way this would happen would be if the superintendent, the administrator and boss of the whole district, became interested and willed it to happen.

We headed home and I waited for word from them for a week. Then I emailed the superintendent and asked how he felt about my proposal. He promptly emailed his answer and wrote, "We thank you for your time and effort, but we have decided to move in a different direction."

For an instant I asked myself, "Which direction is Hades from that city?" The next instant I decided to write this short book.

Chapter Nine – The Writing/Reading Connection

I was born in 1938. When I was in third-grade it was already 1946. At that time, I could add well enough to understand that if I were still alive at the end of the century, the year would be 2000 and I would be 62 years old. That certainly seemed very far off, and who knew if I would ever even make it to be such an old man?

But I did make it, and I'm really in the twilight years of my life now. At the age of eight I had no way of foreseeing how much the world would change in the interim and now looking back I can see the changes have been mind-boggling.

I have been so immersed in the subject of the importance of teaching young school children to write the alphabet I frequently see little children writing on paper with pencils before my eyes as I enter that funny zone just between wakefulness and sleep at night. But for some reason this morning I awoke with an even more pleasant dream. I dreamt I was discussing an upcoming vacation trip to the Union of South Africa.

I have been interested in Africa for years. I doubt I'll ever actually make that dream trip, but from what I have heard and read it is a most beautiful and interesting place. One of the strongest first impressions I had of the country was through reading Alan Paton's classic novel, *Cry, the Beloved Country* (1948). This is a touching story of the son of a rural black minister and his young adult son. The son had gone off to the city in search of a better future but he had been involved in a botched robbery attempt in which a white woman had been killed. The father went on a long search in the city for his missing son, but in the end, he found his son had been convicted and was already in prison awaiting execution.

In those days of legalized racism, the son had had no formal education and no chance for making himself a dignified and successful adult in his own beautiful land. The book ends with a poignant question by the minister, aimed at a white audience, "When you finally turn toward us with love, will we have decided to look on you with hate?"

For a number of years when I was a younger, I was intrigued with Africa. I read as much as I could about the continent and its peoples, assembled an interesting small collection of African tribal ceremonial masks, and even studied the Swahili language from books and recordings for a year or so.

During my last half-year of medical training I did a fellowship in clinical neurology, under the direction of Dr. Sidney Lewis, at the Nassau County Medical Center on Long Island. Dr. Lewis was a native of South Africa and he talked about that land with love during the same months he was growing my interest in how the human brain actually works.

After I retired and became obsessed with psychology, learning theory, and education I came into cyber contact with a professor of classical languages in Johannesburg. He was in the process of writing a book on the subject of racial animosity and the various holocausts, or attempts at genocide, which have occurred on the various continents during the 20th century. He began to send me the chapters in his book as email attachment files one by one as he wrote them. I edited them for him and returned them with my comments and suggestions.

This professor also believed in the innate mental superiority of certain racial groups, but I was more than happy to do it for him because his historical survey of the subject was so informative and interesting. In the end I was additionally rewarded both with a thank you long

distance telephone call from South Africa, and by a mailed copy of his work when it was finally published.

The British email correspondent I mentioned was also a native of Durban, S. A., in the Province of Natal. She also wrote occasionally about her native land and its on-going inter-racial and inter-linguistic problems.

A final South African email contact of mine was formed on one of the education listservs with a woman from a beautiful seaside town a few miles from Capetown. Hermanus is a place popular with tourists who come to the beach to watch whales making the passage between the Atlantic and Indian Oceans very close to the southernmost point of the African continent.

The woman was interested in literacy education because she was a literacy volunteer teaching Afrikaans-speaking black child to read and write in English. In the process I visited the Hermanus website and somewhere else I learned that an estimated 75% of South Africa's adult black population is illiterate. Reading problems among the young are acute throughout the world but it would seem the problem is even more distressing there.

I am old enough to remember important events in my childhood that now seem more like history than memory to most people. I was the first in my home to hear of President Franklin Roosevelt's death on the radio. I went into the next room to tell my mother. I had no idea of what the news actually meant, but I clearly remember my mother exclaiming, "Oh, no….."

Shortly after that we first-graders were paraded into the lunchroom to hear the formal announcement of Germany's surrender. I didn't understand what that was about, either, but a few months later we heard the air raid sirens screaming at supper time to signal Japan's surrender. I felt I understood that a little better. A friend of my folks was a Marine on Okinawa at the time.

When I was in college, I was a political science major at the same time I was a pre-medical student. On one day we were all encouraged to assemble in the auditorium so we could hear the address of an important visiting historian. I only remember him saying, "The twentieth century will be remembered as the century of rising expectations throughout the world. Unmet expectations, while the average living standard is not rising, but falling for most of the world's inhabitants."

Yes, it was quite a century. It has seen the largest wars in history, genocides, widespread strife and the total collapse of several mighty empires, the rise and fall of international communism, and the arrival of the puzzle as to how open market wealth can be reconciled with the remaining stark needs of billions. And our own wealth is counter-balanced with pressing problems of politics and large tides of criminal violence, illegal drug use, blatant materialism, rebelliousness and an inordinately large compensatory preoccupation with sports and bad entertainment. I believe this is all tied to the failure of our education system and the subsequent dumbing down of our population.

The level of public intelligence and common sense is dropping like a stone. I recently read about an essay by a journalism student at a prestigious university. She wrote neither she nor the other students in her major watched the evening news on television, and most had no real interest in learning about what's going on in the world at all.

I was fortunate to have had a young life in which a good part of the world passed before my eyes. I worked on South America bound foreign registry merchant ships during two of my high school vacations, spent the summer before college in Mexico, and the one before medical school as an exchange worker with a family in Germany. Our first son was born on Guam during the two years I was the medical officer on a guided-missile submarine tender there in the 1960s. We had the opportunity to travel in Japan and we have made many vacation trips to interesting places during our married life.

Those who have read this far in this book certainly understand I favor teaching young school children to write the alphabet with a measurable degree of adeptness. And also, I am very critical of the cognitive psychology, which is now ubiquitously accepted. It is time for me to explain these things more fully.

Regarding psychology, I will say that presently this putative science seems to be flowing in two different streams. The first stream is the most obvious and the one everyone reads about. It is also the psychology governing the handling of children in our schools.

This is called "cognitive psychology." The basic force for its formation and advance is an attempt to analogize the workings of our brains to a machine, a computer.

The second branch of psychology is what I would call "biological psychology." It is harder to follow and the books and articles on this subject make more difficult reading. The emerging finding here is that the brain actually does function as a biologically evolved computer, but in ways with implications far different than those accepted by cognitive and school psychologists.

The former view the brain as a sub-collection of little black boxes, each a module in a machine performing a specific sub-function in the overall working of the conscious brain as a whole. In the view of this faction of psychologists, mental differences (which they call "cognitive differences") between individuals are mostly determined by which module isn't quite working the way it should. We could think of this as the "weak link" explanation of individual differences. It has also been called "defectology" by critics because cognitive psychological explanations are riddled with theories about presumed brain defects in the heads of many of us. I personally think of it as the "broken brain wires theory of psychology."

Psychology Professor, Emeritus William R. Utal, wrote a recent book exposing the unscientific and nonsensical theory underlying this kind of psychology in his book, *The New Phrenology* (1993). As you probably know, phrenology was popular in the nineteenth century and it was the theory a person's mental strengths and weaknesses could be determined by examining the shapes of people's faces and skulls.

And modern cognitive psychology really does have an updated version of that same silly theory, as Utal points out. Instead of feeling for little bumps and bulges on a person's skull, cognitive psychologists place the heads of subjects into brain scanning machines.

These modern marvels gradually came into existence during the last two decades or so of my medical career. CAT and MRI scans are truly marvelous and have revolutionized the way medicine in practiced. For much of my practicing career many difficult diagnoses were not made until exploratory surgery was done. And for patients who didn't get such surgery in time the diagnosis often had to wait for an autopsy.

Now scanning machines make two or even three-dimensional pictures of the interior of the body, saving much time and work, to say nothing of countless lives. One type of scanning, called functional Magnetic Resonance Imaging, or fMRI, can actually visualize where the blood is inside the body. If one does a scan of a person's brain while the subject is resting, and then repeats the scan when they are doing something (let's say, tapping an index finger), one can see if a certain part of the brain gets additional blood during the activity. In this case we would have determined the part of the brain responsible for moving the index finger. Of course, that part of the brain was already known previously. Either physical injuries or certain diseases can damage that part of the brain selectively, resulting in paralysis of the index finger. Scientists have been examining the brains to localize such areas for over a century and a half.

As has long been known, the back part of the brain (if you place your open hand over the back of your head, you'll be covering it) is where incoming sensations are received, analyzed,

and "processed." Distinct locations for the receptions of sight, sound, body position, taste and smell have been determined in adjacent brain parts.

In the middle part of the brain, the surface area underlying a strip of skull beginning above one ear and extending up, over and across to the spot above the opposite ear, is the part of the brain sending impulses out to the various muscles of the body, determining whether muscles to the index finger, or wherever, will move. This strip of cortical brain surface is called the "motor area."

From a biological point of view, one could say the function of the brain is to determine if and how the various parts of our bodies, and our bodies as a whole, move. With larger muscles it guides actions like grasping, holding, walking, swallowing, and so forth. The deeper parts of the brain control unapparent motions of breathing, sweating, digesting and the submicroscopic movements of hormones and their receptors.

The very front of the brain, just behind our foreheads, is complex and less understood. One view holds this part of the brain controls some sort of an "overseeing observation" mechanism of the mind keeping conscious track of what's going on with the sensory and motor parts and activities already mentioned. In this view humans differ from lower animals in that we are much more aware and concerned with our personal identities and fates than they are.

According to Utal, cognitive psychologists have made unscientific and illogical assumptions about the significance of brain scans, which are serious enough to be fatal to the viability of their over-all premises. It has been known for a long time that "sensory" and "motor" areas of the brain are distinct in location and in function. If we see a red light ahead while driving, this perception comes in through the eyes and its information travels to the visual sensory area at the back of the brain. When we move our foot toward the brake, that action involves activity of the location of the brain's motor area sending signals through the spinal cord and nerves leading to the muscles in our lower extremity.

But mustn't there be some sort of mechanism selectively connecting sensory with motor mechanisms? After all, not everyone brakes at all red lights. There obviously must be some "association mechanisms" linking sensory stimuli with motor/muscular responses.

Common sense shows motor responses to incoming sensations are by no means invariable or automatic. Our activities are based on all sorts of memory and knowledge that are recorded somehow in the brain in consequence of past experience. Experienced individuals obviously often react differently to identical situations than inexperienced individuals.

As Utal convincingly argues, it is virtually certain the attempts of cognitive psychologists to identify, name, and locate specific associative areas are in vain. There have been a very large number of "black boxes" in the brain presumed by various researchers to represent namable associative discrete functions. They go so far as to believe they can locate one piece of brain the controls "abstract decision making," another for "integration of memories" and so on.

Utal presents three intellectual objections to this sort of theorizing. First, it is impossible to know for sure whether nature has designed the anatomy of the brain exactly in accordance with the way we talk about mental processes in the English language (or any other language). It is possible, if not most probable, these various associative functions are either different than the ones presumed, or else the same part of the brain may be responsible for the function of several such associative functions. Secondly, localization is a problem. Utal has found articles in the scientific literature claiming the very same function is located at up to a half dozen locations on the brain surface. If six opinions exist, five must certainly be wrong, and this raises the probability all are wrong.

The third objection Utal has against the current assumptions of the practitioners of cognitive psychology is they are ignoring the most likely possibility of all. It is most likely the

associative activities involved in conditionality and decision-making are so complex that any namable mental activity must certainly involve the concerted interaction of vast number of different parts of the incredibly complex brain. It has been referred to as the most complicated collection of matter in the universe.

The idea of "associative centers" could be carried to ridiculous extremes. Who would postulate the existence of a discreet "selecting strawberry milkshake" center in the brain at a different place than a presumed "selecting vanilla milkshake" center?

Making the theories of the cognitive scientists even more tenuous, writes Utal, is the fact that brains scans demonstrating relative changes in local arterial blood flow in the brain are by no means definitive. Many lay writers describe scientific "discoveries" of "brain centers" as if certain places simply "light up" during certain activities and remain dark or silent the rest of the time. This is by no means the case. When a brain scan performed during the activity of a certain behavior is compared to the brain scan of a resting subject, the change in blood flow to any particular brain part is only fractional and often quite minimal. Technology has progressed to the point where even tiny differences can be determined by use of either radiological or computerized subtraction studies of the active points of one scan from the active points of another. While it may be true there is a slight increase in flow to one location during a given activity, there is simultaneous and continuous activity in myriad others. It is invalid to assume vital and essential harmony between very widespread different locations in the brain is not necessary for the performance of any imaginable mental activity.

I have mentioned both "cognitive" and "biologic" systems of the study of psychology, which should rightfully be the study of the psyche, or of the mind. We could also add the other non-science of "pop" psychology. During the 1970s and 1980s, there was a vast outpouring of articles in the lay literature about the "left brain/right brain" dichotomy. Although this rage has now simmered down considerably, there is still abundant discussion of if in any textbook of school psychology.

According to these erroneous views, activities and personality types could be viewed as preferential differences as to which side of the brain a person uses. "Left brain" was usually claimed to control "linear," "logical" or "linguistic" activities, whereas the right half of the brain was assumed to control conceptions involving space as well as intuitive and emotional forms of ideation.

This pop psychology is silly and wrong. It is reminiscent of the popular book by John Gray, *Men are from Mars, Women are from Venus.* It is true enough that men and women are different creatures and it is true enough the parts of one side of the brain do different things than the other. The right leg is moved from a locus on the left motor strip for example, and not from the other side. But in fact, any significant mental activity involves the interaction of many different areas scattered on opposite sides of the brain and of different areas on the same side of the brain.

Some years ago, Steven Pinker, of Massachusetts Institute of Technology (MIT), wrote a well-received book, *The Language Instinct*. Pinker wrote a masterful treatise on the subject of language in general, including the obvious fact that in various parts of the world different human groups have developed completely different languages to express the same ideas to one another. He therefore poses the question as to whether humans may be distinguishable from other animals by the human possession of a discrete neural "language organ" buried or scattered somewhere in the brain. But since the book contains absolutely no evidence for the actual existence of such an organ, the logical answer to his question should be, "no."

There is indeed an area on the surface of the brain just above the left ear (in most people), which is essential to ideas involving the integration of different and complicated symbolic and

geometric concepts. Victims with destruction of this area can no longer speak, nor improvise classical piano music, or repair complicated machinery even if they had been able to do these things before the injury.

Speech is fundamentally a form of sign language involving movements of the physical parts of the voice tract. If the hand signs of the deaf made distinctive audible sounds as the hands and fingers moved through the air, these sounds would be associable with their hand movements. A hearing person would then be able to understand the hand signing of the deaf even without seeing them. He would be able to "see with his ears."

Speech is only intelligible in its audible or signed forms. Contrary to popular belief, meaning cannot be derived from the sight of written words alone. In order to comprehend all but the most rudimentary written messages, the reader must read the text silently to himself. It is only by means of this subvocal speech that a reader can "listen to the inner voice" and derive meaning from it.

If young students labor too hard to convert visible written text into internally generated speech, their ability to comprehend what they are reading is seriously impaired. The amount of the degree of ease this process entails is proportional to the rate at which readers can read. The main cause of poor reading comprehension is lack of reading fluency, measured in the per-minute rate at which a child can correctly read an unrehearsed text aloud.

One can get a feel for this phenomenon by reading a magazine article with the text held upside down. After you read the article that way, read it again the right way. You will be surprised at how much of the information it contains you failed to retain when you read it in a non-fluent way.

Another subject quite misunderstood by "pop" psychology has to do with the interesting concept of brain "plasticity." During the early 1990s and after the collapse of the Iron Curtain, many young children from orphanages in the extremely impoverished countries were adopted by parents in western countries. Many of these children were later found to be lacking in normal development, and scans of their brains showed an abnormal lack of brain tissue.

It had not been previously known that lack of nurturing could impede the normal development of the brains of young children. Not widely known, anyway. But in medical school we were taught lack of loving nurturance in the orphanages of poor countries resulted in the children's deaths. The news about the adopted children from places like Romania and the Soviet Union brought this fact home to the public as well as to the professional community here.

At about this same time it was discovered there is more axonal material in the brains of young children than in those of older children. Suddenly a widespread theory emerged through the press. It was felt that with developing brain cells and their axonal interconnections, the principle was "use it or lose it." Simultaneously it came to be understood the neuroembryological and post-natal development of the central nervous system was not entirely under the direction of an immature child's genes. The final maturation and growth was the result of genetic influence combined with the effects of environmental experience.

As with many inappropriate beliefs, this one contains a certain element of truth. It is true the brains of children in late infancy and early childhood have more axons than older or adolescent children do. But there is an alternate theory capable of explaining this differently.

It is probable that once formed, cortical neurons bud nascent axons that then grow outward, traveling by extension analogous to the way the roots of trees grow out away from the base of its trunk. If these axons come into contact with distant nerve cell bodies in a relatively distant part of the brain, and then begin to participate in electrophysiological network activity helpful to the overall function of the brain and the individual, the result is probably that the axons become permanently viable, but if they wind up in a place where they are useless atrophy and

whither away. This gradual and efficient disappearance of extra and superfluous axons is called "axonal pruning." The principle of nature in this process seems to be, "axons that fire together grow together."

But individuals informed only by versions of the theory presented in lay publications often have come to assume that "use it or loose it" is literally true. The valid concept of brain plasticity is probably the most misunderstood biological term used by members of the general public and the press.

This belief sometimes leads to ridiculous recommendations, such as that limiting of external stimuli caused by drawing the shades in a room where a baby is napping is harmful to a child's optimal brain development.

We now know that extreme sensory deprivation and lack of emotionally motivated physical nurturance early in life can lead to brain pathology and death. I am unaware of any evidence at all that lack of extra intellectual challenge has any negative effect on the brain or mental development of any reasonably healthy child still too young to attend school.

The analogy I personally make is with the watering of a tree. If a sapling is watered too little, it is possible the growth of the tree may be stunted. It does not logically follow that excessive watering of a tree will lead to the growth of an exceptionally tall or healthy tree.

Another half-truth, which has become part of contemporary folklore, is that "now it has been found new cells can be produced by the brain." For a long time, it was considered axiomatic neuron cells within the brain and spinal cord of the central nervous system are incapable of multiplying or being reborn if they are destroyed and die. If a segment of the spinal cord is injured by trauma or disease the resulting par paralysis is permanent and incurable. It is well known that other body tissues, such as those of the skin or liver, can quickly and easily regenerate even if large numbers of cells die off in a focal locality.

But in recent years an interesting report appeared on the autopsies of several cancer patients. These patients had been treated with chemotherapeutic cytotoxic drugs killing cells, which are in the process of dividing, or multiplying. Cancer cells undergo uncontrolled cell growth and become large as expanding tumors. The fact cancer cells are more likely to be dividing at a given moment than other cells is the rationale for the use of these chemotherapeutic agents. Because bone marrow cells and the cells in hair follicles also turn over and are replaced rapidly, the side effects of such drugs involve abnormalities of blood cell generation and of hair growth.

In the study in question, the patients had been given a chemotherapeutic agent which had a radioactive tracer substance inserted into its molecular structure. The molecules of these drugs are incorporated into the bodies of multiplying cells.

On doing autopsies on the cancer victims after they had succumbed to their illness, it was found by microscopy of brain tissue there was radioactivity emanating from apparent cells within the brain. There are supportive connective tissue cells scattered throughout the brain, which can sometimes be difficult to distinguish from neurons (brain cells) visually. Special staining techniques suggested the new drug-containing cells were true neurons.

There was much hoopla in the press about this finding. The public has come to believe that not only is the brain plastic in a developmental sense, but perhaps experience such as learning actually involves the appearance of new cells in the cerebral cortex.

This is also a misperception. The presumed new cells found were limited in location to the amygdala of the brain, a small area at the base of the limbic system, and to the olfactory system where incoming perceptions of odors are processed. No evidence of the appearance of new brain cells has been observed in the cerebral neocortex where the process of learning and memory are known to occur. It is certainly true the way circuits are apportioned and arranged

among existing cells is changed by experience, and this is most certainly much more important to learning than the putative appearance of brand-new cells or inter-cellular synapses.

I have given a most rudimentary version of the way the cortex of the brain is viewed. This cortex is just a thin mantle covering the surface of the brain. It is basically spherical in shape, although there is a constricted area running from back to front making the over-all shape of the brain surface more like a dumbbell than like a basketball.

So the cortex of the brain, the most biologically sophisticated part, can be viewed as a potentially hollow organ. This cortical layer is composed of perpendicular stacks of brain cells, or neurons, which act something like biological transistors. The "hollow" interior of the brain is largely filled with "white matter" consisting on thread-like extensions of the nerve cells. They are thinner than spider webs and enable activities of neurons in one part of the brain to be signaled to almost all other parts of the brain. These conducting fibers are called axons.

It has been estimated there are trillions of neurons and over twenty-five thousand miles of axon filaments in the human brain. Imagine a computer with that many transistors etched onto silicon chips and interconnected with that many conducting wires or pathways.

According to accepted evolutionary theory, the earliest brains capable of some sort of consciousness date back to the first predatory little fish and foraging insects. After billions of years of natural honing, the resultant computer brain is incredibly capable and even functions as the mechanism for the soul.

There is more to the brain than a spherical cortex and its interconnections. Lower forms of vertebrate life, like amphibians and birds, don't even have a cortex around their brains. In such creatures the brain is more like a solid ball of neuronal cells. Such animals are not capable of emotions, though they exhibit "arousal states" associated with activities involving fear, hunger, predatory attack or procreative behaviors.

At a higher evolutionary level there appears a new strip of brain tissue about the most primitive of "reptilian" brain just described. This latter "newer brain" does in fact generate emotions. It is possible these instinctive emotional drives developed from previous mechanisms that connected the perception of odors with the various arousal states. This emotion-generating neural system is called the "limbic system" because it is shaped like an arch and extends around the older instinct-bearing basal brain parts.

It interesting that as higher brain levels and mechanisms arose, the old ones never disappeared. They are still present and demonstrable in more advanced animals. They coexist at respective physical levels within our skulls. In primates, including humans, the evolutionarily older parts of the brain are located inside the spherical hollow cortex. The oldest parts are the hypothalamus and many other structures collectively called the basal ganglia. The limbic system is above these solid masses of brain cells and wraps around them

In Ancient Greece it was postulated there are three different levels of the mind (or soul). Much later Sigmund Freud intuited the coexistence of "id", "ego" and "superego". A half-century ago, Paul MacLean, of the National Institute of Health's (NIH) primate research laboratory, elucidated the more modern version of this persisting three-part mind and dubbed it "the triune brain."

Chapter Ten – The Brain/Mind Connection

There is more known about how the brain works than the public absorbs by reading newspaper and magazine articles written by science writers. Besides "cognitive psychology" and "pop" psychology there has been a growing stream of truly fascinating developments in the legitimate field I refer to as "biological psychology."

Prior to about 1990, the best book to give an overall presentation of practical brain physiology had been written in the late 1960s by the author Magoun. The title was, *The Waking Brain*, and I read it while I was a fellow in clinical neurology in 1969. The main focus of the book is its description of the Reticular Activating System (RES) in the brain. This is a system of diffuse and interconnecting neural fibers permeating the midbrain and the posterior basal ganglia with presumed radiations outward to the more peripheral parts of the brain from there.

The book was written for medical professionals and it definitely requires a knowledge of professional jargon and a professional knowledge of neuro-anatomy to be understood. The RES is not often mentioned in lay articles, but it is very important in that it controls consciousness and mental attention to specific topics. Destruction of this system with progressively severe brain swelling due to injury of disease is the typical cause of death in these conditions, because it is closely connected to the brain center driving breathing.

In the past fifteen years three other very excellent books have been written for intelligent lay readers by inspiring experts. The *Number Sense* was published simultaneously in France and in English by Stanislas Dehaene. The book is full of fascinating information about how we handle the perception of multiple objects.

Another informative book is Frank R. Wilson's, *The Hand*. Wilson is a neurologist specializing in dysfunction of the hand in professionals relying on complex motions like musicians and artists. His knowledge of the anatomy of the hand and the cerebral mechanisms controlling it are prodigious. Much of the book is devoted to the comparative anatomy of the human and chimpanzee hands. The two are grossly somewhat similar but Wilson fills about 80 pages with a technical description of the differences.

The fundamental difference between the human hand and the hand of the great apes is the human hand is the result of an amazingly more complicated piece of evolutionary engineering. The human hand is capable of a vast number of things the others simply can't do.

Wilson describes the way the brain and hand had to evolve in parallel throughout the eons so humans could not only possess these advanced hands but also use them to advantage. His final conclusion is persuasive. He believes the most important difference between a human and a chimpanzee brain is humans possess the cerebral mechanism necessary to manipulate a human hand while chimpanzee brain possesses only the mechanisms, limited in comparison, of the chimpanzee hand.

Wilson goes so far as to posit this kind of neural machinery is exactly what makes speech possible. This possibility is just as exciting as the realization speech depends on the perception of muscular movements (of the voice tract) and therefore on geometry. Humans can conceive of a vastly larger array of geometric shapes than lower animals can. Because of this added complexity, the number of possible patterns, which can be accurately perceived and remembered increases by multiples. Such patterns can be used as symbols. And that's what languages

depend on whether the languages are spoken, signed, or others such as the languages of mathematics or music.

The third intriguing book of recent years is Antonio Damasio's *Descartes' Error*. Descartes was a mathematician and philosopher most remembered for the phrase *cogito ergo sum*, or "I think therefore I am." He wrote in the seventeenth century immediately after Sir Francis Bacon had introduced the modern era of history by his pronouncements on the nature of the scientific method of thought.

This conception of science was threatening to religious traditional thinkers because Bacon had been led to the logical conclusion "knowledge that does not lead us to an increased control over our environment is not knowledge." Descartes apparently had intended to counter this heretical notion by devising an intellectual underpinning proving the existence of immaterial beings and of the immortal soul. He reasoned it was possible to consider that perceptions of reality are illusions, and we don't really exist except in a type of hallucination. But he added it is not possible to deny us having the illusion of reality is real. He wrote if two things have different qualities, they couldn't be the same thing. So the thing doing the perceiving cannot be our physical bodies or brains because for all we know they may not even exist.

Descartes' theory was read with interest by some religious authorities, but the interest did not continue. At the time Galileo was under house arrest in Italy for having suggested the biblical suggestion the sun orbits the earth was not in fact true, and Copernicus had been right. So Descartes stopped writing such philosophy.

Damasio's book is about how the brain indeed does generate consciousness and mentation, hence his title. Descartes was wrong. We do exist and our physical brains do generate mentation. This idea was first explicitly expounded by the French encyclopedist who wrote *L'homme Machine* (Man the Machine) in the late eighteenth century.

Damasio's main thrust in *Decartes' Error* was to place emphasis on the way emotions influence reason. The book begins with a detailed account of the life of Phinneas Gage, an engineer on the early railway building projects in Massachusetts. During the 1830s he was injured as a consequence of an explosion while blasting rock for a railway bed. A steel tamping bar was thrown upward. It entered Gage's face and exited through the top of his skull, traversing his brain.

To everyone's amazement the injury was not fatal. He recovered and lived many years thereafter. Although his overall mental facilities were preserved, distinct personality changes resulted from the brain injury. His behavior was much less responsible during the remainder of his life. He was never able to return to his original occupation and became somewhat of a drifter.

After Gage died his skull and the original tamping bar were preserved. They wound up in a museum. Professor Damasio, who is perhaps the world's most authoritative interpreter of cutting-edge neurophysiology for the lay public, was able to determine the exact parts of the brain, which had been destroyed. These parts were the inner and lower segments of the frontal lobes above the bony roofs of the eye sockets.

Damasio then reviewed the medical literature. What he found was personality changes tending toward the sociopathic often occur after brain injuries of this nature. With this knowledge Damasio saw this part of the brain plays a crucial role in connecting the system of emotions and the higher intellectual systems within the brain. Vilayanur S. Ramachandran, MD, PhD, who is Director of the Center for Brain and Cognition and Professor of Neuroscience and Psychology at the University of California, San Diego, has been another scientist active in exploring this same avenue of research and thought.

Damasio wrote of the vast importance of emotional influence in rational thinking and the making of subjective judgments. Ramachandran has amplified this research and has publicized the case of a young man with a brain injury similar to the one Gage had sustained, as a result of an automobile accident. In Ramachandran's case, the patient had recovered to the point his mentation was essentially normal. But he believed his father was a different person who just happened to resemble his father perfectly. It was the same with his home. During a prolonged period of convalescence this medical patient felt his home was just an identical copy of his real home. But if he spoke to his father on the telephone, he could recognize the voice as that of his true father. And if he entered his home through an alternate entrance, he could again identify it as his true home.

Ramachandran explained these phenomena by explaining the emotional responses to his home and to his father had been disconnected by the brain injury. The reason he felt his father was just a human copy was that when he saw his father, he did not experience the identifying emotional reaction to him.

Ramachandran is also famous for demonstrating the way we name things and the way we choose words to symbolize certain thoughts are to some extent not totally arbitrarily determined and culturally dependent events. The process also seems to be influenced by inherent factors in human nature.

He drew two abstract geometric figures. One was a blob with tapering extensions having rounded points on them. It looked somewhat like the image of an ameba under a microscope. The second figure was similar except its projecting extensions, or pseudopods, were sharply angular at their points, making it more resemble a shard of shattered glass.

He then presented these two figures to experimental volunteers. He told the subjects one of the figures was named "Boubah" and the other was named "Kiki". Subjects were asked their opinions as to which was which.

He found over 90% of respondents correctly guessed Boubah had rounded extremities and Kiki has sharp pointed ones. This response was uniform irrespective of the national or cultural background of the subjects.

This experiment clearly proves the innate basis of the poetic technique of onomatopoeia. Words like "buzz" and "cuckoo" obviously have sounds directly reminiscent of their actual meanings. Additional such words are "slap", "kick", "knock" and "pound". Somewhere I once read the word for mother in the many languages of the world so frequently begin with the sound we associate with the letter "m" it couldn't possibly be a coincidence.

People who study languages tell us once we have formed a really solid and fluent association between ideas and concepts and the words symbolizing them in our mother tongues, by the end of early childhood we tend to feel all words actually sound like what they mean. We also begin to act as if we were genetically programmed to specifically speak our mother tongues. It is commonly believed that adolescence human brains lose the ability to learn foreign languages perfectly and without a telltale accent. I think it more probable by that age we have learned our first languages so well it is impossible to suppress the automatic inclusion of some of its characteristics or rhythm and timber when we try to mimic the speech of foreigners. One language teacher once told me, "If you don't sound ridiculous to yourself when you try to speak in a foreign tongue, you are probably not doing it right." Even the willingness to sound ridiculous, helpful as it is, is not one hundred percent effective in suppressing those sounds.

The University of California at San Diego seems to be a fountain on interesting innovative ideas associated with biological psychology. It was there that the late James Crick, co-discoverer of the helical structure of the DNA molecule, updated Sigmund Freud's theory of

the biological function of dreams. Freud believed dreams are the way we resolve unconscious emotional conflicts.

While that still may be partially true, Crick came up with the even more plausible theory that dreams are a way for the brain to compact the computer-like files in its memory bank. The human brain is incredible in its ability to store memories. Even more amazing is the brain's ability to decide what to remember and what to forget. This automatic compacting process makes the biological computers in our heads more efficient and capable than they would otherwise be, unless memory capabilities were literally infinite, which is an obvious impossibility.

It would be logical for the brain to forget memories that are unimportant so more computer memory space would be available for storing memories truly important to future effective behavior. The idea dreaming is actually part of a process of the brain trying determine which memories are worth fortifying is a good one.

An email correspondent of mine who is a retired expert in artificial intelligence and the military and space applications of computer technology, Jack McVicers of Scottsdale, Arizona, has written me this theory is completely plausible from the point of view of computer engineering. Jack has been both kind and generous in mailing me literature on artificial intelligence. The math in some of his articles was daunting to a person like me who has never taken a calculus course, but in rereading them attentively, I feel I got enough out of them to start making some analogies between computers and the brain myself.

Jack is also an expert on the subjects of acoustics. What he taught me about the physics of the cochlea in the ear and how sounds are processed has also been important to me in trying to understand how we use audible symbols to represent ideas.

Although the main importance placed on modern brain research by Antonio Damasio and Dr. Ramachandran is to emphasize the influence of emotion on reasoning and judgment, there are revelations in Damasio's book I found even more important.

Damasio describes the way the brain produces mental images of sensory perceptions in considerable detail, even though much more about this will no doubt be learned in the future. When we see something, its image is passed through the lens of the eye and projected onto the retinas at the back of their eyes. These visual images are upside down and backwards, just as they are on the film in a camera.

Information about the configuration of the images is transferred to the optical processing area at the back of the brain on the surface of the occipital lobes. Most fascinatingly, this causes a pattern of excitation of the cells on the surface of this part of the brain, which are geometric copies of the images on the retinas themselves. If a functional brain scan is performed on a subject looking at an image of a circle or of a grid, identifiable patterns of these same images appear on the scans of the area. They can be clearly seen on the radiologists' computer screens.

And even more informatively, it has been shown these same "topographically correct" images reappear on the surface of the visual cortex when the subjects are no longer looking at the original images, but are simply requested to remember and think about them. This means, as Damasio explains, sensory visual images are recreated on the visual cortex as part of the process of sensory visual perception. Knowledge of these patterns is obviously then stored in another part of the brain, and this encoded knowledge is capable of recreating the corresponding pattern of neural excitation as a result of thinking and remembering.

This realization is so exciting because it elucidates the mental process of recognition. When we see something, an image of it is generated both in our eyes and on the surface of the brain. The neural pattern reappears when we think of that image.

When we see an object, the pattern appearing on our brain surfaces is analyzed and translated into some sort of computer-like information stored in the memory areas of the brain. If we see that image again another time, the brain automatically searches through its memory banks to ascertain whether or not the memory of some reasonably similar pattern exists. If such a memory is located, it is activated. If there is a reasonable match between the perceived pattern and the remembered one, then the individual suddenly experiences a realization of recognition.

Recognition is not synonymous with identification, but it is an essential intermediate step. As Marilyn Adams emphasized, an association between a symbol and an idea cannot occur unless there is a previously existing knowledge of both the idea and the symbol. According to my desk dictionary the definition of the word "recognize" is just, "To know to be something that has been perceived before."

Damasio refers to the perceptions of seen objects as "images." This is logical enough because the word is of French origin and it means "pictures."

Damasio extends the use of the term to any type of sensory perception. Our brains can perceive, store and recollect visual images and also sound, smell, touch, or sound images. There are separate brain processing areas for each of these sensory modalities.

As the experiment involving the Boubah and Kiki images proves, there are mental connections between one sensory system and others in parallel fashion. When we see a shape, it makes us think of a sound. Some people associate specific musical tones with colors. In the subject of Luria's book, *The Mind of a Mnemonist* identified the sound of the church bell in the Russian village of his upbringing with the color purple.

This phenomenon is called *synesthesia*, or simultaneous feeling. It has emerged we are all closet synesthetes to some degree or another. If a basketball is placed in our hands when our eyes are closed, we determine the shape and texture of it with our hands and fingers. Once we have correctly identified it, the visual memory of a basketball immediately and automatically springs to mind.

When we hear the sounds of spoken language, the pattern of hair cell excitation along the basement membrane of the ear's cochlea forms a pattern of excitation analogous to the visual patterns thrown onto the retina. These patterns of sound perception are forwarded to the primary auditory processing center on the surface of the temporal lobes lateral and anterior to the occipital visual areas.

The patterns of nerve excitation here are again "topographically oriented" and reflect the similar pattern standing on the membrane in the ear. In this way streams of changing sound synesthetically produce mental images of geometric forms in at least three dimensions. We all know how classical music, pulsing, rising and falling in pitch, swelling and sinking in volume, can evoke images of trajectories traversing hills and valleys, occasionally rising or soaring into the sky.

There are also emotions activated by both the shapes and the sounds. Here is a valid theory of thought and of spoken language. Language is not necessary for thought. Thought exists as sequences of imaged images made possible by cerebral information derived from both instinct and experience. The purpose of this "mentalese" is to enable us to experiment with conceivable behavioral options. We can test them against world logic so we can determine the best option. Many other animals do the same thing. The most famous type of decision they make is when facing with a potentially dangerous adversary. They must decide whether it is better to stand and fight, or to turn and flee. Konrad Lorenz gave us a marvelously innovative and helpful description of such animal and human behavior in his epochal book of the 1960s, *On Aggression*.

Contrary to the assertions of many collectivist philosophers during the 20th century, speech is not thought. Speech is just a humanly possible method of communicating our thoughts to other individuals. And music is a pleasurable celebration of the rhythmic and geometric potentials of our brains making speech and language possible. Knowledge is not "constructed." It is simply known and associated with other knowledge by habit.

Chapter Twelve – How Children Learn to Read

Speech exists in both oral and written forms. The conceptual aspects of each are parallel to one another in many ways. The learning of the language of music and of learning to play a musical instrument are also parallel to it, as is the learning of almost any complex system of study. A discussion of these latter subjects is beyond the scope of this present book.

I have mentioned the schema theory held important and dear to writers Marilyn Adams and E.D. Hirsch, Jr. Hirsch's *Cultural Literacy* is available as an inexpensive paperback. It is indispensable to anyone interested in improving education. The second chapter is devoted to an explanation of what "schema theory" means and how it relates to learning and to education. This chapter alone is worth the price of the book.

By means of one brief example, if one tries to learn the appearance of a painting of a rural scene containing a cottage, a meadow, some cattle, a small stream and footbridge and some birds flying overhead, the task will be much simpler for an individual who already has prior knowledge of the appearance of cottages, meadows, cattle, streams, footbridges and flying birds. It is the essence of common sense. Hirsch shows knowledge is like "mental Velcro." Once a mind contains sufficient basic knowledge, new knowledge tends to adhere in memory to related knowledge already there. Adams extends the idea to learning to read.

Adams points out knowledge of letters leads to the ability to perceive and recognize sequences of letters. This leads to easier familiarity with the written syllables. She postulates there are about 5,000 different written syllables in English, about the same number of abstract geometric characters Chinese children learn to recognize and identify before they become highly literate in their language.

I like to put it as follows: *It is not possible to mentally envision, remember and recognize the written word "at" unless one is first quite familiar with the appearances of the letters "a" and "t". One cannot conceive of the written word "cat" without first being capable of envisioning "at, and "cat" precedes "catch", which in turn must precede "catching."*

Some months ago, I fell into conversation with a severely dyslexic seventeen-year-old boy. He told me he was dyslexic because his birth mother had ingested cocaine during her pregnancy with him. He believed the ensuing brain damage had made it impossible for him to learn to read normally.

I asked him to spell "candy" and he did so immediately. He explained that was possible because he had memorized the verbal sequence of alphabet letter names in the world, "C-A-N-D-Y spells candy."

I asked him if he could close his eyes and picture what a capital "H" looks like. He said he could; it was easy. I then asked him if he could mentally picture the word "IT", written with capital letters. He said he could not, adding the mental imagery of words is much more difficult than the imagination of single letters.

Then I pointed out "H" is formed by adding a short horizontal line to two straight vertical lines. "IT" is likewise formed by exactly the same combination. Only the relative position of the horizontal bar shifts somewhat in the conversion of "H" to "IT." One is no more difficult than the other. The boy stared at me long and hard, not knowing what to say.

Some years ago, I had considerable email and surface mail contact with some psychologists who are practitioners of a subdivision of Behavior Analysis known as Precision Teaching (PT). PT folks measure the rate at which students can perform the skills they are trying to acquire. It was PT researchers who had done the study in Seattle showing children who can deliver simple addition facts at something faster than a basal rate of fluency never have subsequent problems in math if this skill is acquired by sufficient practice before the end of second grade.

PT people use their own special graphs to chart student progress and they believe the rate of change in rate (called "acceleration" as opposed to "deceleration") of behavior is an important constant in studying the success of students in virtually any learning domain. I was particularly impressed by the PT definition of "fluency." Their definition involves a series of positive statements about it. According to them you are fluent at a given activity if:

1. You can perform it at a high rate of speed.
2. You can perform it accurately with a minimum of mistakes.
3. You can continue your performance for relatively long periods of time without undue stress and fatigue.
4. You can persist in your performance even in the presence of external distractions which would interrupt the performance of a less fluent student.
5. You can perform the activity well even after long periods without regular practice.

The PT enthusiasts, many of whom specialize in the education of autistic or retarded children, have found when learning a complex activity, learning tends to proceed through a predictable sequence of steps or stages. They have also found the almost invariable cause of a learning arrest at one of these learning stages is lack of adequate fluency at the performance of the activity of the preceding learning step. And they found if adequate fluency is attained at each step, progression to the next one is relatively easy. Students often seem to make the advancement almost spontaneously and without specific instruction from the teacher.

I was very happy to have these shared insights. The concept of practicing to the point of fluency and of schema theory seemed to dovetail nicely. If children learn to envision individual letters quickly, easily and automatically (or "fluently") then the ability to envision combinations of letters in sequence is not difficult either.

Aristotle wrote that one learns to play the harp by playing the harp. It is apparently not true that one can strengthen a generic ability to remember things in general. Learning Latin certainly must offer many advantages to the learner. However, it will not increase one's ability to remember telephone numbers or items on a grocery list.

It is certainly true that success breeds success. Success at learning Latin may well give students a sense of pride, self-confidence and determination, which is helpful in many different ways.

Pioneer psychologist, William James, once undertook to memorize poetry to see if it would make him faster at memorizing it. He timed himself to see how long it took him to memorize a certain number of lines or verses.

The exercise no doubt benefited James, but he never found his speed at memorizing poetry increased. But when it comes to learning specific things, repetition is certainly the key to learning. As the saying goes, perfect practice makes perfect. And we get good at remembering a specific thing by remembering it over and over. We get good at remembering by remembering. Think of a person practicing the delivery of a memorized speech. The night before he stands in

his living room reciting the speech over and over. The presence of a prompter with a written version of the speech is an obvious facilitator of memory and learning.

It occurred to me if little children are to be able to automatically recognize written syllables, and then use schema theory to learn to recognize "written entities" such as words and common phrases ("in the park", "after the party"), the first thing to do would be to have the children practice remembering what individual alphabet letters look like.

In theory it should suffice to tell our five-year-olds, "Please spend five minutes each day remembering what each of the capital and small letters in the alphabet look like." Yes, this would be fine in theory. But how many five-year-olds would actually do it?

Suddenly I realized if a child writes an alphabet letter with a pencil, the child must imagine, or remember what the letter will look like before the pencil tip can begin to move. And applying the principle of synesthesia, we can quickly understand if a child has learned the trajectory the pencil makes in writing a letter, the physical form and visual appearance of the letter are learned simultaneously and automatically.

This is not to say it's wise or beneficial to emphasize speed in printing in itself to young students. As a matter of fact, it isn't a good idea at all. If one attempts to do something fast, one does it as quickly as one can. In other words, one rushes. We can never do anything well if we rush or do it as fast as we possibly can. The idea of fluency is not to be fast. It is easy, relaxed and automatic we are striving for. That is how pianists practice a new piece. They always play slowly. As a piece is played more fluently, what seems slow to the artist is actually faster and faster to his audience. It's the same with teaching kindergarten students to write the alphabet fluently. Just a few minutes a day for a few months will suffice. But the children must never rush. They hold their pencils as lightly as possible. They concentrate only on ease and legibility. Speed then takes care of itself.

Writing with a pencil is a marvelous exercise for young children. Pencils as we know them were invented in the first half of the nineteenth century. Before that there was a lead "plummet" used to write instead.

There is a right way and a wrong way to hold a pencil. It is described and illustrated in Romalda Spalding's book, the *Writing Road to Reading*. Both my mother and my mother in law were born shortly after 1910. Both remember filling entire pages with the letter "a" in the early grades and they do not remember any children failing to learn to read.

The pencil should be held in a relaxed hand and with a natural position to the hand. As Spalding pointed out, the most common reason children have trouble learning to write is holding the pencil too tightly or pressing too hard on the paper.

This is not taught in most classrooms. Most children (and even adults) hold a pen or pencil with an awful "monkey fist." I saw a young woman actually holding her pen the right way the other day. When I commented she said when she learned to write, the teacher taught the children how to manipulate chopsticks at the same time they were learning to hold a pencil. Maybe she has something there.

With the Suzuki method, young children about to begin violin lessons are given an exercise that teaches them the lightest and most effective way to hold a bow. The lesson is the same with holding and using a writing instrument. To do so effectively requires only the minimal amount of muscular work to perform easily and effortlessly.

A common and effective teaching practice is to have little children learn to "air write" the letters with a finger or hand. Maria Montessori wrote almost 100 years ago that she easily taught the three- and four-year-old children of poor working families in Rome to write even before they had learned to hold a pencil. She taught them to make the trajectories of the letters with a finger.

Afterwards the children only had to hold pencil to paper and move the hand in the same way in order to write the letters on paper.

Many teachers worry that a significant number of children don't have the "fine motor control" necessary to become skillful at printing alphabet letters at the age of five or six. But I have corresponded with a physician who is a published expert on "the clumsy child syndrome". This entity only appeared in the medical literature in the past twenty years. Its name was changed to the lexically inappropriate term "dyspraxia", and later to its present official designation as CDD, or "coordination deficit disorder". But according to my source, "clumsiness" in the absence of demonstrable neurological abnormalities (which is essential to the diagnosis…if a neurological abnormality exists, its diagnosis supercedes the default diagnosis of "clumsiness"), this condition, while globally incurable, does not preclude the acquisition of specific skilled motor skills with adequate coaching and practice. So for the purposes of schooling children in the classroom, this condition may be ignored.

One day during a recess on the roof of Montessori's preschool a boy who had only been taught the letters, but knew nothing about reading announced he could write words. When the doubting Montessori challenged him, he took a lump of coal and wrote "mano" (hand) on the rooftop.

Suzuki teaches young violin students to hold the bow the easiest and most natural way. When Montessori's book was published in English, the Harvard professor supplying the preface wrote, "That couldn't possibly work with English-speaking children."

But it will work! The only reasonable definition of "dyslexic" is a dyslexic child is one who has not learned to read well by the time his grade peers have. Once a reading problem has been defined and established with psychologist, parents, teacher and child it is devilishly difficult to remediate. The trick is to prevent it before the end of first-grade. The best technical definition of dyslexic is "a child who appears unable to remember what written words look like."

In order to remember what a word looks like it is necessary for a child to remember what its component written syllables look like. Notice for yourself when you envision the appearance of a one-syllable word, you see the whole word written in your mind's eye. But with longer words we can only envision one written syllable at a time. In imagination the other syllables are indicated only by their veiled positions. We don't actually see how they are spelled unless we turn our mental attention from one to the other. When we write or type, we proceed to do so automatically without even thinking about it.

It is widely believed that in the earliest stages of the acquisition of literacy young children go through a phase of reading "logographically." This refers to the remembering of the geometric forms of written words without any mental reference to the correspondence of letters (graphemes) and letter-sounds (phonemes). Children often can recognize some words and product logos (like the one on bottles of *Coca Cola*) before they can really read at all.

But research has shown this to essentially be a myth. The British reading researcher, Morag Stuart, has demonstrated the number of written words five-year-old children can learn to reliably recognize without confusion with other similarly written words is approximately zero unless they understand the alphabetic principle of representing sounds with letters. But once they understand the alphabetic principle and learn to recognize known words as familiar, they expand their sight vocabularies with a "sponge like" facility.

One can't associate a word with a graphic symbol without knowing both first. That's why the Chinese began writing words phonetically under the written characters in beginners' books years ago.

Once a child knows letters well enough to be able to mentally envision three of them in a row, the child will ask how a few simple spoken words are written. A teacher or parent should

start with some of the twenty-five two-letter words in common English (it, at, as, if, on, etcetera). After they are secure one proceeds to three-letter words (cat, hat, cut, hut). **Teaching the first thousand words by grouping them into such gradually more complex word families after children learn to envision letters fluently is a faultless method of ensuring fluent literacy by the end of first grade if it is done systematically**.

If a child can read aloud and accurately a text composed only of the thousand most common words in children's vocabularies fluently by the end of first-grade, the child will be a good reader and a good student for life. Fluency in this case may be defined as a minimum of 120 correct words per minute read aloud. With this degree of fluency children are able to pay attention to the "inner voice" and reading comprehension also takes care of itself.

The NICHD has proved this by studies and has prescribed specific reading rate fluency goals for the end of each of the specific early school grades. According to their studies lack of reading fluency is the principal cause of low scores on reading comprehension tests in American elementary schools. E.D. Hirsch, Jr. has an opposing and erroneous opinion. All of his writings indicate he believes the sole cause of poor reading comprehension is lack of the knowledge necessary to understand the meaning of the written sentences.

The best way to teach children how words are phonetically encoded (and all written English words are, no matter how idiosyncratic and arbitrary the choices of our spellings are) is to teach children to write them "iteratively." That means as a beginning student writes a word, he or she should silently say the sound that letter happens to represent in the very same word. Learning rules of "phonics" is not necessary at first. The child simple learns the "e" in "the" is pronounced short before words starting with consonants (the man, the store), and long when before an initial vowel (the apple, the orange). This reverses the order in which children learn to go from "sounds to letters', proving the order makes no difference.

Iterative writing is an absolutely essential habit for young students to develop. By means of this technique they learn to associate the geometrical trajectories of written words with the corresponding spoken words.

There is a young man in Britain who is incredibly adept in mnemonics. He has memorized the mathematical representation of pi, the ratio of the circumference of a circle to its diameter, to so many decimal places it takes him five hours to recite them. He learned the Icelandic language in one week and demonstrated his ability on a live television broadcast in Reykjavik so well as to have his interviewers laughing at his jokes in Icelandic. He has a strange and amazing way of mentally representing numbers to himself. As he demonstrated to Dr. Ramachandran in San Diego, he has associated complex three-dimensional geometric forms for each number between one and ten thousand. He showed what they look like by modeling them from play dough. One expert on idiot savants proclaimed, "We all probably have a bit of the Rain Man in us."

Our spoken language depends on acoustical representations of geometric symbols transmitted through the air in sound waves. The same thing is true with writing. We know a pencil or hand trajectory for each word we can write. If we are fluent at touch-typing, we also know the thousands of finger dances necessary to express ourselves on a keyboard.

The essence of mentation is twofold. First, we must be able to make mental representations of reality. Second, we must be able to associate memories with one another. We are all familiar with Freud's free association test. And as Mark Twain observed, a cat will only sit on a hot stove once.

This "iterative writing" which involves the stretching out of a spoken word and emphasizing its component sequence of phonemes as a child writes is a time honored and extremely effective way for children to learn penmanship, letter-sound correspondences,

the alphabet principle, phonemic awareness and spelling all simultaneously and spontaneously. This put the lie to the prevalent idea among phonics fanatics who insist the association must be learned "from sound to letter and not from letter to sound."

It doesn't matter which way they learn, as long as they learn. As Samuel Johnson once quipped there is little profit in pondering too long about which leg will go into the trousers first.

Marilyn Adams wrote the most important habit for beginning readers to acquire is the habit of glancing back at a new word immediately after it has been "sounded out." In this way, the letter-sound correspondences are verified, and the image of the word can be mnemonically stored in memory.

That is also a most important principle. However, no one has ever checked this out to see whether it would work or not. In the article by Professor Groff referenced in the article I submitted to the Harvard Education Review, appended after the end of this book, he wrote no one can truly tell if it would work unless someone checks it out first. In his concluding line, Groff writes, "Until that time we will continue to be guided by personal intuition and by armchair philosophy."

Chapter Thirteen – The Curriculum

In this morning's newspaper there was an Associated Press article on the finding of a study by Harvard University's Civil Rights Project and the Urban Institute. They have found the rate at which high school students graduate with their classmates after four years of high school in the South is only 64.5%. They call this "depressing" and refer to the situation as an "educational and civil rights crisis." The pressure to do something about public education in the United States is building to a highly suspenseful and almost unbearable level.

During my years as a practicing primary physician I had occasion to chat with many teachers, students and parents. I know children generally dislike school and parents generally feel the same way, though many of them are reluctant to say this openly.

School may be considered children's occupation, and their re-compensation is knowledge and skills. If children dutifully labor at schoolwork and this effort is supported by parents, the consumers of education will still remain disaffected unless the expected payment is delivered.

A poll mentioned on ABC News last week reported 75% of newly hired teachers feel the attitude parents generally hold towards the schools is "adversarial." Education is one of the largest industries in our country, employing millions of teachers and spending hundreds of millions of dollars each year. This expense is reflected in high taxes, especially property taxes.

This problem demands a resolution. As the authors of *The Bell Curve* write, "Education and productivity are intimately interdependent. Educated workers are productive workers and a productive workforce will produce a maximal amount of national wealth."

And wealth is exactly what we and the world need. The world faces major problems with population density, energy needs, healthcare, pension funding, food, education, a renewable environment, housing and public transportation. Wealth will be required in order to confront and resolve the challenge of our many problems and education is the key to the production of wealth.

If education can be delivered privately, more economically and effectively than it presently is, large amounts of public funds could be diverted to other worthwhile ends at the same time the tax burden on the public could be diminished. I am a firm supporter of the tradition of free and compulsory education system originated long ago by Horace Mann. Almost every graduate of a public high school remembers his days there with special fondness.

It is conceivable the privatization of public education could result in a better product at a lower cost. That would be depressing news for most of us but it would force careful consideration.

The system of public education is so firmly grounded in American tradition it is unthinkable it could end unless some clearly better system is demonstrated to public satisfaction. It is not unlikely that the dramatic change in educational techniques we need will be accomplished by some public-school district somewhere. That would prove the mission is possible of accomplishment and the rush would begin for other schools to replicate their success.

That very process might well bring an ironic end to public education. If one public school district could redeem itself then any and all could in theory. But education is too large an industry to escape the enveloping tentacles of bureaucratic inertia.

It could turn out so many individual principals, teachers, superintendents and school boards are so wedded to their habitual ways that no demonstration of superior pedagogic technique would be sufficient to induce successful change, and that would be a terrible thing. Public education would become the victim of public education.

As Samuel Johnson also said, "When a man knows he's to be hanged in a fortnight, it concentrates his mind wonderfully." We all certainly hope public education will be up to the task.

Education theory is actually simple. We must decide what to teach, then teach, then check to make sure our pupils have the knowledge or skills we want them to learn.

Hirsch has demystified education just as he claims he did. Educated students should possess the same body of knowledge and skills possessed by educated people. Since the goal of education is to produce productive people and good citizens, the examination of a certain number of people earning over 150% of the mean national household income would be appropriate. And we must run police checks on each of them before they are included in the study group. Many of us will maintain we could not pass the same tests today we passed in order to get our high school or college degrees, but that doesn't matter.

I recently tried to remember how to prove the Pythagorean Theorem. It took me a long time to do it, but I was finally able to scissor out all those little triangles and show my grandson how they do exactly fill the square of the hypotenuse. It is not necessary to be able to do that in order to consider oneself basically educated, but there is benefit from having "been there, done that."

Even if we don't remember the minutiae of what we studied when young, having studied goes a long way toward being able to know what is *not* true about a given subject. As Hemingway once observed, education does not fail completely if it only succeeds in giving one a good "baloney detector."

The key to a successful high school education is to enter high school well prepared academically with a good foundation, etcetera. That's why Hirsch has no intention of ever extending his K-8 curriculum up into the higher grades. It's as my grandfather used to say, "When the pupil is ready the teacher shall appear."

If children are ready for a meaningful high school education, educators will certainly be able to figure out what to teach them. If thy do not, communities will replace them. It would be ill advised to require all students to learn more than all students could learn. Not to worry! Normal human children and adolescents are capable of incredible amounts of learning.

I believe the amount of knowledge each student should be required to master on any given subject could easily be contained within a well-written paperback of no more than a few hundred pages in length. Such books would be inexpensive and could be retained for later reference by the students after they have left school.

If individual children and their parents prefer to have the students master these curricular high school books at home, and just go to school to take the qualifying examinations, that would be efficient. Fewer in-school teachers and classrooms could affect immense savings of taxpayer dollars.

Even John Dewey, the destroyer of modern education, was not personally against a demanding universal curriculum, which would prepare students for both work and life. The students at his famous Experimental School at the University of Chicago were mainly the children of Dewey's professorial colleagues. It was demanding indeed.

In the 1930s when Dewey was of late middle age, he wrote he feared his well-meaning curricular disciples had unfortunately "thrown the baby out with the bathwater." Dewey believed a knowledge of geography is the basis of a good education in the humanities. He was right and it is unfortunate no course with that name is taught in the lower grades of most American schools any more.

Geography should be taught fast and well, beginning in the earliest grades, exactly as Hirsch and his curricular consultants have advised. Geography, like anything else, is best taught

in stepwise degrees. Basic geography for younger children, more thorough geographic courses for the more advanced.

Beginning in high school one of the earliest sciences should be Earth Science and Astronomy. In a sequence best determined empirically, students would master basic Chemistry, Physics and Biology. Basic math including elemental algebra could easily be taught to middle school students who are already well grounded in arithmetic.

In high school, a math book could run them through geometry, trigonometry and enough more advanced algebra to bring them to the threshold of calculus. One of the main problems with teaching math is the failure to explain to students why each branch of math is actually important to human civilization. There are easy answers to this question and no reason to withhold them from students.

A basic book with a title like, "Best Loved Short Stories and Poems in the English Language" should not fail to make the list. In order to find out which ones are actually best loved, try some various works and then poll the children by paper ballot. I have a feeling Huckleberry Finn and Edgar Allan Poe would work well.

The ability to express oneself well in expository writing is essential for an educated young adult irrespective of what his eventual chosen career will be. There is an important triangular positive correlation between skills in reading, expository writing, and spelling. If we make children good readers early on, we have taken a huge step toward motivating and helping them achieve skill in the other two areas.

Good readers like to read, and good students should be required to read. I would say at least thirty elective books from an excellent and well-stocked school library would be the minimum a student should read during the four years of his high school career.

The students would be required to submit acceptably written book reports on that number of books, half fiction and half non-fiction. One thousand or twelve hundred well chosen words suffice to describe all but the most convoluted books themes, and if a child writes thirty times that many well-written book reports in high school, our society would have few citizens unable to write a good business letter or email communications.

The major personal and academic advantages of going away to college are obtained by the end of the freshman year. If a fifth year were added to high school, most children would not have to attend a college or university unless they aspire to an occupation impossible to acquire through on-the-job training.

This would save great amounts of tax dollars supporting public universities. Many students, already "well educated," would happily forgo to effort and expense of a college attendance and a degree. In the eighteenth century the children of the affluent took a year off for a "Grand Tour" of foreign countries after their basic education in adolescence had been completed.

There are innumerable works of literature certifying the immense personal and social benefits bestowed on well-educated adults by this kind of experience. In the global village we want nothing but well-educated aristocrats. In these days of jet travel and youth hostels such a custom would be more affordable and more doable than ever before.

Arts and languages are also important. With practice and good teaching, a high level of pencil portraiture would be possible for all by around the age of fifteen.

My son and daughter-in-law are proud their children are "learning Spanish" in school, but the parents and teachers themselves are not busy learning this most interesting and important language. Modern English is more or less of a Creole language synthesizing the grammar and vocabularies of Germanic Old English (known as Anglo-Saxon, and to its former speakers as Anglish) and of the French imposed in the wake of the Norman Invasion.

My list would include basic review books of "Basic French Vocabulary and Grammar" and "Basic German Vocabulary and Grammar." Some folks are more enthusiastic about foreign languages than others. There could be clubs or study halls in which each of a number of foreign languages would be spoken exclusively by students opting to practice foreign language conversations there. But just passing written and oral tests on the basic curricular books would count as valid credits toward a meaningful and solid diploma. Swahili and Chinese are most interesting languages, too. There could be any number of elective courses open to high school students, limited only by their school's ability to fund them. Intelligent voters in a well-educated and affluent country will be able to iron out the details without much difficulty.

Glenn Schellenberg, in Toronto, recently kindly sent me a copy of his article showing most people with absolute pitch began the study of music before the age of seven. As Dr. Suzuki has shown with thousands of children in Japan, virtually any child can become an excellent violinist by the age of twelve. All you have to do is get the mother to take up the study of the violin first and start the children when they are three years old.

In England Sheila Nelson has written an excellent book on the history, technique, and teaching of violin music. She points out it is ignorance of teaching technique and not a shortage of inherent talent limiting the number of good violinists in this world. She also points out that those children who are decent violinists by the age of nine rarely stop playing during the remainder of their lives. And children can learn to love good classical music through systematic exposure even without formal lessons in voice or instrumental music. "As the twig is inclined."

James Cooke's wonderful book, *Great Pianists On Piano Playing*, first published in 1917, is happily back in print again. Over a period of years, Cooke interviewed 29 different world-famous concert pianists during their concert tours in America.

Each artist's monolog on a self-chosen aspect of musicianship and piano playing is contained in a separate chapter. Most of these artists were fluent in a number of languages. All were highly literate and sophisticated citizens of the world.

Clarke inserted a page of biographical material before each entry. Each and every one of these pianists had been taught to play the piano by a parent or older sibling before they were old enough to go to school.

The best-educated children will always tend to be those of well-educated parents. The best way to make this commonplace is to start with those children who are still far from parenthood.

If a high school student attentively reads ten pages each day, he will read 3,650 pages per year and 14,600 pages during the course of four years in high school. There is no good reason to waste this practical potential of this by issuing children backpacks full of many pounds of unnecessary details.

Certainly, there is room for more summary curriculum books than I have already mentioned. I will add a book on the history of psychology and a book on economic theory.

I won't try to extend the list further than that. I am not an educator. However, if all American children reach learn to read and to do basic arithmetic skillfully in the earliest grades, it would enable a more modern high school curriculum to come into being. That would change the world fundamentally. It would arrest the present cultural death spiral, and truly make the world safe for democracy. If America does not perfect education, some other nation soon will. As an American, I hope we will be the ones to do it first.

In Conclusion

The first thing I want to do with these final words is to salute those who have actually read this book. I am in the twilight of my life, but I have never engaged in anything I have felt is as important as this. That others have shared what I think I have learned is a source of ineffable gratification for me.

A few pages of appendices will follow. I included this verbatim text of the article I submitted to the Harvard Education Review in exactly the form it would have appeared in had it been published there. I resisted the temptation of adding a copy of the text of the rejection letter I received.

I have emphasized the importance of a good start in grammar school if we are going to give our children the educations, they all deserve. But it is obvious education cannot be complete in grammar school. In my own experience schools should tell children what they should know. And as Hirsch has informed us, the amount one has to learn in order to be well educated is really not unwieldy or impossible for children to absorb. They all deserve to become mental aristocrats.

During the past several years the federal administration, through the National Literacy Council with joint auspices of the United States Department of Energy (USDOE) and the NICHD, have been mailing a free glossy and colorful booklet on the subject of literacy instruction to all schools and teachers who just request one. The name of the booklet is, *Put Reading First*. It emphasizes phonemic awareness, phonics, comprehension "strategies," and, etcetera. There is not one word about the importance of teaching children to write the alphabet to grade level proficiency. This is in spite of the obvious fact it would be logically impossible to write words, sentences, paragraphs and stories fluently if one cannot do so first with the letters.

Thanks to Kate Gladstone and Donna Garner, I have read a study just published in *Acta Psychologica*, a journal published in Holland in English (May 2005). The study was done in Marseille, France, and it proves that four and five-year-old children learn to identify alphabet letters better by writing them than by trying to learn to type them on a keyboard. I emailed my congratulations to Marieke Longcamp, the lead investigator, and she responded with interest. She wishes us good luck with this project. I also owe special thanks for the professional counseling of Marilyn Ross, Shel Horowitz, and David Koehser who helped learn how to get this book written and published.

I was delighted to see Dr. Longcamp wrote in a way consistent with my own concept of synesthesia, or the coupling of perceptions and memories in parallel different parts of the brain. She wrote, "These various data converge to indicate that the cerebral representation of letters might not be strictly visual, but might be based on a complex neural network linking a sensory motor component acquired while learning concomitantly to read and write." She also wrote, "Repeated writing is an aid that is commonly used to help Japanese children memorize ideograms."

She specifically found young children learn the alphabet letters better by writing them than by just seeing them over and over again visually. I believe this is a most important discovery, because knowledge of the identities of the letters is the most important factor in preparing children to learn to read.

I would like to emphasize, this theory that children will learn to read more easily if they get adequate practice printing the alphabet in kindergarten is certainly just a theory, and the only way to find out if the theory is valid or not is to try it and see. Dr. Lyon himself is a strong proponent of the value of testing new ideas in reading scientifically.

Also, in May 2005, G. Reid Lyon announced his impending resignation from the National Institutes of health. Since he is the primary proponent of the "cognitive deficit" theory of educational problems, the pathway may now become more open to alternative explanations of children's problems in school.

The legal official curricula of virtually all states and school districts in our country mandate children should learn to write and name alphabet letters in the earliest grades. What I would like to do is to get at least one school superintendent in one of the 15,000 school districts to instruct all kindergarten and first-grade teachers to devote five minutes of each school day in the practice of writing alphabet letters. Periodically the teachers will give the "twenty-second test" to the children in the class to find out how many sequential alphabet letters they can write in that period of time. The stated goal should be to get all students able to write the capital and lowercase letters of the alphabet at a minimum rate of 40 letters per minute. The superintendent could then observe whether this practice is helpful in preventing learning disabilities or whether it isn't.

It is said learning problems are unusual in children able to simply write the whole alphabet before entry into kindergarten. Normal children are maturationally ready to learn to write the alphabet at the time of their fourth birthdays. If it became a national tradition for parents to teach their own children this skill prior to kindergarten, I believe we would have a whole new world.

Contrary to popular belief, this printing skill is much more important than direct instruction on letter sounds, letter names, and the identification of the sequential phonemes audible in spoken words. If children are already diagnosed as problem readers, the challenge of remediation is much more difficult.

Children who learn to read the proper way learn to read and to write before the end of first-grade. Those who do not and fail unfortunately have deeply ingrained habits, which involve attempting to read the "wrong" way.

The wrong way is to believe that reading is primarily a matter of sounding out words phonetically letter by letter. Getting children to *stop* doing this is the central problem after such habits have been acquired.

It is a fact that reading a text along silently while a teacher reads the same aloud is an ideal way for children to practice identifying words without sounding them out. An interesting way to understand the problem facing dyslexic children is to try reading upside-down text to a fluent point and with good comprehension. The best way to do this is to read a few minutes a day without sounding the words out. If the eyes just follow the respective lines slowly enough so that the words are merely perceived visually, the reader will find some of the words potentially identifiable. On repeated practice with the same paragraph or text, a larger and larger percentage of the words involuntarily and automatically turn into "inner speech." One notices a comprehension problem when one first starts reading inverted text and later tries to recall its intelligence. As fluency improves, comprehension and recall improve apace.

Another recommended practice for halting readers is to have the child and an adult read alternate words of a text aloud. Done a few minutes a day this gets the child not only identifying words without sounding them out, it also gets them perceiving in terms of short phrases and groups of words, instead of reading word by word. This method of reading is often called "speed reading." In fact, though it is merely competent reading. Contrary to the popular wisdom of

contemporary educators, the problem after children have learned to recognize written syllables as familiar and identifiable, it is no longer worthwhile to continue emphasizing the sounding out of unfamiliar written words. For children who lag a bit with their reading skill, the problem then becomes one of trying to teach them to stop sounding out our written words.

This will seem shocking and implausible to readers who have already absorbed a basic knowledge of what the current education literature prescribes. It would seem that if such a simple to solution to such a vast problem were suggested, it would be too good to be true. But as Watson and Crick said of their epochal discovery of the helical nature of the DNA molecule, which failed to gain acceptance from established scholars for a number of years, "This is an idea too good not to be true."

It is said that individuals who take up the cause of education reform generally burn out and find other pastimes after about five years. It is very frustrating to try to buck the bureaucracy. It is vexing.

We live at a crucial moment in history. The dire predictions of Huxley's *Brave New World,* and Orwell's *Animal Farm* and *1984,* have actually come to pass. We have been living in a new Dark Age since the day the Beatles were introduced on the Ed Sullivan Show. Fortunately, the evolution of history has speeded up. The last Dark Age lasted a millennium. This one is only 45 years old, but I think I can see a faint dawn on the horizon already.

Oliver Wendell Homes once wrote a poem entitled "The Chambered Nautilus." We read it in high school and the message has always stayed with me. The nautilus is an aquatic snail, which moves into progressively larger chambers in its growing spiral shell as it matures. It seals off the chambers it vacates and does not look back. Holmes offered this as an allegory for the wisely led life.

At present there is an immense educational crisis in America. We hear deafening strife on the subjects of testing, lowered expectations, leaving no children behind, teacher quality, no more excuses, choice, vouchers, and even of the future viability of the public education system itself. It is time to forget failed past pedagogic traditions and to move forward.

This can all end. Instead of discussing school reform we must simply reform the schools and forget the bell curve.

It is therefore with a sense of happiness and expectation I herewith release this burden to the readers of this book. Thank you for reading!

Appendix

Here is a copy of the article I submitted to the *Harvard Educational Review*. It has been slightly edited and it is in this form it would it would have appeared had it been accepted for publication.

THE WRITING/READING CONNECTION
Submitted March 15, 2004

Abstract

The possible relationship between practice printing alphabet letters and learning to read in the earliest grades has not been adequately explored. The present article describes preliminary evidence that this relationship may be important, and that reading difficulties may relate directly to inadequate printing practice in kindergarten and first-grade

Historically, many authorities on the subject of literacy instruction have stressed the importance of adequate practice in printing alphabet letters. Aristotle has been quoted as writing, that with regard to becoming literate, "Too slow a hand impedes the mind."

In 1912, Maria Montessori wrote, in effect, that teaching young children to print letters is easy, that it is easy to teach children to read after they have practiced printing alphabet letters, but that it is difficult to teach children to read if they have not practiced writing them.[1]

Marilyn Jager Adams noted that prior to the onset of the twentieth century the "spelling drill" was the principal means of inducing literacy for several millennia.[2]

More recently, several published authors have called attention to the dearth of research on the possible link between printing practice and the acquisition of literacy in young children, but objective studies of the relationship are still lacking.[3, 4]

This author has made the assumption that emphasis on practicing printing alphabet letters increases the fluency with which children can print them. It was therefore decided to examine the relationship between fluency at printing the alphabet in preliterate children, and their subsequent success in learning to read well.

This method suffers the disadvantage of requiring children to be able to recite the alphabet in order to print the different letters both legibly and at a rate sufficient to demonstrate that they have practiced enough to have become "printing fluent." However, it was considered superior to other methods of assessing fluency in printing alphabet letters in young children.

Such children have limited attention spans. It was therefore decided to measure the number of alphabet letters children write during a timed twenty-second interval, and multiply that number by three in order to obtain a "letters-per-minute," or "LPM," value for each child.

During the early months of 2002, five first-grade teachers were enlisted from teacher-related Internet listservs, to do a cooperative study of the relationship between fluency in writing the alphabet, and concomitant reading skill.

The printing rate of each child was listed by teachers submitting classroom data, and each was matched by the subjective teacher assessment of the child's relative reading skill. The assessments were A, B, C, D and E, to designate "excellent", "above average", "average", "below average" and "possible reading problem", respectively.

A total of 94 children in five first-grade classrooms were studied. When the letter grades were converted to numbers (4, 3, 2, 1, 0), "average relative reading ability" could be determined for subgroups of students, defined as printing at different rates.

Among the sixteen children who printed faster than 40 LPM, the average reading score was 3.6. Among the 33 children who printed from 30 to 39 LPM, the average was 2.9. For the 26 children writing at 20-29 LPM, it was 2.3. For the 21 children who wrote more slowly than 20 LPM, it was 1.6.

During this current school year, a number of kindergarten teachers have submitted series of similar studies on their classrooms to the k1writing listserv, accessible at www.yahoogroups.com. By the end of February 2004, a total of five teachers had submitted serial data on a total of 106 kindergarten students, including data for the month of February.

The relative reading skills of the kindergartners were ranked according to a three-level system: "reading better than grade level", "doing well at grade level" and "lagging behind expectations". In the opinions of their teachers, six children were already reading at second-grade level or above.

Statistical analysis of the correlation again yielded similar results. Among the eighteen children who printed the alphabet faster than 40 LPM, 72% were "above grade level," and only one was "lagging." Among the eighteen children who wrote more slowly than 20 LPM, none was above grade level in reading skill, and half of them were "lagging" in this regard.

A tabulation of these findings is revealing. It is informative to look down the column of LPM figures for these 106 children, and observe the correlations. These data are presented in Table One.

The correlation between reading skill and fluency at printing alphabet letters in kindergarten and first-grade is readily apparent. This correlation was known to each of the experienced [kindergarten] teachers participating in this study even before the study was done. The experiment, then, was designed to answer the question as to whether this correlation is one of causation, or merely coincident with some other unidentified factor.

The kindergarten teachers involved have each been able to achieve a level of printing fluency that is considerably above what is generally achieved by American kindergarten students. The printing rates of their kindergarten children are comparable to the rates of the first-grade students in the original study, whose teachers had NOT been previously monitoring printing rate. If the cause of the correlation were in the opposite direction, and it is having learned to read which drives printing fluency, then one would expect the correlation to weaken in classrooms where printing fluency has been intentionally contrived. However, we here see the correlation has persisted intact.

This year, each of the kindergarten teachers has been making a dedicated effort to induce objectively measurable printing fluency in the students as the school year progresses. Each of the five kindergarten teachers has emphatically proclaimed that this practice is found to be immensely helpful in turning young children into readers.

A number of the classrooms have high percentages of poverty and minority children, and none of the children could read at the beginning of the kindergarten school year. It was found that printing fluency, which we arbitrarily defined as 40 LPM or faster, is achieved at different times by different children, and that such fluency is an excellent indicator of when children will

learn to read, as well as indicating which children have become successful at reading at any particular point in time.

It was also observed that printing fluency gradually improves in almost all cases with continued practice writing the alphabet letters. Failure to cooperate during the time allocated by teachers for dedicated printing practice seems to be the main limiting factor in the development of printing skill.

None-the-less, our data suggest that fluency in writing the letters of the alphabet is a reasonable goal for all normal children by the end of first-grade.

But it appears that printing fluency does not at all correlate with reading ability much beyond the first-grade level. One teacher submitted data on 54 fourth-graders, demonstrating no difference at all in the median alphabet-printing rates between children who had been formally identified as reading below grade level, and the other students.[5]

It is also apparent that printing skill is by no means a necessary prerequisite for literacy. Many children learn to read before they are fluent at printing alphabet letters. On the other hand, virtually all children who lag in reading skill in K-1 are dysfluent printers. That this lack of skill is remediable through continued dedicated practice, extended over time, appears to be of fundamental importance.

If the attainment of fluent ability to print alphabet letters in the earliest grades generally assures early success in reading, this fact challenges some current theoretical conceptions regarding the nature of reading disabilities.

Our evidence suggests both that printing fluency confers the ability to name random letters more rapidly than 40 per minute,[6] and that the ability to phonetically write words fluently, possible only after the attainment of fluency in printing letters, confers phonemic awareness.

Adams wrote, “It has been shown that the act of writing newly learned words results in a significant strengthening of their perceptual integrity in recognition. This is surely a factor underlying the documented advantages of programs that emphasize writing and spelling activities.”[7]

Montessori also considered practice writing alphabet letters to be crucial, and wrote, “We shall soon see that the child, on hearing the word, or on thinking of a word he already knows, will see, in his mind’s eye, all the letters, necessary to compose the word, arrange themselves. He will reproduce this vision with a facility most surprising to us.”[7]

While such rhetorical explanations of the value of writing practice have been seen as nebulous in the past, converging advances in the fields of pattern recognition by artificial intelligence and of the cerebral physiology involved in visual pattern recognition and categorization may render them more plausible.

It is emphasized that these studies are limited and preliminary, but their results underscore the pressing need to either confirm or disaffirm their apparent implications.

The author wishes to acknowledge the participation of the classroom teachers who did and submitted these comparison studies on their students. They are Libby Rhoden, Pasadena, Texas; Sue Fisher, Kailua Kona, Hawaii; Ann Vasconcellos, Homewood, Illinois; Helen Wilder, Middlesboro, Kentucky; Nancy Creech, Eastpointe, Michigan; Ruby Clayton, Indianapolis, Indiana; Alice A. Pickel, Phoenix, Arizona; Lori Jackson, Mission, South Dakota; Lalia Kerr, Nova Scotia; Jennifer Runkle, Ohio.

TABLE ONE

Kindergarten Students Printing Level in Letters Per Minute (LPM)

LPM rate:					
> 40 LPM	30-39 LPM		20-29 LPM		< 20 LPM
78**	39**	33**	27**	24*	18*
72**	39**	33**	27**	24*	18*
66**	39**	33**	27**	24*	18*
60**	39**	33*	27**	24o	18*
60*	39**	33*	27**	24o	18*
57**	39**	33*	27**	24*	18*
54**	39*	33*	27*	21*	18 o
54**	39 o	33 o	27*	21*	15*
51**	36**	30**	27*	21*	15*
51**	36**	30**	27*	21*	15 o
48**	36**	30**	27*	21*	15 o
48**	36**	30**	27o	21*	15 o
48**	36**	30**	27o	21*	12*
48*	36*	30*	24**	21*	12 o
48*	36*	30*	24*	21*	12 o
42**	36*	30*	24*	21 o	6 o
42*	36 o	30*	24*	21 o	3 o
42 o		30*			3 o
30*					

In the opinion of respective classroom teachers:

KEY: o lagging in reading skill
* on level
** above level in reading

References:

1. Montessori, Maria. *The Montessori Method*, Dover Publications, 2002, pp.266-7.

2. Adams, Marilyn Jager. *Beginning to Read: Thinking and Learning About Print*, MIT Press, 1990, p. 388.

3. Sofia Vernon and Emilia Ferreiro. "Writing Development: A Neglected Variable in the Consideration of Phonological Awareness." *Harvard Educational Review* 69:4 (1999): pp. 395-415.

4. Groff, Patrick. "Teaching Phonics: Letter-to-phoneme, Phoneme-to-letter, or Both?" *Reading and Writing Quarterly* 17 (fall, 2001): pp. 291-306.

5. Data provided by Marianne Morin, Watkins Glen, New York.

6. Data on kindergarten classroom correlation between letter-naming and printing fluency provided by Sue Fisher, Hawaii.

7. Adams, Op. cit., pp. 230-231.

Notes from Internet Publisher: Donald L. Potter

September 25, 2008
Odessa, TX
www.donpotter.net

Why I decided to publish Mr. Rose's book.

I am publishing Bob Rose's book with the intent of generating more interest in his thesis concerning the crucial important of letter writing fluency in good beginning reading instruction. I have been privileged to teach beginning and remedial reading for many years with good phonics methods. I began noticing that the students with reading problems were not paying attention to all the letters when they read. This explained the many errors they make when reading. What was not so apparent was **why** they were reading that way. It often looked like they were poor at phonics. This was especially possible since most of the students in my district were taught with *Guided Reading*, a form of whole-language, which expects kids to pick up phonics in an indirect manner. I found that by just telling the students over and over to **look at all the letters the right way, and no guessing**, they often improved their reading very quickly. I taught several phonics programs which all seemed to get good results. But there was always the nagging feeling that there was more to it than just phonics. I began to dawn on me that it may be that phonics instruction was teaching children to pay attention to the letters, and **paying attention to the letters was the crucial skill**.

A Free and effective program for teaching reading via fluent handwriting.

I especially recommend *Reading Made Easy with Blend Phonics for First Grade* published by Hazel Loring in 1980. According to Mr. Rose, the most crucial factor in assuring that all children will be able to read is the ability to write the alphabet fluently. Fluently is defined as 40 letters-per-minute for kindergarten. I agree with Mr. Rose concerning the important of making sure the students are fluent in writing all the letters of the alphabet. Once the students are able to write the alphabet (I prefer cursive, but manuscript will work if taught to fluency.), they can begin writing the words in *Blend Phonics*. I should mention Kate Gladstone's *Italic* handwriting program as another possibility, especially since Bob improve his own writing with it. I prefer to teach from a chalkboard or overhead. The new document cameras (Elmo) are the best tools for teaching handwriting that I have ever used. They should also practice writing the words at spaced intervals until they are able to write, read, and spell them fluently. *Blend Phonics* is available at www.blendphonics.org.

Developing Handwriting Fluency.

Parents and teachers interested in helping young children develop the best early handwriting fluency possible should consider the *Peterson Directed Handwriting Method*: https://peterson-handwriting.com. As far as I know, this is the only current handwriting method that specifically considers fluency in its instructional goals. I have, also, taught Zaner-Bloser Manuscript & cursive.

Don Potter's Handwriting Programs

Since publishing Dr. Roses' book, I have developed my own handwriting programs. They can be found on my website: Shortcut to Manuscript and Shortcut to Cursive.

It was my privilege the 2018-2019 school year to teach the A Beka Book cursive handwriting with phonics program. Most of the students learned to write the connected lowercase cursive alphabet from *a* to *z* legibly and quickly from memory. They all became good readers by the end of the year. Daily iterative writing of the alphabet leads to exactly the kind of fluency needed to produce fluent readers. I am sure manuscript could have been used just as well.

ABC Foundations for Young Children: A Classroom Curriculum

By Dr. Marilyn Jager Adams

Dr. Rose and I would like to recommend that every elementary teacher, administrator, reading specialist, and parent purchase Marilyn Jager Adams' brand-new book *ABC Foundations for Young Children: A Classroom Curriculum*. This is the book that will fully equip teachers to teach their students to write and identify the alphabet fluently, an essential prerequisite to literacy.

Dr. Adams is well know for her 1990 synthesis of research on beginning reading: Beginning Reading: Thinking and Learning About Print, which is noted for its clear introduction to the Connectionist view of reading and Parallel Distributed Processing.

In her 1990 book, Adams writes, "Both theory and data suggest that instruction in either sounds of letters nor recognition of whole words should be earnestly undertaken until the child has become confident and quick at recognizing individual Letters." Yet in the "Introduction" to *ABC Foundations for Young Children*, she presents the shocking news, "that only a minority of children are able to name or write all the letters by the end of first grade, and that the number who know the letter sounds is still smaller."

My many years of experience as a successful reading teacher and tutor convinces me that Dr. Adams' shocking news about the lack of alphabet knowledge at the end of first grade is true. Without exaggeration, I can affirm that all of the children coming to me for tutoring in reading lack alphabet writing and letter identification fluency. That includes children from a wide variety of public and private schools. The consequences of attempting to teach phonics and reading to student lacking a solid knowledge of the alphabet is a classic case of putting the cart before the horse, leading to many casualties along the road to literacy.

Mrs. Adams' new book provides the solution to the lack of alphabet knowledge by providing a complete curriculum for teaching children BEFORE first grade to

1. Recognize and name all the uppercase and lowercase letters
2. Print both the uppercase and lowercase letters
3. Produce the primary or most frequent sound for each consonant
4. Identify which letters represent the five major vowels and know the long and short sound of each.

I especially like her very detailed handwriting program. It pays close attention to proper stroke production. She uses a very innovative and helpful "sound effects cueing system" for the strokes of each letter. Although it is just a happy coincidence, she uses the same excellent method of letter formation that I have used for many years. Anyone who has seen my students' handwriting can testify to the effectiveness of this method. I agree completely with her recommendation to teaching uppercase letters before lowercase. Most programs, unfortunately, create unnecessary confusion for the students by teaching both together from the start. Many students coming to me for tutoring mix uppercase and lowercase letters when writing the alphabet from *A* to *Z*.

The excellent assessment program is complete and tied directly with the instruction. Parents, teachers, and administrators will be able use these assessments to evaluate how well the children are mastering all the dimensions of alphabet knowledge.

I have noticed that many children are unable to copy whole words or phrases from the board at a single glance; instead they must repeatedly look up at the letters to copy them one by one. This is a direct result of the failure to learn the alphabet to fluency. Dr. Adams' program will give student the alphabet fluency they need to assimilate whole words at a single glance and have better success with phonics and reading instruction.

The Magical Sixth Element

by Mrs. Libby Rhoden

Feb. 5, 2003

"If you did not get all the available points on essay question number three, be sure you study your notes in more detail and get clear on your thinking, because it will be on the final exam also. Any questions?" "Mrs. Rhoden?" one of my questioning students in my Emergent Literacy class at a local junior college asks. "Do you actually do all five of these elements to insure successful reading in your kindergarten class?" "Yes, every day I do activities in phonemics, phonics, vocabulary building, fluency, and comprehension. I provide development in all of these areas daily, even if I have to do it going down the hall!"

My student continues her questions, "School has been in session for over 5 months now, are all of your kindergartners budding readers?" Ouch! The very thing that I teach these education majors was definitely not the entire answer to teaching reading. I do these things; I do them comprehensively, yet, I still have a few students each year who struggle at becoming "readers."

Although, I considered this to be a very serious question, I could only respond with, "Well, there must be six elements."

Teaching education classes at a local junior college keeps me current on research and programs that in turn compel me to maintain innovative techniques in my own kindergarten classroom.

During the day, I teach at Kruse Elementary School in Pasadena, Texas, which is just south of Houston. I have been a teacher for over 25 years, and this is the 10th year I have taught kindergarten. 98% of the children at Kruse are Hispanic. 96% are labeled at risk and qualify for subsidized lunches. Through my classroom windows I see refineries' roaring exhaust stacks that lie beyond a major highway only a block away. A government housing project is the home of more than half of the 750 students attending our school. This setting fosters unfavorable environmental conditions. Many of my students come to me without having been read to, without the suggested 2,000-word vocabulary, and their basic needs not adequately met. The majority cannot write their names.

A year ago I became interested in the possibility that fluency in the writing of alphabet letters facilitates the acquisition of the ability to read with comprehension in kindergarten children. I was intrigued by an article in the Fall, 2001, issue of *Reading and Writing Quarterly* (17:291-306), titled "Teaching Phonics: Letter-to-phoneme, Phoneme-to-letter, or Both?" by UCSD Professor Emeritus Patrick Groff. In the article Professor Groff noted that research on the relationship between teaching children to write and teaching children to read is essentially non-existent.

I feel that a child does not really "know how to read" unless the child understands what he or she reads. If a child is reading but not comprehending, they are word calling with no understanding. My definition of comprehension demands that children understand the spoken language first, then be able to convert text into oral language (be the language oral or silent, the words on the page must make the transition to language). The ease, automaticity, and rate (or "fluency") with which children make this transition from print to speech correlates highly with reading comprehension skill. I feel successful at what I do. I consistently get good results in teaching kindergarten children to read. The classroom techniques I use align with my knowledge in best practices. These same techniques appear in the texts I use when I teach my college students. Although I feel accomplished, I was always trying to find some possible element that would ensure reading success for all students.

I make sure that my students understand the alphabetic principle. They are involved in activities that reinforce writing and naming the letters. They are successful with phonemic activities. I provide games for my students to play that get them to listen and manipulate "sounds" in words. I develop reading fluency from the very beginning, by reading books with repeating text and books with predictable texts.

I expose them to phonics rules when I guide them to sound out words and "blend" the sounds into written and spoken words the children know and understand.

I do this without isolating letters in meaningless ways. I never use worksheets and pride myself in creating a stress-free and fail-proof environment. I read frequently to my students and by way of "think alouds" I let them know how I know things about the words I read. I model how I comprehend by showing them metacognition techniques.

These basic elements comprise the bulk of my reading instruction. Using real literature and helping my students organize their thinking on graphic organizers adds depth to my curriculum.

With all of these practices in place in my classroom, I still had some children who could not make the connection between text and language. Were some of my students just not capable of learning to read when I expected them to? Why would Professor Groff make a statement about the reading and writing relationship? Was I leaving out the writing piece? These questions lead me to do some informal research of my own.

Louisa C. Moats, Ed. D., an eminent reading authority, wrote, "Any observant child would surmise that letters are irrelevant to sound and must be learned by some magical memory process." (Moats, L.C. (1998) "Teaching Decoding," *American Educator/American Federation of Teachers*) What is this magical process? Dr. Moats in essence supports the five basic elements of an effective reading program that I teach my education students. But that magical process is the mysterious sixth element. I decided to become a researcher and used my classroom to do some informal testing of the reading/writing connection.

In January 2002, I measured the printing fluency of the children in my classroom. I did this by asking the children just to print the letters of the alphabet during a timed twenty-second period, as quickly as they could do so legibly. I multiplied the number of letters each child wrote by three in order to obtain a "letters-per-minute (or "LPM") rate" for each child.

I noticed a strong correlation between how rapidly children could print the alphabet, and how well they progressed on the path to being able to read. I repeated this comparison several times during the second half of the 2001-02 school year. I found that this strong correlation continued. It seemed as if the children, in general, tended to begin reading just as they attained a certain level of printing fluency.

To further test this assumption, I stressed fluency in writing during a four-week summer school session with a dozen students who struggled with reading. These students gained reading ability when they gained writing fluency. It took less than four weeks to see results. I became excited and wanted to do more “in house” research.

At the beginning of this current school year, with a fresh class of children, I began to test this notion. I made a determined effort to have my students gain fluency in printing, and I observed how well they read.

I checked LPM rates on my students the first week of January. The results, along with estimations of the children's ability to read, are posted below. I believe these impressive results explain themselves.

In January of 2002, without any prior writing fluency instruction, the median letter-printing rate of the children in my class was 12 LPM. Eight of the sixteen children in that class remained unable to sound out simple three-letter words. This year, in January of 2003, with fluency instruction since August, the median child writes the alphabet at 39 LPM, and only two of the eighteen children remain unable to sound out simple three-letter words. These two children, predictably, are presently among the slowest writers in the class.

Little question remains in my mind that kindergarten children can become proficient at printing the alphabet, and that encouraging this skill dramatically facilitates the children’s ability to learn to read well. Throughout my research, I pondered why this had not been included in the reading research and textbooks I use for teaching my college classes, especially since so many authorities in the past have emphasized the importance of writing practice.

I share this information in the hopes that teachers and researchers everywhere consider this process for developing readers. I also see it as an intervention component. Illiterates and dyslexics cannot summon visual images that make up the written words. They must learn to form these visual memories in order to learn to spell words correctly, and to be able to recognize them instantly in the future. If children can write words effortlessly, they will always be able to recognize them effortlessly. Children cannot write words fluently if they cannot print letters fluently.

Here is the performance key to my reading skill code, followed by a tabulation of the children’s printing fluency determined on Jan. 10, 2003, and their correlations with the children’s current reading abilities.

In my efforts to teach my education students proven ways to teach young children to read, I humbled myself to the fact that I did not have the answers. But in my own observations, the magical sixth element surfaced for me. I have seen results and wholeheartedly believe that there is a powerful correlation between printing fluency and reading ability. For most children, the two skills appear to arrive simultaneously. All students who learned to read well

did so after they passed the 20 LPM milestone. And when writing fluency instruction was carried out with the students who were struggling, as soon as they reached 20 LPM, their reading ability ignited. So to answer my college student's question, "Yes, all of my students are budding readers!"

Libby Rhoden, Pasadena, TX 77506

Six Essential Elements of Reading Instruction

Under *Reading First* (Title I, Part B, Subpart 1), district and school reading programs for K-3 students must include instruction, curriculum, and assessment on:

1. Phonemic Awareness – The knowledge and manipulation of sounds on spoken words.

2. Phonics – The relationships between written and spoken letters and sounds.

3. Reading Fluency, including oral reading skills – the ability to read with accuracy and appropriate rate, expression, and phrasing

4. Vocabulary Development – The knowledge of words, their definitions, and context.

5. Reading Comprehension Strategies – The understanding of meaning in text.
Must be based on scientifically based research. Must include classroom-based screening, and instruction and diagnostic reading assessments. Should provide ongoing – high-quality professional development focused on essential elements in reading.

6. Alphabet Handwriting Fluency – Libby Rhoden's *Magical 6th Essential Element*

Explanation: For those unfamiliar with reading instruction in the Post Reading-First Era, there are generally considered to be *Five Essential Components* to scientific based reading instruction: Phonemic Awareness, Phonics, Reading Fluency, Vocabulary Development, and Reading Comprehension Strategies. Mrs. Rhoden felt that we should add another component (element) to the list: Alphabet Handwriting Fluency. While she calls it "The Sixth Element," it probably should be taught first because of its foundational nature. Don Potter

Last revision, 4/7/14, 11/24/15, 6/18/16.

Purposeful Steps to Increase Fluency

by Libby Rhoden

First of all, children must become fluent at the one word they know best – their name. The first month is working only on their name and forming those letters using the proper formation. (I use D'Nealian without the tails. This has proven to me to be the most fluent and fluid way to make letters.) Until they are fluent with their own name, you may as well not even teach letter formation because they just haven't gotten to the point where they know the purpose of letters. Until they know the most important word and the letters that make up that word, you are just spinning your wheels teaching handwriting. This has to be on an independent plan. If you give it your all for a month, you can get them all capable of printing their names.

It was years ago that I taught each letter and had my students struggled, not even able to write their names until nearer the end of the school year. I knew that there must be something better. But think of how the child that comes to school knowing how to print. The child that can do that most likely learned to print their name first. That is the natural way.

I follow this closely with numeral writing. Ones are something easy to learn. Teach them and show them to make ones fluently. Show them how fluently you can make a string of ones. Then challenge them to do them fluently also. Let them make a string of ones. Zeros are to be taught correctly next, starting at the top and going toward the left. Do the same with zeros. Have them identify their best tries.

At the same time begin teaching them to draw the geometric shapes. Provide lots of opportunity to practice drawing shapes, writing ones and zeros and their name. This will consume the first month of school. NOW you will have those who know how to write their names and you will need to challenge them. Possibly by teaching them their last name, friend's names, or family's names. I also do things like trace a triangle stencil and draw diagonal lines within the shape (a Montessori technique).

After I am comfortable with their ability to write their name, I begin a 5-minute handwriting segment. I teach them *l* (el). They get it fast because of our work on one! I add *t* and *i* to the list because they are made the same way. I encourage them to make them fluently. I tell them that writing fluently will make them fluent readers. We have big discussions about how to be better people in general and being a good reader is an important part of being a better person. We start doing 20-minute timed writings. At first, we time ourselves at making *lllllllll*, then *iiiiiiii*, then *ttttttt*.

I record their best time on a personal chart that they keep in their journals. I show them where their score is and encourage them to set a goal of 2 more letters next time. The biggest thing you have to teach here is attending to the task for the complete 20 seconds. Next, I do *ooooooooooo*, along with that is *aaaaaa*, *ddddddd*, *ggggggg*, *ccccccc*. Then comes *m, n, h, r, p, k, b*. the rest just comes.

Links to Documents and Videos

for Teaching Fluent Handwriting

by Donald L. Potter

Materials for Teaching Manuscript

1. *Shortcut to Manuscript*: Document for Right Hand Program:

   http://donpotter.net/pdf/shortcut_to_manuscript.pdf

2. Explanation of the *Shortcut to Manuscript* document:

   https://youtu.be/hPXjpgOldfg

3. Demonstration lesson:

   https://youtu.be/fbFcum8uEPQ

Materials for Teaching Cursive

1. *Shortcut to Cursive*: The Full Program:

   http://donpotter.net/pdf/shortcut_to_cursive.pdf

2. *Fundamentals of Cursive*: A shorter program to go with video:

   http://donpotter.net/pdf/cursive_training.pdf

3. Demonstration Video for *Fundamentals of Cursive*:

   https://youtu.be/wlwpgNocong

Quotes Regarding Alphabet Fluency from Marilyn Jager Adams' 1990 *Beginning to Read: Thinking and Learning about Print*

The following quote is taken from Chapter 13 of Adam's well-respected and much quoted book. I am afraid that Chapter 13 on "Print Preliminaries" has been largely overlooked and unfortunately underestimated in the designing of reading curriculum.

> Both theory and data suggest that instruction on neither the sounds of letters nor the recognition of whole words should be earnestly undertaken until the child has become confident and quick at recognizing individual letters (363). [This is the reason behind the creation of these Alphabet Fluency materials. This may be the most frequently violated principle of reading acquisition.]

In Chapter 6 of *Beginning to Read,* Dr. Adams gives a **summary** and the **instructional implications** of the Orthographic Processing Module of the reading process according to the Parallel Distributed Processing (Connectionist) Model of Reading. It merits careful consideration.

> When the skilled reader fixates on a word, each letter activates is own recognition unit in the reader's memory. These directly activated units, in turn, send activation to teach other, with the result that the associations between them are strengthened as the automatic consequence of having looked at the word. Over time, as the reader encounters more and more words, the associations between the letter units will ultimately come to reflect the more general orthographic structure of the printed language.
>
> Strong associations develop between the units representing sequences and patterns of letters that have been seen frequently. As a result, any word composed of these sequences and patterns is perceive more or less holistically: Because of the learned associative linkages, every one of its component letters effectively primes and reinforces the perception of every other. In contrast, weak of inhibitory associations develop between letters that have rarely occurred together. As a result, long words are automatically broken into syllables: Because the letter sequences within syllables are quite predictable, the perception of the syllable as a whole coheres; because the sequences of letters that occur between syllables are unpredictable, the perception of the word becomes somewhat disassociated at the syllable boundary.
>
> In short, then, although the skilled reader's Orthographic processor requires sequences of individual letters as input, it effectively perceives whole words and syllables. In reverse, however, the ability to perceive words and syllables as wholes evolves only through complete repeated attention to sequences of individual letters. With concern toward how to develop word recognition skills, the theory thus carries several implications.
>
> First, it is extremely important that young readers be able to recognize individual letters accurately before word recognition instruction begins. Individual letters are input to the network. If a child cannot recognize a letter, it will not activate the appropriate unit within the network. Unless it activates its appropriate unit with the network, it cannot share the excitation with the other letters of the word under study. Unless the letters share excitation with the other letters of the word under study, the associations between them cannot be strengthened. Only through strengthening of these associations can word study enhance word recognition capacity.
>
> Second, for the development of word recognition proficiency to proceed at its optima rate, young readers must be able to recognize individual letters relatively quickly. The associations between one letter and another is strengthen or created only when both recognition units are active at the same time If the child spends any measurable amount of time recognizing the second letter in a word, then, by the time it is resolved, the activation of the first will have uselessly swindled away. Difficulties in individual letter recognition thus subtract directly from any potential profit to be gained from studying whole words.

Third, for immature readers – readers who have not yet acquired a set of associations to math the print before them, it is important not just that they look at the word before them but that they attend carefully to its completed ordered sequence of letters.

Toward hastening the development and refinement of the letter recognition network, students should be engaged in activities that encourage attention to the ordered, letter-by-letter structure of the syllables and words they are to read. (Remember that the order of letters in a sequence is poorly perceived until the sequence becomes familiar.) Many of the most common practices of reading programs – including synthetic phonics, writing exercise with frequent blends and digraphs, and practice with word families – seem ideally suited to this end.

In this context, the allure of phonics, or the exercise of discovering words by sounding out its spelling, is that it inherently forces the child to attend to reach and every letter of the word, in left-to-right order. The motivation for its recommendation has little to do with the value or importance of actually sounding out words. It is, from this perspective, merely a gimmick to focus the child's attention on its spelling. Note too that phonics activates that direct the child's attention to individual letters rather than sequences of letters do not seem useful to this end.

The value of having children write and spell is also strongly reinforced. It has been shown that the act of writing newly learned words results in a significant strengthening of their perceptual integrity in recognition.

By writing and spelling, I mean writing and spelling of whole words, as when a child composes her or his own story, writes to dictation, or even copies words over. (See Endnote) Workbook exercises that have children fill in the appropriate letter in a blank do not serve the same purpose because they do not force the child's attention to the spelling patterns of the words as wholes.

Exercise on frequent blends and digraphs such as *bl, st, pr, th, sh* and *ch* also seem worthwhile. As attention to such letter groups serves to strengthen the associations among their letters in memory, it should hasten the children's ability to perceive such strings quickly and holistically. In the same spirit, instruction on frequent prefixes and suffixes may similarly be helpful for the reader who is sufficiently advanced to be working on polysyllable words.

The theory suggests further that children be discouraged from skipping or glossing over words that are difficult for them. When the encounter a word that is hard to read, they should take the time to study it. They should look carefully at its spelling and sound out its pronunciation; then they should repeat this process until they can read off the word with something close to normal ease and speed. Happily, for children who are normal readers, this level is reached with only a couple encounters of the word, even if the encounters are separated by several days.

Importantly such focused word study during corrected reading should be relatively infrequent in practice. Intuitions and research concur that students' reading abilities are best advanced by giving them tests in which the vast majority of words are manageable. When students are stumbling on too many words, the best solution is no longer to ask them to reread; it is to give them an easier text. Note further that the objective here is not to force children to study and reread difficult words while you are watching; it is to help them develop the inclination to study and reread words they they are reading by themselves.

These qualifications notwithstanding, repeated readings of difficult words and passages result in marked improvements in children's speed, accuracy, and expression during oral reading and, most important, in their comprehension. In view of this, we should choose texts that are worth rereading and, and whenever it seems worthwhile, we should have children reread them.

In view of the importance of syllabification skills, one might infer that they to ought to be taught. Is this inference supportable? Opponents of syllabification training have argued that it is circularly unproductive. In order to break a word down into syllables, they argue, the readers must first sound the word out. Being able to sound the word out was the goal of breaking it into syllables in the first place. Consistent with this argument, various efforts to teach children to

divide words into syllables have generally produced very little improvement either in children's ability to divide new, untrained words into syllables or in their overall vocabulary and reading comprehension scores.

As exceptions, several recent studies have obtained improvement in children's ability to pronounce two-syllable words by training them to compare the syllable to known one-syllable words (e.g., *problem-rob, them*) …

Overall, the best instructional strategy for orthographic development is to induce children to focus on likely sequences that comprise syllables, words, and frequent blends and digraphs. As the children become familiar with these spelling patterns their ability to syllabify will natural emerge along with the automaticity with which they will recognize the ordered spellings of single syllables. Beyond that, the strongest implication of the theory toward developing solid word recognition skills is that children should read lots and often.

Endnote

It is worth taking time to watch individual students copying words. Some persist in looking at the word to be copied, writing down one single letter and then looking back for the next letter. With respect to orthographic learning, however, the benefits of copying are expected to come from looking at the text to be copied, remembering the whole word or syllable, and writing that down before looking back to check one's spelling or to get the next word or syllable to be copied. Sometimes letter-by-letter copying seems to be nothing more than a habit, as though it simply has not occurred to the child to go for whole words or syllables. In these cases, the problem may be fully remedied by providing a little guidance on the method and increase efficiency of treating the to-be-copied materials in a word-by-word or syllable-by-syllable manner.

Quotes Regarding Alphabet Fluency from Marilyn Jager Adams' 2013 *ABC Foundations for Young Children: A Classroom Curriculum*

I was overjoyed recently to learn that Dr. Adams has published a new book: *ABC Foundations for Young Children: A Classroom Curriculum,* published by Paula H. Brookes Publ. Co, Baltimore, Maryland, 2013. In this book, Dr. Adams has translated the most current research into classroom practice. It is basically the outworking of the principles laid down in chapter 13 of her 1990 *Beginning to Read.* I am surprised that it took 23 long years for someone to finally write the book we have need all along. I had surmised from reading the book that there was one very creative and practical mind behind it. Dr. Adams recent emailed me that my suspicion was correct, and that she had written it herself from start to finish. Let's proceed to my quotes. I will not be including the references. I trust that everyone who reads these quotes will have their appetite whet sufficiently to purchase the book and read it all for themselves.

> Children need to know the alphabet. To use phonemic awareness for reading, children need to know which letter represents which phoneme. In turn, learning letter-sound correspondences requires that children not only be able to discern each letter but also to identify each letter by shape, confidently and securely. To use their phonemic awareness to write, children must also be able to form the letters with legible accuracy and reasonable ease. For much of their classroom instruction on reading and spelling, they must be able not only to recognize each letter, but also to seek, recall, or even image the letter given only its name or sound. (2).

> Even so, the issue is deeper than that, for children's letter knowledge is a good predictor of their responsiveness to phonemic training. … It may well be, as several have argued, that gaining phonemics awareness *depends* on prior letter knowledge. (2)

In all, children's knowledge of letter names and sounds at school entry is the single best predictor of their reading and spelling growth, not just at the outset but throughout the elementary school years. Moreover, this is so even when other weighty predictors such as phonological awareness, language development, and intelligence measures are factored out of the equation. Children who enter school with poor knowledge of letters names and sounds face a far higher risk of reading delay and disability. (2)

Studies commonly show that only a minority of children are able to name or write all letters of the alphabet by the end of first grade and that the number who know the letter sounds is still smaller. (2) [Three years ago, I developed a simple alphabet knowledge and fluency assessment, in response to reading Bob Rose's *Forget the Bell Curve*. Bob maintained that children who know the alphabet to fluency will generally learn to read with little or no problem. I have a very busy tutoring practice for children, teens, and adults with reading problems, getting students from a wide range of local public and private public schools. My assessment revealed that NONE of the student coming to me for tutoring had alphabet fluency. That came to me as a shock, but confirms Dr. Adams' research observation.]

How can this be? Alphabetic knowledge is so fundamental and so pervasively important to literacy development. Without a comfortable familiarity with the alphabet, the student is effectively locked out of virtually everything that formal education has to offer. Our schools *must* do far better in helping children learn their ABC's. What could be the problem? [Adams then explains that most reading programs allocate too little attention and time to developing alphabet fluency, being only a small or incidental portion of a larger literacy program. (3, 4)

Of all the challenges that the child will ultimately confront, learning the letters of the alphabet is the *only* one that depends exactly and only on sheer rote memorization, and it must be over-memorization, at that. (4)

If the support they need is offered neither at home nor at school, then how will they learn? And without solid alphabetic knowledge, how much else will remain unlearnable? (4) [These are soul-searching questions. As the situation stands all across America, most first-graders do not know the alphabet at the end of first-grade. Here Adams was contrasting children coming to school from families that teach the alphabet and families that don't.]

Alphabetic knowledge refers to the children's familiarity with the names, forms, and sounds of the letters of the alphabet as measured by recognition, production, and writing tasks. The **goal** of this book is to provide teachers with lesson plans, materials, and assessments that will help them give their students the instruction, practice, and support needed to master each of these dimensions of alphabetic knowledge. (5) [Emphasis by DLP. Here Adams is summing up the rationale and purpose for the book.]

There are two underlying motivations for this design. The first, of course, is to help the children learn to print each letter efficiently and legibly. The second is that learning to write the letters significantly hastens children's ability to recognize them as, deep in the brain, the motor habits involved in writing each letter become tightly tied to the letter's visual representation. (6) ["Design" here refers to her explicit letter writing instructions. This is why Dr. Rose and I insist on having children *write* the letters of the alphabet in ABC order on a daily basis until they attain true fluency (automaticity).]

In the introduction to "Writing Uppercase Letters," Dr. Adams has some very important information that should be carefully considered.

There are several strong reasons for anchoring letter writing as soon as possible. The most obvious, of course, is to engage children in writing as soon as possible – yet students will not be

able to write much as long as the letters are insecure or onerous for them. A second reason is that spelling activities, both structured and independent are shown to be a superlative means of advancing children's phonemic awareness, their grasp of the alphabetic principle, and their internalization of spelling patterns and conventions. However, spelling activities are thwarted to the extent that children are struggling with letters. (59)

Even so, learning to form letters so that they *look* right is only part of the challenge. Mature readers and writers do not "draw" letters in the way they draw faces, bunnies, or trees. Instead, each letter is tied to a highly overlearned series of movements that are executed almost automatically as people write. Thus, most people can write more legibly with their eyes closed than they can with their nondominant hand. A more important consequence is that as letter formation becomes automatic, people can devote their attention to their message, choice of wording, and spelling as they write. (59)

Leading children to practice a consistent set of strokes for each letter serves to accelerate the development of letter-writing automaticity. Furthermore, as the hand movements involved in writing each letter becomes bound to the visual representation, they serve to hasten and secure the child's ability to recognize the letters. (59) [The term "bound" here refers to the connections model of learning that is the psychological theory behind Dr. Adams' work – and mine. This would apply to any letterform, cursive, manuscript, or italic. I prefer cursive.]

In the introduction to "Writing Lowercase Letters," Dr. Adams has some very important information that should be carefully considered.

The lowercase letters are far more difficult to learn than uppercase letters. [I do not think most parents and teachers are aware that lowercase letters are "far more difficult to learn than uppercase letters." It is my personal preference to teach uppercase manuscript first and then go to lowercase cursive; but it takes a good knowledge of cursive instruction to do that. I come from the last generation in America to have learned cursive-first in first grade, before lowercase manuscript for math and drafting. I do not force my personal preference on other, although it is my consistent practice with my tutoring students; and I can vouch for its effectiveness.]

As mentioned in the introduction to Unit II, visual representation of the letters is integrally bound to the movements that the hands make when writing them. But there is more. Although learning to recognize uppercase letters is *hastened* by learning to write them, research indicates that learning to recognize lowercase letters *depends* on learning to write them. This is the reason that, for survival purposes, the visual system itself is preprogrammed to ignore differences in orientation of objects; yet, orientation is integral to letter identity and, indeed, makes al the difference between *b, p, q* and between *n* and *u.* (121)

What matters is not just *writing* the letters, but linking the appearance to a common habitual stroke sequence for its writing. Thus, letter-writing lessons are designed to help the children write letters such that each is represented by a consistent set of strokes, produced in a consistent order. You will be able to tell whether children are using the proper stroke sequence by examining their written work. The tendency to write letters backwards is a strong indication that children are not adhering to recommended starting spots or stroke sequences, as is inconsistency in rendering of a letterform one occasion to the next. (121) [I consider these words of wisdom that are worthy of serious consideration. Dr. Adams' advice applies to any form of writing. Most children coming to me have either received no handwriting instruction or were not paying attention when proper handwriting strokes were taught. While she does not mention it, proper posture and grip are also vital. To get to the heart of why handwriting instruction has been neglected for decades in American schools just read Gail Harold-Taylor's 1989 *Administrator's*

Guide to Whole Language, where the author clearly says that formal handwriting instruction is not necessary in the primary grades. My own school district has gone without any formal handwriting program for over 25 years. Just ask any first-grade teacher. Yes, it is hard to believe, but true!]

Quotes from Unit 4: "Introducing Letters and Sounds." Here Dr. Adams recommends teaching long-vowel sounds **before** short-vowel sounds, in accordance with only a handful of phonics programs such as the Priscilla McQueen's method which was based on the Association Method of Mildred McGinnis, the Weiss Method, Stevenson, Open Court before SRA/McGraw-Hill tragically switched from long to short vowels first, and a few others.

> The vowels, by contrast, are exercised by having children listen for such sounds as /ē/ when it occurs in the medial (*meet* versus *moat*) or final (*see* versus *sow*) position in words. This is a relatively difficult challenge. However, it is also an important one. Children must learn to hear vowels in the middle and end of word as they develop phonemic awareness and learn phonics and spelling. To make this challenge easier, only the *long*, sounds of the vowels are introduced in Chapter 12. One advantage of the long vowels is that they require tensing of the mouth that must be held long enough to make a relatively clean and distinct sound. A second is that the long sounds of the vowels are the same as their names. As such, each long vowel sound is already familiar to the children, allowing them to concentrate their attention on finding the sound within the words. (185)

> Awareness of vowel phonemes is notoriously difficult for young children. How many times to young spellers have to be reminded that every syllable must have a vowel? One reason is that consonants are intentional, ballistic movements. They are articulated, whereas the vowels are shapes of the mouth. Awareness of short vowels is particularly difficult. Because they are short in duration and lax in pronunciation, the short vowels are hard to detect, and their sounds may vary far more as a function of the phonemes that surround them than do those of the long vowels. (185)

Understanding how the brain controls drawing and handwriting

By Pam Versfeld, Physiotherapist

Experienced hand writers can write a sentence without needing visual guidance. This is because fluent and efficient handwriting is produced with minimal need for visual feedback.

Visual monitoring of handwriting is important for positioning of handwriting on the page and keeping the writing in a straight line.

Letters are formed by a series of small movements called strokes.

The pattern of strokes needed to form a letter are store in the brain as a motor plan.

The motor plans (also referred to as representations) for letters contain information about the relative length, direction and sequence of the strokes needed to form each letter.

Well-learned motor plans control the direction and sequence of strokes without the need for feedback for completing the movements with reasonable accuracy.

Handwriting movements occur to fast to rely on feedback for controlling each letter.

The movements (strokes) used to form letters are pre-planned and very rapid. In fact, the speed of fluent handwriting is so fast that they are completed before any information from the muscles or from the vision reaches the brain.

In fluent handwriting each letter is pre-planned and the movement is carried out without the need for visual monitoring or feedback from the muscles. In fact, research has shown that after the first few months of handwriting young children not only re-plan letters, but have started to pre-plan whole syllables.

The equivalence factor: writing big or small uses the same motor plan

Learning to print letters is all about learning the motor plan for the letter.

Learning to write a letter is a process of learning the relative length, direction and sequence of the strokes that form the letter and storing this information in the brain as a motor plan for the letter.

When a letter is well learned seeing an example of the letter (grapheme) or hearing the letter (phoneme) will call up the motor plan for writing the letter.

With repeated practice, the link between seeing, hearing or thinking about a letter becomes more direct, efficient and faster and requires no attention.

When learners have acquired the motor plan for a letter, they are able to write the letters without hesitation.

Learners who have not developed a direct link between the letter and the motor plan will hesitate before writing a letter.

Tracing letters inhibits learning the motor plan

Tracing letters or writing a letter guided by an outline of the letter can only be done with any degree of accuracy by using visual monitoring of the movement of the pencil tip. To do this the child uses a series of short strokes to make sure that the line they are drawing stays on the line (or between the lines) on the page.

This has two consequences: children get into the habit using vision to monitor their actions and they do not learn the motor plan for the letter. Tracing is a bad idea - and should be banned from handwriting programs.

Last edited on 9/6/2017.

A Partial List of Books and Articles Mentioned in *Forget the Bell Curve* Available for Free from Internet Archive

1. *The Bell Curve: Intelligence and Class Structure in American life* (1994) by Richard J. Herrnstein and Charles Murray.

https://archive.org/details/bellcurveintelli00herr_0/mode/2up

2. *Emile or On Education* by Jean-Jacques Rousseau: Introduction, Translation, and Notes (1978) by Allan Bloom.

https://archive.org/details/emileoroneducati00rous

3. *Walden Two* (1976) B. F. Skinner.

https://archive.org/details/walden00skin

4. *Cultural Literacy: What Americans Need to Know* (1987) by Eric Donald Hirsch.

https://archive.org/details/culturalliterac000hirs

5. *Teach Your Child to Read in 100 Easy Lessons* (1986) by Siegfried Engelmann, Phyllis Haddox, and Elaine Brunner.

https://archive.org/details/teachyourchildto0000enge

6. *Guns, Gems and Steel* (1997, 1999) by Jared Diamond.

https://archive.org/details/fp_Jared_Diamond-Guns_Germs_and_Steel/mode/2up

7. The *Closing of the American Mind* (1988) by Allan Bloom

https://archive.org/details/closingofameric000bloo

8. *The Ominous Parallels: The End of Freedom in America* (1982) by Leonard Peikoff.

https://archive.org/details/ominousparallels00peik/page/n5/mode/2up

9. *What the Social Classes Owe One Another* (1883) by William Graham Summer.

https://mises.org/library/what-social-classes-owe-each-other

10. *School and Society* (1899) John Dewey. Sam Blumenfeld sent me a hardback copy of this book. I find it hard to read and understand Dewey.

https://archive.org/details/in.ernet.dli.2015.22481/page/n5/mode/2up

11. *Why Our Children Can't Read and What We Can Do About It* (1997) Diane McGuinness.

https://archive.org/details/whyourchildrenca0000mcgu/mode/2up

12. *Beginning to Read: Thinking and Learning about Print* (1990) Marilyn J. Adams. A classic in the field.

https://archive.org/details/beginningtoread00mari

Here is a summary of Adam's book for a shortcut to main ideas.
https://archive.org/details/beginningtoreadt00adam

13. *Learning to read: The Great Debate* (1967) by Jeanne S. Chall. A classic in the field.

https://archive.org/details/learningtoreadgr00chal

14. *Why Johnny Can't Read: And What You Can Do about It* (1955) by Rudolf Flesch.

https://archive.org/details/whyjohnnycantrea00fles/page/n3/mode/2up

Flesch also wrote, Why Johnny Still Can't Read: A New Look at the Scandal of our Schools. (1983) https://archive.org/details/whyjohnnystillca0000fles_o9q1

15. *The new Phrenology: The Limits of Localizing Cognitive Processes in the Brain* (2001) by William R. Uttal.

https://archive.org/details/newphrenologylim0000utta

16. *The Language Instinct: How the Mind Creates Language* (1994) Steve Pinker.

https://archive.org/details/languageinstinct0000pink_d1h2

17. *The Waking Brain* (1964) by Winchell H. Magoun.

https://archive.org/details/wakingbrain0000mago/page/n5/mode/2up

18. *The Hand: How Its Use Shapes the Brain, Language, and Human Culture* (1998) Frank R. Wilson.

https://archive.org/details/handhowitsusesha0000wils

19. *Descartes' Error: Emotion, Reason, and the Human Brain* (1996) by Antonio R. Damasio

https://archive.org/details/descarteserrorem0000dama_k2f1

20. *The Writing Road to Reading* (1957, 1986) Romalda B. Spalding. I have taught this with good success, but it a very demanding approach for student and teacher alike.

https://archive.org/details/writingroadtorea0000spal_t2f7

Note: Unfortunately, no books are mentioned in reference to Precision Teaching.

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