



The Abilities of Those with Reading Disabilities

The Need for Systematic Study of the Talents and Special Abilities Thought to be Associated with Dyslexia

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Note: Below is an excerpt from a chapter for book to be published in late 1999 by York Press based on a series of papers given at a symposium reviewing neurobiological factors in dyslexia, June 28 - July 2, 1998, sponsored by the National Dyslexia Research Foundation.

"Perhaps my early problems with dyslexia made me more intuitive: when someone sends me a written proposal, rather than dwelling on detailed facts and figures, I find that my imagination grasps and expands on what I read."

Richard Branson, from *Losing My Virginity: How I've Survived, Had Fun, and Made a Fortune Doing Business My Way*, Times Business, 1998, p. 25.

"Don Winkler has a brain for the 21st century. A dyslexic brain. As other managers struggle to 'think outside the box,' Mr. Winkler has no other way of thinking. . . . In five years he has built the finance arm of Banc One Corp. from an industry also-ran to \$26 billion in assets. How he did so says a lot about Mr. Winkler and the value of quirky thinking in a chaotic business world."

Thomas Petzinger, Jr., "A Banc One Executive Credits His Success to Mastering Dyslexia," *Wall Street Journal*, April 24, 1998, p. B1.

"His thoughts often seem to progress in a nonlinear fashion, which McCaw says stems from [his] dyslexia. . . . He has difficulty absorbing lengthy written documents and usually avoids them. That leaves time for him to do what he prefers anyway, which is to think and to stand back and take in the big picture. . . ."

Andrew Kupfer, "Craig McCaw Sees an Internet in the Sky," *Fortune*, May 27, 1996, p. 64.

"I've always felt that I have more of an ability to envision, to be able to anticipate where things are going, to conceive a solution to a business problem than people who are more sequential thinkers."

Charles Schwab, explaining that his struggle with his own dyslexia has led him to develop other capabilities, "The Schwab Revolution," *Business Week*, December 19, 1994.

The Smartest Lad

In 1896, in the first description of developmental reading disability in the medical literature, it was noted that a certain student could not learn to read in spite of "laborious and persistent training." However, his headmaster observed that this student "would be the smartest lad in the school if the instruction were entirely oral" (Morgan). The study of reading disability has frequently considered the often striking inconsistencies between high intelligence and ability coupled with surprisingly poor reading and writing skills. However, most research to date has focused mainly on the obvious problems to be corrected rather than the hidden potential to be identified and

developed.

The quotations concerning the four highly successful individuals above would suggest that there is something about the dyslexic mind that sometimes confers significant and consequential benefits. (It is also no small matter, perhaps, that the Wall Street Journal article and others like it indicate that these ideas seem to be more and more widely held in the business world - where performance is so important, in contrast to other worlds where credentials often seem more important than performance.)

Given the right context, individual drive and adequate organizational skills, it would appear that, at least sometimes (and perhaps often), the dyslexic kind of mind can create much that is unexpected and highly beneficial. What is true for creativity in business, is often also true for the arts, technology and the sciences as well. Given the right circumstances, it would seem that this kind of mind can indeed have a great deal to contribute. But much may depend upon whether organizations, co-workers, educators and parents understand that the talents and special abilities exhibited by such individuals are often quite different from the talents and abilities most highly valued in a conventional academic context, especially the early years.

Plainly, however, reading disabilities and dyslexia are not always seen as closely associated with talent and high accomplishment. One of our problems, then, should be to try to figure out why some succeed in such dramatic ways while so many struggle fruitlessly in obscurity, never seeming to realize a small fraction of the their own distinctive potential. Perhaps some of those who have already succeeded at this complex task may be the best guides in helping researchers and dyslexics to understand how to create success where there is so often failure. At least initially, it may be better to look to highly individualized personal reports and case histories to see if we can learn new ways of approaching old problems.

Briefly Put - Real Problems, Real Talents

Some researchers argue that the gifts and talents seen among highly successful dyslexics are merely more noticeable in a such a population because of the striking contrast between exceptional capabilities and surprising and highly specific disabilities. They argue that a properly constructed study would probably show that the proportion of gifted dyslexics is likely to be no greater than in the non-dyslexic population (Appendix A).

Others, following the approach of the late Dr. Norman Geschwind, argue that the nature and variety of the talents are directly related to the different brain structures seen in dyslexics - and that the problems and the unusual strengths come together in a package that is difficult to separate into parts. That is, the same microscopic, structural brain changes that produce reading difficulties and other problems, may often (but not always) produce brain changes and differences that can be highly beneficial in certain areas of work and life. Indeed, from this position it might be said that it is not so much the frequency and extent of talent within this group that is of greatest interest, but the kinds and degree of talent and whether these are unusually beneficial in different fields. In other words, perhaps not all dyslexics can be shown to be highly gifted in some way, but those who are highly gifted may have gifts that are unusual and somehow distinctive - since theory would suggest that in this population distinctive neurological mechanisms may produce distinctive talents as well as distinctive difficulties. This perspective also suggests that there may be important talents in this population which are difficult to assess with conventional instruments. Some argue that some dyslexics are judged by the wrong criteria so that many talented individuals are being cast out of the system - depriving them of their useful roles, and the larger society of their distinctive contributions.

Still others argue that the areas of proficiency often noted among dyslexics, such as visual and spatial talents (amid a great variety of other traits), happen to be just those talents that are recently coming into greatest demand - along with the newest computer graphic and information visualization technologies. That is, the particular talents that many dyslexics seem to have are seen as well timed for the technological changes which happen to be taking place all around us just now - even though most educators and professionals are wholly unaware of this trend and of what it will eventually mean. Consequently, the problem for some dyslexics is not so much their inability to do what is expected in school - but their inability to persuade those in authority that their particular talents have growing value while their particular difficulties are becoming rapidly

less and less important.

Members of another group see themselves primarily as strong visual thinkers. While not all in this group are dyslexic, it appears that many have had important educational difficulties, often in the earlier years, and may have near family members who are either dyslexic or have had a similar history of educational difficulties. While many members of this group have been able to succeed in science, global politics and other areas, they are very much aware that their usual way of thinking is quite different from most of the people around them. They find it quite difficult to explain their visually-based ideas to non-visual people. They also find that they can rapidly identify and establish rapport with other strong visual thinkers while communicating with great ease and fluency. Some in this group feel that understanding such patterns will greatly benefit those with reading problems as well as many others.

For some time, many professionals in the field have felt that looking at the gifts and talents thought to be associated with dyslexia would be a distraction from the serious business of correcting deficits in literacy skills. More recently, however, there has been a growing awareness among certain professionals and researchers that it is time for a serious scientific look at this other side of dyslexia.

This chapter is intended to provide a preliminary look at a rationale for beginning a program of systematic scientific study focusing on the various strengths and talents that are believed by some to be closely associated with developmental reading disability. Profiles of a few highly successful dyslexics from varied fields will be provided. There will also be some discussion of some preliminary research along these lines together with some consideration of methodological problems - since effective study of this population may require innovative use of advanced computer technologies as well as novel methodological approaches to a highly heterogeneous population.

Hidden Talents

As we look for hidden talents instead of obvious weaknesses, it seems worth looking first at the very highly successful to try to see patterns - to try to understand what may be in store for the larger population. When we look at such examples, it would appear that they have many strengths that are often not recognized in school or university - but come to be recognized in work and in life. Seeing the longer-term implications - in spite of tradition - we become aware that we need to find ways of seeing and developing the gifts and talents hidden under the difficulties.

When we look at highly successful dyslexic individuals, we see that they succeeded by following their substantial gifts, not by focusing on their difficulties. Accordingly, it is clear that we need to find ways of bringing traditional education more in line with the changing requirements of work and life. The more we are able to do this, the more likely we will, in the long run, really help dyslexics and others who were more or less like them. We may also find ways to help non-dyslexic individuals in the larger society as well.

Achieving the Impossible - Richard Branson

Richard Branson is not well known by the general public in the United States, but in the United Kingdom and much of Europe he is probably among the best known and most popular of media figures. Some may have heard of him as the wealthy hot air balloonist who has tried several times unsuccessfully to circle the globe. However, he is best known in the business world as one who operates (mostly very successfully) over 150 businesses - as diverse as airlines, recording companies, railroads, soft drinks and investment services. This is an accomplishment that for many strains credulity. In order to do this, it is no surprise that he has developed a distinctive management style, emphasizing informality and unconventionality, high employee motivation and decentralized enterprise control. Even his management philosophy is seen by many as backward. While other companies seek "shareholder value," Branson seeks happy and "cheery" employees - reasoning that if the employees are happy and having fun, then the customers will be pleased as well - and they will come back. He is also a master of doing a variety of unconventional stunts to gain free media coverage for each of his new ventures.

In a recent autobiography and magazine interviews and a series of television programs (Channel Four), Branson has just begun to talk publicly about his own dyslexia - and the connections it may

have to his remarkably successful and varied career. When asked to define himself, he makes reference to traits and attitudes often observed among dyslexics. He explains: " ' I always loved the play Peter Pan, and I've never wanted to grow up. I'm a bit of a maverick. I love people, I love challenge, I love taking on the establishment. I love turning things upside down and having fun while doing it. I love motivating people, I love to achieve the impossible. I don't want to waste a moment of my life. I judge people within seconds of meeting them, within 30 seconds.' "

True to patterns familiar among dyslexics, "Branson never made it beyond [his boarding school]. He couldn't get past his entrance exams for university. He attributes this largely to his sense that education was less than essential, but his lousy math and Latin skills - and a mild form of dyslexia - played a part as well. 'I'm not dramatically dyslexic, but I come out with some strange words sometimes,' he says. 'I have a little trouble telling left from right. . . . That's why I paint my parachute release bright red, because I accidentally pulled it once instead of the rip cord and the chute came off' "

Many dyslexics note that they need to learn from observation and by doing - not from books and lectures. Branson sounds a similar theme: " 'I think the most interesting thing about Britain is that most of the entrepreneurs left school at around 15,' he says. 'Very few of them if any went on to university or college. I think the advantage of leaving school at 15 and starting up in business is that you don't have anything to lose. . . . You learn to become street savvy. And learning how to survive and learning from your mistakes is a lot better than trying to learn in some sterile setting.' "

Ridiculous Questions - Don Winkler

One of the advantages that many dyslexics seem to have in the world of business (as well as science and technology) as the high value placed on innovative solutions to difficult problems - the more unexpected and more unconventional the better. Part of Don Winkler's dyslexia is his propensity to perceive everything in reverse. Yet this same propensity seems to have contributed directly and indirectly to his ability to see novel solutions. Banc One had hired Winkler to run a "sleepy" consumer lending affiliate called Finance One. According to a Wall Street Journal columnist, ". . . Seeing things backward yielded deep insights. Like any lender, Banc One rejects a proportion of personal-loan applications as sub-standard. . . . Winkler recognized that these unqualified bank borrowers were perfect candidates for the debt-consolidation and home-equity loans that his unit provided. So he set about turning Banc One's rejects into Finance One's referrals."

Winkler now "instructs colleagues in 'breakthrough thinking' with backwardness at its heart." With personal authority beyond the usual motivational speaker, "he tells people that failures are stepping stones to success, that breakdowns can lead to breakthroughs. . . ." According to Winkler, the most essential element is "asking the most ridiculous questions possible, a practice he encourages by passing out clown noses. As he puts it, 'The dumber the question - the more people laugh at you - the more likely it will lead to breakthroughs.' " (It is noteworthy that medical essayist Lewis Thomas once observed that you could be sure that wonderful results were on the way when people in the laboratory started to laugh at the ridiculous, unexpected and impossible findings.)

It may tell us a lot about the current state of business thinking and reporting that a WSJ columnist asserts that Winkler has "a brain for the 21st century. A dyslexic brain." It is commonplace for business managers to be told to "think outside the box," to think in truly novel ways. So it is seen as a considerable advantage to have "no other way of thinking" - thus honoring "the value of quirky thinking in a chaotic business world." It is also no small matter that the WSJ columnist ended his piece with this request to his readers: "What can dyslexics teach managers? Please send your ideas to tom@petzinger.com." We may well wonder whether such business writers are just pursuing an odd and entertaining story. Or, instead, are they setting forth observations that some day can be operationalized and tested - in order to learn valuable and broadly applicable lessons about learning and creativity.

Biographical Sketch - Thomas G. West - Author of In the Mind's Eye

In the Mind's Eye was written by Thomas G. West and published in 1991 by Prometheus Books, Amherst, New York. After seven printings, an updated edition was released in 1997. A Japanese

language edition, with the alternative title *Geniuses Who Hated School*, was published in 1994 by Kodansha Scientific, Tokyo.

The book deals with visual thinkers and creativity, computer information visualization, neurological research and gifted persons with learning difficulties - examining the role of visual-spatial strengths and verbal weaknesses in the lives of ten historical persons, including Albert Einstein, Michael Faraday, James Clerk Maxwell, Sir Winston Churchill, Gen. George Patton and William Butler Yeats. A special focus is the way major changes in computer visualization technologies promise to gradually transform education and the workplace - greatly increasing the perceived value of visualization talents and skills for comprehending patterns in complex systems, while traditional verbal and text-memorization skills may come to be perceived as less and less important.

In connection with *In the Mind's Eye*, the author has been invited to provide presentations for diverse groups in the U.S. and overseas, including the Confederation of British Industry, the Institute of Personnel and Development in London, the Association for Computing Machinery graphics special interest group (SIGGRAPH), the Educational Testing Service in Princeton, the Dyslexia SPELD Foundation in Perth, Western Australia, the Orton Dyslexia Society of British Columbia in Vancouver and a conference in Gttingen, Germany, for some 50 Max Planck Institutes. Other presentations include: a brief talk at a House of Lords reception, the British Dyslexia Association, the Arts Dyslexia Trust, the Glasgow School of Art and the Royal College of Art.

Consulting for the National Library of Medicine, the author has provided a series of seminars and is currently developing a research program and a conference on visualization to be sponsored by the Library in association with other organizations. Mr. West has organized and participated in seminars on visualization for business leaders and media innovators - at the Aspen Institute in Aspen, Colorado, at Northern Telecoms Institute for Information Studies at Witley Park, outside London, England, and at SRI Consulting's San Francisco Partner's Conference, Business in the Third Millennium.

Mr. West writes a regular column on visualization topics for *Computer Graphics*, a periodical for computer graphics professionals. Other publications include a chapter for a forthcoming book "The Abilities of Those with Reading Disabilities: The Need for Systematic Study of the Talents and Special Abilities Thought to be Associated with Dyslexia;" a lead article for *Understanding Our Gifted*; a chapter for a book on dyslexia and employment; sections of an award-winning CD-ROM multi-media proceedings of the first "Doors of Perception" conference in Amsterdam; "A Future of Reversals" in the *Annals of Dyslexia* and a chapter in *Interactive Learning Through Visualization*, Springer-Verlag, Heidelberg, Germany.

Mr. West appeared in the British documentary "The Unwrapped Gift" released in June 1999 and was interviewed for a series of three TV programs on dyslexia produced by 20/20 for broadcast by UK Channel Four in July 1999. Previously, Mr. West appeared in the BBC television documentary "Lost for Words" broadcast July 1995 to 5 million viewers in the science series QED. He also appeared in a television documentary on dyslexia released to some 80 PBS stations in 1997, produced by The Dartmouth-Hitchcock Medical Center.

Articles reviewing or citing *In the Minds Eye* have appeared in *The Boston Globe*, *The American Bar Association Journal*, *The Roeper Review*, *The Futurist*, *The Whole Earth Review*, *The Financial Times*, *The Times Educational Supplement*, *The Independent*, *The Evening Standard*, *The Oxford Mail*, *The Australian*, *Kagaku Asahi Science Magazine* and *Nikkei Daily*, among others.

Prior to writing *In the Mind's Eye*, Mr. West worked with engineering and consulting organizations involved with computer software design, energy research and international trade, with periodic travel to the Middle East and the Far East. Based in Washington, D.C., the author holds graduate and undergraduate degrees in international relations, literature and philosophy. He learned of his own dyslexia at the age of 41. From a family of artists and engineers, he has long been interested in the connections between mixed abilities, technological innovation and visual thinking in various occupational and cultural settings.

He is affiliated with ACM-SIGGRAPH (Association for Computing Machinery-Special Interest Group on Graphics), the American Association for the Advancement of Science, the Arts Dyslexia Trust (Great Britain, Honorary Founder Member and Consultant), the International Dyslexia Association,

the Japan Dyslexia Association (Hiroshima, Japan, Advisor), the National Dyslexia Research Foundation (Visual Technology Programs) and the Neuhaus Education Foundation (Houston, Texas, National Advisory Board).

Selected Publications

"The Abilities of Those with Reading Disabilities: The Need for Systematic Study of the Talents and Special Abilities Thought to be Associated with Dyslexia," Chapter for book to be published in late 1999 by York Press based on a series of papers given at a symposium reviewing neurobiological factors in dyslexia, June 28 - July 2, 1998, sponsored by the National Dyslexia Research Foundation. (Excerpt provided above.)

"Words to Images Technological Change Redefines Educational Goals." Article for special technology issue of Perspectives, a publication of the International Dyslexia Association, Spring 1998.

In the Mind's Eye: Gifted People with Dyslexia and Other Learning Difficulties, Visual Thinkers, Computer Images and the Ironies of Creativity. Revised and updated edition issued September 1997 with new preface, epilogue, additional bibliography and sources of information. Prometheus Books, Amherst, New York; seventh printing, June 1996; first published, May 1991. (See <http://www.amazon.com>)

Web Sites with Material By or About Thomas G. West

Dyslexia and Learning Disabilities

[Left Behind at the Very Beginning of the Race](#). Autobiographical article for "First Person," LD Online website, January 1, 1998.

Art and Design

[Medieval Clerk to Renaissance Thinker: Design, Visualization and Technological Change.](#)

Presentation published on CD-ROM, documenting the proceedings of the first "Doors of Perception" Conference, Stedelijk Museum, Amsterdam, Holland, October 30-31, 1993. Other speakers included in the CD-ROM: Louis Rossetto, editor and publisher of Wired magazine; Michael Heim, the author of The Metaphysics of Virtual Reality; Toshio Iwai, creator of virtual sets for Einstein TV in Japan; Derrick De Kerckhove, director of the McLuhan Program in Culture and Technology at the University of Toronto; David Liddle, president of Interval Research Corporation in Palo Alto, CA. The CD-ROM has received wide recognition: it won the "Meta Design Award" at the 1995 Digital World/Interactive Media Festival in Los Angeles; it got a "Design Excellence Distinction" in ID magazine's Annual Design Competition 1995, it got a first prize in the 1995 "New Voices / New Visions" competition of The Voyager Company and Ideo Design, and the producer, Willem Velthoven was awarded the 1995 "Aanmoedigingsprijs Grafisch Ontwerpen" (encouragement prize for graphic design) from the Amsterdam Art Council.

Computer Graphics and Information Visualization

A series of columns, Images and Reversals, appearing regularly in Computer Graphics, a quarterly publication of ACM SIGGRAPH, the international association for computer graphics professionals, 1996-1999. The column covers the implications and larger issues involved in the rapid development and increasingly wide-spread use of computer graphics and information visualization.

Columns Posted On SIGGRAPH Website

- "Smashing Images, A Review" - August 1999 (upcoming)
- "Make All Things Make Themselves" - May 1999
- "James Clerk Maxwell, Working In Wet Clay" - February 1999
- "Transforming Spheres, In Three Parts" - November 1998
- "Brain Drain, Reconsidering Spatial Ability" - August 1998
- "Feynman Diagrams and Spreading Illusions" - May 1998
- "Knowing What You Don't Need to Know" - February 1998

- "Digital Artist as Hero" - November 1997

Excerpts from Selected Columns

"James Clerk Maxwell, Working in Wet Clay" (February 1999)

"If you can visualize the shape, you can understand the system."

James Clerk Maxwell, acknowledged by many to be the most important physicist of the nineteenth century, knew how to be a supremely competent scientist and mathematician. Yet, when necessary, he could draw on the talents of the artist and sculptor - for he knew if he could find a way to "visualize the shape," then he could begin to really "understand" the vast complexity of the "system." Accordingly, when he wanted to understand some deep and complex pattern in nature, he often dismissed conventional analysis and notation. Instead, he used the visual and spatial tools of the craftsman, mechanic and artist - modeling clay with wet hands to mold a tangible sculpture of the 3D image in his mind's eye.

"Make All Things Make Themselves" (May 1999)

"The reaction to the Darwinian theory was diverse when it first exploded onto the Victorian scene. For Charles Kingsley, a deity who could make all things make themselves was far wiser than one who simply made all things."

Computer graphics has always been about making things, whether making 3D images of real objects, making images of imagined visions or making models of the "unseen" in visualizations of scientific data.

During the Renaissance, the goal of art was to imitate nature, to make true and accurate images of the real world. Even in the poetry of the period, the "prime aim was to make an imitation" in order to "grasp the essential meaning and value."

Although this goal fell away some time ago, we can now see that our newest tools make it possible to imitate nature once again - but this time at much deeper levels. The imitation can be not only of images of surfaces, but also imitation of nature's growth, its physical motion, its processes, its inner workings, its unfolding instructions according to a simple code - imitating the immense complexity generated by variation of a simple code within a context of meaningful selection. And it is already becoming clear that part of this imitation is developing some understanding of things that "make themselves."

Years ago, when I first saw the short silent movies of Karl Sims block creatures - walking, swimming, seeking light and guarding their food - I was thunderstruck. I felt immediately that something very powerful indeed was afoot. And I imagined that what I was seeing was really only the very beginning.

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