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Dyslexic Strengths in Times of Adversity

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Editor's Note: *In this invited article following his talk for the UNITE SPLD 2021 conference, Thomas West applies his knowledge of dyslexic strengths in times of adversity, following the COVID pandemic. West's understanding of dyslexia has always, in my view, been influenced by the framework of Seligman (1990) on learned optimism, which later became incorporated into my colleague Rod Nicolson's Positive dyslexia movement (Nicolson, 2015).*

Abstract

Months before the world began to realize the full impact of the strange new illness first reported in Wuhan, China, in December 2019, the author had agreed to give a talk for graduating high school students in June of 2020. As conditions worsened, he was in a quandary, trying to think of what to tell these college bound students with dyslexia, who had completed their studies at The Siena School near Washington, DC. Eventually, he decided to focus on the creativity and resilience that so many dyslexics have exhibited so often, especially in times of change, uncertainty and sometimes great adversity. In this article, based on the talk, the author recalls how certain neurologists and researchers had pointed out that dyslexics have often been responsible for highly original innovations and advances as scientists, inventors and entrepreneurs. Accordingly, he hoped that the dyslexic students would be able see themselves as well suited to deal with their own unfolding trial and test -- displaying the special talents of dyslexics for creative solutions in times of uncertainty and adversity. The following article tells the story of his efforts to make this case -- providing arguments and stories that could be helpful to these students and possibly helpful to a larger audience -- as the world continues to deal with the long-term ups and downs of COVID-19 in its several variants -- while at the same time the world also begins to deal with major changes in the nature of jobs and work in the age of ubiquitous computing, computerized "deep learning" and artificial intelligence (AI).

Keywords: Dyslexia, Dyslexia Strengths, COVID-19.

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PRESENTATION FOR THE GRADUATING CLASS

Initially, I puzzled about what I could say to the graduating students. I had promised. But the world had changed. It was to be the first "virtual" commencement – via a then unfamiliar computer link system. It had only been a few months – and the whole world was frantically trying to figure out how to deal with the rapid spread of the virus. It was a time of many difficulties and dangers. I realized that I had to fully acknowledge that what the students were seeing – what was indeed, in so many ways, really The Worst of Times. However, I hoped to somehow be able to show that this, in some ways, could also be seen as The Best of Times – for each student, for their class, for their school and for their larger community.

It was The Worst of Times – it was, indeed, a time for resilience and fortitude, for innovation and survival. They were having to deal with a true global pandemic. They had been locked in, away from school and their friends, having to continue classes virtually, facing an uncertain future. In those early months, all over America a great many had lost their jobs. In recent days there had been protests and demonstrations in Washington and all around the country – and, indeed, all around the world. After many cases and many deaths, a few places were slowly "reopening" – but all too soon – so that this also had many hazards and dangers.

In spite of all of this, I was bold to say that these could be seen also, in some ways, as The Best of Times. I noted that in the long history of human kind, we had been told, dyslexics seem to have had a special role. According to some researchers, dyslexics sometimes seem unusually well suited to deal with major changes – to being able to see opportunities inside of adversity. They are known to be particularly good at rethinking situations in an original way. They are known to be able to see what others cannot see. They are good at not being stuck with conventional views and conventional solutions. They have trouble reading and memorizing old knowledge – but they are often really good at creating new knowledge and insights. (Eide & Eide, 2011; Gechwind & Galaburda, 1987; West 2009).

I told the students that my own story was that I came into the field (as is so often the case) with the testing of our two young sons – who started having dyslexia-related problems in school in the earliest years of education. I told them how, as a worried parent, I got myself tested. I explained that I could hardly read at all until about the fourth year of primary school – and that I have always read very, very slowly – although, as I discovered later, sometimes I could read more deeply than my classmates. I explained how in those early days I had been totally unaware of the larger pattern of dyslexic traits, especially the hidden strengths that often went along with the obvious weaknesses (West, 2017).

I further explained to the students how I soon realized that my family included at least three generations of dyslexics – our sons, myself and my father. My father was a brilliant and highly skilled artist and teacher – who had won many major prizes – but who also had many dyslexic traits. My mother was not dyslexic but was also a highly skilled professionally trained artist who also won top prizes (in spite of extensive hearing loss from childhood scarlet fever).

I had begun to see that it was possibly significant that my mother was from a old Quaker family with many generations of visual thinking occupations – silver smiths, early mechanics and engineers who had designed, built and operated water powered mills in both England and in America (and much later a few early airplane pilots) – occupations that are often linked to the visual and hands-on strengths of those with dyslexia. My parents had met in the early 1930s at the Pennsylvania Academy of the Fine Arts in Philadelphia. Both had high visual talent with high level training in classical artistic skills -- loving to paint portraits of watermen, cooks and dancers, sailboats, a floating theater, old barns and green fields, rural landscapes in the manner of the French Impressionists of the late 19th century.

I explained to the students that when I began my own serious study of dyslexia – I immediately looked to the dyslexics who were successful in various fields. I was less interested in "fixing" the problems. Rather, I was much more interested in understanding the areas of distinctive strength and talent. I wanted to look at the fields where dyslexics were successful. I wanted to see what we could learn from them – how dyslexics could succeed in worlds of changing jobs, skills and technologies. In time, my interest in strengths and talents led me to meet some extraordinarily amazing people and directed me to look into some new and exciting areas of work.

Early on, I realized that many things had been changing in fundamental ways – many changes that tended to favor dyslexics once again, as they had in the past. I soon realized that all the low-level reading and clerical tasks that dyslexics have difficulty with were becoming less and less important in the world of work. In contrast, the high-level visual thinking talents and skills where dyslexics often excel were becoming more and more important in the world of work once again. Indeed, West noted that some researchers have asserted that the dyslexic brain often seemed to be optimized for innovation and original discovery – aspects especially useful in times of radical change and uncertain threat. (Eide & Eide, 2011; EY Report, 2018; West, 2009,).

Looking for talented and successful dyslexics, one of the first places I looked was computer graphics and the organization ACM SIGGRAPH – a field that includes film animation, video games, data visualization, simulators for airplane pilots and 3-D models and structures for architects, biologists, mathematicians and surgeons. This field often features a remarkable melding of ancient forms of art and story-telling with the newest high-speed computer graphic technologies. I began to attend the annual conferences –

and there were major technical advances every year. From the outset, the highly visual people I met at these computer graphics conferences explained to me that half the people in the industry were probably dyslexic.

I met one woman who was responsible for the computer graphics in major films like Titanic and The Fifth Element. She told me that she had assembled a small group of the most talented computer graphic artists and technologists. They dealt with the most difficult problems in the films. She had hired them for their extreme talents based on samples of their work. She had ignored their paper credentials. In time, she discovered that entire team was dyslexic – one hundred percent. (West, 2017).

This taught me a lesson: dyslexics can be super stars when they discover their special areas of talent – and when they find the right industry and position to put their talents to use.

This also taught me that one of the most important things is to be able to retain one's spirit – one's resilience – and not be beaten down by many early failures – and not be convinced by others that you can't move on to high levels of accomplishment – sometimes very high levels. (Eide & Eide, 2011; West, 2005 onwards)

Indeed, when I talked to highly creative and successful dyslexic people in the sciences and business and elsewhere, they say the higher up you go in an area of strength, the easier it gets. For example, I found that many high-level scientists are familiar with the mixed talents common among dyslexics. They instantly know what you are talking about. Conventionally trained teachers usually do not understand these things; they are often compelled to focus on memorization and testing rather than insight and discovery (Dreyer, Dreyer & King, 2001-2004; West, 2022).

A wonderful example of great success after repeated failures is Jack Horner – the famous paleontologist who has been advisor to Stephen Spielberg for his four Jurassic Park films. I got to know Jack over the years at several conferences and I visited him twice at his digs in northern Montana.

Jack explained to me that he was mostly a failure in lower school and high school. His high school English teacher gave him a grade of "D minus, minus, minus." The teacher said you passed, barely, but "I never want to see you again." Jack said he sent this teacher a copy of his first book (written with help from a co-writer, of course). Indeed, Jack says he has written more books than he has read. (Horner, 2007)

Although Jack had failed a lot, he said he never felt a failure. Why? Because when young, he won all the science fair prizes. He built a Tesla coil – and he also built a rocket. When he first told me this, I just assumed he meant a small model rocket. But he said, "Oh no, it wasn't a small model rocket. It was 5 feet tall and it blasted to 27,000

feet." I said, "Jack, that was dangerous, you could have shot down an airliner!" Jack could not do the low-level work – but when given the opportunity, he could accomplish things way beyond his classmates.

In Montana, if you have graduated from high school you could start college. Jack failed in college seven times (as he once reminded me) but he never gave up. He took a low-level job cleaning and preparing fossils. He kept searching the dry wild lands of Montana. He could not get funding from professional grants for his research. But he asked a local beer company and got the funding he needed – to eventually make important discoveries. In time, his work was respected and he became famous. He designed the dinosaur museum exhibits in Bozeman, received honorary degrees and started teaching paleontology.

He would have his 19 graduate students write their papers and put them in the computer so Jack could have his computer read the papers to him. He said that his mission was to get these graduate students to "think like a dyslexic." "I don't want them to clutter their minds with 'other people's thoughts,'" he said. He wanted them to observe nature directly and see what was there in front of them in the fossil evidence. He tried to teach them how to think "out of the box" like a dyslexic. He said that normally dyslexics think "out of the box" – because "they have never been in the box." (Horner, 2007).

I think Jack's example is a great one because it shows that he is definitely not suited to conventional academic studies. But he was – and still is – extremely well suited to understanding nature and science – seeing clearly what the fossil evidence revealed – seeing things that other scientists have missed.

Another great example is one of Jack's graduate students, Mary Schweitzer. Mary is also dyslexic. One year, Jack and his team had found a very large set of fossil bones from a Tyrannosaurus Rex at the face of a high cliff in northern Montana. It was in a remote area so it was hard to get people and equipment in and out. They found that the fossil femur (that is, the upper leg bone) of the T Rex (when covered with protective plaster of Paris) was so big and heavy that the loaned helicopter couldn't lift it. So, they had to cut this femur in half.

They sent one half to Mary. They didn't treat it with any chemicals as they normally do. Mary looked inside and what she saw immediately was a deposit of calcium inside the bone – like the deposits of calcium found inside bird bones when they are ready to make egg shells. So, Mary knew right away that the T Rex had been a pregnant female.

But there was more. Inside the bone Mary also found tiny flexible blood vessels and the remnants of red blood cells. Mary and her assistant said they could not sleep for weeks because they thought they would never be believed. She published her findings in Science magazine (Schweitzer, 2006) and indeed she was attacked. The critics said it is not possible for such things to survive for more that 60 million years. Subsequent papers

(Schweitzer, Wittmeyer & Horner, 2007) drew "howls of scepticism." Some said: "These parts would "not survive tens of millions of years." Was this "contamination?"

However, later, other scientists repeated her discoveries and admitted that her work was legitimate. "'Milestone' paper opens door to molecular approach" (Service, 2017). So, Mary Schweitzer, PhD, Jack's dyslexic grad student, started a whole new subfield of scientific study – molecular paleontology – a scientific subfield that all would have believed to be completely impossible. (Horner, 2007; NHK interview, 2017.)

Another amazing story is about William J. Dreyer, a dyslexic molecular biologist at the California Institute of Technology, in Pasadena, known as "Caltech." Years ago, Bill contacted me and said he had read my first book and thought that I understood how he thinks. "No one else does," he said. He suggested, "Next time you're in the Los Angeles area come and visit. I want to tell you my story." It turned out that Bill's story was very interesting indeed. (Dreyer, Dreyer & King, 2001-2004)

Bill started off as a poor student and he was uncertain about what he could and could not do. But he took some tests and realized he had some areas of special ability, especially in visual thinking. He started studying biology and he soon realized that he could understand what was going on in the laboratory better than others. Because he could use his powerful dyslexic imagination to see how the molecules fit together in various ways, he developed a new theory related to the human immune system. (Dreyer, Grey & Hood, 1967; West, 2009, West 2014).

He told his professors which experiments they should do and what the results would be. They helped him write his papers, based on his new theories. For 12 years, he gave talks about his new theories. Many professionals in the field were angered by these talks; it was all so new that they could not understand what he was talking about; they thought it was heresy.

Later, a different scientist, working in Switzerland, doing experiments that were illegal in United States at the time, proved that Bill's new theories were correct. And this other scientist received a Nobel Prize (Susumu Tonegawa, was awarded the Nobel Prize, Physiology or Medicine, 1987). (Tauber & Podolsky, 1997).

Bill told me, I think honestly, that he was not upset about not receiving the Nobel Prize. He told me that once you receive the prize your life is not your own – everybody wants a piece of you. (At Caltech, Dreyer was surrounded by a number of Nobel Prize winners.) Bill said that he was happy to be vindicated and to know that his theory was correct and was eventually accepted by everyone in the field. Bill also became the "idea man" to start six "bio tech" companies.

But there's still more to Bill's story. Bill had a dyslexic grandson named Brandon King. Brandon was in high school, flunking courses, fighting with his parents, feeling very low. So, his grandfather asked him to come and visit and help with his research using Brandon's computer skills. Each day Bill talked to Brandon and said: "This is what I want you to do today. Since you are good with computers, I want you to write this little search program – but before that you need to know this biology. . . . "

Soon, Brandon started to help in the laboratory at Caltech as a volunteer. Then he was a part-time employee. Eventually he was a full-time employee helping with the computer side of the biology laboratory at the Caltech. In a short time, according to Bill, Brandon was doing "post doc" level work at the laboratory – and he still hadn't graduated from high school. (Dreyer, Dreyer & King, 2001-2004; West 2014)

Eventually Brandon went on to college at the famous University of California at Berkeley (because they had the best learning disability support program) and was able to graduate with honors and start his own business. (West, 2009, 2014)

Because of my books and talks, many stories of successful dyslexics have come my way. The field is full of paradoxes and surprises. Great writers who cannot spell. High level mathematicians who don't know their math facts. A Nobel Prize winning biologist who had been in "special education" and thought she was stupid (Carol Greider, Nobel Prize, Physiology or Medicine, 2009).

It is important for educators and test designers to understand that there are whole areas of talent that they do not know how to measure or comprehend. Many clever students are great with memorization and test taking, but they are not good at developing new ideas or making new discoveries. Rather, often dyslexics seem to be well suited to these tasks.

Over many years, stories of dyslexic entrepreneurs like Richard Branson have been written about in the business press (Branson, 1999). This is not new. However, what is new is that in the last few years there have been formal reports written by major business management consultant firms. A report by one of the big four management consultant companies (EY – formerly Ernst and Young) states the case that what businesses want in the future are the skills and talents and strengths that are common among dyslexics. (EY Report, 2018).

With the new powerful computers of today many of the clerical tasks – the tasks that our traditional educational system trains human beings to do – are now being done faster and more cheaply by machines – especially with massive data available in the cloud along with "deep learning" and artificial intelligence (AI).

Businesses realize that what they now need from their human employees is something quite different from the past. They want the innovation, creativity, big picture thinking and other abilities that appear to be common among dyslexics (but seem to be comparatively rare among certain non-dyslexics).

From the EY report: The Value of Dyslexia: "Our research shows that dyslexic strengths provide a significant opportunity for organizations to harness a different, and widely untapped, pool of talent . . . Dyslexic individuals have differing abilities, with strengths in creative, problem solving and communication skills and challenges with spelling, reading and memorizing facts. Generally, a dyslexic cognitive profile will be uneven. Dyslexic individuals really do think differently. In work . . . these varied cognitive profiles give dyslexic individuals natural abilities to form alternative views and solve problems creatively. Heightened cognitive abilities in certain areas, such as visualization and logical reasoning skills and natural entrepreneurial traits can bring a fresh, often intuitive perspective." (EY Report, 2018).

These are the kinds of things that some of us been saying for many years. But it is wonderful indeed to hear these words from established management consulting companies. I told the students that it is important for you, the class of 2020, to acknowledge the many great problems and stresses of our time. But along with all your own difficulties with dyslexia, remember that you have many advantages in ways of thinking that others do not have.

So, I told them that I wanted them to see that it may be possible to view current problems and difficulties as opportunities – to show the world – and to show yourselves – what you really can do.

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Recommended Readings

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Biographical Sketch

Thomas G. West is the author of three books. His first book – In the Mind's Eye: Creative Visual Thinkers, Gifted Dyslexics and The Rise of Visual Technologies – was first published in 1991 and was released in a third edition in 2020. The book has been translated into Japanese, Chinese and Korean. Awarded a gold seal by the Research Libraries of the American Library Association, the book was recognized as one of the "best of the best" for the year (in their broad psychology, psychiatry and neuroscience category). Mr. West has been invited to provide presentations for scientific, medical, art, design, computer and business groups in the U.S. and 19 other countries, including groups in Australia, Canada, New Zealand, Dubai-UAE, Hong Kong, Taiwan, Singapore and twelve European countries.

West has long been interested in the talents of dyslexic individuals along with the history of visual thinking in making discoveries as well as the way the worlds of education and work are slowly being transformed by powerful computer technologies, many visual and graphical. West's second book is Thinking Like Einstein: Returning to Our Visual Roots with the Emerging Revolution in Computer Information Visualization (2004). His third book is Seeing What Others Cannot See: The Hidden Advantages of Visual Thinkers and Differently Wired Brains (2017).

West has given presentations and workshops for organizations such as NASA Ames, MIT and Harvard University in the US, the Netherlands Design Institute in Amsterdam, the Glasgow School of Art, Oxford University and GCHQ in the UK, the Dyslexia Association of Singapore and a meeting of 50 Max Planck Institutes in Göttingen, Germany. West's papers and personal blog have been deposited in a permanent archive in the U.S. National Library of Medicine, National Institutes of Health.

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