

Breaking The Vision Barrier

How One Woman Invented The Future She Saw For Herself

By Judy Katz

For as long as she lives Denise Drace-Brownell will never forget the day she saw—*really* saw—Central Park for the first time. It was a chilly, clear autumn day, the kind of day a Woody Allen character might have dreamed up. At her optometrist’s Manhattan office, Denise was picking up a pair of sporting glasses that were sturdy enough to wear when she played squash. After issuing strong complaints, she had been prescribed single-distance vision glasses with prism lenses. The moment she put them on, a world she had never known suddenly snapped into focus.

Wearing the new glasses, Denise rushed out of the office to meet her husband for lunch. As she cut through the park, she was astonished to find a different city rapidly revealing itself. All around her depth, color, and texture took on new meaning. The park itself, once seen on a single plateau, was now an intricate series of different levels. The leaves on the trees differentiated themselves from one another. They were no longer a blur, they were individual masterpieces of multi-splendid color. What had once been a uniform blur had now become hundreds of beautiful glittering images.

“It was on that day that I came to understand what vision really is,” Denise says from the desk of her office in Rockefeller Plaza, where she serves as CEO of DDB Technology, LLC. When she met her husband that day he remarked that she seemed “like an entirely new person.” Her husband’s observation proved prescient. With her new awareness of what she

had not even known she was missing, Denise began a quest to improve her own vision. In the process something much larger would emerge: she would invent an eyeglass solution, called OPTICA, that could help millions to likewise improve their own life-limiting vision challenges.

Before that fateful day when a special pair of glasses started her on this new path, "Eyeglasses were always a problem for me, and had been for over forty years," Denise relates. "Dozens of doctors had insisted that I had 20/20 vision and didn't require correction beyond the eyeglasses they had prescribed. I tried to tell them that the 20/20 chart had been designed during the Civil War, and that it did not relate to all the multiple issues of the eye. I was told I was not the doctor, so what did I know?"

An Undiagnosed Syndrome That Affects Millions

As she would discover, Denise was one of the millions living unknowingly with a condition known as Binocular Vision Dysfunction (BVD). Conservative estimates say this often undiagnosed or misdiagnosed condition affects at least twelve percent of Americans, hampering their ability to read, saddling them with headaches, disrupting their balance, and interfering with regular activities in their daily lives, such as driving. After decades of living with the devastating effects of her own undiagnosed BVD, Denise eventually resolved her own challenges through the development of her next generation of prismatic spectacles, and is in the process of making her invention available for those millions of men, women and children, so that they might have a similar chance to advance their own lives.

Denise Drace-Brownell's story began at Cook County Hospital in Chicago. Orphaned by her biological parents, she was adopted into a loving home in the northwestern Illinois city of Rockford. While she was a driven, precocious student, she often had problems reading. "I

was always tired, regardless of my activities,” she recalls. “If I read for 15 minutes, I would need to rest.”

Around seventh grade her adoptive mother, a surgical nurse, noticed she was struggling and took her to an ophthalmologist. As scores of other eye doctors would do in the future, he told her that her vision was fine. “I didn’t know how to describe my reading problems,” she says. “I didn’t even know I *had* reading problems. I thought everyone saw the way I did.” Young Denise knew that something was wrong—she just didn’t have the words to articulate it. In class she was bullied when she was asked to read out loud and was unable to do so without stumbling on the words, stuttering and mispronouncing them.

It would take her years to find the right words, but eventually she discovered that what she suffered from was esophoria, a BVD condition where the eyes tend to deviate inward. Esophoria causes diplopia, or double vision. Denise had esophoria for both near and distant vision. Where most people see a single image she saw overlapping and blurred images. Not only was her reading blurred—it caused constant eye strain. Drace-Brownell’s eye problems were further complicated with another BVD issue called anisometropia. Her two eyes had large differences in their refractive powers. In an exam, doctors found the first problem, anisometropia, but the second one, esophoria, was missed. Hers was an unusual problem, and was difficult to treat.

Where her eyes failed, Denise's work ethic succeeded. While still in high school she landed a job at Gannett News. Even though reading was extremely challenging, she made it through law school by committing swaths of information to memory so that she could recall facts without having to crack a book. Nonetheless, her vision held her back in ways she couldn’t

control. She was forced to give up great jobs because they required large amounts of reading. Understandably, her self-confidence was also affected. Nevertheless, Denise persisted without proper treatment until that fateful day in the fall of 2009, when she had her epiphany, and, as she walked through Central Park, she was able to see the world differently.

By the following spring she decided that not only was she going to wear prism glasses all the time, she was determined to invent a *new* kind of eyeglass that would improve her vision even more. She describes the process as being an experiment that gained a life of its own. "Many good medical findings come from self-experimentation," she says. "I am proud to fall into that category." Eyeglass innovations in particular have often come from upstart inventors who were simply trying to fix a sight problem in their own lives. That's how Ben Franklin dreamed up bifocals. And one Jim Jannard, who dropped out of pharmacy school, came up with his now world-famous Oakley sunglasses—because he knew from his own experiences that cyclists needed frames that would protect them. In 2007 Jannard sold Oakley for 2 billion dollars, joining the ranks of those who did well while doing good. Jim's motto is, *"Everything in the world can be made better ... the only questions are, when and by whom?"*

No new path is completely straight. As Denise candidly reports, there were some missteps. She had learned a great deal about new optical technology, lens aberrations, and the important role of vision therapy, and she was going to simply donate her findings in 2012. But then, on a research visit to an optometrist in the Midwest, the optometrist's novel prism-approach was tried. This proved to be a big mistake, causing severe balance issues for Denise over the next few years, in which she suffered several bad falls that resulted in broken bones. This setback took a few years more to resolve.

In one incident that illustrates the extent to which her balance was affected, Denise met with former New York State Governor David Paterson on a business matter. He was legally blind, but could get around unaided. Embarrassed, Denise had to admit that she could not find the elevators on her own. "I could tell you were having difficulty," the former Governor said kindly.

She fortunately found two of the world's experts in prism eyeglasses who were recommended to her by The Lighthouse International: Dr. Jay Wisnicki, M.D. and Dr. Jeffrey Cooper, O.D., both of whom practiced in New York City. With Dr. Wisnicki she switched back to her original approach, and Dr. Cooper added valuable vision therapy. Over the years she made more technical improvements until today, when she no longer has a BVD issue. "That Midwest trip cost me five years of my life," says Denise. "But the outcomes will be of help to many others."

The process of invention often takes several tries before one gets it right. Working hard to get it right—she finally did. Reflecting back on how, over her career, her impaired vision had impacted all facets of her life, she muses: "I could see now that I had given away other valuable innovations for pennies because I didn't understand my own value." Now her mission is to inspire others—men, women and especially young people—whose lives continue to be severely limited by undiagnosed BVD. "I asked myself how many others are there in my country, indeed in the world, who are experiencing this set of challenges, and might be giving up along the way?" she says, shaking her head. "What is the cost to society for wasting their talents, or even their genius, by neglecting this diagnosis?"

Denise believes OPTICA will help many people. But more immediately, she knows there needs to be more far-reaching solutions to what is a complex situation. On a recent visit to the Department of Defense, where they let her ride in a Humvee and shoot a machine gun while wearing her OPTICA prism glasses, she discovered that the Army does something that should be routine in civilian life: They require a BVD test form to be submitted by the doctors of all its ROTC and military academy applicants which covers diplopia, depth perception, near point convergence, and other important issues.

"Even though BVD is expected to be part of a comprehensive exam, doctors sometimes are confused about the problem and think patients understand their own symptoms. Patients meanwhile have no context for comparison and understandably think everyone sees the way they do, so they do not realize that they have *vision* issues," Denise explains. "To me implementing a standard BVD test form, in addition to the standard prescription, would be a simple and effective first step in addressing the exam issue. Asking doctors to fill out the form would require BVD tests to be performed."

Like other innovators before her, Denise feels she cannot stand idly by as untold numbers of brilliant minds are lost in the shadows—not when she could be helping them lead more productive lives through better information about this problem. She feels this especially deeply when it comes to young children.

Until now OPTICA has been funded exclusively by DDB Technology. She is working to make it globally available through her partnerships and contacts while she brings awareness to this often overlooked vision challenge, encourages the use of patient questionnaires, and recommends that patients ask their doctors for a BVD exam too.

Make no mistake, Denise Drace-Brownell is out to open collective eyes to this severe problem. She is poised to succeed in her mission, and will not stop until she does. On that happy day, countless individuals, here and across the world, will be one diagnosis away from seeing and enjoying the lives they deserve.

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Vision Checklists for Parents, Teachers, and Friends

<http://www.children-special-needs.org/parent.html>