



## Fixing My Gaze: A Scientist's Journey into Seeing in Three Dimensions

Susan R. Barry. Basic (New York), 2009, \$26 (256p) ISBN 978-0-465-00913-8

Reviewed by Leonard J. Press, OD, FCOVD, FAAO.

Susan R. Barry, Ph.D., dubbed “Stereo Sue” in the *New Yorker* article by famed neurologist Oliver Sacks, has accomplished what many of us hoped one of our patients would ultimately do. Uplifted by her optometric vision therapy experiences but perturbed by the lack of awareness about vision therapy, Sue embarked on a personal campaign to give Optometry its due accord. *Fixing My Gaze: A Scientist's Journey Into Seeing In Three Dimensions*, is part memoir and part science. Of great interest to readership of this journal, it is a tribute to the determination of an optometric vision therapy patient and her developmental optometrist to challenge conventional wisdom and dogma.

Sue's saga and her interaction with COVD Fellow Theresa Ruggiero have been showcased at the Annual COVD meeting, and in the pages of *Optometry and Vision Development*. Her new book now brings the power of her message to a much wider audience. It will be difficult for me to improve on the glowing review from *Publisher's Weekly*, which observed:

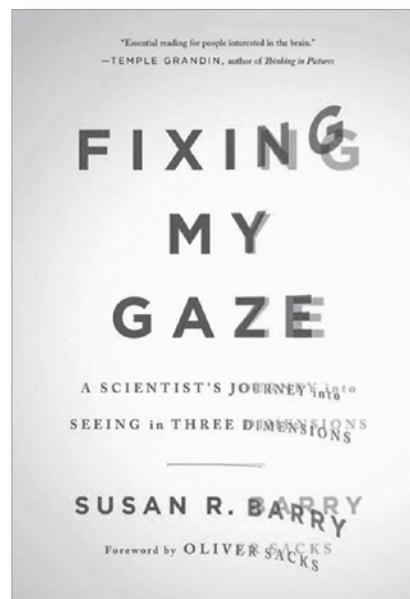
“The medical profession has believed that the visual center of the brain can't rewire itself after a critical cutoff point in a child's development, but in her 40s, with the help of optometric vision therapy, Barry showed that previously neglected neurons could be nudged back into action. The author tells a poignant story of her gradual discovery of the shapes in flowers in a vase, snowflakes falling, even the folds in coats

hanging on a peg. After Barry's story was written up in the *New Yorker* by Oliver Sacks, she heard from many others who had successfully learned to correct their vision as adults, challenging accepted wisdom about the plasticity of the brain. Recommended for all readers who cheer stories with a triumph over seemingly insuperable odds.”<sup>1</sup> The tone of the book is well-established in the foreword by Oliver Sacks, who writes regarding the intensive training and learning that Sue experienced: “In this way, vision therapy is directed at the whole person: it requires high motivation and self-awareness, as well as enormous perseverance, practice and determination, as does psychotherapy, for instance, or learning to play the piano.” A survey of the chapter titles speaks volumes about the subject matter:

- Stereoblind
- Mixed-up Beginnings
- School Crossings
- Knowing Where to Look
- Fixing My Gaze
- The Space Between
- When Two Eyes See as One
- Nature and Nurture
- Vision and Revision

As you read the book you'll be struck by the lyrical nature of Sue's writing and indeed, the nine chapter titles sound like innovative

cuts from a new CD by your favorite artist. Amply illustrated, each chapter presents pleasant surprises turning potentially dry material into a feast for the eyes and mind. The opening chapter, *Stereoblind*, ends with the sobering thought that despite being a well-informed scientist, the author had never heard of optometrists who help patients with strabismus through vision rehabilitation. This theme continues in the second chapter, in which the author notes the irony that despite her childhood strabismus surgeries taking place at a hospital in New Haven, the work at Gesell Institute nearby and its potential for helping



her development was never brought to her parents' attention.

I suspect the most revealing chapter, for many readers, will be *School Crossings*. In the third chapter Sue lays bare the fact that she attributes her struggles in school to undetected and untreated vision problems. She writes, "I did not discover how I used my eyes for reading until I was an adult and underwent an eye exam with a developmental optometrist." While this may not be as profound to neuroscientists as the neuroplasticity piece of her tale, it will raise the eyebrows of a few professionals and should resonate with parents of children who are struggling in school.

The work of the late Dr. Frederick Brock, a pioneer in strabismus therapy, is introduced in chapter four. Two of the more important points Sue relates from Dr. Brock are that strabismics speak a different language, and that adaptations come at quite a cost. The experiences of patients with contemporary colleagues, Drs. Francke, Lessman, and Ruggiero, are detailed in this chapter, aptly titled *Knowing Where to Look*. Once again Sue Barry guides patients on important differences in the skills of optometrists versus ophthalmologists. All too often, books in the public domain emphasize what optometrists are not - for example, optometrists are not medical doctors - inferring a higher level of knowledge or skill on the part of ophthalmologists in all matters of the eye. In contrast, Sue clearly states that ophthalmologists are not skilled in vision therapy, in this instance acknowledging eye surgeons for their areas of expertise, while guiding readers toward developmental optometrists for their clinical expertise in affairs of the visual brain.

*Fixing my gaze*, the fifth chapter, details Sue's discoveries in vision therapy through the guidance of Dr. Ruggiero. It is eye opening to view the vision therapy room, and the activities introduced, through the author's descriptions. Sue's husband is Dan Barry, a retired astronaut, and the interplay between her expanding visual awareness and Dan's perceptions of her experiences are as delightful as they are insightful. The sixth chapter celebrates Sue's emerging stereopsis, and the palpable space she discovers between herself and objects, and between objects themselves. The chapter concludes with Sue revealing how Fred Brock's writings about stereopsis captivated her, and why he had such uncanny understanding of strabismus.

Chapter seven elaborates emergent properties of binocular fusion, and the qualitative features of

acquired stereopsis. The author is at her best here in sharing not only her personal experiences, but in journalistically chronicling and sharing the insights of patients whom she interviewed. Quite appropriately, this is the most liberally illustrated chapter in the book, and the photographs and drawings complement Sue's points beautifully. The pooled success stories of patients interviewed by the author spills into chapter eight, framed nicely in the perennial debate of nature versus nurture. It is in this chapter that the reader is introduced to the Nobel Prize winning work of David Hubel and Torsten Wiesel, and how their ideas were misappropriated for claims of critical periods of binocular vision development.

The concluding chapter of the book reveals how the misnomer of critical periods has handcuffed doctors' thinking, and shackled patients with strabismus into resignation about their visual compromises and struggles. Blending science with personal experience, Sue stakes her claim that stereopsis is a quale every bit as significant as motion detection, color vision, and other properties of vision considered to be indispensable. She convincingly demonstrates why normal binocular vision is not just icing on the cake, but an essential ingredient.

It would be fair to say that six years ago, when a neurobiologist from Mt. Holyoke College walked into Dr. Theresa Ruggiero's office upon a referral from her primary care optometrist, Dr. Steven Markow, no one envisioned *Fixing My Gaze* as the outcome of their serendipitous meeting. In hindsight it seems less surprising. The culmination of intense collaboration between a developmental optometrist and her patient, this book is a marvelous ode to what can be accomplished when doctor and patient encourage one another to aim higher and further. Subtitled *A Scientist's Journey into Seeing in Three Dimensions*, it is so much more.

## References

1. (<http://www.publishersweekly.com/search/siteall?q=Susan%20R.%20Barry> - accessed April 30, 2009)