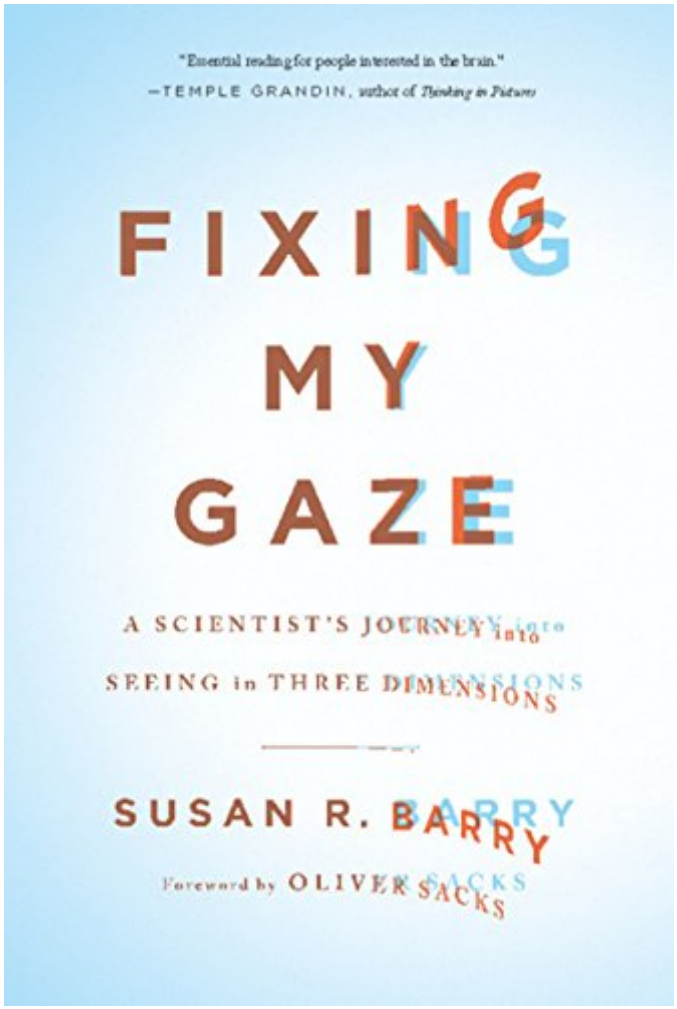
Fixing My Gaze: A Scientist's Journey Into Seeing In Three Dimensions



Synopsis

When neuroscientist Susan Barry was fifty years old, she took an unforgettable trip to Manhattan. As she emerged from the dim light of the subway into the sunshine, she saw a view of the city that she had witnessed many times in the past but now saw in an astonishingly new way. Skyscrapers on street corners appeared to loom out toward her like the bows of giant ships. Tree branches projected upward and outward, enclosing and commanding palpable volumes of space. Leaves created intricate mosaics in 3D. With each glance, she experienced the deliriously novel sense of immersion in a three dimensional world.Barry had been cross-eyed and stereoblind since early infancy. After half a century of perceiving her surroundings as flat and compressed, on that day she was seeing Manhattan in stereo depth for first time in her life. As a neuroscientist, she understood just how extraordinary this transformation was, not only for herself but for the scientific understanding of the human brain. Scientists have long believed that the brain is malleable only during a â œcritical periodâ • in early childhood. According to this theory, Barryâ ™s brain had organized itself when she was a baby to avoid double vision â “ and there was no way to rewire it as an adult. But Barry found an optometrist who prescribed a little-known program of vision therapy; after intensive training, Barry was ultimately able to accomplish what other scientists and even she herself had once considered impossible.A revelatory account of the brainâ ™s capacity for change, Fixing My Gaze describes Barryâ ™s remarkable journey and celebrates the joyous pleasure of our senses. Â

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Customer Reviews

Do you have depth perception, that visual ability to judge what is closer and farther away?If you are reading this review, the answer is yes. From the time of the Renaissance, artists have made use of cues for depth to endow their canvases with a sense of life: streets become narrower in the distance; subjects that are closer are also larger and overlap those that are behind; there is the slightest haze in the distance, a subtle indistinctness of form, a difference in shadow. These devices trick the mind into perceiving depth whether we have one eye or two.There is a second, more vivid form of depth perception, however, which requires the use of two eyes. To experience it, try the following experiment: Hold your hand at a forty-five degree angle to your face about ten inches in front of your eyes and spread apart your fingers. Closing one eye at a time, view the hand first with one eye, then the other. You'll find that each view is different, that the fingers have different separations depending on which eye you use. Next, open both eyes and see how your perspective changes, how the fingers seem now to be separated by more air, how there is an increased sense of space. This two-eyed form of depth perception is called stereopsis. Those individuals who have a "crossed" or "wall-eye" (strabismus), rather than combining the two views into a three-dimensional percept, typically see one of the views while ignoring the other. Dr. Susan Barry, a neuroscientist, and the author of FIXING MY GAZE: a Scientist's Journey in Seeing in Three Dimensions was one such individual. Her eye crossed when she was three months old.

I ordered this new book just after meeting the inspirational Dr. Barry at this year's meeting of the Vision Sciences Society. The book arrived this last Friday and I spent the day reading it. I confess to be blown away by her story, as well as the scientific and clinical implications of her work. Add me to the list of people who loved the book!Sue Barry's astonishing development of stereopsis at age 48 changed - profoundly - the way that many scientists (me included) view visual development and plasticity. Somehow we had tuned out, en masse, one hundred years of successes using vision therapy (including the extensive the work of Frederick Brock). The stuff of vision therapy was ignored, relegated to the fringes of sensible vision care. Instead, several generations of us took the Nobel Prize winning research of Hubel and Wiesel as gospel truth, going beyond the data by

wrongly concluding (perhaps unlike the Nobel laureates) that stereopsis could only develop during a critical period during infancy. It took Barry, a well-established neuroscientist and keen observer, to bring us to our senses.And yet now, having read her new book, I see that the story is much deeper and profound than I thought. First off, she's a very entertaining storyteller in her own right.

If you see double or if you have(had) an eye(s) turn, you should try the Brock string. Barry writes, "When I learned to use the "Brock string," I received the feedback that I needed to know where my eyes were pointing and then to redirect them so that they were aiming simultaneously at the same point in space." (p. 90) My guess is that Barry believes this was the single most important exercise of her visual therapy.The Brock string is a simple setup. Tie a string to a knob, hold the other end to the bridge of your nose. If you put a bead or clip about a foot or so from your nose, you'll see an X as you look down the string to where the bead resides. How you see the X, what you can do with it, and whether you can easily move the juncture point of the X along the string...all of that is the stuff of some visual training which worked for Barry.I have a childhood history of visual therapy (I'm now 66). I did not use the Brock string, because I guess my therapists didn't know about it. But, I did many, many other exercises. I remember many of them from Barry's descriptions. There is, however, one she doesn't talk about. It involves holding a straw at arms length and feeding a pickup stick held with the other hand into hole at the end of the straw. It's harder than it sounds, even if you are not visually impaired. Now, put on a set of prisms that disjoints and distorts the visual field, and the rapidly-put-the-pick-into-the-straw game becomes even better (read that harder--harder is what visual therapy is all about.)Physical therapy worked for me; were you to look at me you'd never realize that my gaze is a bit cocked. Some might also argue that it didn't work; it converted a situation of a right eye turn into seeing double.

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