
Foreword

*'Why does she stop, and look often around,
As she glides down the secret stair;
And why does she pat the shaggy blood-bound,
As she rouses him up from his lair?'*



In your hands you are holding the first of a three-volume set about perceiving, interacting, and optically generating two and three-dimensional images.

Sorry, I should qualify that. Although it's quite likely you're holding this in your hands, the technologies Barry describes introduce a new possibility: that you're flipping through its virtual pages in a light-field display with a 6-DOF interaction wand.

I don't mean to be glib, especially given my surprise that I have the honour of writing this Foreword. The author needs little introduction; he is a highly-regarded historian of 'the technology of images', with a deep knowledge fuelled by his own groundbreaking work in volumetric 3-D display. I have learned a great deal in the pages of Barry's writings since I entered the field of 3-D display in 1988.

This book is exciting for two reasons. First, you'll learn - in a very clear, completely illustrated manner - about perception, interaction, and image display. For example, in perception, you'll encounter the architecture of the eye, a deep catalogue of depth cues, and the visual cortex. You'll learn about haptics and interaction, including the fundamental Fitts' Law of visual and physical target acquisition. The book is rounded out (so to speak) with Barry's excellent teachings on a complete variety of three-dimensional displays, spanning stereoscopic, lenticular, parallax barrier, and volumetric systems.

The citations are absolutely extraordinary, even if taken on their own. Hundreds of papers and patents are cited - from the earliest work in perspective-drawing and the human visual system - to volumetric 3-D displays. I am jealous of Barry's personal research archives!

Second, I enjoy his writing because he magically expresses treasure-troves of deep historical and scientific knowledge underlying a variety of topics. Ever wonder not about who really invented the stereoscope, but what they argued over? What's a horopter or how do you compute 3-D imagery? Never mind 'what's a volumetric display', what might its embedded electronics look like?

I hope you'll agree that a book of this sort has really been a long time coming. When I got a sneak preview, I certainly enjoyed page after page of history and science that was new to me, even after working in the display industry for 20 years.

Students of perception, displays, or interaction: get this book. It is an efficient and very sympathetically-written work that will bring you up to speed immediately. I anticipate that hardened experts will delight at the hundreds of difficult-to-find references cited here, too.

Whether you're in a bookstore or voyaging on a quasi-holographic display stage, you'll learn something incredible when you read this book.

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