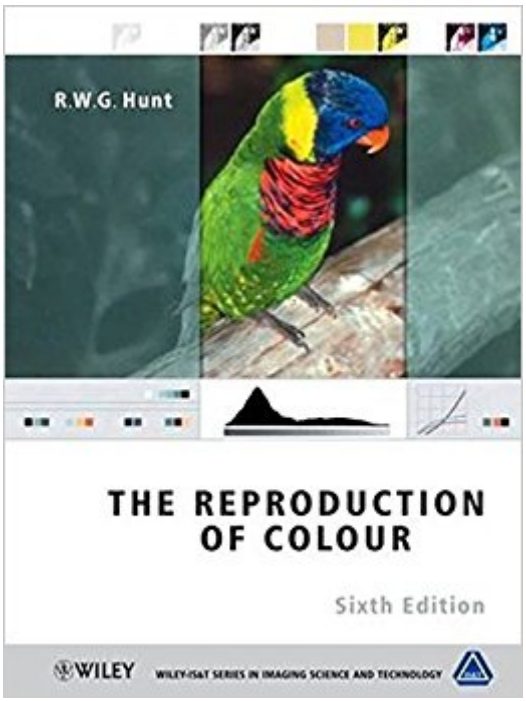
The Reproduction Of Colour



Synopsis

Increasing use of digital signals for transmitting data in television, photography and printing means the reproduction of pictorial colour in the 21st century continues to drive innovation in its development. HuntÃ¢â ¬â„¢s classic text The Reproduction of Colour has been fully revised and updated for the sixth edition to provide a comprehensive introduction to colour imaging and colour reproduction. New illustrations, diagrams and photographs ensure that both students and practising engineers using colour images can gain a full understanding of the theory and practical applications behind the phenomena they encounter. Key features: Describes the fundamental principles of colour reproduction for photography, television, printing and electronic imaging. Provides detailed coverage of the physics of light and the property of colorants. Includes new chapters on digital printing and digital imaging, which discuss colour reproduction on HDTV and desktop publishing. Presents expanded coverage of the evaluation of colour appearance. The Reproduction of Colour is already used as a basis for lectures in universities and specialist institutions and continues to be an essential resource for scientists, engineers and developers needing to appreciate the technologies of colour perception. Reviews of the Fifth Edition: "The book is beautifully written and superbly presented. It is a credit to both author and publisher, and deserves to be on the shelves of anyone who has any concern with the reproduction of colour." From The Journal of Photographic Science, Vol. 43 1995 "Using his ability as a teacher, Dr Hunt has made potentially very difficult topics quite readableÃ¢â ¬Âhe brings the insight that leads the reader to a greater depth of understanding." From Color Research and Application, Vol. 23 1998 The Society for Imaging Science and Technology is an international society that aims to advance the science and practices of image assessment. A major objective of the Wiley-IS&T series will be to explain the latest scientific and technological developments in the field of imaging at a professional level. The broad scope of the series will focus on imaging in all its aspects, with particular emphasis on digital printing, electronic imaging, photofinishing, image preservation, image assessment, image archiving, pre-press technologies and hybrid imaging systems.

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Customer Reviews

"Hunt’s ability to transmit complex technical information in a communicable, easy reading manner is to be applaudedÃ¢â ¬Â¦will make a difference n the careers of scientists, engineers, color developers, and color technologists, who undertake to study and learn from it." (COLOR research and application, December 2005) "Ã¢â ¬Â¦a standardÃ¢â ¬Â¦[that] is widely used in research, teaching, and lecturing." (CHOICE, July 2005)

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understanding." From Color Research and Application, Vol. 23 1998 The Society for Imaging Science and Technology is an international society that aims to advance the science and practices of image assessment. A major objective of the Wiley-IS&T series will be to explain the latest scientific and technological developments in the field of imaging at a professional level. The broad scope of the series will focus on imaging in all its aspects, with particular emphasis on digital printing, electronic imaging, photofinishing, image preservation, image assessment, image archiving, pre-press technologies and hybrid imaging systems.

I purchased this book believing it was the definitive reference for understanding colour. Twenty years ago it might have been. But time has marched on, and this book is in danger of being left behind. Its treatment of colour technology prior to 1980 is superb, and since I wanted a good understanding of Kodachrome and its characteristics, I came away satisfied in that regard. However, parts of the book go into too much detail about technology that has passed its use-by-date, at the expense of incoming technologies.POOR EDITINGThe author is obviously an expert in film technology, having been the Assistant Director of Research with Kodak. Being an expert though, doesn’t necessarily translate into being a good teacher - and poor editing doesn’t help the situation. I came unstuck on page 6 and had to turn to Wikipedia before I could understand the Lippman Method. This is not an isolated example. Here are two others among many:P204: "If the maximum density of a slide is about 3.0, a fairly typical figure, and the luminance caused by ambient light is 3.0 log units less than the open-gate screen luminance at the same point (a figure representative of good projection conditions), then the minimum luminance for a black would be equal to twice that of the ambient luminance, or 0.3 log units above that corresponding to the maximum density of the film." What Hunt is trying to say is something like this:"Assuming that the luminance of the deepest black on screen (in the absence of ambient light) is the same as the luminance at the same point caused by ambient light in the projection room, then the combined luminance will be doubled - an increase of 0.3 log units."P300: "Assuming a visual resolution of 20 cycles per degree (objects of 1.5 minutes of arc in diameter visible), the eye cannot see detail finer than about 5 cycles per mm, so that the smallest object visible would be about 0.1 mm in diameter." What he is trying to say is:"Assuming a visual resolution of 5 cycles per mm, the smallest object visible would be about 0.1 mm in diameter (half a cycle)."The latter example is one of many in the book that shows poor editing, in this case using two different units when one would suffice. Poor editing again shows its hand when "micro-meter" and "Ãƒâ Ã Â m" occur in the same sentence (p301), when "Ãƒâ Ã Â m" has already been introduced as a shorthand for "micro-meter". It looks

clumsy and it is clumsy.MEDIOCRE PHOTOS & DIAGRAMSSome of the figures and photos require updating. Fig. 4.2 (p28) is poorly hand-drawn, and the photo on p38 has the look of a 1960's photo in a women's magazine. Poor-quality photos should not appear in a modern book on colour reproduction. They need updating. I wouldn't be surprised if the majority of the photos have been retained over several editions.TOO MUCH OF THE PAST; TOO LITTLE OF THE MODERNSections of the book are devoted to technology that is antiquated. It is, of course, important that such technology be documented, but how much space should be devoted to descriptions of old equipment when there is a dearth of explanation of modern equipment? As each new edition appears, it is probably desirable that some sections be retired, to be replaced by their modern equivalents. Here are some examples where there is too much emphasis on old equipment and not enough on the new:Pages 219-221: Densitometers (latest reference 1956). Included is this inaccuracy: "...the photocell produces an ac signal which is easier to amplify than a dc signal." That may have been the case in the 1950s; it hasn't been the case since the 1970s when IC op amps were introduced.Pages 264-270: A detailed description of 1950s equipment used for printing photos from colour negatives. In this chapter ("Printing Colour Negatives"), less than one page is devoted to digital printers (p274) and even that is woefully outdated. A reference to a LaserColor printer, for example, is dated 1979. No mention of mini-labs.Pages 450-453: Kodak's Photo CD receives more than three pages of detailed analysis. Unfortunately, Photo CD has gone the way of the dodo, replaced by Picture CD. I may be wrong, but aren't both now technological relics?Chapter 25 ("Pictures from Computers") can be summed up by noting that the latest reference in that chapter is 1985, with most dating from the 1960s and 70s. The numerous images in this chapter may have induced a "wow" factor in the mind of a mid-1980s reader, but in 2011 the images and descriptions are outdated.Similarly, Chapter 29 ("Colour Scanners") is at least 20 years out of date. What may have been modern-sounding in the 1980s ("The facility with which electrical signals can be manipulated to correspond to a wide variety of algebraic equations has led to the use, in graphic arts processes, of a number of devices known as scanners") comes across now as antiquated. The chapter gives a good rundown of scanners from the 1950s. Fine, if you want history, but of little use for a user in 2011 who wants to learn about colour theory as applied in modern devices. The images on p528 and 538-39, clearly show the age of this chapter; the latter showing as much good taste as a novice let loose with corny Photoshop filters.Talking about Photoshop: not one mention. I'm not suggesting that this book become a tutorial on Photoshop, but given that every organisation involved in colour reproduction now uses Photoshop to some degree, its non-appearance is further indication of how this book is becoming outdated. I was looking forward to reading the history

behind Photoshop’s "Unsharp Mask" (a sharpening tool). Unsharp Masks are explained (p247), but not how they relate to their digital equivalents. In a similar vein, I was fascinated by the technique used to obtain reasonable colour balance in the early photo-printing machines, a technique called "integrating to gray" (p265). No mention that a similar technique is available in digital image editors. Photoshop calls it "Auto Colour". History, in a book such as this, should be related to the present wherever possible.Chapter 10 ("Light Sources") has a healthy stack of information on the technicalities of light sources: their colour temperature and spectral response. However, the section on LEDs is inadequate. LEDs are likely to become the dominant form of lighting, and are increasingly used in photography and movies. This section should have contained a detailed examination of their strong and weak points. All Hunt offers is one paragraph, ending with this unhelpful comment in which he compares LEDs with traditional light sources: "even when red, green and blue LEDs... are used to produce white light, the spectral power is still markedly different." No further explanation, no spectral response graphs. Disappointing, really.ON A POSITIVE NOTETo counter the above negative impressions, there is one overriding positive impression: Hunt is an acknowledged expert on film and colour. Those chapters where he deals primarily with the theory of colour and it’s practical application in film are definitive. Problems arise when he strays from this area into other specialised fields such as television, modern scanners, digital cameras, and large digital printers. Two examples. First, the HP Indigo digital printer, which is making inroads into the offset printing business, receives a mention by name but with no detail. The Xerox iGen is not mentioned at all. A whole chapter is required to explain how these innovative printing solutions, and others like them, handle colour. Second, the very basis of digital cameras - the Bayer filter - although shown in a diagram (p368), is not mentioned by name. Which is surprising, given that the inventor, Bryce Bayer, worked for Kodak. Hunt surely must have known of him.SUMMARYThe Reproduction of Colour, first published in 1957 and now into its sixth edition, is in danger of becoming a dinosaur. Hunt may have to relinquish his sole authorship role and bring on board specialist writers to handle topics that are barely covered in this book: digital cameras and scanners; large digital printers that are competing with offset; LEDs for photographic lighting; flat-screen TVs that have now replaced CRT screens; DVD and Blu-Ray -- each of which has a serious role to play in our modern colourful lives, but which receive scant treatment here. Some of these technologies have matured since the book was printed, and this could be put forward as an argument in the book’s defence. The malaise goes deeper than that - the evidence from the book itself points to a lack of skilled editing (making explanations clear, and knowing when to toss certain topics), a preponderance of explanations of technologies past their prime, and insufficient attention paid to

emerging technologies. After six editions, the book is showing its age. It needs a major revamp and the input of new authors.Around 15% of this book covers either dead technology (those pages should be removed or significantly reduced in content, and replaced with sections on modern technology), or it covers its subject at a superficial level. If you want to learn about colour as it applies to film, there is probably not a finer book. However, if you come to this book (as I did) thinking you have purchased the definitive book about the reproduction of colour in a wide variety of modern devices, you will be disappointed.

In my opinion, this is the best book on color photography that I have read. Of course, it covers other topics, but it devotes a substantial amount of text, graphs and formulas to that topic. In recent months, I have acquired a fair number of books on the subject of photography and color theory, some of them very formula-intensive and some descriptive and math-primitive; but this one stands head and shoulder above the rest in its effort to describe the fundamental principles.I bought this book primarily because I wanted to learn whether it is possible, and if it is, how to predict the RGB density values of negative film versus the CYM density of the photo enlarging filter. I believe that I have found my answers in this book. Yet I was also quite pleasantly surprised to learn a lot more about color photography and reproduction. As I was reading this book, many things to which I had had unanswered questions from reading those other books have fallen in their logical place.I would highly recommend this book for anyone interested in color photography and who wants to learn not only the practical aspects of it (i.e. the result and the practice) but also the "why" of it (i.e. its scientific and experimental fundamentals). You do, though, have to have some knowledge of linear algebra and chemistry, although I would not call this book math-intensive.

The author has an impressive array of initials after his name; he is, amongst other things, a Doctor of Science, a Member of the Imperial College, an Associate of the Royal College of Science, and a Fellow of the Royal Photographic Society as well as a Visiting Professor of Physiological Optics and of Colour Science, and a former Assistant Director of Research at Kodak. He has also been Chairman of the Colorimetry Committee of the International Commision on Illumination, and Chairman of the International Colour Association. First published in 1957 and now in its much enhanced 5th edition, The Reproduction of Colour is the most comprehensive single resource available. Two quotes from the preface to the 5th edition describe what it is about: "The object (is to present) the fundamental principles of colour reproduction, whether by photography, television, or printing in the hopes that all those engaged in producing, selling, buying, or using colour pictures will

be able to see the nature of the problems they encounter. Those who want a general statement on colour reproduction will find it in the first part, and those who want a more detailed discussion of any one application in which they are particularly interested (will find it) in the later parts." and "The reproduction of colour involves physiology, psychology, physics, chemistry, and technology. presents complexities, (and) involves a wide variety of enterprises". Even though there are individuals skilled in processing and printing their own color film, and DTP bureaux had taken over some of the work of traditional printing houses, color reproduction was, until not so long ago, the province of technicians in the photographic, printing, and television industries, Now we have crossed the threshold of a new era in which a massive technology transfer is taking place, putting effective control over color into the hands of a much wider range of users. Even home users now have available to them very powerful tools that enable production of images that are, to the ordinary eye, indistinguishable from quality photographic prints. That brings with it a need to understand the technology of color reproduction, and the definitive text is Dr Hunt’s book. I have rated it 10/10 because of the remarkably wide range of disciplines covered and its astounding technical depth. Without it most of the information presented would have to be gleaned from numerous other books, professional journals, and published papers. Further, one does not have to have a scientific background to gain some understanding of what is involved in the reproduction of color. The fields covered television, photography, and printing are becoming less discrete with the application of digital technology; those who use computerized systems for the reproduction of color images will find relevant information spread throughout most parts of this book. It is not a popular account, a color-for-cretins guide, or a how-to manual. This is a technical resource written in a style that makes it readable without diluting its professional integrity. Not all readers will need, or even want, to know the chemical structure of cyclic methylene magneta couplers, but may want information about the effects of signal processing on color reproduction. In what other recently published text would one find a comparison table of film speeds that includes the Weston system? The Reproduction of Colour should be in any library with holdings on technical subjects; professionals in DTP, printing, photolabs, television, and digital imaging should have it; and anyone teaching or studying graphic arts, computer science, photography, printing, or subjects related to television technology should be aware of this edition. A check of some large libraries suggests that librarians may think earlier editions are good enough, but new developments demand this latest edition. Teachers of science in sub-tertiary institutions may well find this a useful text for its practical application of science to topical real-life problems. The book is divided into parts: Fundamentals, Color Photography, Color Television, Color Printing, and Evaluating Color Appearance. Each chapter opens with an

introduction that provides a succinct overview of the topic. Reviewed by Major Keary [majkeary@netspace.net.au]

The Reproduction of Colour The Reproduction of Colour (The Wiley-IS&T Series in Imaging Science and Technology) Colour Confident Stitching: How to Create Beautiful Colour Palettes Orthodontics and Paediatric Dentistry: Colour Guide, 1e (Colour Guides) Songs of Experience: Facsimile Reproduction with 26 Plates in Full Color (Dover Fine Art, History of Art) Everything Conceivable: How the Science of Assisted Reproduction Is Changing Our World The Audible Past: Cultural Origins of Sound Reproduction Sound Reproduction: The Acoustics and Psychoacoustics of Loudspeakers and Rooms (Audio Engineering Society Presents) Acupuncture for IVF and Assisted Reproduction: An integrated approach to treatment and management, 1e Prudence and Pressure: Reproduction and Human Agency in Europe and Asia, 1700-1900 (Eurasian Population and Family History) Revolution at Point Zero: Housework, Reproduction, and Feminist Struggle (Common Notions) Politics of the Womb: Women, Reproduction, and the State in Kenya The Big Book of Civil War Quilts: 58 Patterns for Reproduction-Fabric Lovers Keeping the Praying Mantis: Mantodean Captive Biology, Reproduction, and Husbandry The Politics of Duplicity: Controlling Reproduction in Ceausescu's Romania The Art of Sound Reproduction Reproduction of Sound in High-Fidelity & Stereo Phonographs Small and Scrappy: Pint-Size Patchwork Quilts Using Reproduction Fabrics The 4" x 5" Quilt-Block Anthology: 182 Blocks for Reproduction Fabrics Weaving Shaker Rugs: Traditional Techniques to Create Beautiful Reproduction Rugs and Tapes