

Way Beyond Monochrome



# Way Beyond Monochrome

Advanced Techniques for Traditional Black & White Photography

second edition

by Ralph W. Lambrecht & Chris Woodhouse



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Focal Press is an imprint of Elsevier



Cover design by Ralph W. Lambrecht

Focal Press is an imprint of Elsevier  
30 Corporate Drive, Suite 400, Burlington, MA 01803, USA  
The Boulevard, Langford Lane, Kidlington, Oxford, OX5 1GB, UK

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#### Library of Congress Cataloging-in-Publication Data

Application submitted

#### British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library.

ISBN: 978-0-240-81625-8

For information on all Focal Press publications visit our website at [www.elsevierdirect.com](http://www.elsevierdirect.com).

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Art is about being consciously creative. Understanding materials and processes is about taking control. This makes our work consistent and predictable. When materials, techniques and processes are not understood, artistic success depends on serendipity and is no longer intentionally conceived.

—*Ralph W. Lambrecht*



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How charming it would be if it were possible to cause these natural images to imprint themselves durably and remain fixed upon the paper.

— *William Henry Fox Talbot*

The discovery I announce to the public today is one of the small number which, by their principles, their results and the beneficial influence which they exert upon the arts, are counted among the most useful and extraordinary inventions.

— *Louis Jacques Mandé Daguerre*

The production of a perfect picture by means of photography is an art. The production of a technically perfect negative is a science.

— *Ferdinand Hurter*

In 1876, I induced Dr. Ferdinand Hurter to take up photography as a recreation, but to a mind accustomed like his to methods of scientific precision, it became intolerable to practice an art which, at the time, was so entirely governed by rule of thumb, and of which the fundamental principles were so little understood. It was agreed that we should jointly undertake an investigation with the object of rendering photography a more quantitative science.

— *Vero Charles Driffield*

One photo out of focus is a mistake, ten photos out of focus are an experimentation, one hundred photos out of focus are a style.

— *author unknown*

To consult the rules of composition before making a picture is a little like consulting the law of gravity before going for a walk.

— *Edward Weston*

Your first 10,000 photographs are your worst.

— *Henri Cartier-Bresson*

Photography is 90% sheer, brutal drudgery. The other 10% is inspiration.

— *Brett Weston*

Compensating for lack of skill with technology is progress toward mediocrity. As technology advances, craftsmanship recedes. As technology increases our possibilities, we use them less resourcefully. The one thing we've gained is spontaneity, which is useless without perception.

— *David Vestal*

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# Foreword to the First Edition

As I write this in the spring of 2002, many people are starting to believe that traditional, film-based, analog photography will soon be replaced by digital photography. However, as most people who take a close interest in these matters understand very well, the reality is likely to be rather different. We read about ever-increasing numbers of pictures being taken with digital cameras and how this is evidence of the replacement of film by the newer technology. Digital photography has clearly started to replace film in some areas, but only those where it offers overwhelming advantages. Two good examples are news photography because of the short deadlines, and catalogue photography because of the small image size and significant savings on film and processing costs. The arrival of the digital camera has meant that more pictures are being taken, and that's a good thing. While many of these are very different kinds of pictures, they are often simply visual notes. Film, however, remains a highly portable and very high quality storage medium, which is also, at least from the point of view of someone involved in film manufacturing, excellent value for money. It provides human readable images with good storage stability, which are free from the risk of software and equipment obsolescence that tends to threaten the long-term survival of digitally stored images. For these reasons alone, film will no doubt be with us for many years to come.

Digital photography is currently more a threat to color film, which has replaced B&W film in those fields where digital capture is becoming popular. However, the options for producing high-quality monochrome prints from digital files still need to be explored further. In my view, there are some interesting parallels here with the earlier replacement of B&W by color photography. Color initially replaced B&W in popular applications such as weddings and portrait

photography where desirability of color images outweighed their considerable extra cost. In other areas, like snapshot photography, it happened later where color photography became more affordable, and the price advantage of B&W began to disappear. However, it never came close to eliminating B&W photography altogether. This is because the photographers who choose to work in B&W are using it as a medium for personal expression and not as an inferior substitute for color. These photographers actively prefer it, and they value the very high degree of creative control that is potentially available at all stages of the process, from camera filtration to print toning. To exploit this fully requires a great deal of skill and experience in the art of photography. This can be, and often is, acquired by a process of trial and error, but a more reliable route is through a thorough understanding of the underlying principles involved. Without this understanding, it is very difficult to get predictable results and to make the leap from occasionally good results to consistently excellent ones.

In my own continuing journey to becoming (I hope) a better photographer, I have been very grateful for the counsel of more experienced and skillful practitioners. With the decline of photographic clubs and societies, this has come mainly from books written by respected experts.

This book, from Ralph and Chris, is a very worthwhile addition to the available literature as it offers a wealth of practical advice, which is based on a very sound grasp of photographic theory and practice. I certainly hope that it will help many technically minded photographers to make real improvements in the quality of their negatives and prints. I also expect that we can look forward to many more years of analog B&W photography, because I believe that reports of its imminent total demise are much exaggerated.

*Mike Gristwood*  
*ILFORD Imaging UK Limited*  
*March 2002*



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# Foreword to the Second Edition

When the first edition of this book was published in 2003, digital methods were already making inroads into many areas of photography. Since then, the revolution has been more or less complete for casual and commercial photography. In his foreword to the first edition, Ilford's Mike Gristwood predicted that traditional black and white photography would not be eclipsed by digital and would survive as the medium of choice for the more discerning and artistically minded practitioner. Not only is silver-based monochrome photography still very much with us, it is positively flourishing, and while some famous and long-established manufacturers have fallen by the wayside, there are smaller, leaner businesses stepping into the breach to ensure that traditional materials remain available.

In an encouraging move, many young photographers brought up with digital have started to explore the world of film-based photography and are enjoying the craft aspects of the process, which are largely absent whenever computers are involved. At the time of this writing, film cameras, accessories and darkroom equipment of the highest quality can be picked up secondhand for a fraction of their original value. Most will last a lifetime if properly cared for — unlike digital equipment and software, which demands continual upgrades more or less every six months or so, killing at a stroke the notion that digital is 'cheaper' simply because there are no film and processing costs.

The secret to successful film photography lies in a full understanding of the processes involved for the creation of the negative and subsequent print, as well as an ability to create pleasing images. This combination of art, craft and science is perhaps unique to traditional photography, and is certainly a major reason for my continuing interest in its pursuit.

This book is a rigorous and thorough approach to all aspects of monochrome photography but never loses sight of the fact that the final print is as much a work of art as of science. Many photographers enjoy the craft and science of photography, and they will find here as much reference information as they could ever need. Yet, photographers who have a definite idea of the desired outcome can select as much or as little as required to produce the fine print they visualized at the time of exposing the film.

While some of the science may appear daunting at first glance, especially to a reader new to the subject, it is presented in such a way that the reader can decide in how much depth he or she wishes to cover each subject. The first edition has been described as a 'technical tour de force', and with copies changing hands for many times the original cover price, it is evident that the basic premise of the authors was fundamentally sound. This greatly expanded second edition includes many more in-depth chapters, based on original research and exploding a few myths along the way. In addition, there are new chapters covering the more aesthetic aspects of photography, including visualization, print presentation and more, which should ensure that it remains the standard work on traditional monochrome photography for many years to come.

*Dr. Richard Ross*  
*RH Designs*  
*September 2009*

# Preface and Acknowledgments

Photography can be breathtaking and beautiful. It can represent a real or an imagined world. Yet, from its beginnings, photography constantly struggled to be accepted as 'real' art. There were those who claim artistic creativity is too constrained by the involvement of a highly technical process, which is a debate that is now refueled with the invention of digital imaging. Nevertheless, it requires the combination of creativity and craft to create fine art. A visionary, no matter how creative, without mastery of the photographic craft, will struggle to create a print that reflects the intended feeling or mood. On the other hand, the craftsman without creativity might be able to create beautiful prints, but they will have little artistic individuality. There is no essential difference between the artist and the craftsman. The artist is an exalted craftsman.

A common interest in good photography, combined with a fascination for fine-art printing and an appreciation for the craftsmanship involved, drew us together many years ago. We recognized that the final print is the only criterion by which all previous photographic steps can be judged and that poor technique can ruin the best print. Fortunately, good technique can be learned, but it proved difficult to find contemporary literature that competently addressed all of the topics and intricacies of creating fine-art prints successfully.

We felt that many of the recently published instructional books did not cover the technical aspects of printmaking in sufficient detail and failed to help discerning printers to progress. Therefore, we found ourselves frequently consulting good technical literature, published several decades ago and no longer available for sale. In addition, these books were rarely supported by commendable pictorial content and seldom made for an easy read. There were, however, many quality photographic publications with

admirable image content. Nevertheless, these often fell short in offering creative advice or completely avoided revealing the techniques required to achieve the presented results. It seemed to us that the entire photographic community was separated into artists, darkroom practitioners and photographic scientists with limited interest in each other's work. Obviously, there was little chance for them ever to get together and write one book, covering in adequate detail all subjects required to produce skilled fine-art prints consistently and to support the technical advice with a respectable pictorial body of work. Since obviously no one else was working on this task, we picked up the challenge and set to work.

We took more than ten years to research, draft, write, edit, re-write and lay out the first and second edition, although our individual data collections started many years before we began. During this period, digital imaging made its presence known with a meteoric rise in sales and hype, and we felt obligated to research and include some digital monochrome techniques. All visual artists select a medium to communicate their message: for some, this is oil paint on canvas; for others, it is charcoal or watercolor on paper. We chose analog B&W photography. Frequently, when progress and innovation offer a new tool, it must be considered an additional choice and not a replacement, regardless of exaggerated predictions from overly eager proponents. Not all painters abandoned their paintbrushes when photography was announced in 1839, and similarly, fine-art prints will continue to be made with traditional materials in spite of the arrival of digital printing. Nevertheless, a new tool often provides additional possibilities that only Luddites ignore, and it offers the potential to improve on an otherwise mature technology, making it cheaper, quicker, simpler or better.

Unfortunately, many digital-imaging claims of cost and timesavings, simplicity and longevity have since proven to be premature. We have invested considerable research time, effort and money into every aspect of digital imaging, and it is our joint conclusion that there are obvious advantages to digital manipulation, but digital print quality is inferior to silver-gelatin prints in many ways. In reality, there is nothing cheap, quick or simple about digital imaging. It requires a considerable ongoing financial investment in hardware and software, a significant effort to become a proficient user and a tiring amount of work to get an image manipulated to satisfaction. Moreover, it has the common disadvantage of evolving technologies in which all investments are outdated before they have a realistic chance to appreciate.

Considering all of this, we are restricting the digital contents in the second edition to include digital capture, digital sensitometry and the making of digital negatives for the purpose of traditional printing to silver-gelatin papers. We purposely avoid detailed instructions about digital manipulation, because many competent publications already cover this exciting subject, and often-useful technique, in more detail than we ever could. For now, we will stay away from inkjet printing as a final output altogether and leave this topic to more frequently updated publications, since they can react more quickly to constant technology improvements in this area. At the same time, we have reorganized, updated and added to the first edition in all areas, to make this book as accurate and complete as possible. The result, we believe, upholds the best in current monochrome practice.

During the research phase for this book, we processed countless rolls of film and sheets of paper to evaluate the influence and significance of all known photographic variables. Being familiar with professional testing methods and statistical process control, we are aware that our test methods will not withstand scientific scrutiny. Be that as it may, we have taken all reasonable care that potential variables, not tested for,

have been kept constant within a tolerance, where they could not influence the results as anything more than insignificant noise factors. Strictly speaking, many results presented in the book may only be valid for the particular materials tested and may not be applicable to others. Enough test details are given for you to recreate the tests with your favorite materials, nevertheless.

A book project, like this, cannot be accomplished without the help and support of some knowledgeable and experienced people. They all deserve our appreciation and gratitude. First and foremost, we thank Karen Lambrecht for patiently editing the text and asking countless clarifying questions. Without her effort, linguistic expertise and patience, this book would have never happened.

Many thanks for their support also goes to our friends in photography, Frank Andreae, Thomas Bertilsson, Nicole Boenig-McGrade, Don Clayden, Andreas Emmel, Brooks Jensen, Paul Kessel, Marco Morini, Michael R. Peres, Lynn Radeka, Henrik Reimann, Gerry Sexton, John Sexton, Steve Sherman, Peter De Smidt, Bernard Turnbull, Keith A. Williams and Hisun Wong, who contributed their excellent photographs to illustrate this book.

Special thanks to Howard Bond and Phil Davis for their initial guidance, introduction to the Zone System and early technical edits. Many thanks to Dr. Richard Zakia for the permission to use his valuable illustrations. Many thanks, as well, to Dr. Michael J. Gudzinowicz and Dr. Scott Williams (Rochester Institute of Technology), and to Douglas Nishimura (Image Permanence Institute) for sharing their knowledge on archival processing techniques. Finally, special thanks also to Ian Grant, Mike Gristwood (Ilford Imaging UK Ltd, retired) and Dave Valvo (Eastman Kodak Company, retired) for their continuing technical support and final technical edits. The combined help of all the people above, and the feedback, suggestions and encouragement we received from our readers of the first edition, made this book more authoritative, useful and accurate.



Ralph Lambrecht was born and educated in Germany. His interest in photography started when he was about seven years old and saw a B&W image emerging in the developer of his father's darkroom. His first camera was a Box Brownie handed down from his grandmother, followed by a post-war 6x6 rangefinder from his father.

As a young adult, Ralph emigrated with his wife and two children to the United States, where he worked and received a Masters Degree in Manufacturing

Engineering from Lawrence Technological University in Michigan. While living in the US his interest in photography grew slowly into a passion, when he met accomplished photographers such as Howard Bond and Phil Davis, who taught him the basics of fine printing and the Zone System. Further photographic education followed, including a workshop with John Sexton in California, which ended with an unforgettable visit to Ansel Adams' darkroom.

His choice of equipment has become more sophisticated since the days of the Brownie, but he still uses mechanical cameras in medium and large format for all his fine-art photography. Traditional silver-gelatin film and fiber-base paper are his media of choice, and he enjoys performing all darkroom tasks himself. To him, an attractive presentation of the image is just as important as the photography itself. Consequently, he performs all mounting, matting and framing to archival gallery and museum standards. Since 1999, he is an Associate of the Royal Photographic Society and a Graduate Image Scientist since 2007. His work has been exhibited internationally from private galleries to the London Salon of Photography.

Ralph has been involved in adult education for over 20 years. As a photographic author, he has written for major photographic magazines, including *Camera & Darkroom*, *Black & White Photography*, *Photo Techniques*, *Fine Art Printer* and *View Camera* magazine. He is a regular on FotoTV and has contributed to several book projects, including *Schwarzweiß Fotografie Digital* and the fourth edition of *The Focal Encyclopedia of Photography*.

[www.darkroomagic.com](http://www.darkroomagic.com)

## Introduction

This book is aimed at advanced amateur and semi-professional monochrome photographers, who have at some time developed and printed their own images, prefer the beauty of traditional photography, but want to improve their negative and print quality. The book will take the reader on a journey, which will transform 'trial and error' into confidence and the final print into something special.

This book explores techniques of print and negative control using example pictures, graphs and tables to communicate the information. Armed with this knowledge, the case studies show how and when to select which techniques to overcome problems on the path to the final print. The combination of technical background information and hands-on case studies creates a link between the 'how' and 'why' of traditional monochrome photography.

In this second edition, we have meticulously updated and extensively revised most chapters, adding better how-to pictures and improving all illustrations, while carefully rearranging the content and introducing several new topics. A brand-new section discussing the path from visualization to print, illustrating the interaction between eye and brain, and showing how craft and creativity can be combined to a quality photograph with impact was added. Print presentation was completely omitted from the previous edition, but is now covered in detail, including hands-on mounting, matting, spotting, and framing techniques as well as display considerations. Also, image capture has a more in-depth focus, including pinhole photography and digital capture. Film pre-exposure and latitude have been added, while film development has been extended. Making and printing with digital negatives is shown in detail. On the paper side, factorial development and print bleaching are new, while existing chapters were extended and improved. A few new



case studies have been added. There is now a detailed section, showing all image-taking and image-making equipment we use on a regular basis. Plus, there are new do-it-yourself projects, including a shutter tester and how to make and work with paper negatives. In the appendix, we added a complete list of formulae to make your own darkroom chemicals, included a helpful glossary and extended the bibliography.

The focus of this book has not changed from the original goal to make high-quality silver-gelatin prints. For reasons already mentioned in the preface, digital output is not covered in this book at all. However, we still see a benefit in combining the new and creative opportunities of digital capturing with the proven quality of analog silver-gelatin prints. We have, therefore, included digital negative technology and sufficient information about digital capture to enable an experienced and dedicated darkroom worker to take advantage of these opportunities and combine the better of two technologies. Nevertheless, this is still predominantly a book about advanced techniques in traditional photography. We are certain that this new edition will provide something of interest for the practical and the more technically minded photographer.

For up-to-date information about this book, electronic sample chapters to show to friends, potential error corrections and many useful downloads, check the dedicated website at:

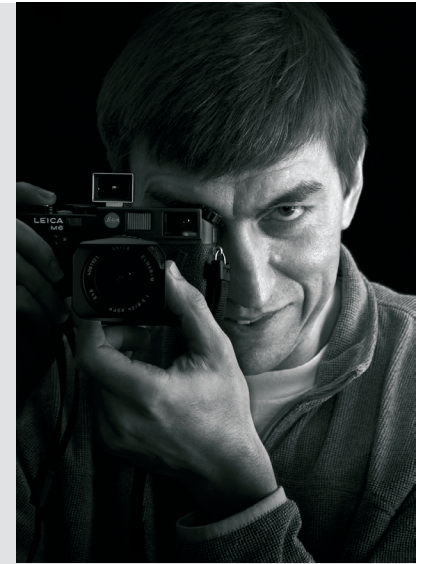
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*Ralph W. Lambrecht*

*Chris Woodhouse*

*June 2010*

Chris Woodhouse was born in Brentwood, England and during his teenage years was a keen amateur artist. Around this time, he was given his first camera, a Zenith B, which along with the discovery of his school darkroom started his interest in monochrome photography. At the age of 15, he joined a local photographic club, where he experienced his first large monochrome enlargements. Later, he received a Masters Degree in Electronic Engineering at Bath University, and after a period of designing communication and optical gauging equipment, he joined an automotive company. As a member of the Royal Photographic Society, he gained an Associate distinction in 2002.



During the last twenty-five years, he has pursued his passion for all forms of photography, including landscape, infrared, as well as portraiture, still life and architectural photography, mostly in monochrome. This passion, coupled with his design experience, led him to invent and patent several unique darkroom timers and meters, which are sold throughout the world. For a period of time, he turned his attention to digital imaging and the particular problems of making convincing monochrome inkjet prints. During this time, he wrote magazine articles on advanced printing techniques for *Camera & Darkroom*, *Ag+* and *Photo Techniques*.

In the dim peace of the darkroom, the negative is the beginning of a creative journey. Rather than assume that there is only one interpretation of a given negative, Chris explores alternative techniques, even with a familiar image, to suit the mood of the moment. Even after several interpretations, new techniques and experience often lead to better prints.

[www.beyondmonochrome.co.uk](http://www.beyondmonochrome.co.uk)