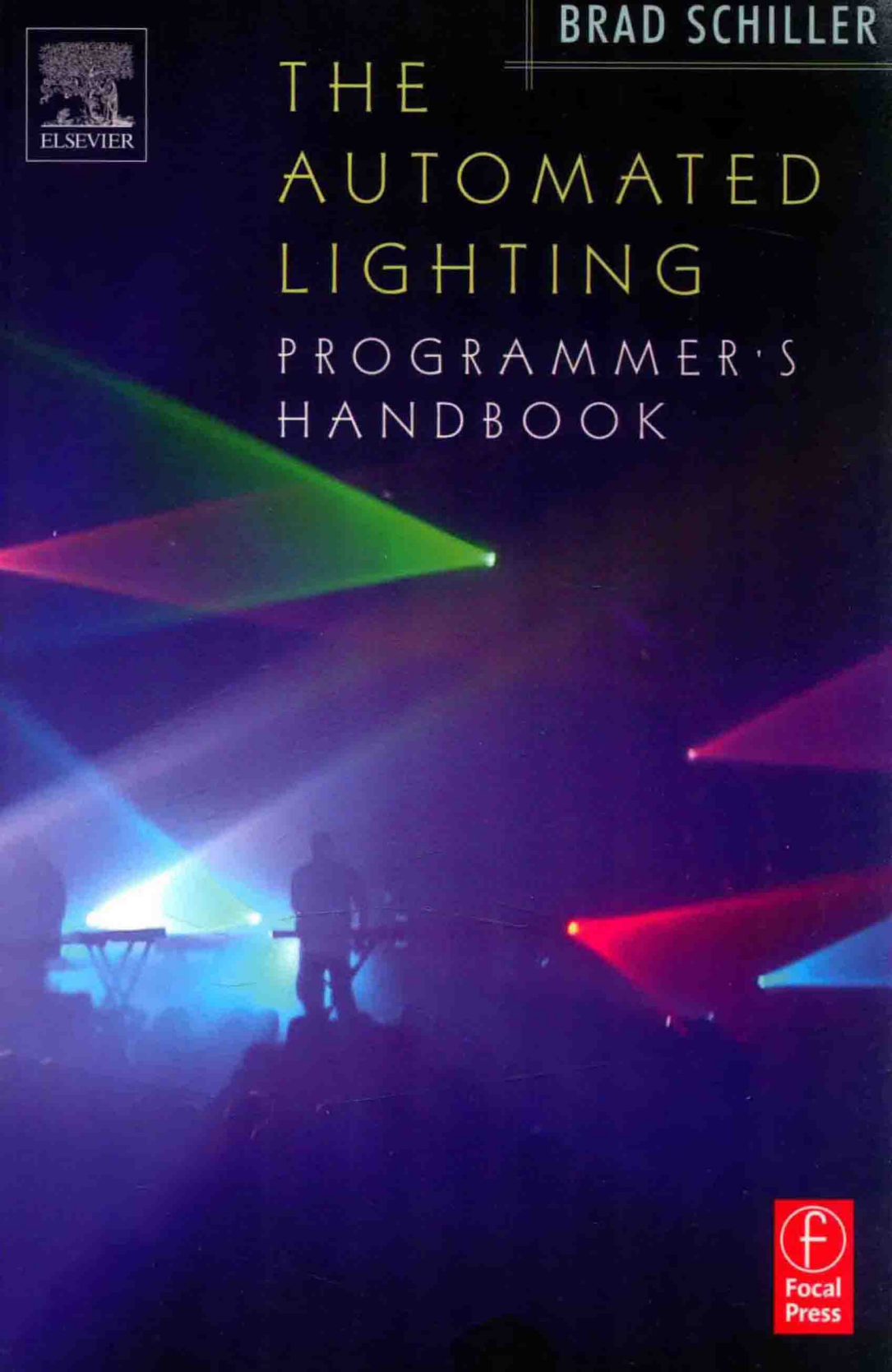
BRAD SCHILLER
THE AUTOMATED LIGHTING PROGRAMMER'S HANDBOOK
ELSEVIER
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The Automated Lighting Programmer's Handbook

I would like to dedicate this book first to my grandfather, Maurice, who always encouraged everyone in the family to write. Then to my parents, Don and Annette, for teaching me "the best job is one you love." Finally, I dedicate this book to my wife, Margaret, and son, Matthew, for their continued support of my career.

Acknowledgements

I strongly believe in sharing my knowledge of automated lighting with others. I could not have gained my knowledge and experience without the assistance of many great people and organizations.

First I would like to thank High End Systems and Flying Pig Systems for the great exposure to the industry. During my six and a half years working as an employee of High End Systems, I was able to learn much more than I could have ever expected. There are too many names to list, but I thank everyone involved with both organizations throughout the years.

Next I would like to thank Pro Lights and Staging News (PLSN) for inspiring me to write on the subject of automated lighting programming. My monthly column "Feeding the Machines" was the catalyst for this book. Terry Lowe, Richard Cadena, and Bruce Jorhdal have all been very enthusiastic when encouraging my writing.

In addition, I would like to thank all the professional programmers and designers that I have met throughout the years. Our industry is a great one with many creative and intelligent people. We all contribute our skills and knowledge to continually improve our fast changing business. I especially would like to express thanks to the many that were able to participate in this book by providing a quote for Chapter 11.

Finally, I would like to thank you for reading this book and having an interest in programming automated lights. Whether programming is a

hobby or a career choice, I am sure you will find it a fulfilling, challenging, fun, and expressive skill that you will enjoy every time you sit down behind a lighting console.

Introduction

I find working as an Automated Lighting Programmer a truly wonderful career choice. It enables me to travel throughout the world, meet many different people, and work on all types of productions. Each event presents a different set of challenges and opportunities. I always enjoy sharing my knowledge in this field with others and hope to do just that with this book.

Automated lighting is a fairly new development in our industry and there are many that are only now beginning to explore this field. With this book, the plan is to share basics of programming automated lighting fixtures while also providing useful information for those who have been working with this technology for several years. Much of this information comes from my own experience and knowledge. In addition, many esteemed programmers and designers have been consulted to ensure the data is accurate and timely.

Because this book is a guide strictly on the process of programming, which is essentially the same regardless of the fixture and console types, there is no mention of specific manufacturer's fixtures or consoles (except in the Appendix). Specific console syntax and fixture operations can be studied via the user's manuals provided by equipment manufacturers. The basic principles presented within this book apply to past, current, and future lighting technologies.

Programming automated lights is very much an art. Just as most anyone can learn to hold a paintbrush and put the paint on a canvas, the

actual entering of data into a lighting console is fairly simple. The real art comes from years of experience, fine-tuning the procedures for painting the canvas or programming the console. Similar to painting, there is no right or wrong way to program, only the requirement to get the data into the desk in a method that produces the best show possible given all the constraints.

If you have ever wanted to know what goes on at the lighting console, or have a desire to become an automated lighting programmer, then please read on and enjoy.

10 Things Every Programmer Should Know

There are many things that every automated lighting programmer just ought to know. These basic concepts and routines help to create the groundwork for any production's lighting. A solid understanding of the following should help anyone interested in programming moving lights. The following is presented in no particular order:

#1–UNDERSTANDING THE FIXTURES

When starting with a new rig, you should first find out as much as you can about the fixtures you will have. Download the manuals and read up on the features and functions of the lights. Study the digital multiplexing (DMX) protocol so you understand what happens with different DMX values. A good understanding of how the fixture responds to DMX (and what is available) will aid in any programming. In addition, studying the different modes and options of the fixtures can result in optimal settings for your production.

#2 – BASIC CONSOLE OPERATIONS

Of course, if you do not know much about your console, how can you be expected to program it? You do not need to be a full fledged expert on every aspect of the desk (although this does not hurt), but at the very least you must be able to patch, create cues, recall cues, and backup the data.

#3 – PATCHING AND ADDRESSING

Once you have studied the fixtures and grasped your console, it is essential that you know how to connect the two together. Properly patching the desk and addressing the fixtures is a skill every programmer must possess. The more information you can provide to the crew about the patch, the better. Too often I have seen productions where the programmer did not create a patch until he was on-site and everyone was waiting around for the information.

#4 – MAKING LIGHTS MOVE

The most basic function you should be able to accomplish is to move fixtures from point A to point B using a repeatable method. Generally this requires two cues, one with the fixtures in position A and the other with the fixtures in position B. Then by crossfading between the two cues, the fixtures will move at the selected crossfade speed. You can then apply these procedures to the other parameters of your fixtures.

#5 – LONG HOURS AND LATE NIGHTS

Our industry often gives the lighting team the late night shift, so you must be prepared to spend many long nights at the console. Knowing how to prepare your body and mind for hours of staring at one canvas, while helping to create multiple paintings, is essential.

#6 – SUBTRACTIVE VERSUS ADDITIVE COLOR MIXING

The most common color mixing in moving lights uses three graduated dichroic filters: cyan, magenta, and yellow. By combining the three you

can create millions of colors. This is usually called subtractive color mixing because you are removing (or filtering) wavelengths or colors out of white light. As more wavelengths are subtracted, the color tends to move closer to black. On the other hand, additive color mixing is generally accomplished by adding several sources together to get closer to white. For example, many of the new light emitting diode (LED) fixtures use additive color mixing by combining red, green, and blue sources.

#7 – TRACKING

Conventional lighting desks commonly record all values for all channels into every cue. Moving light consoles make use of tracking by recording only channels with changed values into each cue. This significantly reduces the amount of data in each cue and enables many tricks for dynamic programming and playback.

#8 – PROTECT THE DATA

A good programmer will protect the data in the console with his or her life. You are hired to enter the data into the console, and to see that it remains there (or can be recalled) at all times. Proper saving routines are essential as well as requiring an uninterruptible power supply (UPS) and a dedicated power source. If something goes wrong and all data is lost and you have no options for recovery, then only you are to blame.

#9 – HOW TO ADMIT YOUR FAULTS

If a Lighting Designer (LD) asks for a particular effect or look and you are unsure of how to create it, admit it. Do not tell the LD that it is not possible, either find a way to make it happen or tell him you do not know how to do it. One LD has told me of a time when his programmer said the console could not select fixtures based on their current color. The LD told him it was possible as his last programmer did it all the time. Again the programmer said it was not possible and told the LD he must be mistaken. The LD called his last programmer and had him explain to the current programmer how to do the function. Needless to say the LD never wanted to hire this guy again, although things would have been different if he had just admitted that he did not know how to perform the function.

#10 – WHO TO CALL

Write down the support phone numbers for all the lighting manufacturers and keep this with you at all times. Then when a problem develops, or when you need to know how to do something, call for assistance. Do not call instead of picking up a manual and trying to figure it out, but do call once you have exhausted other methods. In addition, there are many people in this industry who like to share their knowledge. Get to know others and network. I know of a group of programmers that try to get together once a month just to share experiences and problems with each other. This way they can all learn from one another.

BUT WAIT, THERE'S MORE

Sure, there is plenty more you need to know to be a successful automated lighting programmer. This book is filled with many of the basic concepts that are important to get you started. The most important thing to remember is that you are working on one element of the show, and to strive to make your part of it the best it can be for the overall production.

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