A Focal Press Book

THE ASSISTANT LIGHTING DESIGNER'S TOOLKIT

2ND EDITION

ANNE E. MCMILLS

ROUTLEDGE

The Assistant Lighting Designer's Toolkit

> "The Assistant Lighting Designer's Toolkit *is a book the lighting world needs and should be required reading for all new—and not so new—lighting designers."*
>
> *—Ken Billington, Tony Award-winning Broadway Lighting Designer*

The ground-breaking text that took the lighting world by storm returns in its second edition, unlocking the insider secrets and proven, time-tested methods to succeed as a professional assistant lighting designer.

This definitive guide outlines, step-by-step, the daily challenges that assistant lighting designers face during every phase of production, and the solutions for overcoming them. Furthermore, intermingled among the highly detailed paperwork techniques and essential procedures, top industry professionals reveal tips for success in this challenging career. This fully updated second edition features:

- All new advice, real-world stories, and current paperwork examples from over 120 working professionals.
- Updated industry practices with case studies from the professionals themselves, such as how to create a video network to record previews for the lighting department; how much printing is done in an increasingly paperless world; how to produce a set electrics package; and how the industry interfaces with cutting-edge technology like remote followspots and pre-visualization software.
- New lifestyle tips for traveling abroad, negotiating contracts, and dealing with stressful situations.

The Assistant Lighting Designer's Toolkit, the most trusted authority on assisting in the lighting world, equips budding assistant lighting designers and students studying lighting design with the insider knowledge they need to achieve the successful career that they have always wanted—whether choosing assisting as a career or as a stepping-stone toward design. Within these pages are the industry secrets rarely taught in school!

Anne E. McMills' career extends across the many facets of the lighting world—from theatre (including Broadway and the West End) to television and theme parks, to architectural lighting, corporate industrials, concerts, cruise ships, award shows, dance, and opera. In addition to designing her own work, Anne has worked as an associate for many Tony Award-winning Broadway designers, mounting productions throughout the world. Anne is a proud member of United Scenic Artists, Local 829, and is the Head of Lighting Design for the MFA in Design and Technology at San Diego State University. For further information, visit www.annemcmillslighting.com.

The Focal Press Toolkit Series

Regardless of your profession, whether you're a Stage Manager or Stagehand, The Focal Press Toolkit Series has you covered. With all the insider secrets, paperwork, and day-to-day details that you could ever need for your chosen profession or specialty, these books provide you with a one-stop-shop to ensure a smooth production process.

The Production Manager's Toolkit
Successful Production Management in Theatre and Performing Arts
Cary Gillett and Jay Sheehan

The Director's Toolkit
Robin Schraft

The Properties Director's Toolkit
Managing a Prop Shop for Theatre
Sandra Strawn and Lisa Schlenker

The Costume Supervisor's Toolkit
Supervising Theatre Costume Production from First Meeting to Final Performance
Rebecca Pride

The Stage Manager's Toolkit, 3rd edition
Templates and Communication Techniques to Guide Your Theatre Production from First Meeting to Final Performance
Laurie Kincman

The Lighting Supervisor's Toolkit
Collaboration, Interrogation, and Innovation toward Engineering Brilliant Lighting Designs
Jason E. Weber

The Assistant Lighting Designer's Toolkit, 2nd edition
Anne E. McMills

For more information about this series, please visit: www.routledge.com/The-Focal-Press-Toolkit-Series/book-series/TFPTS

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

The Assistant Lighting Designer's Toolkit

Second Edition

Anne E. McMills

Routledge
Taylor & Francis Group
NEW YORK AND LONDON

Second edition published 2022
by Routledge
605 Third Avenue, New York, NY 10158

and by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2022 Anne E. McMills

The right of Anne E. McMills to be identified as author of this work has been asserted by her in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

First edition published by Focal Press 2014

Library of Congress Cataloging-in-Publication Data
Names: McMills, Anne E., author.
Title: The assistant lighting designer's toolkit /Anne E. McMills.
Description: Second edition. | New York, NY : Routledge, 2022. |
Series: The Focal Press toolkit series | Includes bibliographical references and index.
Identifiers: LCCN 2021010863 (print) | LCCN 2021010864 (ebook) |
ISBN 9780367423711 (hardback) | ISBN 9780367423728 (paperback) |
ISBN 9780367823870 (ebook)
Subjects: LCSH: Stage lighting.
Classification: LCC PN2091.E4 M37 2022 (print) |
LCC PN2091.E4 (ebook) | DDC 792.02/5–dc23
LC record available at https://lccn.loc.gov/2021010863
LC ebook record available at https://lccn.loc.gov/2021010864

ISBN: 978-0-367-42371-1 (hbk)
ISBN: 978-0-367-42372-8 (pbk)
ISBN: 978-0-367-82387-0 (ebk)

DOI: 10.4324/9780367823870

Typeset in Times New Roman and Helvetica
by Newgen Publishing UK

The second edition of The Assistant Lighting Designer's Toolkit *is dedicated to my students (both past and present) from whom I learn so much. My life is more meaningful because you are in it.*

For my mother, Rose C. McMills
—the original "Typewriter"—

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

Table of Contents

About the Author xi
Acknowledgments xiii
Acknowledgments from the First Edition xv
Foreword by Ken Billington xvii
Introduction xix
Common Abbreviations xxiii

PART I: The Profession 1
Chapter 1: Understanding Assisting 3
Chapter 2: The Tools Required 25
Chapter 3: Production Personnel 57
Chapter 4: Unions 73

PART II: The Process 85
Chapter 5: Design Prep 87
Chapter 6: Load-in 105
Chapter 7: Tech 135
Chapter 8: Previews and Performances 145

PART III: The Paperwork 153

Chapter 9: Pre-production Paperwork 157

Chapter 10: Tech Process Paperwork 261

PART IV: The Industry 313

Chapter 11: US-based Employment Opportunities 315

Chapter 12: Working Internationally 337

Chapter 13: Working in Related Industries 365

PART V: The Life 405

Chapter 14: Working as an Independent Contractor 407

Conclusion 425

Appendices 427

- Appendix A: Step-by-Step Assistant's Checklist 427
- Appendix B: Design Package Checklist 431
- Appendix C: Assistant's Kit Checklist 435
- Appendix D: Electronic Folder Organization 439
- Appendix E: Site Survey Measurements 443
- Appendix F: Sample Shop Order 445
- Appendix G: Sample Set Electrics Specifications 457
- Appendix H: Sample Cover Letter and Resume 463
- Appendix I: Product Websites 467

Bibliography 473

Index 481

About the Author

Anne E. McMills is a lighting designer, associate lighting designer, educator, and author. Her far-reaching career extends across the many facets of the lighting world—from theatre (including Broadway and the West End) to television and theme parks, to architectural lighting, industrials, concerts, award shows, dance, and opera. In addition to designing her own work, Anne has assisted many award-winning Broadway lighting designers, including Ken Billington, Brian MacDevitt, Howell Binkley, Peter Kaczorowski, Jason Lyons, David Lander, and Brian Monahan, among others. Anne also assisted projections designer Elaine J. McCarthy on *Wicked* and *Spamalot*, mounting productions in the United States, the UK, Japan, Australia, and Germany to name a few. Anne is a proud member of United Scenic Artists, Local USA 829.

Anne achieved her BFA degree in Theatre Design with an emphasis in Lighting Design from Millikin University in Decatur, Illinois, and her MFA degree in Lighting Design from Mason Gross School of the Arts at Rutgers University in New Brunswick, New Jersey while studying under F. Mitchell Dana. While pursuing her thesis research, Anne interned at the Royal Opera House at Covent Garden and the Lyric Theatre Hammersmith in London, UK, as well as the Opéra de Lyon in Lyon, France in order to analyze the comparison between American, British, and European lighting design practices and technologies.

Anne is the Head of Lighting at San Diego State University, leading the MFA program in Lighting Design and Technology. In addition to *The Assistant Lighting Designer's Toolkit*, Anne is also the author of *3D Printing Basics for Entertainment Design*. For further information, visit www.annemcmillslighting.com.

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

Acknowledgments

The second edition of *The Assistant Lighting Designer's Toolkit* was written largely during the Covid-19 pandemic and resulting lock-down. Writing it on top of virtual teaching and running an MFA program in hyflex during a pandemic was nothing short of a gargantuan effort. I'm thrilled to have it complete and out in the world. I hope that you, the readers, find knowledge and meaning in it.

This book could not have happened without the continual love and support from my partner Jonathan Mulvaney. You are always so selfless and willing to allow me the space to create. Thank you for keeping me sane enough to write and for being my partner in all things.

To my mother, Rose C. McMills—the original typewriter; you are always by my side—especially when I'm writing—whether you know it or not. I love you, Mom!

Thank you to my test readers—Ken Elliott, Colby Freel, Winston G. Limauge, Conor Mulligan, and Craig Stelzenmuller. You've influenced this edition more than you know! An additional thanks to Colby for your valuable research. And a very special thanks to Craig Stelzenmuller for going above and beyond. Your notes and continued support throughout the process were amazing and so influential to the formation of the final manuscript. Thank you for caring enough to make this edition the most current and accurate that it could be!

So many people helped make this book a reality; so much so that I've started calling it a love letter to the industry. So many of you selflessly donated your time with filling out surveys, sending in images, test reading sections, dealing with emails for permissions, and being there for general advice. Thank you from the bottom of my heart for your dedication to the industry, this text, and the donation of your valuable time. I wish to thank each one of you and tell you how much your contributions touched my heart … Kevin Adams, Chris Akerlind, Katy Atwell, Kevin Barry, Josh Benghiat, Ken Billington, Howell Binkley, Fred Bock, Wilburn Bonnell, Shawn Boyle, Kaitlyn Breen, Isabella Byrd, Rob Casey, Amith Chandrashaker, Jiyoun Chang, Coby Chasman-Beck, Colin Chauche, Dillion Cody, Eric Cornwell, Jane Cox, Jessica Creager, Crowood Press, Jeremy Cunningham, Oona Curley, F. Mitchell Dana, Jake DeGroot, Tim Deiling, Disney Enterprises, Alan C. Edwards, Ken Elliott, Josh Epstein, Erin Erdman, ETC, Mitchell Fenton, Bruce Ferri, Rick Fisher, Kirk Fitzgerald, Amanda Zieve Fogarty, Alex Fogel, Brent Forjosis, Colby Freel, Cecilia Friederichs, Matt Gordon, Brad Gray, Caitlin Guyan, Rob Halliday, Michael Helm, Mark Henderson, Colleen Henty, Hevi Lite, Don Holder, Holland America, David Martin Jacques, Mitchell Jakubka, Patrick Johnston, Peter Kaczorowski, Natasha Katz, Kristina Kloss, Stephanie Lasater, Jimmy Lawlor, Ken Lennon, Vivien Leone, Winston G. Limauge, Tim Lutkin, Jason Lyons, Brian MacDevitt, Joan Marcus, Jonathan Martin, Ed McCarthy, Elaine J. McCarthy, Porsche McGovern, Travis McHale, John McKernon, Tyler Micoleau, Tim Mitchell, Brian Monahan, Samuel Morgan Photography, Conor Mulligan, Jonathan Mulvaney, Ryan O'Gara, OISTAT, Lowell Olcott, Justin A. Partier, Cory Pattak, Benjamin Pearcy, Anthony Pearson, Kathy A. Perkins, Edward Pierce, Xavier Pierce, Richard Pilbrow, Ken Posner, Timothy Reed, Michael A. Reese, Nik Robalino, Asher Robinson, ROSCO®, Brandon Rosen, Philip Rosenberg, Jared A. Sayeg, Jen Schriever, Joel Shier, David Shocket, Mark Stanley, Craig Stelzenmuller, Aaron Tacy, Clifton Taylor, Paul Toben, Mike Tomaselli, Justin Townsend, Nicole Van Dijk, Hugh Vanstone, Vectorworks Inc., Andrew Voller, Dan Walker, Japhy Weideman, KC Wilkerson, Ken Wills, Carolyn Wong, Mike Wood, Jennie Yeung, and Yi Zhao. I hope I didn't miss anyone!

Thank you to Ed McCarthy, my tech editor and friend, who influenced this book along every step of the way! And as always, thank you to Stacey Walker—who is simply just the best. No question!

Thank you to my friends and family for their support, and to my four-legged writing partners: Sienna, Toffee, and little Smudges; and, as always, to my sweet Cosette. Forever in my heart.

A special thank you to Denitsa Bliznakova, Charles Murdock Lucas, and Ralph Funicello for allowing me the space to work when I really needed it. And for so many students for putting up with my scattered and late email responses while trying to get this edition out during a pandemic. Sometimes we are all human.

An eternal thank you to the great Ken Billington (who wrote the foreword to both of these editions) for giving me the career I always dreamed of, which made these books a reality. Who knows where I would be now if you hadn't taken a chance on this kid so long ago!

And, finally, thank you to all the readers and adopters of the first edition. This book has had a life all its own that I never imagined. I feel like it has become a mission bigger than myself by helping to shape new recruits within the industry. If you are just starting out, I hope that it makes a difference in your career and provides direction when you need it. Thank you for reading this book so that it can live on and, hopefully, affect the careers of many.

Acknowledgments from the First Edition

This book has been a monumental task and could not have come into being without the selfless donation of time from a lot of very busy people. Please forgive me if I miss anyone.

First of all, thank you to my mother, Rose C. McMills, who has always inspired me to be brave and strive for greatness. Thank you for finding time in your busy schedule to be my personal editor and proofreader. Most importantly, thank you for instilling within me your love of books, your passion for prose, your fervor for grammar, and your joy in the beauty of language.

Thank you to my advance readers and information gatherers—Susan Mason, Heather Oliver, Jessica Morataya, Morgan Zupanski, Jennifer Salmeron, Jared A. Sayeg, Jim Milkey, and Rob Halliday as well as the countless others who read excerpts and sections. Your insight and constructive comments helped shape this book for the better. I am grateful for your help.

Thank you to everyone who donated their time assisting with paperwork examples, images, quotes, and edits—Christopher Akerlind, Apollo Design Technology, Inc., Kevin Barry, Ken Billington, Juan Carillo, CAST Software, Richard Crother, Eric Cornwell, Crowood Press, F. Mitchell Dana (whose profound teaching and influence sculpted the career I have today), John Demous, Andrew Derrington, Devin DeVore (for your beautiful cover photo), DHV Productions, Disney Enterprises, Inc., EarthLED, Beverly Emmons, Erin Erdman, ETC, ESP Vision, Bruce Ferri, Cecilia Friederichs and the team at USA829, Matt Gordon, Meredith Greenberg, Rob Halliday, Tony Helinsky, Hevi Lite, Inc., Donald Holder, Jim Hutchison, KB Associates, Inc., Justin Lang, Vivien Leone, Scott Longberry, Jason Lyons, Joan Marcus Photography, Reinhold Meyer, Ed McCarthy, John McKernon, Jim Milkey, Millikin University, Brian Monahan, Samuel Morgan Photography, Jonathan Mulvaney, Nemetschek Vectorworks Inc., Ryan O'Gara, Justin A. Partier, Matt Peel, Anthony Pearson, Charlie Pennebaker, Edward Pierce, Richard Pilbrow, Kenneth Posner, Carol Prendergast, Michael A. Reese and the team at BKA, Landon Roberts, Rosco Laboratories, Philip S. Rosenberg, Jared A. Sayeg, Jen Schriever, Sewell Direct, Steve Shelley, Rick Sorensen, Hugh Vanstone, Andrew Voller, Dave Ward, K.C. Wilkerson, Jake Wiltshire, WMW Reprographics Ltd., WYSIWYG, Michael Zinman, and the Carpenter Performing Arts Center at California State University, Long Beach. It has been a tremendous joy to have so many significant professionals within the field contribute to this project.

Thank you to Jim Milkey, my technical editor and friend. I am so grateful for your observations and careful crafting of my manuscript. Thank you for sticking with me during such a challenging time in your life.

Thank you to my family for their support and input, and to my friends for their constant encouragement (especially those who have traveled with me the longest through this career: Jimmy Babcock, Aaron Jackson, Melissa (Raddatz) Mulvaney, and the always-inspirational, Trillian, who told me to write this book “no matter what.”) And, of course, a loving thanks to my four-legged writing partners, Cosette and Sienna, who were always there to make me laugh when I needed it.

Thank you to Focal Press for giving me this opportunity—especially Stacey Walker and Meagan White. Special thanks to Steve Shelley for your guidance and continuing mentorship. And thank you to Jennifer Silva Redmond and Michael Lennie.

Thank you to the faculty, staff, administrators, and students at Cal State L.A. who supported me through my creative leave for this project—especially Meredith Greenburg and John Kennedy.

A special thank you to Ken Billington and his associates. Nothing has affected my career more profoundly than my years working at KBA. There I was taught how to be a great associate *and* a great professional. Without question, this book would not exist without your immeasurable influence and extraordinary training. I am truly honored and humbled to have the legendary Ken Billington write this text’s foreword.

And, finally, thank you to my partner, Jonathan Mulvaney, who has supported me throughout this project and every day before and after. Thank you for always listening, giving your brilliant contributions, putting up with my always-busy schedule, and constantly stopping what you were doing to talk me through even the smallest decisions on this book. Thank you for being in my life, supporting my dreams, and always being there for me.

Foreword by Ken Billington

When Anne McMills contacted me about writing the foreword to this book, I was flattered, but I wondered if she had asked the right guy. After all, the last time I was an assistant was for Paul Sullivan, lighting a Broadway revival of *Lost in the Stars* in 1972.

Much has changed in the past 48 years on Broadway and in the art and craft of lighting. Back then, drafting was done by hand, and the hookup was handwritten, using carbon paper to produce copies. There was no channel hookup, just a dimmer hookup, as all the controls were on manual resistance "piano boards." On a Broadway musical, it took three electricians to operate the board. Followspots were direct current, 100-amp carbon arcs, automated lighting had yet to be invented, and the color scroller was still ten years away. Using a gobo required ordering a Leko with a gobo slot, designing the gobo, and having it cut out of a pie tin or etched into brass—the product of this labor would often burn out almost instantly. Yes, it was the dark ages of lighting design.

What being an assistant taught me, however, was how to be a designer. Back then, there was one assistant. We were *not* "associates." Sometimes I did the drafting, but usually I was there to write the focus charts, update the paperwork, write down the cue locations, document the dimmer levels, and keep track of the followspots … also the fun things such as running for coffee and cigarettes and to empty the ashtray at the production table. Yes, everyone smoked at the production tables, even the stage manager at the calling desk. When I was not performing such chores, I was observing the lighting designer and the creative process. I watched the collaboration that created a show, the interactions with the scenic and costume designers, the director, the choreographer, and with management. Keeping up with technology was important, but so were personalities and professional flexibility. The theatre is always a community.

I quickly learned that theatre people, from producer to stagehand, usher to actor, are giving artists. I was young, and they generously showed how things were done and how professionals behaved in the theatre. I could ask questions, of course, and they would be answered, but I had to learn *when* to ask the question. Timing, not just of light cues, was an important lesson. I learned not to question the use of, say, a blue backlight while the director was talking to my boss about a scene. I learned that it might be better to wait until dinner, when things are more relaxed, to voice my thoughts and observations. The lessons I learned still guide my life in the theatre.

Of course, I had the good fortune to work for some of the most successful lighting designers of the day, and luckily, I worked extensively as Tharon Musser's assistant. I always say I went to Musser University since my lighting education came from sitting at the production table and observing her professional skill and professional manner.

In the 21st century, most designers expect a great deal from an assistant. We have incorporated computers into every aspect of theatrical lighting, automation, and sound. Today's designer does not need to figure out how one man with two arms can execute a cue on a manual board. Today's lighting operator hits a button, and it all happens. The job still starts with a love of lighting, but today's assistant needs to be an expert draftsman, in Vectorworks or AutoCAD, and to have a complete understanding of Lightwright, moving light tracking software, and computer networking. When you sit down to light a show, you plan to have all the computers and networks talking to each other. If not, I will be looking at my assistant to figure out what is wrong while I tell the director we will start shortly after all systems are go. All this technology needs to be integrated, efficient, and in service to the design.

An assistant is there, of course, to support and represent the designer, and this means maintaining a good relationship with the rest of the creative team, being well dressed and articulate, and being a good companion. A lighting team shares long hours, long days, and countless lunches, dinners, and drinks. Some designers I know think that one of most important things an assistant can offer is good dinner company.

Finding that first foothold in the theatre can be rough. How many college students graduate each year with a lighting degree? Working as an assistant offers a sturdy first step toward a professional design career. You get to watch the designer, and if it goes wrong, it's not your fault. You are there to learn the skills and procedures you will need to become your own designer. In another time, it would have been called an apprenticeship, but it is a professional job, and I think Anne has made it very clear what will be expected.

It has been many years since the last time I assisted, and I have over 100 Broadway designs under my belt. I have had many brilliant assistants over the years, and some have become my best friends. Anne's book reminds me of a fact I acknowledge every day; I could not be a good designer without those assistants.

Ken Billington
New York City
June 2020

Introduction

This is the book I wish I'd had when I was in school. Its goal is to help bridge the seemingly large divide between being a lighting student and becoming a lighting professional—in hopes of making the transition an easier one. Likewise it is also intended to help young professionals hoping to become further established in the field.

The business of lighting and the practice of assisting a lighting designer is a complex topic that is not often covered at length in academic institutions—no matter how hard the professors try to squeeze it in. The result is that students often graduate as competent designers but lack the valuable know-how to break into the business by way of assisting. Due to this conundrum, the process of assisting has historically remained an apprentice-style or journeyman-like pathway, requiring most skills to be learned on the job. This book hopes to change that by providing individuals with the proper skills needed *before* entering the workforce, thereby making them more valuable assets at an earlier stage in the process and enabling designers to focus more on their work instead of developing new assistants—a task which has become more daunting as the lighting industry has become more complicated.

This book aims to unlock the insider secrets of the assisting profession. It will help you, the reader, become a better lighting assistant no matter where you are working—whether Broadway or the West End, regional, educational, or while acting as your own assistant. Some concepts discussed may also be useful for assistants in other design disciplines as well as stage managers.

In January 1989, renowned lighting designer Craig Miller published a short article in *Theatre Crafts* magazine called, "A Guide for Assistant Lighting Designers: Some Modestly Proffered Notes." This article was given as a roadmap to generations of future lighting designers assisting Miller at the time—including Broadway greats such as Ken Posner, Peter Kaczorowski, and others. I discovered this article late in the book-writing process of the first edition—nearly after the completion of my manuscript. If I had discovered it earlier, I would have been proud to call that article the forefather of this text. However, as fate would have it, the late discovery of that cherished article further demonstrated how little has truly changed throughout the history of assisting. My laptop might have been his carbon paper, my Vectorworks his plastic lighting template, but the overall sentiment of documenting the lighting design process, being proactive, generous of spirit, and always saying "please" and "thank you" has not changed. The major topics and key points of Miller's article, although brief, nearly mirrored this text's concepts. Finding that article further solidified for me not only the historical importance of documenting the process of the assistant lighting designer and the profession's staying-power, but also the contemporary need for an updated guide as a staple in our literature and roadmap for future generations to come.

What this book is not: this book is not a book about the fundamentals of lighting design. It assumes the reader previously has that knowledge and should ideally be read by individuals who already grasp the basic concepts of lighting design and the process of tech. This book is also not a "how-to" of popular software programs. It assumes knowledge of the software itself and suggests "pro tips" as opposed to offering a "how-to." Readers are encouraged to consult the developers' websites and other tutorials for program-specific questions and methodologies.

In addition, please note that this book is not intended to provide all of the answers. It cannot due to the fact that every lighting designer and assistant relationship is different. In this same vein, the methods described herein are not considered the *only* way to do things, but instead a distillation of the most common methods used by the top professionals in the field.

Quotations found throughout this text without annotations are taken directly from personal interviews and surveys. Terms found within the text in bold font indicate the initial definitive use of the term.

The pronouns "he/him/his" and "she/her/hers" have been alternated within topics when referring to the designer and others. This has been done intentionally in an attempt to inject an increased female presence into a currently male-dominated profession. Furthermore, in this second edition, inclusive pronouns ("they/them/theirs") have been added into the rotation to further the inclusion of non-binary individuals working in the field.

Most of the concepts in this book are based on how the lighting design process works during a professional American production, such as Broadway, assuming that the fictitious assistant, namely the reader, is working under the constraints, budgets, unions, and amenities that a professional production of high caliber has to offer. Variations on this situation are presented in Part IV of this book, which discusses other systems and styles of production. Use this book as a guide, and scale its techniques and paperwork needs according to your particular situation. Do not feel that this book is a concrete way that things *must* be done, but rather a set of tools from which to choose when working on your individual show.

This book is broken up into Parts, briefly described here:

- ***Part I: The Profession*** *defines the basics of assisting and covers the qualities and talents needed in order to be successful in the career. Additionally, it describes the tools needed to accomplish the daily tasks of the profession, the production personnel dealt with on a typical day, and the unions to which they may belong.*
- ***Part II: The Process*** *covers the phases of the design process from concept to strike and the role and responsibilities of the assistant along each step of the journey.*
- ***Part III: The Paperwork*** *covers tips and techniques for the assistant's documentation process; enabling the reader to learn to create documents in a professional standard.*

- ***Part IV: The Industry*** *details the many and varied organizations and situations that an assistant lighting designer may work within—both domestically and abroad, as well as related industries outside of theatre.*
- ***Part V: The Life*** *details what it is like to both start a career and live the life of a freelance assistant lighting designer.*

Overall, this text is intended to fill a void within the literature of the field, which limits the mention of the assistant and their duties considerably. It elaborates on this extremely complex career and allows new assistants and aspiring designers to begin their careers at a more advanced level. Its goal is to help you, the reader, unlock the secrets that break through the barrier into the professional realm.

For more information, visit ALDToolkit.com and facebook.com/ALDToolkit.

Disclaimer: The information contained in this book is for informational purposes only. I am not a lawyer or a financial advisor, and this book should not be construed as legal or financial advice. Please do your own research and contact a professional for guidance.

Final note: Most of this edition was written before the Covid-19 pandemic with the manuscript finished during the resulting lock-down. At the time, we were stuck in a never-ending cycle of lackluster Zoom performances and desperate theatres playing small events for drive-in audiences, patrons in plexiglass boxes or life-size plastic bubbles, and even clusters of potted plants!—a world unimaginable the year prior.

The designers, associates, and assistants that contributed to this volume and I had no choice but to write this book as if everything would return to normal and to the profession we once knew. However, in a time of an unprecedented pandemic, the ongoing protests for Black Lives Matter surrounding the murder of George Floyd, Breonna Taylor, and others, the push to end unpaid internships and 10-out-of-12s, endeavors to create a more diverse and equitable industry, an impending budget crisis, rampant unemployment, and attempted political setbacks for LGBTQIA+ and women's rights, it was hard to imagine what "normal" would look like when we got to the other side. Some change (like a push for inclusion, diversity, equity, and access) is good, of course, but I hope that our industry has returned enough to the good parts of "normal" to look like the industry we've described in this book. If you find information that is not accurate in this text (or is evolving) in a post-Covid-19 world, I apologize. As much as we all tried to be forward-thinking, it felt impossible to predict the future with so much unrest happening in the world and in the industry.

Hopefully by the time you are reading this, the vaccines have been widely distributed and the industry has come roaring back as I believe it will. Art has the power to change the lives of many, and it always manages to find its way home.

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

Common Abbreviations

Common Theatrical Abbreviations Used in this Book

Personnel

- LD – Lighting Designer
- ALD – Assistant Lighting Designer/ Associate Lighting Designer
- PSM – Production Stage Manager
- Carp – Carpenter (usually referring to the Head Carpenter)

Unions/Organizations

- IATSE – The International Alliance of Theatrical Stage Employees…
- USA – United Scenic Artists, Local USA 829
- AEA – Actors' Equity Association
- LORT – League of Resident Theatres
- Bway or B'way – common colloquial abbreviation for "Broadway"
- CBA – Collective Bargaining Agreement

Stage Directions

- US – Upstage
- DS – Downstage
- SR – Stage Right
- SL – Stage Left
- CL – Centerline
- PL – Plasterline
- HR – House Right
- HL – House Left
- CS – Center Stage
- DC – Down (Stage) Center
- DR – Down (Stage) Right
- DCR – Down Center Right (sometimes DRC)
- DL – Down (Stage) Left
- DCL – Down Center Left (sometimes DLC)
- UC – Up (Stage) Center
- UR – Up (Stage) Right
- UCR – Up Center Right (sometimes URC)
- UL – Up (Stage) Left
- UCL – Up Center Left (sometimes ULC)

Lighting Design Terms

- HS – High Side
- PE – Pipe End
- HH – Head High
- FOH – Front of House
- EOS – Edge of Stage (not to be confused with ETC's EOS console!)
- EOD – Edge of Deck
- BK – Backlight
- WM – Warm
- CL – Cool

Miscellaneous

- BD – Barndoor
- CAD – Computer-Aided Drafting
- LW – Lightwright®
- ML – Moving Light
- VW – Vectorworks

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

PART I

The Profession

The **Assistant Lighting Designer** is responsible for effectively communicating the lighting designer's artistic vision for a production and helping to usher it into physical reality. It takes a special blend of skills—both technical and interpersonal—to succeed in this challenging career.

> *"The big British imports … turned [assisting] into an occupation. With the mega-musical and the notion of multiple companies, someone could make a living for many years remounting and reconfiguring a show."*
>
> *—Kenneth Posner*[1]*, Broadway Lighting Designer*

In the past, working as an assistant lighting designer was viewed simply as a stepping-stone to becoming a designer. Within the past several decades, things have changed. Many young designers still use it as a means to climb the professional ladder, but some are now choosing assisting as a life-long career. Perhaps they find they are particularly good at the unique mix of skills required; perhaps they are not interested in dealing with the enormous pressures of heavy-handed producers, as designers must; or perhaps they find that they prefer the daily interactions with the crew better than with the management-types. Whatever the reason, those individuals who choose assisting as a career can become some of the most sought-after artisans in the business. After all, having great assistants on a show can make the difference between a smooth process and one that is not.

> *"Working as an assistant or associate is immensely informative. It allows you to observe different methods of design. You can witness several techniques such as how to light a drop, interact with programmers, and focus a show. There is also a great deal of intangibles that you can glean off. You can use these to form your own aesthetic and system."*
>
> *—Amith Chandrashaker, Lighting Designer*

DOI: 10.4324/9780367823870-1

NOTE

1 Robin, Natalie. “Light on the subject: Revisiting the roadmap.” *Stage Directions*, October 2012, www.stage-directions.com/current-issue/55-light-on-the-subject/4590-revisiting-the-roadmap-.html (accessed October 3, 2012).

CHAPTER 1

Understanding Assisting

DEFINING THE ROLE

The assistant has many responsibilities throughout a production period. These responsibilities may vary considerably depending on the preferences of the designer and on where the assistant is working—Broadway in an educational setting, for example. Essentially it all boils down to one overarching concept—*the responsibilities of the assistant are anything that facilitates making the lighting designer's vision a reality on stage*. It is up to you, the assistant, to determine exactly what items are required in order to do that. Let this book be your guide.

> *"There is no single correct path to building a career or doing the job of assistant (and designer, for that matter). There are a thousand skills, expectations, apps, etc. that are part of what we do, but you don't have to be proficient at all of them. Instead, be willing to learn and be inquisitive. Every designer–assistant relationship is different and will develop over time; honing in on what grouping of skills and work products are required."*
>
> *—Travis McHale, Lighting Designer and Broadway Associate*

ASSISTANTS VS ASSOCIATES

This book uses both the terms "assistant designer" and "associate designer." When entering the field, you need to know what the distinguishing characteristics are between these two roles.

From an outsider's viewpoint, one might think that the titles of assistant and associate are interchangeable. In some respects, they are: both produce paperwork for a production and work in conjunction with the lighting designer, making her artistic visions a reality, and both are

DOI: 10.4324/9780367823870-2

abbreviated as ALD (although sometimes as "asst." and "assoc."). However, although it may seem like it at first glance, they are *not* the same position. Essentially, the **Associate** designer is the promoted version of an assistant designer. It may take several years to become an Associate Lighting Designer—a title which commands considerable respect among professionals in the field. While both individuals report to the designer, the assistant may also report to the associate, if there are persons of both titles on the show.

The essential distinguishing factor between these two job descriptions is that *the associate, unlike the assistant, is authorized by the lighting designer to make artistic decisions in her absence.* The associate can discuss artistic changes with the director and implement those changes in the show—often without discussing the changes with the designer first, depending on the designer–associate relationship. In contrast, if artistic decisions are discussed with the *assistant* in the absence of the designer and/or the associate, the assistant should listen intently and pleasantly, write down the questions (without agreeing or disagreeing to anything), and report them accurately to the designer for direction.

Never assume that you can make artistic decisions or changes (or agree to any) as the assistant. Even as an associate, ask your designer if they are comfortable with the idea before proceeding. Never assume.

Many high-level associates develop a relationship with the designer whereby they will focus and sometimes even skeleton-cue nearly the entire show without the designer present. Furthermore, when remounting a show, many associates recreate full productions without the designer ever showing up.

If the designer is not on site, the associate should keep the designer informed on the process. Some designers will feel that the process is out of their control if they are not kept abreast of the daily ins and outs. Err on the side of too much information; never assume that you should not bother the designer if they are busy. If it is something on which the designer needs to weigh in, contact them right away.

> *"Lighting designers are usually spread thin over many different shows at once, so knowing the nitty-gritty of each show is in good hands is invaluable."*
>
> *—Jen Schriever, Broadway Lighting Designer*

Each relationship is different. Assistants often work with the same designer for several years (and/or several productions) before they acquire the trust to be promoted to associate. Even after working as an established associate with his regular designers, an associate may need to start over again with the assistant title when working for any new designers (instead of automatically receiving the associate title).

The pathway toward becoming an associate is through careful discussion with the designer. After multiple shows together (and before signing the next contract), if the designer has not already broached the topic, inquire if the designer thinks you are ready to be named as associate on the next show. For some designers, this may happen right away; others may need more time to get to know you, your work, and your artistic eye before promotion.

Also, note that working as an associate instead of an assistant does not automatically equate to more pay at this time. You may negotiate for more, but it is not currently automatic. (More on contracts in Chapters 3 and 4.)

Please note that for the purposes of this book the term "assistant" has been used universally to include the work of both the assistant and/or the associate depending on the structure of the production. However, if the term "associate" is specifically used in this book, the item relates to associate duties only.

Production teams vary. Typically, plays on Broadway—which are usually considered smaller in scope—will employ only one assistant or one associate. (Most commonly an associate.) If there are followspots or it is a very large, complex play, there may be an additional assistant added but this is rare. On a large show, such as a Broadway musical, the production often has an associate lighting designer and an assistant lighting designer, often called the "Followspot Assistant." (More in Chapter 5.) An additional assistant may also be added for extremely large musicals, sometimes called the "2nd Assistant."

Overall, the number of assistants needed depends upon the scope of the production and in which employment situation you are working. For example, Broadway productions typically employ more assistants than a regional production—which may only employ one or, often, none.

Dividing Responsibilities

Dividing up the responsibilities may vary by team, but the typical method is as below:

Typically, the associate works like an adjunct designer and department manager, running the day-to-day activities for the lighting department. He will interface with the lighting designer directly and act as their right-hand person. For example, the associate may follow along as the designer cues helping with channels they cannot find or any other needs that they may have, such as taking cue notes and/or work and focus notes. The associate will also liaise with the production electrician and keep the paperwork up to date. The associate is the person holding the most pieces of the puzzle and must make sure the information is flowing in all directions.

Time management and keeping everyone on task is vital to keeping the production moving smoothly and getting the priorities checked off the list on schedule.

> *"As an associate on Broadway, your responsibility is not only to the designer. The position is really about coordination—individual areas have distinct needs, and they often need something from you! You will find the electricians asking you for specific paperwork, for example, or the scenic associate asking you for a drawing with particular measurements. An associate on Broadway is truly in a service position—providing assistance to many, while primarily serving the designer."*
>
> *—Kristina Kloss, Lighting Designer and Broadway Associate*

The assistant (often called the "Followspot Assistant") is typically in charge of "The Three 'F's": Followspots, Focus Charts, and Folding Plots (aptly dubbed by lighting designer and Broadway associate Vivien Leone). They are responsible for the design, creation, and calling of the followspot cues, the recording and updating of the focus charts, and folding printed drawings. They may also help the associate with paperwork updates, moving light documentation, and anything else needed.

> *"The assistant's number one priority is calling followspots, but also any spillover notes that the associate didn't get time to do; they have to be vigilant and aware of what the associate is doing 100 percent of the time, regardless if they're involved or not."*
>
> *—Brandon Rosen, Lighting Designer and Broadway Assistant*

> *"If I'm an assistant, I look at it like my job is to do all the paperwork, so the associate can talk to people."*
>
> *—Kristina Kloss, Lighting Designer and Broadway Associate*

If a show has only one assistant or one associate, that person is in charge of covering all of the responsibilities. If followspots are involved, having them called by a separate person is typically preferred; some teams will hire an additional assistant for only the first few days or first week of tech to call followspots in order to make the overall responsibilities more manageable.

> *"Often the assistant or associate is the go-between, the meeting place of multiple avenues and types of information. Understanding the coordination and movement of information is key."*
>
> *—Alan C. Edwards, Lighting Designer and Broadway Associate*

QUALITIES OF A GOOD ASSISTANT

> *"I value organized and good-humored assistants. My favorite folx are able to make me laugh, be a good dinner companion, and stay positive as much as they are excellent at paperwork and problem-solving."*
>
> *—Isabella Byrd, Lighting Designer*

> *"A good assistant sees the same picture as the designer; a great assistant keeps a whole other picture in mind so the designer doesn't need to. The collaborative art form of theatre design is messy and a great assistant can be the designer's rock: not daunted by the chaos, but rather able to find order in it."*
>
> *—Yi Zhao, Lighting Designer*

The first guidelines to being a good assistant are to one, be qualified and two, be likable. Chances are if you exude an amiable personality (on top of being qualified) you are more likely to get hired quickly and rehired frequently. After all, assistants and designers spend many hours together working side-by-side at the tech table, and theatre is a business of people. Many designers believe that the essential skills of assisting can be taught, but a good personality is the first thing that they look for in an assistant.

> *"Skill gets you hired the first time, personality gets you hired the second, third, and fourth time!"*
>
> *—KC Wilkerson, Principal Lighting Designer, Disney Parks*
> *Live Entertainment, Anaheim*

> *"I am meticulous as to who I choose to work with, and it's not just based on their talent. Their personality and how they are perceived when they walk into a room [are] also very important."*
>
> *—Howell Binkley,*[1] *Broadway Lighting Designer*

Being an assistant requires a unique cocktail of talents in order to be successful—both in hard and soft skills. For example, you must be the type of person who can stay calm during high-pressure situations as well as maintain a pleasant nature after a long day or week. And having a good sense of humor (and the instinct to know when it is appropriate) can break the tension and ease your designer's stress when needed. Also, being able to bounce between "the crew thing" one minute and interacting with management the next is also a valued skill.

> *"The ability to communicate information in the way that people will best receive it (and spur them to take action) can be difficult to master, but it's an invaluable tool."*
>
> *—KC Wilkerson, Principal Lighting Designer, Disney Parks*
> *Live Entertainment, Anaheim*

Some qualities and tips to being a successful assistant are as follows:

METICULOUS

> *"It is the mark of a great assistant that [they remind] you at 11:30 at night that you said something at 8:10 in the morning."*
>
> *—Kenneth Posner,*[2] *Broadway Lighting Designer*

Lighting design is a profession of numbers. The assistant must keep track of channel numbers, cue numbers, palette numbers, preset numbers, and instrument numbers—just to name a few. Never let *even one of them* get lost in the shuffle. If a channel cannot be found, it can make your designer very unhappy during a fast-paced moment when that all-important number is required.

It boils down to this—you must write everything down. Period. Even if you have amazing memory retention, multiple numbers and notes from the designer may be thrown at you at once. Better to write them down than to record the incorrect information or forget it all together. Update the changes in their proper place electronically as soon as you can. Do not leave it scribbled on your notepad indefinitely. However, do not underestimate having pencil and paper with you at all times. Writing something down can be quicker than finding the electronic file. Use a notepad as a temporary holding area for notes when needed.

> *"I can't live without my notepad and pencil. I write everything down, from everyone's names when I first walk into the theatre, to every note that needs to happen and anything we change as we go along."*
>
> *—Anthony Pearson, Lighting Designer and Broadway Associate*

The amount of information that changes throughout a typical day of tech can be staggering. Instead of feeling overwhelmed, think of it like a game, like *Tetris*: you need to keep placing all the blocks (of information) in the most logical places before time runs out. Regarding it more like a fun challenge instead of an oppressive responsibility will keep your attitude positive and encourage you to succeed.

WORKING UNDER PRESSURE

The job of a lighting designer—and the assistant—is incredibly stressful. Often called "the hot seat," the designer needs to work extremely fast in order to keep the tech process moving, which means the assistant needs to work even faster!

> The lighting designer's job is referred to as "the hot seat" because most of the lighting design process cannot be done in advance. The lighting designer must create her art while everyone else in the theatre is watching and waiting to move on.

During tech, many lighting designers pride themselves on never hearing the stage manager say those dreaded four little words: "We're waiting on lighting." (It might as well be a four-*lettered* word!) In order for this not to happen, the assistant has to be every bit as quick (or quicker) than the designer regarding anything she may need. The designer may be the one in the hot seat, but it is the assistant who will get burned if the process gets held up.

There are many ways to try to stay on top of your designer's needs. For example, work tirelessly at memorizing the channels for your production. Quiz yourself throughout the day. If you have memorized the channels and your designer is struggling to remember one, you will be able to tell it to her before she even needs to look down at her magic sheet. Or, as another example, if your designer requests a change in the followspots while a musical number is being run, make that change as fast as humanly possible (even if it is messy) so that she can see the implementation of the change onstage before the moment has passed.

THICK-SKINNED

> *"Practice not taking things too personally. Usually, it is not about you … unless you make it about you."*
>
> *—Vivien Leone, Lighting Designer and Broadway Associate*

It does not matter if you work for the nicest designer you think you have ever met—there is always a possibility that at some point during the process, you will be addressed in an emphatic manner or even yelled at. Being a lighting designer is so stressful and full of pressure that it would be unfair to imagine that even the calmest designer would be able to keep their cool at all times, no matter how hard they try. Keep in mind that when this happens, it is not typically a reflection on you personally, but often a transference from the designer during a stressful situation. No matter the reason, try to shake it off, smile, and fix the issue as quickly as you can.

> *"Be 'there' for the designer. Be the best moral support you can because things can get heated and intense in a crunched timeframe."*
>
> *—Jiyoun Chang, Broadway Lighting Designer*

If feeling stressed, take a drink of water and focus on something positive on your desktop like a photo of your pet, significant other, or an image that makes you laugh. If tense situations occur, some designers will apologize later. Some will not. Ultimately, remember how you would have preferred the situation to be handled for later in your career when you are the designer working with assistants.

> *"When in a stressful situation with a designer, it can be a bonding moment if you're prepared and supportive. It is you and the designer versus the chaos! I try and view a designer's more intense moments from their point of view. I think about what might be causing the reaction, and how I can be supportive to alleviate the stress. I think of it as 'What fear is causing them to act in this way: the stress of the room … the pressure of other jobs outside of this tech …?' Taking what a designer says personally only gets in the way of moving forward. I try to look at it from the perspective of how I can help this human be more comfortable and feel supported to do their best creative work."*
>
> *—Conor Mulligan, Lighting Designer and Broadway Assistant*

In the rare case that you feel the way you are being treated is verging on verbally abusive or inappropriate, speak to your designer about it. Ask to have another person in the room if it would help you feel more supported. If uncomfortable with that approach, seek guidance from the production manager and/or the union.

> *"I have worked for some lighting designers who are quick-tempered. They knew that about themselves and wanted to try to be better. So, we came up with a 'safe word' that I could say to them which would calm them down as they were flying off the handle. If I sensed they were about to yell at the stage manager or someone outside our department, I could say [our safe word] over the headset or to them directly; they would hear it and at least take a pause."*
>
> *—Craig Stelzenmuller, Lighting Designer and Broadway Associate*

STAYING ONE STEP AHEAD

> *"You should be able to 'read the room.' The lighting department is not the only table in the room. During tech there can be an array of dynamics playing out between various departments, and it's imperative the Associate is sensitive and keyed into the overall interplay of the entire creative team."*
>
> *—Japhy Weideman, Broadway Lighting Designer*

Staying one step ahead may be difficult at first when working with a new designer. As you get to know the designer better, it will become more easily achievable.

The more you try to anticipate issues, the better, but make sure that your designer is comfortable with you taking charge. For example, you notice that a conventional fixture has been knocked out of focus on a boom, but your designer makes no mention of it. If this is the first time you find yourself in this situation with this new designer always ask if it is okay to fix it without him. You might say, "I noticed that channel 82 was kicked during that last transition. Are you comfortable with me touching up the focus after our break?" Chances are the designer will appreciate that you noticed the issue. If he approves, ask the production electrician if she is able to have an electrician focus with you after break. However, if the designer would rather be involved and is not available after the break, add the note to the focus notes. Do not worry if your designer is not feeling comfortable with you focusing on your own yet. Some designers always prefer to focus themselves. Others will develop that level of trust as they get to know you, your artistic eye, and your ability to emulate their techniques and vision.

The incorrect thing to do in this situation would have been racing up on stage, grabbing an electrician, and beginning to focus. Although this may seem like a self-sufficient and go-getter attitude, it is always best to discuss your intentions with your designer first—especially the first time. If the assistant races up onstage, the designer may feel abandoned at an inopportune time or worry that the assistant will focus the fixture incorrectly. As the designer–assistant relationship grows stronger, the designer may allow the assistant a little more rein, but even then, tell the designer your intentions before doing something that affects the show.

Keep in mind that the unfocused fixture *could* be a happy accident that creates interest on a piece of scenery. Your designer may want to keep it and repurpose it, instead of refocusing it to its original intent. Keeping the communication lines open will help you to stay on track with your designer's wants and needs.

> *"Anticipate what's needed next … what scenery is needed, when the next break is … Look ahead, assess, and act … Anticipate the next steps without waiting for direction."*
>
> *—Jen Schriever, Broadway Lighting Designer*

Another method of staying one step ahead is to continually ask yourself, "What notes can we accomplish during the next actor-break?" Maybe there are a few instruments on the FOH coves that could be easily touched up by an electrician? Is there time to fly in and test that new practical that was hung just before rehearsal?

Again, think of it like a game. Objective: how can you continue to cross things off your list throughout the day to result in the least number of notes possible at the end of the night? The reward at the end of the game may result in a later call-time for you the next morning. Not only that, but your designer will be happier throughout rehearsal as bothersome items begin to disappear.

> *"The best assistants I've had are creative problem solvers—people who try to answer their questions for themselves first, and if they can't, aren't afraid to ask for clarification or further explanation."*
>
> *—Oona Curley, Lighting Designer*

Also be forward thinking about the next day's events. Ask your designer questions like, "Tomorrow when we start focus, what things will you need that you don't already have?" or "What do you anticipate that we will be dealing with tomorrow? Any issues you imagine may arise?" Asking probing questions like this helps you get into the designer's head to solve problems in advance. It also lets the designer know that you are proactive instead of reactive to the process.

> *"Ask questions! It's better for both of us if we're both clear about the task at hand and the expectations."*
>
> *—Alan C. Edwards, Lighting Designer and Broadway Associate*

PROMPT

Do not be late. Ever. Be early—thirty minutes or more is a good rule of thumb. Never let the designer arrive before you do. The assistant is typically the first one of the lighting design team to arrive and the last one to leave.

> *"My pet peeve is assistants being late."*
>
> *—Kathy A. Perkins, Lighting Designer*

Arrive early and make sure everything is set and ready for the designer before they enter the theatre. First thing to check: Are the headsets still working well? No buzzing or echoing? They may have worked the night before, but if the Com is unusable then tech cannot proceed. Also, assure that the tech table is neat and in good order.

Check with the production electrician to assure that she has everything ready for focus notes. Also ask what has been accomplished on the work notes list. Never act pushy or impatient about these items—many notes may not be able to be accomplished for one reason or another. Simply inquire politely so that you can inform the designer what has been completed if they ask.

However, do not be afraid to remind the electrician of the designer's priorities if they seem to be falling lower on the list. You are there to represent the designer's priorities, so do what you can to see that those happen on time.

POLITE

> *"Never lose your sensitivity to the fact that waiting at the top of a 30′ ladder is no fun for the focusing electrician."*
>
> *—Craig Miller,[3] Broadway Lighting Designer*

An assistant should always be polite and cordial no matter how stressful the situation. As designers, we often make difficult requests of the electricians who sometimes perform nearly impossible—verging on dangerous—tasks for us in order to simply create our art. "Please" and "thank you" should be used even if an electrician responds in a less-than-generous manner.

> *"Be friendly and kind to other people."*
>
> *—Jen Schriever, Broadway Lighting Designer*

Treat your production electrician with courtesy and appreciation. As an assistant, they are your partner (and often savior) during the production period. Forge a cohesive relationship based on mutual respect. It can make or break your experience on a show—especially as a new assistant.

KNOWING WHEN TO STAY QUIET

Learn when to speak up and when to stay quiet during the process. Every designer is different. Even different days with the same designer may vary. Pay attention to any subtle clues she may give and try to anticipate her needs.

> *"Sometimes you have to let the designer find something on their own. It is a delicate balance … in the heat of the moment [offering input] can sometimes seem invasive and distracting."*
>
> *—Jason Lyons, Broadway Lighting Designer*

A good rule of thumb is to start off by saying *less* rather than more. Do not begin your working relationship together by saying things like, "What if it was blue?" or "Did you try the gobos?" Keep those opinions to yourself. It is not your position as an assistant—especially a new one—to discuss design decisions with your designer. If he asks for your opinion, answer him honestly but do not overdo it with a long discussion on the merits and pitfalls of his decisions. A designer asking for opinions may be feeling insecure and is probably seeking your support and validation more than anything. Delving too deeply and registering (even slightly) negative reactions to any of his design choices may erode your budding designer-assistant relationship in its early stages. Something simple and reassuring like, "I think it works!" may be all he needs to move on. Also do not assume after being asked your opinion one time that it gives you free rein to comment on additional moments. Your best bet is to keep your opinions to yourself unless you are asked again.

Similarly, learn to determine when it is appropriate to ask questions of your designer, such as seeking clarification on a cue note or focus note. The appropriate timing is individual for each designer. For example, you notice your designer sitting and idly staring at the stage. Is it an appropriate time to ask a question? Even if it is just a quick one? You might think it is, but instead, proceed with caution. Your designer may *look* as if he is not doing anything, but actually he may be lost in thought regarding a cueing sequence. If you interrupt with a question, it may throw off his entire solution and make him very unhappy with you. Never assume that your designer is not working.

Learn to approach your designer in the least obtrusive way possible. Do not launch directly into your question. Instead employ a shorthand tactic. For example, perhaps you say gently, "I have a question" or "When you have a moment" or simply, "Question." This may be enough to communicate that you need attention at their convenience. Approaches like this will help build a relationship based on mutual respect. They know your questions are important and will answer your questions when they are available, and you show respect for the space and time required for their design process.

On the flip side, there are times when it is appropriate to say something regardless of the situation. One of these times is during an emergency—do not be afraid to speak up if you notice that a curtain has landed on a lighting fixture and is beginning to smoke or you see an actor walking toward the pit when you know the designer is about to black out the stage.

It is also appropriate to speak up if you see the designer telling the programmer to update the wrong cue, or the programmer is making a typo in the **command line**—the area on the console's monitor that displays what the programmer is typing. Stop them and diplomatically verify the correct information. Your designer may seem frustrated with you at first, but they will be glad that you saved them from making a grave mistake. To note: most console systems with remote monitors can be set up for separate users with varying views of the screen. Be sure that your view mirrors that of the programmer so that the active command line is in view.

> *"As an assistant, don't answer to the director or producer unless you've already developed that relationship with the designer you're working for."*
>
> *—Jen Schriever, Broadway Lighting Designer*

Finally, be reserved when dealing with anyone outside of the lighting team. For example, if you fall into a conversation with the director, your designer may worry that you are discussing design decisions without them, or a producer may perceive that you committed to a design idea in which the designer is not interested. Always let the designer deal with any top-down communication. If you are approached by the director, producers, or any other higher-ups, politely direct them to speak with the designer or offer to pass on the note. As the assistant, your interactions should remain internal to the lighting team and members of the electrics crew.

Similarly, let the designer lead in meetings. If you are asked a question directly then respond, but communication should funnel through the designer. Especially if your relationship with the designer is somewhat new, speaking for the designer may cause you to make some wrong assumptions or seem like you are stepping on the designer's toes.

WORKING WITHOUT JUDGMENT

> *"Don't be snarky—even when everyone in the room is being snarky. It doesn't become an assistant to buy into that energy, ever."*
>
> *—Clifton Taylor, Lighting Designer*

As an assistant, you may often have to deliver extravagant work note requests to the electrics crew that may seem overwhelming. No matter what the note, deliver it matter-of-factly. Do not complain about it or belittle the note. And never discuss the note in a way that damages the reputation of the designer. It is not appropriate to judge your designer's decisions. You are merely the messenger and the facilitator of the note.

ACCEPTING RESPONSIBILITY

Take responsibility for any mistakes you have made. Never blame someone else—especially your designer. For example, if you gave the production electrician the wrong note during the previous work session, accept responsibility for it. Do not pretend that the designer changed her mind again. Matter-of-factly state that you had requested the wrong thing, such as hanging the wrong instrument, adding the wrong color, or focusing the fixture incorrectly. Apologize for the mistake and ask politely to rectify it.

SENSE OF HUMOR

A good-natured assistant is usually a well-employed assistant. Try to take life as it comes and enjoy the work even during difficult moments. Chances are your designer will appreciate someone with a kind heart and easy-going attitude sitting beside them.

GOOD EYE FOR DESIGN

> *"I like for my assistants to really know the play and understand the time period. I like for them to serve as a second eye."*
>
> *—Kathy A. Perkins, Lighting Designer*

Even though assistants should keep their design ideas to themselves unless asked, dismiss the myth that assistant designers are "those who cannot do." On the contrary, assistants are incredibly good designers in their own right—partially because they spend countless hours studying the craft of our modern masters at work. Furthermore, when those assistants are promoted to associate, they often must make creative decisions during the designer's absence while also trying to emulate the designer's style and vision. This can be even more challenging than designing using strictly your own voice.

> *"When I find myself in the hot seat, I try to hear the lighting designer's voice in my head as I'm making choices. I try to speak to the programmer in the same rhythm and style that the designer was speaking in. It helps keep the style and design integrity intact."*
>
> *—Craig Stelzenmuller, Lighting Designer and Broadway Associate*

BE A CITIZEN OF THE WORLD

> *"Practice how to be a good conversationalist and human being on topics that aren't just theatre."*
>
> *—Travis McHale, Lighting Designer and Broadway Associate*

Be aware of the world around you and study up on the issues of the day. Being a good conversationalist is valued in our field. On a base level, it makes you a better dinner companion; if you "talk shop" all throughout dinner, you and your designer never get to escape the throws of the theatre. On a grander scale, being aware of a wide range of socio-political issues and being able to discuss them intelligently, not only makes you a good citizen of the world, but also helps you pave the way for those less fortunate or, conversely, discuss your rights in an intelligent and balanced manner. Cultural competence is an important skill to nurture as our industry continues to grow.

> *"Don't mold yourself into someone else's image just to get hired."*
>
> *—Oona Curley, Lighting Designer*

THE DOS AND DON'TS OF BEING A GOOD ASSISTANT

> *"The best assistants tend to listen with their ears and not with their eyes. You have to stay tightly focused on the tasks at hand and on the steady stream of information that will come at you in production. It's very easy to miss an essential piece of information in that minute when you wanted to look at the pretty picture being created onstage."*
>
> *—Tyler Micoleau, Broadway Lighting Designer*

Many missteps can be made by new assistants when integrating into the business for the first time. Following these tips and tricks can help you minimize mistakes and begin to forge a lucrative career in the assisting world and beyond.

COMMON "DOS"

- **Look professional**. Dress more like management than you would if working as a stagehand and culturally appropriate for whichever country in which you are working. Keep in mind that you are representing your designer and the rest of the design team. Take note of the level at which your designer dresses. If they dress in an extremely professional manner, match their intention with your style of dress. Remember that you are a professional. Act like it, and dress like it.

  However, for safety, wear shoes that are load-in appropriate. Steel-toed work boots are not necessary, but sturdy-soled, closed-toed shoes that protect your feet are a good choice.
- **Use proper headset etiquette**. Often called "Com" or "cans" in the professional community, headsets are connected all over the theatre during tech. You never know who may be listening while you are talking. Rule number one: only speak when required. Extra headset chatter only makes it more difficult for others on your channels to communicate and focus. And rule number two: keep your language clean. Do not curse, use inappropriate language, or ridicule anyone or anything involved in the production. Even if others are doing it, don't engage; it can reflect poorly on you and the rest of the lighting team. Extra conversation may also appear to the designer that you are not truly invested in your work and not paying enough attention to his needs.

> *"I can't stand a loud tech table. A lot of shuffling of paperwork, loud talk over headsets, etc. I'm very respectful of the actor's need for concentration."*
>
> *—Christopher Akerlind, Broadway Lighting Designer*

> *"Keep your comments and questions on the headset to a minimum (unless you're calling followspots on a separate channel). I hate to be interrupted when in the middle of a thought or in the midst of writing a complex sequence of cues."*
>
> *—Donald Holder, Broadway Lighting Designer*

- **Find good places to eat**. Locate local eateries within walking distance of the venue for all meals and coffee. The production period on a professional show is spread over many weeks, and the lighting team will often eat at least two meals a day together. Usually after the first few days the team begins to run out of ideas for places to dine, and the repetitive "What's-for-lunch?" question begins to arise over headset. Be prepared to propose new options as this duty often falls to the assistant. The team will be grateful you conducted some research and have new ideas to suggest.

> *"I love a fun dinner companion and often enjoy pondering for an hour or more out, 'What shall we eat?!' So, I suppose I like an assistant who is a fellow foodie and excited by the task of finding a frugal, delicious meal that humors our cravings."*
>
> *—Isabella Byrd, Lighting Designer*

  As you begin to know your designer, pay special attention to items she likes to eat and find a variety of places that carry that type of food. Also discreetly take note of any dietary restrictions that she may have. Is she allergic to seafood or nuts? Is she vegetarian? Does she simply love chicken soup? Research menus and reviews of nearby restaurants that have options she can eat. Gather ideas for a variety of food types to suggest within a moderate price range. In addition, also locate one or two upscale restaurants for nicer dinners during longer meal breaks. Make reservations on weekends.

  When working out of town, have several options mapped out for the first day. Ask the local crew what nearby eateries they recommend. No matter what the choice, make sure you know how to get there—the group will likely follow you. Also download a restaurant app that splits the bill like *Tab* or *Splitwise*. Often the team will ask for separate checks but be prepared in case it is needed. If you need to send money to the others, use a transfer app like *Venmo*. Choose apps that work in multiple currencies for international productions.

- **Note your designer's preferences**. Some designers are very specific regarding their tech table setup. On the first day of tech when the designer steps away, discreetly take a photo of the table to use as a reference. At the end of each night, clean the tech table, throw away trash, and restore your designer's preferred setup. Make sure he has everything he needs: do you need to refill his Post-its or pencil lead? Is the magic sheet in the area that he likes to keep it? Restore what you can so you have less to set up again in the morning.

- **Silence all electronic devices**. Silence all your devices during rehearsal—laptop, smart phone, tablet, etc. To avoid mistakes, keep them off permanently during the production process. Not only do noisy devices that interrupt rehearsal reflect badly on you, but they can also embarrass your designer.
- **Memorize the names of your co-workers**. Your designer may be counting on you to feed them names of individuals in the theatre—especially if they need to grab someone's attention. Ask the company manager or production stage manager for an up-to-date contact sheet that includes the crew. Try to get to know everyone's name, but pay special attention to electricians, assistant directors, choreographers, sound personnel, the projection design team, assistant stage managers, and anyone else that you may come in contact with daily. If you struggle with memorizing names, write each name you learn upon introduction discreetly on the corner of the paperwork or notebook you carry around the theatre most frequently and a Post-it you keep at the tech table. Even better, make your team a cheat sheet or "people magic sheet," listing everyone by job and geographical layout in the theatre. (See Figure 1.1.)

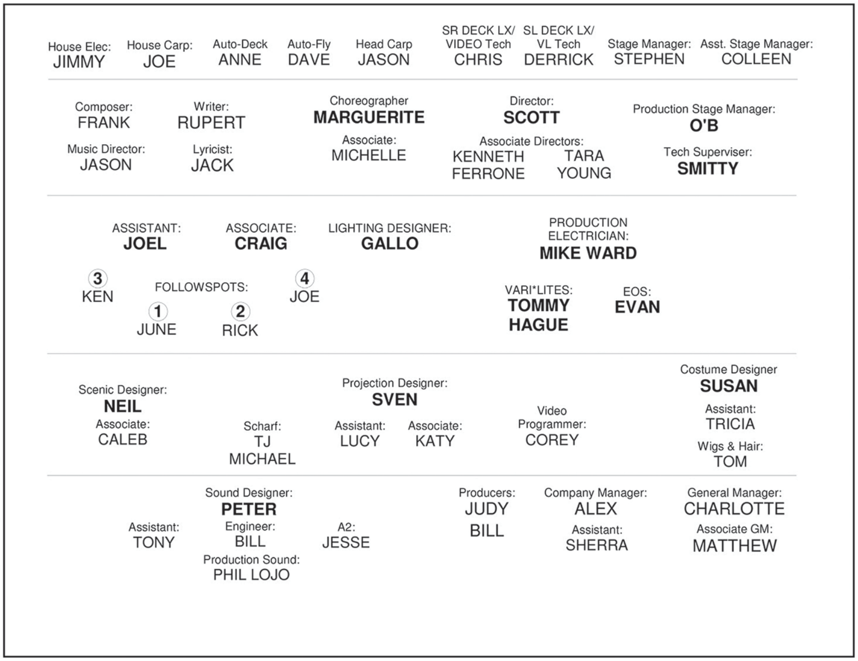
House Elec: JIMMY
House Carp: JOE
Auto-Deck ANNE
Auto-Fly DAVE
Head Carp JASON
SR DECK LX/ VIDEO Tech CHRIS
SL DECK LX/ VL Tech DERRICK
Stage Manager: STEPHEN
Asst. Stage Manager: COLLEEN
Composer: FRANK
Writer: RUPERT
Choreographer MARGUERITE
Director: SCOTT
Production Stage Manager: O'B
Music Director: JASON
Lyricist: JACK
Associate: MICHELLE
Associate Directors: KENNETH FERRONE TARA YOUNG
Tech Superviser: SMITTY
ASSISTANT: JOEL
ASSOCIATE: CRAIG
LIGHTING DESIGNER: GALLO
PRODUCTION ELECTRICIAN: MIKE WARD
FOLLOWSPOTS:
③ KEN
① JUNE
② RICK
④ JOE
VARI*LITES: TOMMY HAGUE
EOS: EVAN
Scenic Designer: NEIL
Associate: CALEB
Scharf: TJ MICHAEL
Projection Designer: SVEN
Assistant: LUCY
Associate: KATY
Video Programmer: COREY
Costume Designer SUSAN
Assistant: TRICIA
Wigs & Hair: TOM
Sound Designer: PETER
Assistant: TONY
Engineer: BILL
Production Sound: PHIL LOJO
A2: JESSE
Producers: JUDY BILL
Company Manager: ALEX
Assistant: SHERRA
General Manager: CHARLOTTE
Associate GM: MATTHEW

Figure 1.1 *Wonderland* people magic sheet.
Courtesy of Craig Stelzenmuller.

- **Be eager to learn**. Many designers enjoy the energy that a new assistant brings to the table. They appreciate someone passionate about the business and hungry to learn everything that they can. Do not be afraid to ask questions (at the appropriate times) and soak up as much knowledge as possible from the experienced veterans by whom you are surrounded.

> *"Don't be afraid to ask questions! I'd rather clarify than have to correct you down the line and make you do the work twice."*
>
> *—Jessica Creager, Broadway Associate Lighting Designer*

> *"Be a sponge … soak up all the experience you can."*
>
> *—Brian Monahan, Broadway Lighting Designer*

- **Be mindful of what jobs you take**. Be mindful of others asking you to do work for free, extremely low pay, or without university credit, if applicable. Observing and getting to know people is one thing, but doing work that someone should get paid for (and taking work away from those people) is another. It allows theatres to take advantage of trained labor, and, on a union show, it is against union regulations for a non-union individual to work on anything specific to the show's implementation, like paperwork. One exception on Broadway is the Design Membership Candidate Program. (See Chapter 4.)

  In recent years, there has been a push toward ending the practice of unpaid and low-paying internships because (among other reasons) usually those able to work or intern for free (or really low pay) come from a place of privilege. Therefore, the practice acts as a gatekeeping tactic against underprivileged and, often diverse, potentials; allowing privileged individuals to get ahead while others fall behind through no fault of their own, thereby hindering the advancement of diversity in our field.

> *"Don't forget that you have value."*
>
> *—Porsche McGovern, Lighting Designer, Broadway Associate, and Researcher*

> *"If you genuinely want to start by 'dipping your toe' into the industry, that's great! Just be clear about availability and terms and build forward from there."*
>
> *—Isabella Byrd, Lighting Designer*

COMMON "DON'TS"

> *"Be confident, but not conceited. People in the theatre can smell both fear and falseness."*
>
> *—Jason Lyons, Broadway Lighting Designer*

- **Don't have a sense of entitlement**. This is probably the most common complaint of today's professional design community. No matter how good your training has been at whatever prestigious university you attended, stepping into your first large professional show makes you a little fish in a big pond. New assistants that act as if they know everything are quickly ignored. Instead, show up willing to learn, open to new ideas, and appreciative of the number of years your new colleagues have worked within the field. The more positive your attitude, the more everyone will be willing to help you succeed.

> *"Understand that you have a lot to learn. That doesn't mean that you don't have valuable skills already, it just means that lived experience is a huge part of the learning process for anyone in any career."*
>
> *—Oona Curley, Lighting Designer*

> *"Don't be anxious to show off how much you already know. Be anxious to admit how much you don't "*
>
> *—Peter Kaczorowski,*[4] *Broadway Lighting Designer*

- **Don't text, use social media, or make phone calls**. Unless it directly relates to the current show, texting and social media convey a sense of apathy, which can quickly damage your budding relationship with your designer. However, some lighting assistants will text each other (or the production electrician) during tech so as not to disturb the designer on headset. If this is the case, be upfront and explain the situation preemptively to your designer so that she knows you are communicating for work purposes. It will help put her mind at ease and remind her that the show is your top priority. If possible, a dedicated headset channel or a chat or messaging app on your computer may be a better method than texting; using your phone can look like a lack of dedication to any outsider.

  Finally, do not post anything about your current show on social media. Posting may violate your contract and make others very upset. Do not be tempted no matter how cool the lighting looks! Put your phone away if you have to.
- **Don't shop for design jobs**. Even if your career goal is to move away from assisting, do not spend your time "schmoozing" with the director while assisting another designer. Your current job is to be the assistant, and your allegiance is to your designer. If it appears that you are constantly undercutting your designer by angling for job opportunities with the director or other designers, there is a strong possibility that the designer will not hire you again. Not only will he begin to feel as if he cannot trust you, but also it may feel to him that you are not invested in his show. If you are dedicated, professional, and likable you will be remembered if any future opportunities are to arise.
- **Don't sleep or nap on the job**. Sleeping on the job looks unprofessional and may give others a poor impression of you—especially as a new assistant. Also avoid complaining about being tired. Chances are that others around you have been working longer hours and arrived at the theatre earlier than you did.

An assistant has the power to make the process wonderful or miserable for their lighting team—so choose to make things wonderful! And as a freelancer, you are only considered as good as your last show—so be *great* on every show you do! Following the advice in this chapter will help guide you in your journey toward a higher standard of professionalism. The goal is to make your skills as an assistant appear effortless. Mastering the skills can take time but is well worth the confidence you will feel at the end of the day and the success that will follow in your career.

NOTES

1 Riha, Michael J. *Starting your career as a theatrical designer: Insights and advice from leading Broadway designers*. New York: Allworth Press, 2012.

2 Robin, Natalie. "Light on the subject: Revisiting the roadmap." *Stage Directions*, October 2012. www.stage-directions.com/current-issue/55-light-on-the-subject/4590-revisiting-the-roadmap-.html (accessed October 3, 2012).

3 Miller, Craig. "A guide for assistant lighting designers: Some modestly proffered notes." *Theatre Crafts*, January 1989, 21–27.

4 Robin, Natalie. "Light on the subject: Revisiting the roadmap." *Stage Directions*, October 2012. www.stage-directions.com/current-issue/55-light-on-the-subject/4590-revisiting-the-roadmap-.html (accessed October 3, 2012).

CHAPTER 2

The Tools Required

Many tools are required for success as an assistant lighting designer; these vary from hardware to software to profession-specific specialty items. As an assistant, you are responsible for owning most of these items and showing up to the job with tools on hand.

HARDWARE

> *"Make sure you have all the necessary software and a decent computer to get the job done. You are investing in your future."*
>
> *—Kathy A. Perkins, Lighting Designer*

LAPTOP

The most essential tool in which to invest is a laptop—either a PC or Mac depending on your personal preference. If you can, purchase the top-of-the-line product available. Technology outdates itself so quickly that within two years, if you did not buy the best, you may be wishing that you had.

When buying a laptop, consider the following:

- Ensure that the computer has plenty of speed, reliability, storage space, and memory so that the computer can handle several large programs and a visualizer running simultaneously.
- Consider purchasing a laptop with a matte (non-glossy) screen or installing a matte screen protector. A matte screen will help to diffuse the glare of other tech table lights or egress lighting reflecting on your screen in the dark theatre. An inverted or "dark mode" feature may also be helpful for easier viewing.

DOI: 10.4324/9780367823870-3

- Purchase an extra mouse, mousepad, laptop lock, and power supply. Write your name or initials on each of them in permanent marker so they do not get lost when the tech table moves for previews. One set can reside in your home office and the other set can stay at the tech table for convenience or travel in your laptop bag.

Always connect your laptop lock to a house seat that is permanently attached to the cement theatre floor—not something temporary like a tech table. Never leave your laptop in the theatre overnight. Even though many professional theatres have doormen/doorwomen and other security features, laptops "walk" easily and have done so from many a show.

- The physical weight of the laptop should also be a consideration. It may not seem like much at first, but even a few ounces less constitutes a perceivable difference in weight. Your laptop is usually only one of the items that you carry daily—your pack can get heavy, especially when working in a pedestrian-centered city.
- Physical size should also be considered. You may feel you need a larger screen for drafting, but you may discover that it is easier to travel with a smaller item. If concerned about screen size, consider purchasing a large external monitor (or two) for your home office and requesting one (or two) for you in your shop order for the tech table. Working on larger screens can be helpful for weary eyes after a long day of tech.
- Consider what sort of input/output and wireless options the computer has. Do you need to purchase additional adaptors and/or various kinds of adaptors? Make sure your laptop is as flexible as it can be. Consider that you may need to communicate with older devices, like when remounting a production from several decades ago—especially when working in opera and dance. Keep a collection of older technology at home (CD/DVD and floppy disk drives, for example) and ways to connect to them.
- Backup options are vital in the cases of theft and total technical failure. Consider purchasing a laptop with included backup software that will automatically back up your information to an external hard drive or cloud storage. If your computer fails or gets stolen during tech and you have no backup, you put yourself, your designer, and the show in jeopardy. Furthermore, an external hard drive is helpful for storing large files (like rehearsal videos) and is a fast way to back up in theatres where the Wi-Fi is slow. On corporate events, some companies do not allow the use of Wi-Fi for security reasons. In these cases, a physical drive is best.

Portable Computer Speakers and Headphones

Add to your laptop purchase a set of small computer speakers useful for cueing a sequence during notes without the band or the cast. Having the ability to play the music (off a demo or recorded video) allows the designer to cue more accurately.

A set of wireless headphones can also be helpful for working through a rehearsal video that others do not need to hear. Wireless devices are a good choice at a tech table already covered in too many cables.

SMARTPHONE

A smartphone with photo and video capabilities is extremely helpful in the theatre. Not only is it your personal phone, calendar, and internet browser—to name a few, but it is also useful for taking photos for focus charts or recording designer runs.

Make sure your designer gets permission from the director before recording anything during rehearsal. For many years, it was against Actors' Equity Association's (AEA) union regulations to capture or record union performers without permission. Recently, recording rehearsals has been approved (for internal use only) in some contracts. However, you still need permission from the production, usually 48 hours in advance. Assure the director and stage manager or production manager that the video will only be used for your internal lighting design purposes and will not be posted anywhere on the internet or shared with anyone outside the lighting design team. If your phone/camera uses cloud technology, make sure that you are the only person with permission to view the recordings. Do not share them with others or there could be serious consequences.

> *"One of the first things I ask in a production meeting is whether I can record the designer run."*
>
> *—Ryan O'Gara, Lighting Designer and Broadway Associate*

Photo and Video Considerations

When considering a smartphone, choose one with these recommended features:

- Assure the phone's camera has high enough resolution to take clear photos. Multiple lens options can help you capture the right contextualization of the theatre architecture when taking focus photos. A good amount of optical zoom and digital zoom may also be helpful in large houses.
- The camera's flash must have the ability to be disabled (standard on most smartphones). Not only is it distracting and dangerous to the performers, but a flash washes out stage lighting, thereby rendering your photos useless. A flash also advertises that you are taking photos during a rehearsal or tech, which may upset the union members. Turn off your flash permanently while working on the show.

- Purchase a phone with a long battery life and the capacity to work while plugged in—you may need to use the camera for extended periods of time and take hundreds of photos in one continual shoot. Your phone needs to be able to keep up without needing to stop and be charged. Purchase an extra phone charger that can live at the tech table and in your assistant's kit. (More on the assistant's kit to follow.)
- Plenty of storage capacity is required to hold a multitude of photos without running out of storage space. Alternatively, a phone that uploads photos instantly to a cloud service can also be a solution, but the reality of seamless Wi-Fi is a worry in some venues and/or locales.
- Investigate the photo transfer process. If you are purchasing a device that requires a cable connection to the computer for transfer, buy an extra transfer cable that can be kept permanently in your laptop bag as a spare.
- Photos on stage can be extremely difficult to capture accurately due to the amount of high-contrast lighting and rich colors in theatrical lighting. Choose a phone camera that allows you to adjust exposure, provides image stabilization to reduce camera shake, and has the ability to take low-light photos.
- Purchase a small, adjustable tripod that enables you to set the phone on the tech table to further reduce blurry shots. For some smartphones, a remote trigger or shutter option is a useful mate to a tripod when battling camera shake. This allows you to place the camera in an ideal location and take photos without physically standing next to the camera or touching it. There are also "tethered" options, which enable a camera to be triggered from a laptop which then automatically uploads the images; this can help speed up the process.
- Ensure that the phone's video capabilities are just as competent and flexible as its photo capabilities. Look for high-resolution options, low-light capabilities, and the ability to easily capture theatrical lighting without blur.

Lighting Apps

Another useful aspect to smartphones is the variety of lighting-specific apps at your fingertips. Below are just a few—most are available on all mobile platforms. See Appendix I for product websites.

Software-Specific Apps: Software-specific tools

- LW Touch for Lightwright
- Nomad from Vectorworks
- Vectorworks Remote