Robert B. Musburger Gorham Kindem

Introduction to Media Production to Producti

The Path to Digital Media Production

Fourth Edition



Introduction to Media Production

The Path to Digital Media Production

Fourth Edition

Robert B. Musburger

Gorham Kindem





Focal Press is an imprint of Elsevier 30 Corporate Drive, Suite 400, Burlington, MA 01803, USA Linacre House, Jordan Hill, Oxford OX2 8DP, UK

Copyright © 2009, Elsevier Inc. All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

Permissions may be sought directly from Elsevier's Science & Technology Rights Department in Oxford, UK: phone: (+44) 1865 843830, fax: (+44) 1865 853333, E-mail: permissions@elsevier.com. You may also complete your request on-line via the Elsevier homepage (http://elsevier.com), by selecting "Support & Contact" then "Copyright and Permission" and then "Obtaining Permissions."

Recognizing the importance of preserving what has been written, Elsevier prints its books on acid-free paper whenever possible.

Library of Congress Cataloging-in-Publication Data

Musburger, Robert B.

Introduction to media production: the path to digital media production by Robert B. Musburger and Gorham Kindem.

p. cm.

Previous editions entered under Gorham Kindem.

Includes bibliographical references and index.

ISBN 978-0-240-81082-9 (pbk.: alk. paper) 1. Motion pictures-Production and direction.

2. Television-Production and direction. 3. Analog electronic systems. 4. Digital electronics.

I. Kindem, Gorham Anders. II. Title.

PN1995.9.P7K538 2009

791.4302'32-dc22

2008043914

British Library Cataloguing-in-Publication Data

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

ISBN: 978-0-240-81082-9

For information on all Focal Press publications visit our website at www.elsevierdirect.com

09 10 11 12 13 5 4 3 2 1

Printed in the United States of America

Working together to grow libraries in developing countries

www.elsevier.com | www.bookaid.org | www.sabre.org

ELSEVIER

BOOK AII

Sabre Foundation

Introduction to Media Production

To Nancy and Pat In return for their patience, understanding, and support.

PREFACE TO THE FOURTH EDITION

This fourth edition of *Introduction to Media Production* approaches the process of teaching media production from a slightly different perspective from previous editions. Given the wide range and diversity of means by which a production will finally reach different audiences today, a consideration of potential audiences overrides nearly all other considerations in the planning and production of a program, whether it is an audio, video, or graphics production. Although the chapters in this book are arranged in a logical progression, each chapter can be taught as a stand-alone unit, or in any order that fits the curriculum of the school or of the individual faculty member teaching the course. A detailed index and a comprehensive glossary with 128 new digital entries provides definitions to new terms and concepts regardless of the order of presentation to the reader. Each chapter discusses developments in digital media technologies as they affect various topics. All chapters have been streamlined and bulleted for added readability and improved access to key concepts. Some chapters have been combined to recognize important changes in the rapidly evolving digital media production world. In addition to the original 168 images plus 12 color plates, 105 new photographs and illustrations have been added where they best facilitate understanding and illustrate important recent developments. Finally, although all media must start and end as an analog signal, digital technology in preproduction, production, postproduction, and distribution dominate analog technology. The structure and content of the fourth edition of Introduction to Media Production reflect those important changes. The authors are grateful to the external reviewers for their valuable suggestions and to Elinor Actipis, Michele Cronin, Lianne Hong, and the staff of Focal Press for their encouragement and strong support for this edition.

INTRODUCTION FOR IMP IV

The goal of this book is to help young media producers understand the entire process of media creativity, beginning with concepts and audience considerations and continuing through the preproduction, production, and postproduction processes, including distribution and exhibition. A final chapter considers how to plan and guide your future in the field of media production.

The authors feel you need to learn why decisions are made given the many choices involved in producing a media project, which is as important as knowing how to push buttons and turn knobs. Understanding how a piece of equipment works helps to explain what that equipment can and will accomplish for the operator and director. Unrealistic expectations based on ignorance leads to frustration and poor production qualities.

The chapters in this book are written so that you may read them in any order, although the authors feel that, based on their own experience, the chapter order in the text makes the best sense from a professional media producer's point of view.

Topics, professional terminology, and the language of media production are introduced and explained as the text moves from chapter to chapter. If you do not understand a term, you will find it defined and explained in the glossary at the end of the book.

CHAPTER 1: PRODUCING: EXPLOITING NEW OPPORTUNITIES AND MARKETS IN THE DIGITAL ARENA

This chapter is placed first in the book to underline the importance of knowing how the end result of a production will finally meet its intended audience. The radical changes in media production equipment, techniques, and methods of operation have been matched equally with radical changes in the distribution and exhibition of media productions. The quality of a production can now range from such extremes as a high-definition, widescreen, multichannel audio program to a small, low-quality picture on a cell phone. The production could be distributed by a major multinational distribution company placing the project on network television or in motion picture theaters around the world, or a few friends may view it on a personal web site.

CHAPTER 2: THE PRODUCTION PROCESS: ANALOG AND DIGITAL TECHNOLOGIES

Chapter 2 breaks the production process down into three primary stages—preproduction, production, and postproduction—and explains the relationship between the three. Much of the chapter covers the use of digital technology and equipment in the three stages. Finally, the chapter explains the relationships and duties of each member of the production team: audio, video, film, and multimedia.

CHAPTER 3: PRODUCING AND PRODUCTION MANAGEMENT

Chapter 3 describes the different types, duties, and responsibilities of producers and their chief assistants, production managers. The many critical duties and responsibilities of the producers and their teams are more often hidden from public view. These duties include supervising script preparation, writing proposals, and managing a budget.

CHAPTER 4: SCRIPTWRITING

Chapter 4 describes the many genres and methods of writing scripts. Details on writing dramatic, commercial, educational, news, situation comedy, and animation scripts for digital production are illustrated with various rhetorical, expository, and dramatic theories of writing.

CHAPTER 5: DIRECTING: AESTHETIC PRINCIPLES AND PRODUCTION COORDINATION

Chapter 5 describes the functions and skills required of directors of video, audio, film, and animation productions. Scene construction, the use of sound, and the differences between single-camera and multiple-camera productions in the digital age are clearly explained.

CHAPTER 6: AUDIO/SOUND

Chapter 6 covers all aspects of audio and sound production, concentrating on digital techniques. The discussion covers microphones and their uses, the control and monitoring of sound, and mixing for digital productions, along with an explanation of the theories of sound perspective and benefits of using sound in visual productions.

CHAPTER 7: LIGHTING AND DESIGN

Chapter 7 describes and organizes the techniques of lighting and design for digital production. The common areas of lighting and designing sets, costumes, and handling of props for digital production are covered in this chapter. New lighting instruments and techniques specific to digital productions are also explored.

CHAPTER 8: THE CAMERA

Chapter 8 discusses all types of digital cameras, as well as film cameras in common use today. Camera operation techniques, lens operation, and a breakdown of various specific types of digital cameras and their differences emphasize the wide range of digital cameras and their technical variations.

CHAPTER 9: RECORDING

Chapter 9 describes each of the many digital, analog, and film recording methods. Descriptions of audio and video digital formats, their compatibility, and their level of use are provided in great detail. Specific techniques required for digital recording of both audio and video constitute a portion of this chapter.

CHAPTER 10: EDITING

Chapter 10 describes each of the steps of editing digital audio, video, and digital film. Both the physical processes and the theoretical processes of dealing with digital editing as opposed to older analog editing methods are covered. Theories of editing a story, whether it is a commercial, news, or dramatic production, are described.

CHAPTER 11: GRAPHICS, ANIMATION, AND SPECIAL EFFECTS

Chapter 11 describes the digital techniques used in creating all visuals, including the methods used both on camera and off camera. The chapter explores the use of animation, special effects, and time-proven art techniques. The use of color and color theory along with framing and composition make up a major portion of this chapter.

CHAPTER 12: THE FUTURE AND YOUR CAREER

Chapter 12 describes the future of the media production business, as well as it can be determined at this point in time. The chapter then describes, point-by-point, the method of preparing for a career by earning an internship, preparing the paperwork for a résumé and cover letter, and designing and creating a portfolio. The chapter also offers tips for preparing for and handling an interview and negotiating pay and benefits for that first and succeeding jobs.

CONTENTS

Preface to the Fourth Edition Introduction for IMP IV		
CHAPTER 1	 Producing: Exploiting New Opportunities and 	
	Markets in the Digital Arena	1
	Introduction	1
	The Audience	2
	Audience Analysis	2
	The Technology of Distribution	5
	New Production Considerations	6
	The Big Ten of Distribution	7
	AM-FM Terrestrial Radio	7
	HD-Radio (IBOC)	7
	Mobile	8
	Satellite	8
	Terrestrial Television	8
	Cable/Telcos	9
	Disk/Disc	9
	The Internet	9
	Games	10
	Motion Pictures	10
	Solid-State Storage	10
	The Economics of Distribution	11
	Broadcasting, Cable, and Satellite	12
	Theatrical and Nontheatrical	18
	Home Video, Audio, and Multimedia	22
	Corporate and In-House	25
	Internet Distribution	26
	The Future of Distribution and Exhibition	28
	Summary	28
	Exercises	30
	Additional Readings	30
CHAPTER 2	The Production Process: Analog and Digital Technologies	33
	Introduction	33
	Stages of Production	34
	Preproduction	35
	Production	35
	Postproduction	36

		Digital Technologies Used in Preproduction	38
		Digital Technologies Used in Production	39
		Digital Technologies Used in Postproduction	40
		Production Terminology	45
		Single-Camera versus Multiple-Camera Production, and	
		Studio versus Location Production	47
		Planning for Positive Production Experiences	48
		Avoiding Negative Production Experiences	49
		The Production Team in Audio, Video, Film, and Multimedia	
		Production	49
		Creative Staff in Media Production	50
		The Production Crew in Media Production	53
		The Production Team in the Recording Industry	55
		The Production Team on an Interactive	
		Multimedia Production	56
		Visualization: Images, Sounds, and the	
		Creative Process	57
		Conveying Information	58
		Rhetorical Persuasion	59
		Artistic Expression	59
		Production Aesthetics	59
		Realism	59
		Modernism	60
		Postmodernism	61
		Combining Aesthetic Approaches	63
		A Short History of Audio, Film, and Video	
		Production Technology	63
		Summary	69
		Exercises	70
		Additional Readings	70
CHAPTER	3 •	Producing and Production Management	73
		Introduction	73
		Producing	73
		Role of the Producer	73
		Production Strategies	75
		Legal Rights and Concerns	82
		Unions, Guilds, and Nonunion Working Conditions	83
		Production Management	85
		Script Breakdown	85
		Shooting Schedule	87
		Production Budget	87
		Summary	91
		Exercises	92
		Additional Readings	92

Digital versus Analog Technology

36

CHAPTER 4 ●	Scriptwriting	95
	Introduction	95
	Visual Thinking	96
	Preparation for Scriptwriting	97
	Research	98
	Premise, Synopsis, and Outline	98
	Treatments	99
	Scriptwriting Formats	100
	Full-Page Master Scene Script Format	100
	Split-Page Script Format	103
	Semiscripted Formats	105
	Fiction Scriptwriting	106
	Dramatic Structure	106
	Characterization and Theme	110
	Adaptation	112
	Short Fiction Forms and Formats	114
	Interactive Stories and Games	115
	Nonfiction Scriptwriting	117
	Rhetorical and Expository Structure	117
	Voice and Point of View	119
	Narration and Interviews	120
	Short Nonfiction Forms and Formats	121
	Interactive Learning and Training	129
	Summary	131
	Exercises	132
	Additional Readings	133
CHAPTER 5 •	Directing: Aesthetic Principles and Production	
	Coordination	135
	Introduction	135
	Aesthetic Approaches	136
	Realism	136
	Modernism	137
	Postmodernism	137
	Visualization	138
	Types of Shots	138
	Camera Angle	141
	Stationary versus Mobile Camera Shots	142
	Composition	145
	Aspect Ratio	145
	Symmetry	147
	Closure	149
	Combining Shots	152
	Straight Cut or Take	152
	Fade	152
	Dissolve	153

		Wipe	153
		Defocus	153
		Swish Pan	154
		Special Effects	154
		Digital Transitions	155
		Scene Construction	156
		Continuity Editing	157
		Pace and Rhythm	157
		Compression and Expansion of Time	157
		Screen Directionality	158
		Directional Glances	158
		The 180-Degree Axis of Action Rule	158
		Sound and Image Interaction	159
		On-Screen versus Off-Screen Sound	160
		Commentative versus Actual Sound	160
		Synchronous versus Asynchronous Sound	160
		Parallel versus Contrapuntal Sound	161
		Composing Images for Prerecorded Music	161
		Composing Music for Prerecorded Images	162
		Preparing the Shooting Script	163
		Production Coordination	164
		Production Meetings	165
		Casting	165
		Rehearsals	166
		Performer and Camera Blocking	167
		Multiple-Camera Directing	167
		Timing	169
		Running Time	169
		Timing in Production	169
		On-the-Air Timing	169
		Production Switching	170
		Director's Commands	171
		Live-on-Tape Recording	172
		Single-Camera Directing	173
		Cutaways	174
		Shooting Ratios	175
		Director's Terminology	175
		Summary	175
		Exercises	177
		Additional Readings	178
CHAPTER	6 •	Audio/Sound	179
		Introduction	179
		Aesthetics of Audio/Sound	180
		Types of Microphones	180
		Transducer Elements	180

		Mic Placement and Selection	183
		On-Camera Mics	185
		Off-Camera Mics	187
		Selecting the Best Mic	193
		Using Multiple Mics	195
		Stereo Mic Placement	196
		Digital Mic Placement	196
		Sound-Signal Control	197
		Audio Problems: Distortion and Noise	198
		Sound Intensity Measurement	199
		Cables and Connectors	201
		Console Operation	207
		Sound Perspectives	208
		Stereo Sound	208
		Multichannel Sound	210
		Dolby Digital 5.1, 6.1, and 7.1 Sound and Beyond	210
		Summary	210
		Exercises	211
		Additional Readings	212
CHAPTER	7 ●	Lighting and Design	215
		Introduction	215
		Realist Lighting and Design	216
		Modernist Lighting and Design	216
		Postmodernist Lighting and Design	217
		Light and Color	217
		Sunlight	218
		Tungsten Light	219
		Carbon Arc Light	219
		Metal Halide Light	219
		Fluorescent Light	220
		LED Lights	222
		White Balance	222
		Lighting Instruments	224
		Spotlights	224
		Floodlights	225
		Portable Lights	227
		New Lamp Designs	229
		Shaping Devices	229
		Light Control	232
		Lighting Control in the Studio	232
		Lighting Control on Location	236
		Light Measurement	237
		Types of Light Meter Readings	238
		Determining Contrast Ratios	239
		Setting Lighting Instruments	241
			- 11

	Three- and Four-Point Lighting	241
	Controlling Shadows	244
	Cross Key Lighting	244
	Lighting Moving Subjects	244
	Low-Key versus High-Key Lighting	245
	Single-Camera versus Multiple-Camera Situations	245
	Lighting for Digital Cameras	246
	Lighting Plots	246
	Principles of Design	247
	Design Elements	248
	Color	248
	Composition	248
	On-Set Design Elements	250
	Scenic Design	251
	Set Construction	252
	Virtual Sets	253
	Set Construction	253
	Properties	253
	Costume Design	254
	Makeup	254
	Summary	256
	Exercises	257
	Additional Readings	259
CHAPTER 8	The Camera	261
	Introduction	261
	Camera Placement	262
	Framing	262
	Positioning	264
	Movement	264
	Mounting Devices	265
	Lens Control	269
	Basic Optics	269
	Aberrations	270
	Lens Perspective	271
	Video Cameras	276
	Basic Video Camera	276
	The Camera Chain	276
	Video Camera Filters	277
	Types of Video Cameras	277
	Digital Cameras	278
	Viewfinder	278
	Body	279
	Optics	280
	Recording	280
	Types of Digital Cameras	281

	Film Cameras	286
	Types of Film Cameras	286
	35 mm Cameras	287
	Camera Accessories	290
	Camera Care	290
	Summary	292
	Exercises	293
	Additional Readings	294
	3	
CHAPTER 9 •	Recording	297
	Introduction	297
	Analog Audio	297
	Audiotape Formats	298
	Analog Audio Recorders	298
	Audiotape Speeds	298
	Digital Audio	300
	Digital Recorders	301
	Analog Video	304
	Composite Video Signal	304
	Videotape Formats	308
	Videotape Sound Synchronization	311
	Digital Video	312
	Signal Compression	312
	Digital Videotape Formats	313
	Tapeless Video Recording	314
	Film Recording	315
	Basic Photochemistry	315
	Color Film	317
	Film Exposure	318
	Motion Picture Formats	319
	Film Sound Synchronization	321
	Summary	324
	Exercises	325
	Additional Readings	326
CITA DIEST 40	Talkin	007
CHAPTER 10 •		327
	Introduction	327
	Aesthetic Approaches	328
	Realism	329
	Modernism	330
	Postmodernism	330
	Editing Modes	331
	Fiction	331
	Nonfiction	333
	Editing Workflow	333
	Planning	334

	Acquisition	334
	Ingest	334
	Editing Log	336
	Editing	340
	Finishing	346
	Output	347
	Editing Digital Audio	347
	Synchronizing Sound Sources	347
	Sound Mixing Techniques	348
	Sound Effects	351
	Editing Music	353
	Editing Film	353
	Synchronizing the Dailies	355
	Digital Film Editing	355
	Conforming	356
	Combining the A and B Rolls	357
	Summary	357
	Exercises	359
	Additional Readings	361
CHAPTER 11 ●	Graphics, Animation, and Special Effects	363
	Introduction	363
	Aesthetics of Graphics and Animation	364
	Realist Graphics	364
	Modernist Graphics	364
	Postmodernist Graphics	364
	Principles of Graphics	365
	Design Elements	365
	Color	366
	Composition	368
	Graphic Design	378
	Principles of Graphic Design	378
	Types of Graphics	378
	Computer Graphics	378
	Graphic Applications	379
	Typography	380
	Searching the Internet	381
	Hypertext Markup Language (HTML)	381
	Interactivity	381
	Multimedia	382
	On-Set Graphics	382
	Lettering and Titles	383
	Animation	385
	Storyboards and Animation Preproduction	385
	Types of Animation	385
	Special Effects	393