

CONTENTS

| | |
|---|------------|
| LIST OF FIGURES AND TABLES | xiii |
| ABOUT THE AUTHOR | xix |
| CREDITS | xxi |
| ACKNOWLEDGMENTS | xxiii |
| | |
| Introduction | xxv |
| Overview | xxv |
| The Elements of a Soundtrack | xxv |
| Scope of Book | xxvi |
| Using This Book | xxvi |
| About the 2nd Edition | xxvii |
| Online Content | xxvii |
| | |
| Chapter 1 Foundations of Audio for Image | 1 |
| Overview | 1 |
| Perception of Sound | 1 |
| Sound | 1 |
| Hearing Versus Listening | 2 |
| Localization | 2 |
| Acoustics | 4 |
| Rhythm and Tempo | 4 |
| Noise and Silence | 5 |
| Physics of Sound | 5 |
| Sound Waves | 5 |
| Frequency | 6 |
| Amplitude | 7 |
| Timbre | 9 |
| Wavelength | 9 |
| Speed of Sound | 10 |
| Digital Audio | 10 |
| Digitizing Audio | 10 |

| | |
|---|-----------|
| Sampling Rates | 10 |
| Bit-Depths | 12 |
| Audio Compression | 13 |
| Chapter 2 Sound Design Theory | 15 |
| Overview | 15 |
| Sound Classifications | 15 |
| Chion Classifications | 15 |
| Diegetic and Non-Diegetic Sound | 16 |
| Narrative Functions | 16 |
| Guided Perception | 16 |
| Drawing the Audience into the Narrative | 17 |
| Directing the Eye | 17 |
| Establishing or Clarifying Point of View | 18 |
| Clarifying the Subtext | 18 |
| Contrasting Reality and Subjectivity | 18 |
| Extending the Field of Vision | 19 |
| Tension and Release | 19 |
| Continuity | 20 |
| Promoting Character Development | 21 |
| Theoretical Concepts Specific to Dialogue | 21 |
| Theoretical Concepts Specific to Score | 22 |
| Theoretical Concepts Specific to SFX | 22 |
| Interpreting Picture Edits | 24 |
| Overview | 24 |
| Shots | 24 |
| Framing | 25 |
| Camera Placement | 25 |
| Camera Movement | 26 |
| Movement of Objects | 26 |
| Perspective Shot (POV) | 26 |
| Insert Shots and Cutaways | 27 |
| Cuts | 27 |
| Transitions | 28 |
| Dissolves | 28 |
| Wipes | 28 |
| Fades | 29 |
| Sound Transitions | 29 |
| Scenes | 29 |
| Parallel Edit | 29 |
| Montage Sequence | 30 |
| Time-Lapse and Flashback Sequences | 30 |
| Conclusion | 32 |

| | |
|-------------------------------|-----------|
| Chapter 3 Dialogue | 33 |
| Overview | 33 |
| Principal Dialogue | 33 |
| Narration | 34 |
| Group ADR and Walla | 34 |
| Developing the Script | 35 |
| Casting Voice Talent | 35 |
| Caricature | 36 |
| Recording Dialogue | 36 |
| The Recording Script | 36 |
| Directing Voice Talent | 38 |
| The ADR Studio | 38 |
| Microphones | 40 |
| Recording Set-Up | 41 |
| Cueing a Session | 42 |
| Preparing Tracks for Lip Sync | 42 |
| Lip Sync Animation | 43 |
| ADR | 43 |
| Evaluating Recorded Dialogue | 45 |
| Dialogue Editing | 48 |
| Designed Languages | 48 |

| | |
|--|-----------|
| Chapter 4 Music | 53 |
| Overview | 53 |
| Underscore | 53 |
| Source Music | 54 |
| Songs | 55 |
| Title, Montage, and End Credit Sequences | 55 |
| Workflow for Original Score | 56 |
| Rationale for Original Score | 56 |
| Temp Music | 56 |
| The Spotting Session | 57 |
| Writing Original Cues | 58 |
| The Scoring Session | 58 |
| Workflow for Production Libraries | 59 |
| Production Libraries | 59 |
| Searching a Library | 60 |
| Managing a Project | 61 |
| Developing Cues | 62 |
| Licensing Cues | 62 |
| Workflow for Copy-Protected Music | 62 |
| Overview | 62 |
| Rights Versus License | 63 |

| | |
|--|-----------|
| Synchronization, Master, and Videogram License | 64 |
| Public Domain | 64 |
| Fair Use | 65 |
| Parody | 65 |
| Music Supervision | 66 |
| Historical Trends in Animation Scoring | 67 |
| The Golden Age | 67 |
| The Television Age | 69 |
| The Animation Renaissance | 69 |
| | |
| Chapter 5 Sound Effects (SFX) | 71 |
| Overview | 71 |
| The SFX Stem | 72 |
| Temp Tracks and Spotting Sessions | 72 |
| The Sound Department | 73 |
| Sound Editors | 73 |
| Commercial SFX Libraries | 73 |
| Searching SFX Libraries | 75 |
| Developing an Original SFX Library | 76 |
| Creating an Original Library | 76 |
| Field Recorders | 77 |
| Field Microphones | 78 |
| Field Accessories | 79 |
| Suggestions for Field Recording | 82 |
| Record like an Editor | 82 |
| Objectivity | 82 |
| Area-Specific Frequency Response | 82 |
| Signal-To-Noise Ratio | 82 |
| Dynamic Range | 82 |
| File Management | 83 |
| The Sound Designer | 84 |
| Performing Design Elements | 85 |
| | |
| Chapter 6 Foley | 89 |
| Overview | 89 |
| The Foley Stage | 89 |
| Spotting Foley | 91 |
| The Foley Artist | 91 |
| Footsteps | 92 |
| Props | 92 |
| The Cloth Pass | 94 |
| Cueing a Session | 94 |
| The Foley Mixer | 94 |

| | |
|---------------------------------|----|
| Overview | 94 |
| Recording with Preparatory Cues | 97 |
| Playlisting | 98 |
| Looping | 98 |
| Foley Editing | 99 |

Chapter 7 The Production Path 101

| | |
|--|------------|
| Overview | 101 |
| Preproduction | 102 |
| Overview | 102 |
| Enlisting a Sound Crew | 102 |
| Developing a Soundtrack Budget | 103 |
| Project Management | 103 |
| Production Standards | 104 |
| Release Formats | 107 |
| Production | 108 |
| Overview | 108 |
| Creating Temp Tracks | 108 |
| Production Tasks for the Sound and Music Departments | 109 |
| Postproduction | 109 |
| Overview | 109 |
| Picture Lock | 110 |
| Postproduction Tasks for the Sound and Music Departments | 110 |

Chapter 8 Sound Editing 113

| | |
|--|-----|
| Overview | 113 |
| Syncing Sound To Picture | 113 |
| Trimming and Cutting | 114 |
| Fades | 116 |
| Compositing Takes | 116 |
| Ring-Outs | 116 |
| Time-Scaling | 117 |
| Pitch Shifting | 119 |
| Vari-Speed | 120 |
| Reverse and Rewind | 121 |
| Sound Replacement | 122 |
| Noise Reduction | 122 |
| Side-Chain Gate | 123 |
| Futzing | 123 |
| Doppler | 125 |
| Looping | 126 |
| Preparing Tracks for Delivery to the Mix | 126 |

| | |
|---------------------------------------|------------|
| Chapter 9 The Final Mix | 127 |
| Overview | 127 |
| The Re-Recording Mixer(s) | 127 |
| Speaker Calibration | 129 |
| Dynamic Range | 131 |
| Configuring the Session | 131 |
| Pre-Dubs | 131 |
| Creating the Stems and Printmaster | 133 |
| The Stereo Mix | 136 |
| Panning | 136 |
| Leveling | 136 |
| Signal Processing | 137 |
| Reverb | 137 |
| Equalization (EQ) | 137 |
| Peak Limiting | 137 |
| The Multi-Channel Mix | 138 |
| The Direct/Ambient Perspective | 140 |
| The "Inside the Band" Perspective | 141 |
| Mastering for Various Release Formats | 142 |
| Bouncing to Disk or Tracks | 143 |
| Encoding | 143 |
| Layback | 144 |
| | |
| Chapter 10 Case Studies | 147 |
| | |
| BIBLIOGRAPHY | 181 |
| INDEX | 186 |