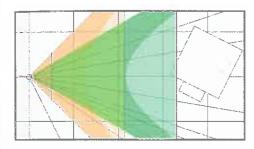
#### INTRODUCTION | PAGE 8

#### CHAPTER 01 Drawing Materials and Skills | PAGE 10



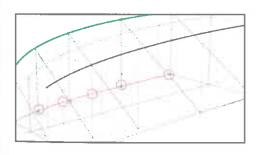
- 12 Choosing Your Drawing Materials
- 13 Choosing Pens and Paper
- 14 The Craft of Drawing
- 15 Practicing Freehand Straight Lines
- 16 X-Y-Z Coordinate System
- 17 Practicing Freehand Smooth Curves
- 18 Practicing Freehand Ellipses
- 19 Drawing an Ellipse on the Minor Axis

#### CHAPTER 02 Perspective Terminology | PAGE 20



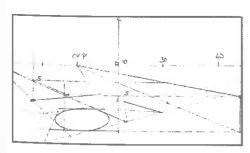
- 22 Defining the Perspective by the Viewing Position
- 23 Cone of Vision COV
- 24 Finding Vanishing Points on the Picture Plane
- 26 Physical Parallel Lines Converge to a Common Vanishing Point
- 27 Horizon Line Relative to Position

## CHAPTER 03 Perspective Drawing Techniques | PAGE 28



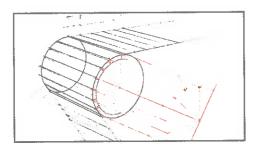
- 30 Division and Multiplication of Dimensions in Perspective
- 32 Multiplying and Dividing Rectangles
- 33 Dividing into Odd-Numbered Proportions
- 34 Mirroring in Perspective
- 36 Mirroring Tilted Planes
- 37 Mirroring Rotated, Tilted Planes
- 40 Mirroring 2D Curves
- 42 Mirroring a 2D Curve on a Tilted Surface
- 43 Mirroring 3D Curves in Perspective: The 2-Curve Combo

#### CHAPTER 04 Creating Grids | PAGE 44



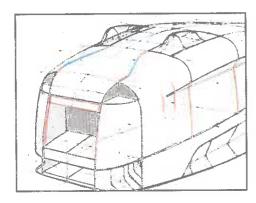
- 46 Perspective Grid Types
- 48 Perspective Grid Construction
- 49 Diagonal Vanishing Point, Station Point Method
- 50 2-Point Grid Construction with Vanishing Points on the Page
- 51 Rotated 2-Point Grids with Same-Sized Squares
- 53 Transferring Scale in Perspective
- 54 The Brewer Method: Constructing a Grid with Vanishing Points off the Page
- 57 Creating a Grid of Squares, without Diagonal Vanishing Points
- 58 When to Use a Computer-Generated Underlay
- 61 Other Benefits and Ways to Use an Underlay
- 62 Not All Perspective Grids Are Created Equal
- 68 Assembly and Exploded Views

## CHAPTER 05 Ellipses and Rotations | PAGE 70



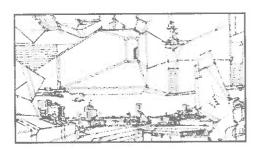
- 72 Ellipse Basics and Terminology
- 73 Placing a Circle in Perspective or Drawing Ellipses
- 74 Creating a Cube Using Ellipses
- 74 Offsetting Ellipses
- 75 Hinging and Rotating Flaps and Doors
- 76 Subdividing Ellipses
- 78 Shortcuts to Dividing Ellipses
- 79 Placing a Circle on a Sloped Surface

#### CHAPTER 06 Working with Volume | PAGE 80



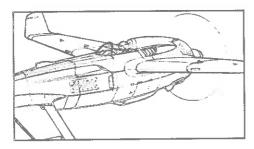
- 82 Planning Before Perspective
- 84 Orthographic Views, a.k.a. Orthogonal Views or Draft Views
- 85 Transferring a Side View into Perspective
- 86 Putting It All Together: X-Y-Z Section Drawing
- 88 Extending the Sections
- 89 2-Curve Combo
- 90 Cutting Volumes
- 92 Adding Radii and Fillets
- 93 Wrapping Graphics
- 94 Detailing and Sculpting Surfaces
- 96 More Tips for Modifying Complex Volumes
- 100 Contour Lines, Overlapping and Line Weight
- 102 X-Y-Z Section Drawing Applied

## CHAPTER 07 Drawing Environments | PAGE 104



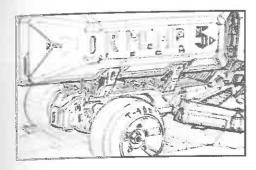
- 108 Photo Underlay
- 110 Site Planning
- 112 Thumbnail Sketching
- 115 Non-Photo Blue, Then Ink
- 116 Sci-Fi Environment Step-by-Step
- 118 Warp That Grid with a Wide-Angle Lens!
- 120 Outdoor Environment Sketch Step-by-Step

## CHAPTER 08 Drawing Aircraft | PAGE 122



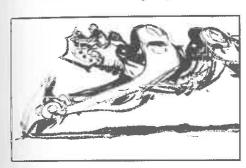
- 124 Airplane Anatomy
- 126 Visual Research
- 128 Drawing from Observation
- 130 Loose Concept Sketching
- 132 "Paper Plane" Ideation
- 133 "Paper Plane" Perspective Grid
- 137 Drawing a Paper Plane, Step-by-Step
- 142 Using a 3D Underlay
- 146 Final Airplane Drawing Step-by-Step

# CHAPTER 09 Drawing Wheeled Vehicles | PAGE 152



- 154 Visual Research
- 157 Have an Idea or a Goal Before Starting to Sketch
- 160 Some Basics on Vehicle Packaging and Architecture
- 164 Flexing Your Creativity
- 166, Grids, Grids, Grids!
- 169 Drawing a Side View in Perspective
- 170 Drawing a Stylized Side View in Perspective
- 174 Basic Body Sculpting
- 175 Drawing the Windshield and Greenhouse
- 176 Wheel Wells, Wheels and Tires in Perspective
- 178 Common Automotive Lines
- 180 Car Drawing Construction, Step-by-Step Grid
- 186 Vehicle Sketching with a Wide-Angle Lens

## CHAPTER 10 Sketching Styles and Mediums | PAGE 188



- 190 Ballpoint Pen
- 191 Copic Marker + Ballpoint Pen
- 192 Graphite Pencil
- 193 Colored Pencil
- 194 Pilot HI-TEC Pen on Newsprint
- 195 Copic Marker + Pilot HI-TEC Pen
- 196 Non-Photo Blue Colored Pencil + Marker + Brush Pen
- 197 Pentel Pocket Brush Pen
- 198 Copic Marker + Pen + Gouache
- 199 Gouache on Illustration Board
- 200 Toned Paper + Mixed Media
- 201 Digital: Sketchbook PRO

Glossary | PAGE 202

Index | PAGE 203

Additional Resources | PAGE 204

Video Links | PAGE 206

Bios | PAGE 207

Special Thanks | PAGE 208