F.A.Q.

Frequently Asked Questions for constructing & painting dioramas

by Mario y Rafael Milla
Agradecemos a Andrea Press la confianza depositada en nosotros y por la absoluta libertad que hemos tenido a la hora de realizar este libro en cuanto a temática, procesos y escalas, así como al equipo de diseño gráfico por su paciencia y profesionalidad. Un agradecimiento especial a nuestro amigo Julio Cabos, tanto por su labor de coordinador de la obra como por la pintura de las figuras del diorama de los conquistadores en la selva.

Hay fotografías de dioramas y procesos en esta publicación que están realizadas por el equipo técnico de Andrea Miniaturas en el que en la mayoría de los casos somos parte integrante. Dichas fotos cortesía de Andrea Miniaturas son: 3.1.15.1, 3.1.15.2, 3.3.3.2.1, 3.3.3.2.2, 3.3.3.2.3, 3.3.3.13.1, 3.3.3.13.2, 3.3.3.13.3, 3.3.3.13.4, 3.3.3.13.5, 3.3.3.13.6, 3.3.3.13.7, 3.3.12.20.4, y todas las del apartado grandes dioramas.

OJO A LOS NUMEROS DE LAS FIGURAS QUE COINCIDAN CON LA PAGINACION
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All the models that were udes for this book were created between Mario y Rafael Milla

ESTOY SEGURO DE QUE ES USED

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4.3. TECHNIQUES AND PROCESSES

4.3.1 Bases and structure basics
1. What I can use as the base for my diorama? ................................................................. 47
2. What types of pedestals can be found on the market? ...................................................... 47
3. How do I customize a pedestal? ..................................................................................... 48
4. How do I build a custom pedestal? ................................................................................. 48
5. When is it necessary to use a frame and how do I make one? .......................................... 49
6. How I can protect my diorama? ....................................................................................... 49
7. How do I make a diorama cover of my own? ................................................................... 49
8. What materials can I use to increase the volume of the scene? ......................................... 50
9. How do we work with cork sheets? ................................................................................. 50
10. How do I can protect my diorama? .................................................................................. 51

4.3.2 Land
1. How do I get a thermoformed land mass? ....................................................................... 51
2. How I can get only a section of thermoformed ground? ................................................... 51
3. What variety of sands and gravels can I use? .................................................................... 52
4. How do I make gravel of a uniform size? ......................................................................... 52
5. How do I work with sand and gravel? ............................................................................. 53
6. Can I use bark to mimic rocks? ....................................................................................... 54
7. What types of natural rocks can I use? ............................................................................ 54
8. How do I work with slate? ............................................................................................... 55
9. What can I use to add texture to the putty? ...................................................................... 56
11. Can I use molds for rocks? ............................................................................................. 57
12. How I can make my own rock molds? ........................................................................... 57
13. What materials can I use to make copies? ..................................................................... 58
14. How do I detail the parts obtained? ............................................................................... 58
15. How do I integrate molded rocks into the soil structure? ................................................ 59
16. How do I make a muddy field? ..................................................................................... 60
17. How do I paint muddy terrain? ..................................................................................... 61
18. How do I use powdered pigments? .............................................................................. 63
19. How do I paint rocks with liquid pigments? ................................................................. 64
20. What are spray washes? ............................................................................................... 65
21. How do I paint land using acrylics and oils? ................................................................. 65
22. What types of soils can be represented? ....................................................................... 66
23. How do I make the mold for the ground? ..................................................................... 66

4.3.3 Water..................................................................................................................... 68
1. How I can imitate water? ............................................................................................... 68
2. What type of water can imitate? ..................................................................................... 68
3. How do I recreate the bed of a calm river? ..................................................................... 69
4. How do I use transparent resin? .................................................................................... 70
4.3.4 Vegetation .................................................. 85

1. What I can use for vegetation? ................................................. 85
2. What artificial products are on the market that mimic vegetation? .......................................................... 85
3. What natural elements can I use? .................................................................................................... 85
4. How do I use the static grass? .................................................................................................. 86
5. How useful is the commercial crushed sponge? .................................................................................... 88
6. How is sawdust used in modeling? .................................................................................................... 88
7. How do I dye sawdust? ................................................................................................................... 89
8. What is the best way to handle photoetched plants? ........................................................................... 89
9. What alternatives are there for creating trees? .................................................................................... 91
10. What kind of branches and trunks can I use? ..................................................................................... 91
11. What are the white metal trees? ...................................................................................................... 91
12. How useful are plastic trees? .......................................................................................................... 92
13. How do I add foliage to a tree? ........................................................................................................ 92
14. How do we represent trees realistically? ......................................................................................... 92
15. How do we make a poplar from a commercial metal trunk? ............................................................. 93
16. How to make a weeping willow starting with a plastic tree? ............................................................... 96
17. How do I recreate natural olive tree branches? ............................................................................... 98
18. How can I make a pine tree using copper wire? ............................................................................... 102
19. How do I make a tree stump? ......................................................................................................... 104
20. How do I make wild bushes? ......................................................................................................... 106
21. What do I use to mimic small fruits? ................................................................................................ 107
22. How do I make a bush in flower? .................................................................................................... 107
23. What kind of plants can I make with copper wire? ........................................................................... 107
24. What process do you use to make herbaceous plants using copper wire? ...................................... 108
25. How can I make palm leaves? ........................................................................................................ 109
26. How do you make water lilies? ....................................................................................................... 111
27. What technique do I use to create plants from the papyrus family? ............................................. 112
28. What is the process for making plants from natural leaves? ............................................................. 113
29. Can I use seaweed to represent terrestrial vegetation? ................................................................. 114
30. How do I make Nenuphars? ............................................................................................................ 115
31. How can I imitate duckweed? ......................................................................................................... 116
32. How can I simulate small flowering plants? ................................................................................... 116
33. How can I use steel wool to mimic vegetation? ............................................................................... 118
34. How do we use river algae? .......................................................................................................... 118
35. How do I prepare small natural plants for my diorama? ................................................................. 119
36. What kind of plants can cypress leaves mimic? .............................................................................. 120
37. How can I use a natural weed? ..................................................................................................... 121
38. How do I use grass? ...................................................................................................................... 122
39. How do I create mushrooms? ....................................................................................................... 123
40. What types of synthetic bristles can I use? ..................................................................................... 124
41. How do we handle synthetic bristles? ........................................................................................... 124
42. How do I use the bristles from a shaving brush? ............................................................................ 125
43. Can I use artificial aquarium plants? ............................................................................................. 126
44. How useful is the sea ball? ............................................................................................................. 127
45. What can I use to paint very thin vegetation? .................................................................................. 127
46. How can we use plant plumes? ..................................................................................................... 128
47. How do I imitate mosses and lichens? ............................................................................................ 129
48. What can I use to imitate roots? .................................................................................................... 130
49. How do I make plants from heavy card stock? .............................................................................. 131
4.3.5 Deep sea ................................................................. 145
1. What elements can contain a seabed scenario? ................................................................................. 145
2. What are the sirens? ............................................................................................................................... 145
3. How do we create the heights in this scene? ......................................................................................... 146
4. How do we recreate sandy areas? ......................................................................................................... 146
5. How do we transform a human figure into mermaid? .......................................................................... 147
6. How does hair behave in the water? ..................................................................................................... 148
7. What processes do we use to paint mermaids? .................................................................................... 149
8. Where can we find corals? ................................................................................................................... 151
9. How do we work with hard corals? ....................................................................................................... 151
10. How useful are the lichens to represent a seabed? ............................................................................. 152
11. Where can we get algae? .................................................................................................................... 153
12. How do we prepare the algae? ............................................................................................................ 154
13. What options do we have for painting algae? ..................................................................................... 154
14. How can we simulate anemones? ....................................................................................................... 155
15. What natural animals can be used? ..................................................................................................... 156
16. How do we make a marine spirograph? .............................................................................................. 157
17. How can we imitate sea sponges? ........................................................................................................ 158
18. How do we simulate fish? .................................................................................................................... 158
19. How do we place the fish in the scene? ............................................................................................... 159
20. In what order do we build the scene? .................................................................................................. 160

4.3.6 Ice and Snow .............................................................. 162
1. What types of snow can we reproduce in miniature? ........................................................................... 162
2. In what areas does snow accumulate most? ......................................................................................... 163
3. What products can be used to simulate snow? ...................................................................................... 163
4. How do I model the snow in case of heavy snowfall? ......................................................................... 163
5. How do fingerprints and footprints appear in the snow? ..................................................................... 164
6. How do I apply snow on groundwork? ............................................................................................... 165
7. Can you render frost on the vegetation? ............................................................................................... 166
8. How can I imitate snow on a tree? ........................................................................................................ 167
9. How do I represent dirty snow? ............................................................................................................ 168
10. How can we imitate icy snow? ............................................................................................................ 169
11. How do we do sheets of ice? ................................................................................................................ 169
12. What techniques do you use to make icicles? ....................................................................................... 170
13. How do we make frozen blades of grass? ............................................................................................ 171
14. How do we apply snow on figures? ...................................................................................................... 172

4.3.7 Buildings ..................................................................... 173
1. What are the most common materials used for manmade construction? ............................................. 173
2. How can we make a facade? .................................................................................................................. 173
3. What is the technique for making stone walls and brick? .................................................................... 174
4. Can I make copies of these pieces? ....................................................................................................... 174
5. What is the technique to painting brick? ............................................................................................... 174
6. What material do we use to make a plastered wall? ............................................................................ 176
7. How do I make a facade with sandpaper? ............................................................................................ 176
8. How can we make the lantern of a lighthouse? ..................................................................................... 177
9. What materials do we use to make a dome? ......................................................................................... 177
10. How do the central body of the lamp? ................................................................................................ 178
11. How do we make the combination headlight lens? ............................................................................ 180
12. What did you use to make the balcony of the tower? ....................................................................... 180
13. What technique do we use to paint a metal dome? ................................................................. 180
14. What elements can recreate natural wooden boards? .......................................................... 182
15. How to make a wooden platform? ......................................................................................... 182
16. What do I use for chipping wooden ends? ............................................................................. 183
17. How do I paint timber? ........................................................................................................... 184
18. Can we utilize the natural color of the wood? ......................................................................... 184
19. How can I simulate old boards? ............................................................................................. 185
20. How to paint old boards? ....................................................................................................... 186
21. How do I simulate effects of wear on painted wood? .......................................................... 186
22. How I can make windows with plastic sheet? .......................................................................... 187
23. How do we build a door with wood? ....................................................................................... 188
24. What do we use to make metal railings? .................................................................................. 189
25. How do we make grills and thick bars? ................................................................................... 190
26. To what techniques do we use to make rivets? ...................................................................... 191
27. What material do you use for window glass? ......................................................................... 192
28. What technique is used to make tiles? .................................................................................... 192
29. What types of roofs can be represented? ................................................................................ 193
30. How do you make corrugated iron roofs? .............................................................................. 193
31. With what materials we can do slate roofing? ........................................................................ 194
32. How are slates painted? .......................................................................................................... 195
33. What process do we use for Arabic tiles? .............................................................................. 196
34. How do I gutters? .................................................................................................................... 196
35. How do we use a ruined building in a diorama? ..................................................................... 197
36. How we do simulate a crumbling facade? .............................................................................. 197
37. How to paint a facade? ............................................................................................................ 198
38. How to paint walls of sandstone walls? .................................................................................. 199
39. How do you make a roof in ruins? .......................................................................................... 200
40. What are the foundations of a building? ................................................................................. 200
41. How do I simulate bullets marks in a wall? ............................................................................ 201
42. How do I imitate broken glass? ............................................................................................... 201
43. How do I make rubble? ........................................................................................................... 202
44. How do I use clay to make rubble? ........................................................................................ 203
45. How do I build a spiral staircase? .......................................................................................... 204
46. How do you paint a metal ladder? .......................................................................................... 206
47. How do I paint burned areas? ............................................................................................... 207
48. How do we build a ladder? ..................................................................................................... 207
49. How do I simulate the effects of rust and wear? .................................................................... 208
50. Are there different types of rust? .......................................................................................... 210
51. How do we make a weather vane? .......................................................................................... 210

4.3.8 Figures ................................................................................................................................. 211

1. How do you assemble a figure of metal? .................................................................................. 211
2. How do you peg pieces that need perfect alignment? ............................................................ 212
3. Do we fully assemble the figure before painting? ................................................................. 212
4. Why would I have to convert figures? ..................................................................................... 213
5. What are the basic steps in a conversion? ............................................................................... 213
6. How do I get postures and natural proportions in figures? .................................................... 216
7. What is a commercial sculpting skeleton? .............................................................................. 216
8. Can I use parts of other figures? ............................................................................................. 217
9. How do I simulate tears in a garment? .................................................................................... 218
10. What techniques do you use to paint figures? ....................................................................... 219
11. Can I combine the techniques of airbrush and brush? ........................................................ 219
12. What do you give the effect of cloth? ..................................................................................... 220
13. How easy is it to paint uniforms? ........................................................................................... 221
14. How can I imitate a wet garment? .......................................................................................... 221
15. How do you simulate dust on clothes? .................................................................................. 222
16. How can I simulate mud on boots and clothes? .................................................................... 223
17. What techniques can be used to paint metal? ........................................................................ 223
18. How do I use a metallic paints set? ....................................................................................... 224
19. What process do we use to mimic polished steel? ............................................................... 225
20. How do we use metal powdered pigments? ........................................................................... 225
21. How to make a flag for a figure? ............................................................................................ 226
4.3.9 Accessories

1. What kind of commercial accessories can I find? ................................................................. 228
2. Are there paper accessories on the market for dioramas? ..................................................... 228
3. Can I make my own accessories? ............................................................................................ 229
4. How do we make barbed wire? ................................................................................................ 229
5. How do we make our own fuel drums? ................................................................................... 231
6. What are the advantages of homemade drums? ..................................................................... 232
7. How can we make tin cans? .................................................................................................... 232
8. Where do we find the animals for a diorama? .......................................................................... 233
9. How to make a glass easily? .................................................................................................... 234
10. How can we make bottles? ...................................................................................................... 235
11. How can we reproduce transparent objects? ......................................................................... 235
12. How I can make signs and posters? ....................................................................................... 236
13. What material do you use for cables, cords and ropes? ........................................................ 236
14. How can we make a kite? ........................................................................................................ 237
15. How I can place objects in a clear bottle mold? ..................................................................... 238
16. How to make a wall barometer? ............................................................................................. 238
17. How do you make shell casings? ............................................................................................ 238
18. How can we make small butterflies? ...................................................................................... 239

4.3.10 Climate and natural phenomena. The Four Seasons

1. What factors have to be considered for locating a diorama in a particular season? .............. 240
2. How do we change the color of the ground depending on the weather? ............................... 241
3. What are the typical characteristics of spring? .......................................................................... 242
4. How does the landscape look in the summer? ......................................................................... 242
5. How do we represent the fall? .................................................................................................. 243
6. What does the middle of winter look like? ................................................................................ 243
7. How does a deciduous tree evolve during the year? ............................................................... 244
8. How can we imitate fallen leaves in autumn? .......................................................................... 245
9. Do all plants have the same life cycle? .................................................................................... 246
10. How do wild shrubs with fruits behave? ................................................................................ 246
11. How do the riverside plants change depending on the weather? ......................................... 247
12. How can the flow of a small stream vary in the different seasons? ....................................... 248

4.3.11 Electricity and electronics

1. What are the basic electrical assemblies? ................................................................................ 249
2. What is DC and AC? ................................................................................................................ 249
3. What kind of switches can I use? .............................................................................................. 249
4. What is the difference between an interrupter switch and a direct switch? ......................... 250
5. How do you change the color of lights? .................................................................................... 250
6. How do I make the connections? ............................................................................................. 250
7. How do I supply power to my assemblies? .............................................................................. 251
8. Can I connect my circuit to the mains? .................................................................................... 251
9. What can I use to illuminate a diorama? .................................................................................. 251
10. When should I use a bulb? ....................................................................................................... 252
11. Can I dye bulbs to color them? ............................................................................................... 253
12. Is there much of a variety of LED’s? ....................................................................................... 253
13. How do I connect an LED? ...................................................................................................... 253
14. Do I need to put resistors on the LED? ................................................................................... 254
15. Can I cut and shape an LED? .................................................................................................. 254
16. What are LED strips? .............................................................................................................. 255
17. What is a high-power LED? ................................................................................................... 255
18. Can the LED be visible? ........................................................................................................... 255
19. What is the use of fiber optics? ................................................................................................ 256
20. In what situations can I use fiber optics? ................................................................................ 256
21. What can I use a laser pointer for? .......................................................................................... 256
22. Are there any electronics on the market that I can use? ....................................................... 257
23. What is an oscillator circuit? .................................................................................................. 257
24. How can we use single oscillator? ......................................................................................... 257
25. What use is a double oscillator? ............................................................................................ 257
26. How do you simulate a cigarette flickering? .......................................................................... 257
27. How do I get welding effects? ............................................................................................... 258
28. What is a voltage regulator used for? ................................................................. 258
29. Can I adjust the voltage of my diorama if we travel to other countries? .................. 259
30. What is a smoke machine? ............................................................................... 259

4.3.12 Closed dioramas .................................................................................... 260
1. What is a closed diorama? .................................................................................. 260
2. What problems could I have with a closed diorama? ............................................. 260
3. What are the blind spots? .................................................................................. 260
4. What is perspective? ......................................................................................... 260
5. What is the vanishing point in a perspective drawing? ........................................... 261
6. How do we apply the theory of three-dimensional perspective? ......................... 261
7. What techniques do you use to make sense of continuity? ................................. 262
8. How do I reproduce the sky a closed diorama? ................................................... 263
9. Can I make a diorama with a night setting? ........................................................ 263
10. How can I simulate the illuminated moon? .......................................................... 264
11. How can I imitate the stars? .............................................................................. 264
12. Why is it necessary to make a closed diorama accessible? ................................. 265
13. Where do I place the electronics? ...................................................................... 266
14. How to prevent the electronic components from being overheated in a closed box diorama? ........................................... 266
15. How do we make lamps? ................................................................................... 267
16. What choice do I have if I cannot camouflage a cable into a lamp? .................... 267
17. How can I conceal a cable? ................................................................................ 269
18. What is ambient light? ....................................................................................... 269
19. How do we use LED strips? .............................................................................. 270
20. What is projected light? .................................................................................... 271
22. What are the differences between warm light and cool light? ............................ 272
23. What is a backlight? ....................................................................................... 273
24. How do we solve the problem of lighting a ceiling? ............................................ 273
25. How do I use exterior backgrounds in a closed diorama? ..................................... 274
26. How do I make a box for a closed diorama? ...................................................... 275
27. How can I varnish natural woods? ..................................................................... 276
28. Where do we place the controls of the diorama? ............................................... 277
29. What elements make up the front view of the box? ............................................ 277
30. How do I cut glass? ......................................................................................... 277

4.3.13 Big dioramas ............................................................................................. 278
1. What factors have to be considered before starting a large diorama? ..................... 278
2. How can I design the whole diorama that I have in mind? ................................... 280
3. Is it necessary to follow a plan for large dioramas? ............................................. 281
4. What advantages does a modular diorama have? ................................................. 281
5. How do I prevent a large diorama from being monotonous? ............................... 282
6. What elements can enrich a diorama? ................................................................. 283
7. How can I make machinery that is not available on the market? ......................... 284
8. How to make a larger workspace accommodate large dioramas? ....................... 285

5. GALLERY ........................................................................................................ 286
1. Eastern Front 1944 ......................................................................................... 288
2. Fishing afternoon ............................................................................................. 290
3. Tired of playing ............................................................................................... 292
4. Retreat positions (Spring) ................................................................................ 294
5. Hospitaller (Summer) ...................................................................................... 296
6. The attack of the barbarians (Fall) .................................................................... 298
7. In the blizzard (Winter) .................................................................................... 300
8. Message in a bottle ......................................................................................... 302
9. Cornered at the lighthouse .............................................................................. 304
10. Intruders! ....................................................................................................... 308

6. CONCLUSIONS ............................................................................................ 310
The diorama is definitely the quintessential goal in modeling. It combines all categories: painting, modeling, vehicles, land, buildings, vegetation. If we go a step further, it can also include effects such as lighting or perspective.

When an idea starts forming in our heads, we have to follow some guidelines — both theoretical and practical — to see it reflected in three dimensions. We will explain these guidelines in this book. They are generally simple but laborious techniques that surely lead to the fruition of our project.

The world of dioramas presents an immense range of possibilities, from a small stage to larger recreations using box dioramas, depicting literal or fantasy scenes set on any historical or geographical stage. In every case, we must attend to the smallest detail because accurate documentation is a prerequisite. To face the challenge of making a complex diorama, we must update our knowledge of mathematics and/or technical drawing to address buildings or styles of architecture. We must study botany and geology to mimic realistic plants and landscapes. We must also plan for electricity and electronics when creating a box diorama. In addition, the designer of the diorama must be observant, looking at every detail to recreate the scene realistically, paying attention to geological formations, the distribution of vegetation in the environment, the behavior of wildlife, and the design of the buildings. When it comes to designing realistic recreations, we have found that it is helpful to always carry a camera on our field trips to the countryside or historical city centers.

There are aspects of modeling that, while important, we have only touched upon lightly, such as painting figures or vehicles. The reason is that there are a huge number of books, journals, and monographs that thoroughly address these issues. In addition, these are very broad categories that would greatly lengthen this publication. We personally recommend the monographs and FAQs from this same publisher.
In this publication we have tried to cover very different stages of history, completely leaving aside any political ideology, from the Roman era through the Middle Ages, the Napoleonic era, the American Civil War and World War II. We have allowed ourselves the luxury of answering questions about two diorama subjects that are our passions, fishing and the seabed.

In one scene, we can recreate different situations in the mood of the characters, from the drama of the withdrawal from Russia of the defeated Napoleonic at the mercy of bad weather, to the despair of a German soldier who, seeing his imminent end on the firing line, risks a last glance at the photos of his family. From the extreme violence of the infighting between Romans and barbarians to the peace and tranquility found in a scene of a boy fishing in the shade of a willow tree on the shore of a lake. We can also add a touch of humor, as in the scene of the conquerors in which one of the characters is frightened by the flight of a small monkey, eliciting laughter from his partner.
3

HOW TO USE THIS BOOK
Being a collection of Frequently Asked Questions (FAQ), this book attempts to answer the many questions that arise when creating a diorama. We have divided the book into sections depending on the subject being treated, and in each of these sections we include both the process of painting different elements and materials and the most appropriate tools to use in each situation. Each question is resolved by an explanation that corresponds to a numbered photographic process. This publication can be used as a reference book when the user has a specific question, but ideally it should be read from beginning to end, since it has been built in a logical order from the most basic to the most complex processes.

The content is divided into three sections; basic concepts; materials and tools; and techniques and processes.

In the section on basics, we analyze the theories that must be considered before starting a diorama. These concepts are similar to those used in other artistic categories such as drawing, painting, and traditional sculpture, but they have been adapted to the topic at hand.

In the materials and tools section, we review a number of useful items that we use to solve the development processes. We also show how to make your own proper tools for specific jobs, as well as a wide range of materials that can be used for modeling.

The section on techniques and processes is the main topic and is therefore explored in greater length. It is divided into sections which thoroughly treat the contents of each. As we go through the different categories, you will see the evolution of different dioramas that have been made for this publication. With each scene, we tried to include the largest number of techniques and elements, and to streamline these processes which are applicable in many situations.
1. What inspires one to create a diorama?

The sources of inspiration are diverse — natural landscapes, historical paintings, films, literature, towns and cities, etc. It is important to document the environment that one wishes to recreate, so taking a camera while on field trips or strolling through historic districts is very useful.

2. What types of environments can be recreated?

Any type of environment is suitable for recreation. Nature is very inspiring for its great diversity, from the arctic to the desert, from the sea to the mountains, all with their seasonal variations. Urban and rural areas also open up a wide range of possibilities; buildings, vehicles, agricultural areas, and so on.
3. How do we plan a diorama?

Once we have the general idea of our scene in mind, we begin to plan the number of figures that will be included, the distribution of the elements, heights and colors, etc. Therefore, it will be useful to follow some basic guidelines, such as:

- Location history. All objects in the scene should be framed in the same historical period.
- Avoid symmetries and parallels. Many times we tend to build items such as buildings and roads parallel to the rectangular base of the diorama, which visually creates a feeling of monotony. This can be helped by using curves and diagonals, or by using a base with irregular contours.
- Harmony between the horizontal and the vertical. In certain size dioramas, we must take into account the heights that we will integrate, to avoid giving the scene a feeling of being too flat or unbalanced due to excess height. To achieve harmony, we will explain the different lines of composition later.
- Point of view. We must ensure that our recreation can be properly viewed from every angle, so we must not leave dead zones that lack detail, whether or not the angle represents the main view of the diorama.
- Find the ideal number of elements. Although it seems obvious, it is important to be clear about the number of objects that make up the scene and its location to avoid empty areas that leave a vacuum and/or other areas that may be too saturated. On many occasions, as work progresses new ideas and changes to the original design will emerge that are sure to improve the final product.

4. What are the basics of composition and shape?

We can define composition as the logical distribution of all the elements that will be included in a design, presented in a balanced and harmonious way, while taking into account that each of these elements has an individual value that must be considered when viewing the entire scene. For this reason, we must take into account the concept of balance, as well as the lines of composition (with variants) which are summarized in the following table.

<table>
<thead>
<tr>
<th>BALANCE</th>
<th>Visual Weight</th>
<th>Weight by Composition</th>
<th>Symmetry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Size</td>
<td>Right</td>
<td>Symmetric Balance</td>
</tr>
<tr>
<td></td>
<td>Color</td>
<td>Left</td>
<td>Asymmetric Balance</td>
</tr>
<tr>
<td></td>
<td>Shape</td>
<td>Center</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Texture</td>
<td></td>
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</tbody>
</table>
5. **What is the balance of a scene?**

All items that are part of a diorama should be appropriately distributed. Imagine that each element is like a weight on a scale – a scene will be balanced if the weights of the various components that form it are offset.

6. **What is the visual weight?**

We can define the visual weight as the force with which an object in a scene attracts the eye of the beholder. The more visual weight an element has, the more our attention is drawn to it. The factors determining this weight can be:

- **Size** - The greater the size of the object, the greater its visual weight.
- **Color** - Dark, warm colors give a greater sense of weight than clear and cold colors.
- **Forms** - Objects with geometric shapes have more visual weight than those with irregular shapes.
- **Texture** - Compact or dense items have more weight than those with a hollow appearance or a porous texture. For example, a brick wall has more visual weight than a fence made of posts, although the two have the same dimensions.

7. **What is weight by position?**

It is the weight given to an object in the diorama depending on its location – the farther away the object is from the center of the primary scene, the greater its weight. In the same way, items that are located on the right side of the composition will have a higher value than those on the left.
8. **What is the difference between symmetrical and asymmetrical balance?**

If we divide a scene in half and all the elements on each side are similar in number, form, and size, the scene will have a symmetrical balance. If, upon dividing the scene, the elements in each half are uneven and their weights are offset, we have achieved an asymmetrical balance. In general, when designing dioramas, one should avoid creating parallels. For this reason, asymmetrical balance is almost always used. There are specific exceptions, such as in photography; an example would be when intentional symmetry is created between different elements so that when seen from a certain distance, the image evokes a face.

9. **What are lines of composition?**

We can sort the elements of a scene by means of one or more imaginary lines, usually taking the simple shape of a curve or a triangle. This line can be made up of different objects, such as corners in the case of buildings or faces in the case of figures. The more elements that are included in the line, the more obvious the line becomes. The same scene can contain different lines of composition.

10. **What lines of composition are applicable to dioramas?**

Depending on their form, compositional lines can elicit different sensations. The most common are:

- **Horizontal**: Transmits a feeling of solidity, weight, width.
- **Vertical**: Lightness, balance, and elegance.
- **Curve**: Natural, smooth motion.
- **Pyramidal**: An offset ensemble, harmony. It is one of the most used in small dioramas.
- **Diagonal**: Produces feelings of strength, movement, instability.
11. Is it better to use even or odd numbers in a scene?

It is not a strict rule but is advisable to avoid an even number of like elements in a composition. In fact, most commercial kits that include several figures in a scene usually contain an odd number.

12. Do I have to do a sketch of the diorama in three dimensions?

Yes, especially in dioramas of some complexity, it is essential to make a simulation of the items that will compose the scene using similar volumes in shape and size, to get a clear idea of the position and height of each. We can start by moving the main pieces to give to their final location.

13. What are the basic techniques for painting dioramas?

The base colors can be applied using either the brush or airbrush, then we can use techniques such as increasing light, washing, dry brush, pigments, etc.

14. What scales are more common in dioramas?

The scales most often used are 1:32, 1:35, and 1:72, although it is also common to use 28mm. Scales used less often include 90mm and 80mm.
15. **What are the advantages of each of the scales?**

The 1:32 and 1:35 scales have an average size that allows us to encompass several figures with architectural elements, vehicles, and accessories in a scene. In both scales, there are a variety of commercial accessories and in particular there is a wide range of vehicles of all types, as well as ruins, buildings, and accessories in 1:35 scale. In smaller sizes like 28mm or 1:72, the artist can represent large areas in a reasonable size with a large number of figures and accessories, as well as numerous commercial vehicles and accessories. Larger sizes like 80mm or 90mm scenes have the disadvantage of a shortage of accessories, but have the advantage of allowing the artist to include the most precise detail in any item that is represented.
1. **What paints can be used to decorate dioramas?**

In general, acrylics are used for your convenience and palette, although to create some effects we will use oils and pigments. Sometimes we can also use enamels.

2. **Are all acrylics the same?**

We have a very wide range of acrylic colors, some specifically for use with the airbrush, some for application by paint brush, and others that can be used in both cases. There are also sets with specific colors and shades to paint flesh tones and army uniforms, as well as sets containing a variety of shades in the same color range, all of which greatly facilitate the process of painting figures with a wide variety of colors.

3. **What are the advantages and disadvantages of enamels?**

The main advantage of painting with enamel is its strength, which is ideal for parts that have a lot of wear. However, it has drawbacks, such as the strong smell of the solvent, lengthy drying times, and the difficulty of increasing light or shade by blending. In the case of oils, the advantage is that we can blend them and they give us the possibility of creating subtle glazes.
4. How useful are inks?

Because of their very fine pigmentation, we can achieve very subtle color transparencies; we can also mix inks with other acrylics. Inks can be used with either the paint brush or the airbrush.

5. What solvent should I use in each case?

To dissolve acrylics for a paint brush, we typically use water. For the airbrush, it is best to use the solvent that each brand has created specifically for its paints, thus getting the proper fluidity and lubrication. To dilute oils, we use solvents such as nail polish remover or turpentine. To clean painting utensils, we use denatured alcohol (methylated spirits) or acetone.

6. What types of varnish can I use?

You can use either acrylic or enamels varnishes. Acrylics are best for small areas while the enamels have a more homogeneous finish on large pieces. Other types of coatings that can be used are ceramic or nitrocellulose lacquer, which gives a very bright and durable finish.
8. What are the most common fillers used in scenery?

Generally, there are two types of fillers – two-component epoxy or air drying. The epoxy components should be mixed in equal amounts and blended until a uniform color is achieved. From that moment, depending on the filler we use, there is limited time until it hardens. Fillers that air dry can come in packages or cans. The filler containers must be carefully closed or the filler will quickly dry out. Depending on the filler’s composition, they can be diluted with water or acetone.

9. What types of paint brushes are needed?

There are a variety of brushes that have a different value for every occasion, depending on the material they are made of, their size, shape, or stiffness. Overall, for painting figures and accessories, we use martin-hair or kolinsky-hair brushes. To paint terrain, flat brushes with synthetic or natural bristles are very useful. For sculpting, the most used are the round synthetic or silicone brushes.

10. What kind of pigments exist?

Pigments come in the forms of powder, liquid, and metal. The powders are ideal to simulate soil, rust, and other textured effects. Liquids are used to paint terrain and rocks with an attractive earthy finish. The metal gives a very fine and realistic gold and silver finish.

7. Is it convenient to use primers?

It is highly recommended that we apply a primer to ensure an optimum surface before the painting process begins. Primers can be applied with spray-paint, with the paint brush or with the airbrush.
11. **What kind of glue can I use?**

Depending on the materials that are to be bonded, you can use cyanoacrylate glue, epoxy, glues specifically designed for plastics, white glue, contact adhesive, or thermal glue.

12. **What silicones molding materials should we use?**

To create copies of our pieces, we can make molds for metals with low melting temperatures or for resins. In each case, there are specific silicones that indicate the percentage of catalyst to be used to achieve proper hardening.

13. **What types of resins are most common?**

When creating copies, the easiest to handle are polyurethane resins. When the two components mixed in equal parts, they are set in minutes. For transparent pieces or to mimic water, there are other types of resins that give spectacular finishes. The setting time is extended to several hours.

14. **What are soft metals?**

Soft metals are metals that are easy to handle, fold, or braid. Among the most used are brass, copper, lead, tin, and aluminum, in the form of wires, rods, or sheets.
15. What are photogravures or photoetch?

A photogravure is an image produced from a photographic negative that is transferred to a metal plate and etched in. In modeling, these etched sheets of brass or steel are designed to create very fine and detailed pieces. There is a wide variety of etched images, including leaves and plants, detailed parts for vehicles, glasses and buckles, and many other small parts.

16. What tools are needed to make dioramas?

The size and complexity of the diorama will dictate how many tools the modeler will need, but there are a few basic categories to consider; cutting, sanding or roughening surfaces, sculpting, measuring, and painting. However in many cases one tool can be used to facilitate other specific jobs.

17. What power cutting tools are the most common?

For most jobs, modelers typically use the mini drill with multiple cutting discs, although for larger pieces we can use the jigsaw or a multifunction tool.
18. How do I cut a thick threaded rod?

To join pieces of considerable size, it is recommended to use bolts of a certain thickness. The fastest way to cut and clean the rod is with a mini drill and a carbide or diamond disc, but rods can also be cut with a hacksaw. The threaded rods allow us to firmly anchor large pieces with nuts and bolts. Threaded rods also fit into brackets, for instances when we need to unscrew them easily, or into special threads for application to a wooden base.

19. What manual cutting tools can I use?

Depending on the material, we use blades, saws for wood and metal, scissors, a compass cutter (a device with a stationary pivot that can create circles from 10mm to 150mm), and cutting pliers.