Session Topic List for
Mandelbulb3D Tutorial Series #1
Let's Build a Mandelbulb 3D Animation
with Patrick C. Cook

Use this Session Topic List to help you track the tutorial sessions that you have completed.

☐ 1. Welcome and introduction to the Mandelbulb3D tutorial series

☐ 2. More about the Mandelbulb 3D software application and how to obtain it

☐ 3. Overview of the Mandelbulb 3D application panels and major functions

☐ 4. Beginning our animation project by setting up the Mandelbulb 3D formulas

☐ 5. Advancing the project's animation goal with formulas and discussion of clipping

☐ 6. Combining formulas, formula iterations and changing formula properties

☐ 7. Manipulating formula properties and resetting the last formula property change

☐ 8. Preparing for application crashes and instability and discussing default directories

☐ 9. Saving your work as m3i/m3p files and saving your work as JPG/PNG image files

☐ 10. Using the To/From clipboard feature and recovering your work using the To/From feature

☐ 11. Continuing design of our project's graphic considering our animation goal

☐ 12. A real-time example of Mandelbulb 3D application instability and saving your work

☐ 13. Three work recovery methods (from m3i/m3p, from clipboard, from history)

☐ 14. The Navigator; The automatic/manual Zoom feature

☐ 15. The Navigator; The Field of View (FOV) feature

☐ 16. The Navigator; The Camera Type selection

☐ 17. The Navigator; The 'Far Plane' feature

☐ 18. The Navigator Guides, Coordinates and navigation buttons

☐ 19. Advancing our project's animation goal with camera positioning

☐ 20. Advancing our project's animation goal with camera positioning, continued

☐ 21. Thoughts on the artistic goals of Mandelbulb 3D design

☐ 22. Using the Navigator's formula adjustment controls

☐ 23. Brief analysis of our project's interim Mandelbulb graphic

☐ 24. Continuing the design of our graphic, formula iterations

Thank you for participating in my Mandelbulb3D tutorials!
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☐ 25. Removing color as visual aid for Mandelbulb 3D design

☐ 26. Coloring and lighting and discussing types of animations

☐ 27. Navigation buttons, the Stream Deck XL for navigation

☐ 28. An example of unexpected change of the Far Plane value

☐ 29. Advancing the project's animation with formula adjustments

☐ 30. Advancing the project's animation with formula adjustments

☐ 31. The Lighting panel; Global lighting and the "Relative to Object" option

☐ 32. The Lighting panel; Object tab, Specular and Diffuse color controls

☐ 33. Making your Mandelbulb fractal scene interesting, unique and engaging

☐ 34. Criteria for creating a Mandelbulb fractal animation and fine tuning your graphic

☐ 35. Advancing the project with formula property changes and saving your discoveries

☐ 36. Advancing the project with formula property changes and workflow dynamics

☐ 37. Thoughts about artistic intention for your Mandelbulb 3D work and working with formulas

☐ 38. Advancing the project's animation goal with camera position, FOV and camera type

☐ 39. Beginning discussion of lighting using the Lighting panel; global lighting

☐ 40. Lighting using the Lighting panel; ambient lighting controls

☐ 41. Discussing artistic use of shadowing and the Lighting panel's Dynamic Fog controls

☐ 42. Discussing artistic use of Dynamic Fog in your Mandelbulb 3D scene

☐ 43. Coloring ambient light and summing up lighting discussion of your Mandelbulb scene

☐ 44. Discussing the Lighting panel; The Diffuse color band window

☐ 45. Continuing discussion of the Lighting panel and Diffuse and Specular coloring

☐ 46. Discussing the relationship of colors to the Z axis, with examples

☐ 47. Discussing the Color Picker window functions and coloring on the Z axis

☐ 48. The Lighting panel; the 'Color Range/Histogram' control and knowing your software tools

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☐ 49. The Lighting panel; the 'Specular Range' control and the 'NoIpol' option

☐ 50. The Lighting panel; the 'Color Cycling' controls and impact on animations

☐ 51. The Lighting panel; the 'Ambient Shadow' 'Second Reflection', 'Mode' and 'Roughness' controls

☐ 52. The Lighting panel; Light source types (global, positional and light map)

☐ 53. The Lighting panel; Using mapping for diffuse coloring

☐ 54. The Lighting panel; Color mapping controls; 'its trap', 'norm', 'wrap1', 'wrap2'

☐ 55. The Lighting panel; Background picture controls and picture scaling

☐ 56. The Lighting panel; Using the background picture in an animation

☐ 57. The Lighting panel; additional background picture controls and background picture xis controls

☐ 58. The Lighting panel; summary of previous sessions and starting coloring of the project's graphic

☐ 59. Continuing discussion of coloring your Mandelbulb 3D graphic

☐ 60. Testing if graphic coloring will remain consistent for keyframe positioning

☐ 61. The Navigator; Introduction to Mouse-Based navigation

☐ 62. The Navigator; Mouse-Based navigation caveats and using it for fine tuning camera position

☐ 63. The Navigator; Loading only the Main formulas or lighting into the Navigator and the Misc panel

☐ 64. The Navigator; the 'HiQual' control, Misc panel; 'R- Bailout'

☐ 65. The Navigator Misc panel; 'Smooth DE Comb', 'DE Stop', 'Max Iterations' and optimizing quality

☐ 66. Overview of Raytracing, Optimizing the quality of your Mandelbulb 3D scene and 'DE Stop' examples

☐ 67. Demonstrating how the 'DE Stop' parameter impacts graphics quality

☐ 68. Fine tuning the 'DE Stop' parameter for minimum over-sampling

☐ 69. Fine tuning the 'DE Stop' parameter for a balance between quality and rendering time

☐ 70. Summary of the 'DE Stop' and its value to your Mandelbulb 3D graphics

☐ 71. Fine tuning the 'DE Stop' parameter for optimum render quality, with examples

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☐ 72. Fine tuning the 'DE Stop' parameter for optimum render quality, with examples

☐ 73. The Main window Calculations panel; Preview Mode presets (preview, video, mid, high)

☐ 74. The Main window Calculations panel; Preview Mode presets use case, 8x8 'Blocky' Calc

☐ 75. The Main window Calculations panel; 'Vary DE Stop on FOV' option

☐ 76. The Main window Calculations panel; 'Raystep Multiplier' property

☐ 77. The Main window Calculations panel; 'Stepwidth Limiter' property and Mandelbulb 3D at Github

☐ 78. The Main window Calculations panel; 'Stepcount for Binary Search' and 'Smooth Normals' properties

☐ 79. The Main window Calculations panel; 'Normals on DE', 'First Step Random' and Raystep Sub DE Stop' options

☐ 80. Finalizing the properties values of the Calculations panel for the tutorial series animation

☐ 81. Recap of previous sessions and preparing for animation

☐ 82. Describing Mandelbulb 3D keyframes and sub-frame interpolation

☐ 83. Overview of the Animation Maker window's controls, options and features

☐ 84. The Animation Maker; 'File Index', 'Output Format'

☐ 85. The Animation Maker; 'Overwrite Existing Images', 'Loop Animation', 'Save Z Butter Too', 'Render Stereo Animation', Previewing Animations

☐ 86. The Animation Maker; the Animation Preview window and discussing frames-per-second

☐ 87. The Animation Maker; the 'Output Folder' button, saving/opening animations and Clearing Current Animation

☐ 88. The Animation Maker; Rendering your animation and recapping the Animation Maker

☐ 89. Creating animation keyframes (workflow, tips, techniques, suggestions), deleting keyframes and sending keyframes to Main

☐ 90. Creating animation keyframes with navigation, recording your keyframe information

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☐ 91. An example of creating and documenting animation keyframes with their navigation

☐ 92. Continuing example of creating and documenting animation keyframes

☐ 93. Continuing example of creating and documenting animation keyframes

☐ 94. Reviewing animation preview of four keyframes, obtaining good animation speed and using OBS for preview capture

☐ 95. Reviewing keyframe subframes and implementing a pause/stop animation event

☐ 96. Planning your animation and performing an airplane-style banking right turn animation event

☐ 97. Adding flight keyframe events for a right banking turn and level-out

☐ 98. Discussing the discovery of a bad animation keyframe and various methods of repair

☐ 99. Troubleshooting our animation keyframe issue

☐ 100. Troubleshooting our animation keyframe issue

☐ 101. Troubleshooting our animation keyframe issue - isolating the problem to the stop keyframe

☐ 102. Implmenting a solution to our animation keyframe issue

☐ 103. Discussing what was learned with the preceding animation challenge and general animation goals

☐ 104. Discussing ways to modify lighting and coloring of keyframes and introduction to the DJV animation previewer

☐ 105. Reviewing our animation using the DJV animation previewer and discussing frames per second

☐ 106. Inspecting our animation for motion issues, improper animation events and lighting issues and coloring issues

☐ 107. Using DJV to review our animation and identifying a dynamic fog/shadow issue of our fractal environment

☐ 108. Additional capabilities of DJV for your animation work and preparing to correct our fog/shadow issue

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☐ 109. Improving our fog/shadow issue in the fractal environment and an Ambient Shadow example

☐ 110. Improving your animation, thoughts on the design of the Mandelbulb 3D application and using the 'Processings' tool

☐ 111. Thoughts about the Mandelbulber application, thinking about our next animation event for our animation

☐ 112. The Animation Maker keyframe insertion methods; 'Insert parameters', 'Insert Between Keyframes' and 'Interpolate Between Keyframes'

☐ 113. Use cases for the various keyframe inserti on methods as discussed in the previous session

☐ 114. Discussing the next animation move (event) for our animation

☐ 115. Keyframing the next animation move (event) for our animation

☐ 116. Demonstrating repairing the keyframe Far Plane value and reviewing our last animation move

☐ 117. Demonstrating a large forward animation event (move)

☐ 118. Performing a large forward animation event (move) with other events (moves)

☐ 119. Reviewing our last animation sequence and planning our next animation sequence (a forward barrel roll)

☐ 120. Performing our next animation sequence (a forward barrel roll)

☐ 121. Reviewing our last animation sequence (a forward barrel roll)

☐ 122. Setting up to review our full resolution animation with the DJV video previewer

☐ 123. A detailed review our full resolution animation using the DJV video previewer

☐ 124. Summarizing the review of our full resolution animation and review of workflow

☐ 125. Fixing a graphics quality problem discovered in our previous session review

☐ 126. Finalizing the quality improvements of our graphic using various quality properties

☐ 127. Applying quality related settings to all keyframe with the Processings tool and improving dynamic fog

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☐ 128. Improving our graphic scene's coloring and applying to all keyframes with the Processings tool

☐ 129. Fixing our dynamic fog issue with other lighting controls and applying to all keyframes

☐ 130. Adjusting the gamma of our graphic, discussing the 'Internals' tab and CPU threads for rendering

☐ 131. Preparing to render our animation and describing how Mandelbulb 3D network rendering works

☐ 132. Setting up Mandelbulb 3D network rendering using the shared folder method

☐ 133. Performing network rendering from a shared folder with the Mandelbulb 3D application

☐ 134. Recap of the Mandelbulb 3D tutorial series so far and review of suggested animation building workflow

☐ 135. Setting up to review the source code of the Mandelbulb 3D application

☐ 136. Looking over some forms of the Mandelbulb 3D using Embarcardeo's Community Edition of the Delphi IDE

☐ 137. Looking over so me code of the Mandelbulb 3D using Embarcardeo's Community Edition of the Delphi IDE

☐ 138. Looking over the Mandelbulb 3D using Embarcardeo's Community Edition of the Delphi IDE

☐ 139. Attempting to compile the Mandelbulb 3D source code using Embarcardeo's Community Edition of the Delphi IDE

☐ 140. Reviewing our Mandelbulb 3D source code and quality review of some subframes rendered so far

☐ 141. Reviewing our subframes that have been rendered so far using the DJV video viewer

☐ 142. Discussing deciding if to proceed with video editing of the rendered subframes

☐ 143. Discussing DaVinci Resolve video editing software and where to download it

☐ 144. Beginning our animation video editing with the DaVinci Resolve video editor

☐ 145. Continuing our animation vide o editing with DaVinci Resolve - enhancing contrast and coloring

☐ 146. Continuing our animation video editing with DaVinci Resolve - applying sharpening and motion speed correction

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☐ 147. Continuing our animation video editing with DaVinci Resolve - fine tuning motion speed

☐ 148. Continuing our animation video editing with DaVinci Resolve - adding titling

☐ 149. Continuing our animation video editing with DaVinci Resolve - adding additional subframes

☐ 150. Continuing our animation video editing with DaVinci Resolve - rendering our video

☐ 151. Continuing our animation video editing with DaVinci Resolve

☐ 152. Adding a soundtrack to our animation and thoughts about using royalty-free assets in your work

☐ 153. Summary of topics discussed in this Mandelbulb 3D Tutorial Series and send-off

Notes:

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