
ThØr User Guide

Standalone version for Windows PC

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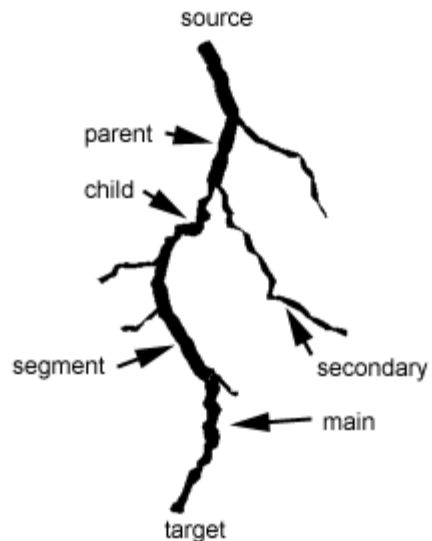
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Thank you for purchasing ThØr, the god of lightning plug-ins. Although we have made every effort to make ThØr intuitive and easy to use, this User Guide is designed to help you get the most out of ThØr.

ThØr is a standalone application for Windows PC (Windows 95, 98, or NT) which allows you to create a variety of electrical effects such as lightning bolts. More precisely, ThØr is a procedural modeller that generates a three dimensional primitive representation of a lightning bolt which spans the space between a source conductor and a target conductor.

The *source* is the starting point of the lightning and is located at the center of the top of the primitive's



bounding box. Correspondingly, the *target* is the end point of the lightning and is located at the center of the bottom of the bounding box. A *lightning bolt* is constructed from electrical segments. An *electrical segment* is a three dimensional point-to-point arc of electricity. The segments along the path from the source to the target are called the *main segments*; non-main segments are called *secondary segments*. A segment which is connected to segments below itself is called a *parent segment*.

Finally, we want to continually improve ThØr, and we would like to hear from you. Please send us your comments and show us what you have done and what you would like to do with this unique tool. We will try to incorporate your suggestions into future versions and to feature the best work done using ThØr on our website.

We can be reached at:

ThØr, standalone version
email: mpogue@zenstar.com

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Previewer

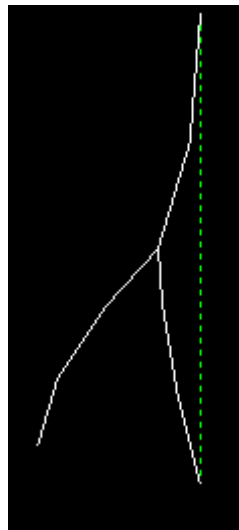
ThØr's power comes from its interactivity which in turn comes from its powerful pre-viewing capacities. The previewer is broken up into three sections: *the black preview window*, *the orientation controls*, and *the view quality controls*.

The previewer should not be confused with a full-blown graphics world such as Ray Dream. Rather it was designed with a very specific purpose in mind: providing you the user with immediate feedback. The *black preview window* provides you with a sketch of the electrical effect you are creating.



Quality

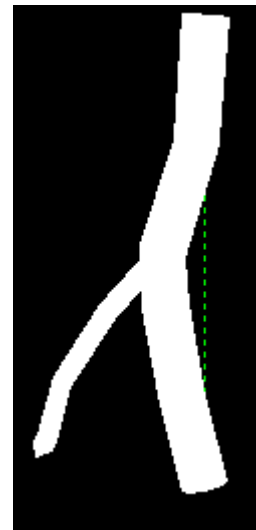
The **Display quality** radio buttons are analogous to those in Ray Dream and allow for three levels of display quality: *line*, *mesh*, and *facets*. Line quality displays only the axes of the segments. Wireframe quality displays the mesh as a wire-frame. Facet quality displays the filled facets of the mesh. For most operations, it is recommended to use line quality since it is the fastest. For operations that involve widths, wireframe quality is appropriate. Facet quality is useful when determining the quality of the resulting mesh.



line



wireframe



facet

Also included in the View Quality area is a **Facet Counter** which displays the number of facets in the mesh. Finally in the lower right-hand side of the editor, there is a **Message Bar** which displays "Working" when ThØr is calculating something (e.g., each time you move a slider) and "Idle" otherwise.

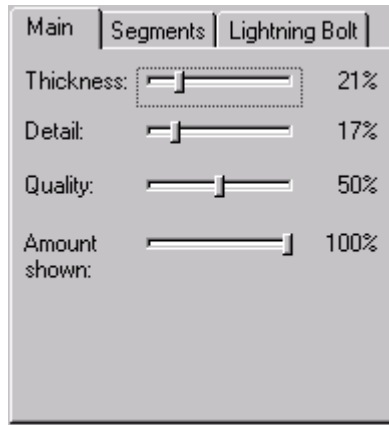
Orientation

The orientation controls allow you to manipulate the internal viewing camera. Pressing either the **rotate left** or **rotate right** buttons rotates the camera by six degrees. By holding down one of these buttons, the segments begin to spin. The **Guideline** button toggles off the display of the green dashed line. The guideline goes from the source to the target (from top to bottom).

Control tabs

ThØr's controls are organized into three tabs so that you only need to see what interests you: Main, Segments, Lightning Bolt.

Main



For the majority of use, you will probably never have to go past this tab.

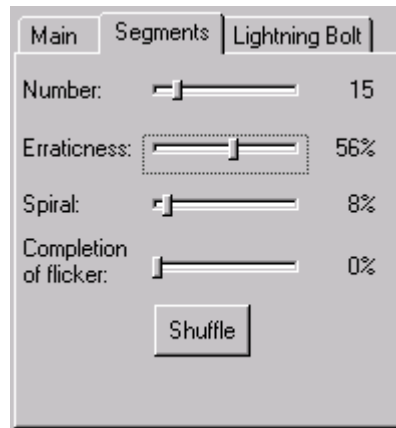
The **Thickness** slider controls the thickness of the main segments relative to their length (i.e., the length of the effect). In order to see the effect of this control, make sure that you first choose either *Wireframe* or *Facet View Quality*.

The **Detail** slider controls how many pieces the segments are broken up into. At the extreme values, 0% detail the bolt is one piece; at 100% detail the bolt is broken into many pieces. High detail carries with it high facet count, so be careful.

The **Quality** slider controls the rendering quality of the lightning bolt by controlling the number of facets in the mesh. At the extreme values, 0% quality results in each segment being constructed from six facets (i.e., simple three sided objects); 100% results in each main segment being constructed from 20 facets and in each secondary segment from fewer facets proportional to their width. You can see how the slider controls the facet count by looking either at the Facet Counter or at pre-view window under Wireframe quality.

The **Amount shown** slider controls how much of the bolt is currently visible. This is useful in creating the illusion of bolt movement by only showing a certain percentage of the actual bolt. That is, by setting the slider to 0% at the beginning frame and then setting it to 100% at the end frame, an increasing amount of the bolt will be seen, as the animation progresses. The amount always starts at the source and works towards the target.

Segments



The segments tab controls the appearance (structure) of the individual segments.

The **Number** slider controls the number of segments in the bolt. An arc typically consists of only one segment.

The **Erraticness** slider controls how chaotic the segments are. At the extreme values, 0% erraticness results in straight-lined segments and 100% erraticness results in completely unpredictable segments that may even contain loops.

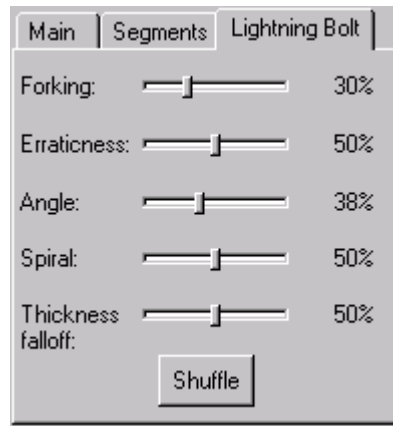
The **Spiral** slider controls how much the segments twist around themselves. At the extreme values, 0% spiral results in an essentially two dimensional object (use the rotation controls to see); 100% spiral results in the segments twisting as much as possible (i.e., as three dimensional as possible).

The **Completion of flicker** slider controls how much the segments flicker (change in appearance). It is useful when animating the movement of the segments, particu-

larly of electrical arcs. At 0% and 100%, the segments are identical so that seamless looping of animations can be possible.

The **Shuffle** button randomizes the layout of the individual segments. That is, pushing this button randomly changes the appearance of the segments.

Lightning Bolt



The lightning bolt tab controls the layout of the segments.

The **Forking** slider controls the shape of a lightning bolt, i.e., how much the bolt forks. At 0% forking, the bolt is a single sequence of connected segments (i.e., only if the erraticness is set to 0%). As the forking increases, so do the number of forks in the bolt (this can be best seen if the erraticness is low and the number of forks is high).

The **Erraticness** slider controls how chaotic the entire lightning bolt is. At 0% erraticness the bolt is very structured and predictable. As the erraticness increases, the structure decreases and the layout's unpredictability increase.

The **Angle** slider controls the angle between sets of parent and child segments. That is, the angle controls how wide the bolt is (narrow for low angles and wide for high angles).

The **Spiral** slider controls how much the bolt twists along its guideline from its source to its target. At the extreme values, 0% spiral results in an essentially two dimensional object; 100% spiral results in narrow tightly twisted object.

The **Thickness falloff** slider controls how quickly the secondary (the non-main) segments decrease in width. At 0%, each segment has the same width. At 100%, all secondary segments are as narrow as possible. Note: in order to see how this works, do not forget to set the **View Quality** to *Wireframe*.

The **Shuffle** button randomly changes the layout of the lightning bolt based on the current control settings.

Ancillary Buttons

Standard buttons



ThØr has two standard ancillary buttons.

Pressing the **Exit** button closes the application (any unsaved changes are lost). Pressing the **About** button brings up a window which tells you about ThØr and the team behind it.

->DXF and ->OBJ buttons



Click the ->DXF or ->OBJ buttons, to export your lightning bolt in DXF or OBJ format to a file. The resulting file can then be imported into your favorite graphics program, and rendered there. Note: ThØr itself does not do rendering. For additional information on DXF and OBJ formats, see the following chapter.

DXF Format

DXF files, invented by AutoCAD, can be imported by many CAD and 3D graphics programs, including Ray Dream Studio 5, Caligari Truespace 4, Metacreations Bryce 3D and 4.0, Studio Pro 2.5.3, Amapi 4, Cinema 4DXL, et.al. Thør and Tree Druid output files conform to the R12 version of the DXF spec.

Advantages:

- Can be imported by many programs
- Human readable format (ASCII text)

Disadvantages:

- Files can get very large
- Files cannot contain UV coordinates (texture mapping information)

OBJ format

OBJ files, invented by Alias/Wavefront, can also be imported by many 3D graphics programs. Thør and Tree Druid output files conform to the 2.11 version of the OBJ spec (ASCII file format). Texture coordinates are the same as used in the Ray Dream Studio 5 plugins.

NOTE: Currently, all triangles are separate, and edges are not welded together.

Advantages:

- Can be imported directly by many programs, including Caligari Truespace 4, Metacreation's Bryce3D, Alias/Wavefront Maya, Cinema 4DXL, Metacreation's Poser3, et.al.
- Can also be imported by Ray Dream Studio 5 (requires a separate OBJ extension plugin, available free from Metacreation's under RDS5/Plugins)
- Human readable format (ASCII text)
- Files can contain UV coordinates, object normals, etc.

Disadvantages:

- Files can get very large (there is a binary version of the OBJ format, but it is not implemented by Thør and Tree Druid)
- Cannot be imported by Studio Pro or AMAPI

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