**NAME**
> rhpict - render a RADIANCE picture from a holodeck file

**SYNOPSIS**
> **rhpict [ options ] holodeck**

**DESCRIPTION**
> *Rhpict* generates one or more pictures from the RADIANCE holodeck file *holodeck* and sends them to the standard output. The −*o* option may be used to specify an alternate output file. Other options specify the viewing parameters and provide some control over the calculation.
>
> The view as well as some of the other controls are shared in common with the *rpict(1)* command. The options that are unique to *rhpict* are given first, followed by the more familiar ones.

> **-s**          Use the smooth resampling algorithm, which amounts to linear interpolation between ray samples with additional edge detection along color and object boundaries. This is the default.

> **-r** *rf*      Use random resampling, where *rf* is a fraction from 0 to 1 indicating the desired degree of randomness. A random fraction of 0 is not the same as smooth resampling, because there is no linear interpolation, just Voronoi regions. Values greater than 1 produce interesting underwater effects.

> **-x** *res*    Set the maximum x resolution to *res*.

> **-y** *res*    Set the maximum y resolution to *res*.

> **-pa** *rat*   Set the pixel aspect ratio (height over width) to *rat*. Either the x or the y resolution will be reduced so that the pixels have this ratio for the specified view. If *rat* is zero, then the x and y resolutions will adhere to the given maxima.

> **-pe** *expval* Set the exposure value for the output pictures to *expval*. Since filtering is performed by *rhpict*, there is little sense in passing the output through *pfilt(1)*, other than changing the exposure. This option eliminates that need. The value may be specified either as a multiplier, or as a number f-stops preceeded by a '+' or '-' character.

> **-vt***t*       Set view type to *t*. If *t* is 'v', a perspective view is selected. If *t* is 'l', a parallel view is used. A cylindrical panorma may be selected by setting *t* to the letter 'c'. This view is like a standard perspective vertically, but projected on a cylinder horizontally (like a soupcan's-eye view). Three fisheye views are provided as well; 'h' yields a hemispherical fisheye view, 'a' results in angular fisheye distortion, and 's' results in a planisphere (stereographic) projection. A hemispherical fisheye is a projection of the hemisphere onto a circle. The maximum view angle for this type is 180 degrees. An angular fisheye view is defined such that distance from the center of the image is proportional to the angle from the central view direction. An angular fisheye can display a full 360 degrees. A planisphere fisheye view maintains angular relationships between lines, and is commonly used for sun path analysis. This is more commonly known as a "stereographic projection," but we avoid the term here so as not to confuse it with a stereoscopic pair. A planisphere fisheye can display up to (but not including) 360 degrees, although distortion becomes extreme as this limit is approached. Note that there is no space between the view type option and its single letter argument.

> **-vp** *x y z*  Set the view point to *x y z* . This is the focal point of a perspective view or the center of a parallel projection.

> **-vd** *xd yd zd*
> > Set the view direction vector to *xd yd zd* .

> **-vu** *xd yd zd*
> > Set the view up vector (vertical direction) to *xd yd zd* .

> **-vh** *val*    Set the view horizontal size to *val*. For a perspective projection (including fisheye views), *val* is the horizontal field of view (in degrees). For a parallel projection, *val* is the view width in world coordinates.

**-vv** *val*    Set the view vertical size to *val*.

**-vo** *val*    Set the view fore clipping plane at a distance of *val* from the view point. The plane will be perpendicular to the view direction for perspective and parallel view types. For fisheye view types, the clipping plane is actually a clipping sphere, centered on the view point with radius *val*. Objects in front of this imaginary surface will not be visible. This may be useful for seeing through walls (to get a longer perspective from an exterior view point) or for incremental rendering. A value of zero implies no foreground clipping. A negative value produces some interesting effects, since it creates an inverted image for objects behind the viewpoint. This possibility is provided mostly for the purpose of rendering stereographic holograms.

**-va** *val*    Set the view aft clipping plane at a distance of *val* from the view point. Like the view fore plane, it will be perpendicular to the view direction for perspective and parallel view types. For fisheye view types, the clipping plane is actually a clipping sphere, centered on the view point with radius *val*. Objects behind this imaginary surface will not be visible. A value of zero means no aft clipping, and is the only way to see infinitely distant objects such as the sky.

**-vs** *val*    Set the view shift to *val*. This is the amount the actual image will be shifted to the right of the specified view. This is option is useful for generating skewed perspectives or rendering an image a piece at a time. A value of 1 means that the rendered image starts just to the right of the normal view. A value of −1 would be to the left. Larger or fractional values are permitted as well.

**-vl** *val*    Set the view lift to *val*. This is the amount the actual image will be lifted up from the specified view, similar to the −*vs* option.

**-vf** *file*    Get view parameters from *file*, which may be a picture or a file created by rvu (with the "view" command).

**-S** *seqstart*    Instead of generating a single picture based only on the view parameters given on the command line, this option causes *rhpict* to read view options from the standard input and for each line containing a valid view specification, generate a corresponding picture. *Seqstart* is a positive integer that will be associated with the first output frame, and incremented for successive output frames. By default, each frame is concatenated to the output stream, but it is possible to change this action using the −*o* option (described below). Multiple frames may be later extracted from a single output stream using the *ra_rgbe(1)* command.

**-o** *fspec*    Send the picture(s) to the file(s) given by *fspec* instead of the standard output. If this option is used in combination with −*S* and *fspec* contains an integer field for *printf(3)* (eg., "%03d") then the actual output file name will include the current frame number.

**−w**    Turn off warning messages.

## EXAMPLE

rhpict −vp 10 5 3 −vd 1 −.5 0 scene.hdk > scene.hdr

rpict −S 1 −o frame%02d.hdr scene.hdk < keyframes.vf

## AUTHOR

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## SEE ALSO

getinfo(1), pfilt(1), pinterp(1), printf(3), ra_rgbe(1), rholo(1), rpict(1), rvu(1)