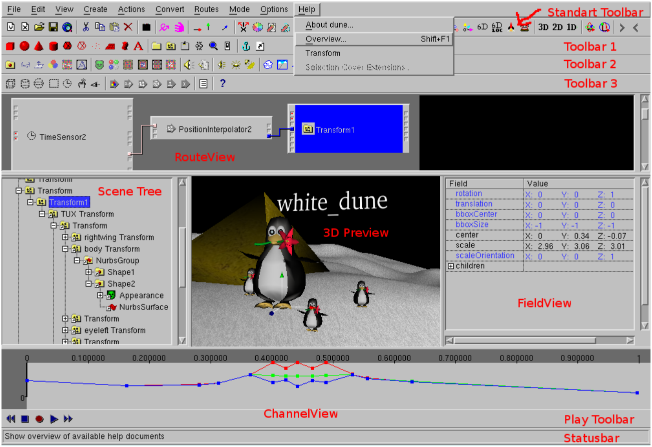
Tutorial of the VRML-Editor "dune"

http://wdune.ourproject.org/docs/usage_docs/dune_en_tutorial.html

Download the newest version of "dune/white_dune" (currently 0.29beta) from http://wdune.ourproject.org/

white_dune is program to change or create VRML97/VRML2 files.
The declaritive language VRML (Virtual Reality Modelling Language) is used to discribe 3D graphic objects ("nodes") in a tree structure ("scenegraph"). Additionaly there are ways of messages (ROUTEs) between the nodes to set the runtime behavior.
The VRML-Editor "dune" tries to show this informations completely in a graphical userinterface.

The 5 windows of "dune"


File
Edit
View
Create
Actions
Convert
Routes
Mode
Options
Help
About dune...
Overview... Shift+F1
Transform
Selection Cover Extensions
6D
3D 2D 1D
Standart Toolbar
Toolbar 1
Toolbar 2
Toolbar 3
TimeSensor2
PositionInterpolator2
Transform1
RouteView
Transform
Transform
Transform1
TUX Transform
Transform
rightwing Transform
body Transform
NurbsGroup
Shape1
Shape2
Appearance
NurbsSurface
Transform
eyeleft Transform
Transform
Scene Tree
white_dune
3D Preview
FieldView
0
0.100000
0.200000
0.300000
0.400000
0.500000
0.600000
0.700000
0.800000
0.900000
1
0
ChannelView
Play Toolbar
Statusbar

Field	Value
rotation	X: 0 Y: 0 Z: 1
translation	X: 0 Y: 0 Z: 0
bboxCenter	X: 0 Y: 0 Z: 0
bboxSize	X: -1 Y: -1 Z: -1
center	X: 0 Y: 0.34 Z: -0.07
scale	X: 2.96 Y: 3.06 Z: 3.01
scaleOrientation	X: 0 Y: 0 Z: 1
⊞ children	

Show overview of available help documents

Beside some toolbars for icons and messages "dune" has 5 windows. Except the "3D Preview" window, all windows can be switched on or off via the menupoints in *View* , according to the current operations.

- **Scene Tree**
  This window contains the scenegraph. It shows the structure of a VRML file (the information, how the VRML nodes are placed).
- **Field View**
  This window contains the fieldvalues, the numbers (or Textstrings etc.) in a VRML file. Only the fields of the current selected node are shown.
- **Route View**
  This window contains the ROUTE's, the ways of information, which are used to exchange messages ("events") between the VRML nodes during program run.
- **Channel View**
  This window is exclusivly used for interpolator nodes. Interpolatornodes are mainly used for animations in VRML97.
- **3D Preview**
  This windows shows a preview of the graphical result of a VRML file. In difference to the other windows the matching program part is not complete in implementing the VRML97 standard. Some nodes like "PixelTexture", "MovieTexture" and self definied "PROTO" or "EXTERNPROTO" nodes are not shown at all (yet). The preview do not support VRML scripting or VRML interaction (yet). Not all all fieldvalues of some nodes are shown correctly (yet) (e.g. IndexedFaceSet.ColorPerVertex oder Extrusion). If you are in doubt, use the menupoint *File* -> *Preview* to proof the current situation in a "real" VRML-Browser.

"dune" crashed, work lost ?

Dune is still in development, it do not run as stable as it should.

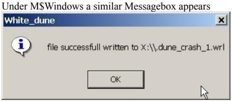
Is the work since the last save lost, when dune crashs ?

No, not automatically.

"dune" tries to save the VRML97 file short before the crash. When this try is sucessful, dune write the following under Linux/UNIX/MacOSX

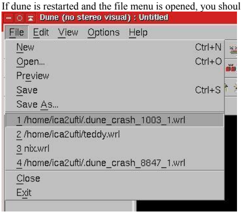
```
Internal Crash !
Try to save Files
attempt to write file to /home/someone/.dune_crash_NUMBER_NUMBER.wrl
write sucessful
```

in the standarderror output of the window, that started dune and in the systemconsole (e.g the window of the "xconsole" application).
Under M$Windows a similar Messagebox appears


White_dune
OK

file successfull written to X:\\.dune_crash_1.wrl

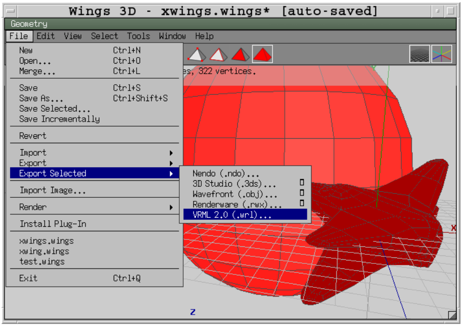
The system variables under M$Windows are "%HOMEDRIVE%" and "%HOMEPATH%", "$HOME" under Linux/Unix/MacOSX.
If dune is restarted and the file menu is opened, you should see the name of the file starting with ".dune_crash".


Dune (no stereo visual) : Untitled
File Edit View Options Help
New Ctrl+N
Open... Ctrl+O
Preview
Save Ctrl+S
Save As...
1 /home/ica2ufti/.dune_crash_1003_1.wrl
2 /home/ica2ufti/teddy.wrl
3 nix.wrl
4 /home/ica2ufti/.dune_crash_8847_1.wrl
Close
Exit

Click it to load the file and save it as another file.
This Method can fail, if the error that led to crash has damaged the internal data structure of the program.
In this case it's worth to search in directory of VRML-files for temporary files (".dune_*"), that are produced during the execution of *File->Preview* or *File->Textedit*.
These Files will be deleted at a normal program end, but not in case of a program crash.

Animation

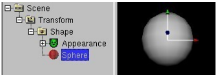
If big VRML-files are processed, the work in white_dune will be very troublesome, because for example the route view is not clear cause of overcrowding.
As compensation it is possible to use the VRML_nodes "Inline" by white_dune. So that you can pack a big VRML-File in only one VRML-node. For example you can pack objects for the background (or a rigid, complex object that shall be moved in a animation) into one VRML-file of its own.
A range of CAD- or 3D-modeller-programs support this mode of operation by providing a option to export only selected or not hided 3D-objects as a VRML-file.
For example, the free 3D-modeller Wings3D supports the export of selected 3D-objects.


Wings 3D - xwings.wings* [auto-saved]
Geometry
File Edit View Select Tools Window Help
New Ctrl+N
Open... Ctrl+O
Merge... Ctrl+L
Save Ctrl+S
Save As... Ctrl+Shift+S
Save Selected...
Save Incrementally
Revert
Import
Export
Export Selected
Import Image...
Render
Install Plug-In
xwings.wings
xwing.wings
test.wings
Exit Ctrl+Q
Nendo (.ndo)...
3D Studio (.3ds)...
Wavefront (.obj)...
Renderware (.rwx)...
VRML 2.0 (.wrl)...
es, 322 vertices.
x
z

The use of "Inline" nodes is also the key to use several tools as 3D-modellers at the same time, without the need to do additional work to refresh the VRML-file after every change.

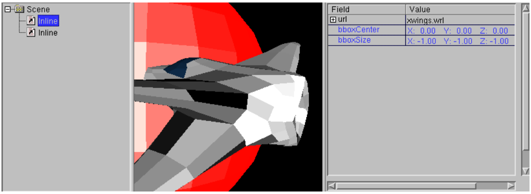
If you own 3D data, try to export VRML97/VRML2 files from your favorite 3D program now or create a few small VRML-files quickly. Take care about to create only few faces (Polygone) if possible. The latest versions of a lot of advanced 3D-Modellers support polygon reducing during work or export.

You can use the VRML data files of a [Wings3D example]() for [foreground]() and [background]() or just use white_dune, if you have no 3D-modeller in this moment. For example you can create a sphere with the menuitem *Create -> Shape -> Sphere*.


Scene
Transform
Shape
Appearance
Sphere

and use *File -> Save As...* to export the object in a VRML-file.

Now start white_dune and use *Create -> WWW -> Inline* to insert your VRML-file as "Inline"-node.

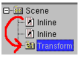

Scene
Inline
Inline

Field	Value
url	xwings.wrl
bboxCenter	X: 0.00 Y: 0.00 Z: 0.00
bboxSize	X: -1.00 Y: -1.00 Z: -1.00

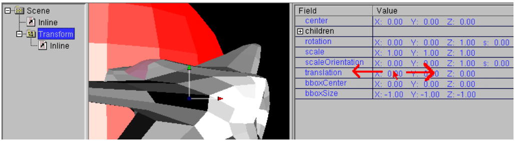
When using the Inline node you have to take extreme care about not to inline a file by itself (also not indirectly). In this case most tools allocate more and more memory (cause the VRML file always loads itself) and finally crash after a long time. In case this occures with white_dune, you need to set either "Limit number of loaded inlines" in the *Options -> Preferences...* dialog to low values or you need to rename the inlined file. Then you can repair the problem.

Use the menuitem *Actions -> Show Polygons/Primitives in StatusBar* to check, if your 3D-object has too many faces. If your graphics card does not have 3D-acceleration, your 3D-object shall contain less than a few 1000 polygones.

You will notice, that you can not move inlined 3D-Objects inside of white_dune in this situation.
You need a Transform node to move a object, you can create one with *Create -> Grouping Node -> Transform*.
The Transform nodes in VRML is responsible for movement, rotation, scaling etc. of rigid bodies. For example, this is discribed for in the VRML standard http://www.web3d.org/x3d/specifications/vrml/ISO-IEC-14772-IS-VRML97WithAmendment1/part1/nodesRef.html#Transform (this link can be reached with the menuitem *Help -> Transform* when a Transform node is selected).
To set, which 3D-object is used for the Transform node, its icon in the scenetree view must be moved.

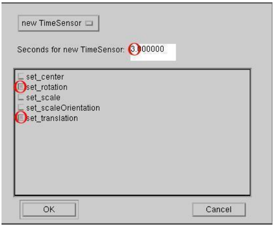

Scene
Inline
Inline
Transform

Select the transform-nodes in scene-tree-window.


Scene
Inline
Transform
Inline

Field	Value
center	X: 0.00 Y: 0.00 Z: 0.00
children	
rotation	X: 0.00 Y: 0.00 Z: 1.00 s: 0.00
scale	X: 1.00 Y: 1.00 Z: 1.00
scaleOrientation	X: 0.00 Y: 0.00 Z: 1.00 s: 0.00
translation	X: 0.00 Y: 0.00 Z: 0.00
bboxCenter	X: 0.00 Y: 0.00 Z: 0.00
bboxSize	X: -1.00 Y: -1.00 Z: -1.00

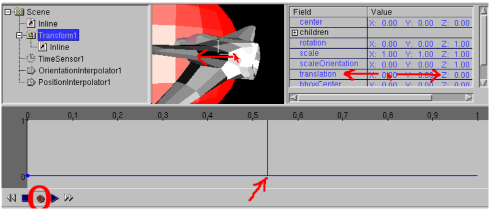
Please note that you can change the values of the fields of Transform node now by moving the Mouse with the Mouse button held down on in FieldViewWindow.
Use the Menu-item *Actions -> Animate* (still by selected trasform-nodes). Hereupon a dialog appears.


new TimeSensor
OK
Cancel

Seconds for new TimeSensor: 3.000000

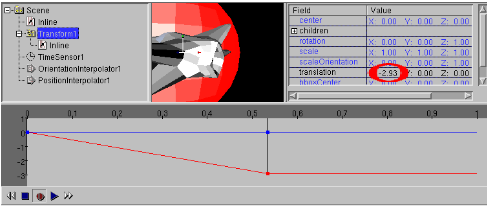
☐ set_center
☑ set_rotation
☐ set_scale
☐ set_scaleOrientation
☑ set_translation

Beside the length of animation (and if required the already defined time source) you can also select the target fields (or EventIn("input message")) of the target node (Transform here). The fields "set_translation" and "set_rotation" describe movement and rotation and are identical to the fields "translation" and "rotation" in the FieldView of a Transform node. In order to input the data with the mouse in the 3D Preview window it is needed to set the menu-item *Mode -> Move* or *Mode -> Rotate*. Use now *Mode -> Move* for translation.
Open the ChannelViewWindow with *View -> Channel View* and click to the the PositionInterpolator node in SceneTreeWindow.
Animation means that the values (for example movement, rotation, color, transparency and light intensity etc.) change according to the changing of the time. In the ChannelView window the position of the black blinking bar means the time, the colored lines show the change of the values.


Scene
Inline
Transform1
Inline
TimeSensor1
OrientationInterpolator1
PositionInterpolator1
0
0,1
0,2
0,3
0,4
0,5
0,6
0,7
0,8
0,9
1
1
0

Field	Value
center	X: 0.00 Y: 0.00 Z: 0.00
children	
rotation	X: 0.00 Y: 0.00 Z: 1.00
scale	X: 1.00 Y: 1.00 Z: 1.00
scaleOrientation	X: 0.00 Y: 0.00 Z: 1.00
translation	X: 0.00 Y: 0.00 Z: 0.00
bboxCenter	X: 0.00 Y: 0.00 Z: 0.00

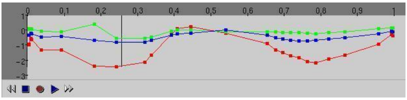
- Click the red record-icon on the VCR-Toolbar.
- Click in the ChannelViewWindow in order to choose a new time period.
- Push the trihedron of the 3D-object in another direction with the mouse or select the Transform node in the SceneTreeWindow.


Scene
Inline
Transform1
Inline
TimeSensor1
OrientationInterpolator1
PositionInterpolator1
0
0,1
0,2
0,3
0,4
0,5
0,6
0,7
0,8
0,9
1
1
0
-1
-2
-3

Field	Value
center	X: 0.00 Y: 0.00 Z: 0.00
children	
rotation	X: 0.00 Y: 0.00 Z: 1.00
scale	X: 1.00 Y: 1.00 Z: 1.00
scaleOrientation	X: 0.00 Y: 0.00 Z: 1.00
translation	-2.93 : 0.00 Z: 0.00
bboxCenter	X: 0.00 Y: 0.00 Z: 0.00

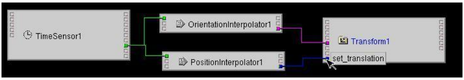
Click both recorder symbols for recording and play in the vcr toolbar

and use the trihedron in the 3D PreviewWindow in order to move around.
The recorded movings should be played back too.
Open the ChannelViewWindow with *View* -> *Channel* and click the PositionInterpolator node in the SceneTreeWindow


0
0,1
0,2
0,3
0,4
0,5
0,6
0,7
0,8
0,9
1
1
0
-1
-2
-3

Click the recorder-symbol "stop". The animation dates can be changed with mouse in the ChannelViewWindow e.g. a value can be changed by moving a point or a new value can be inserted.

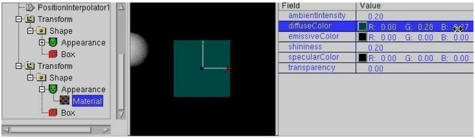
A time range can also be deleted, by drawing on a black bar in the ChannelViewWindow and deleting the point in the bar with *Edit* -> *delete*.


TimeSensor1
OrientationInterpolator1
PositionInterpolator1
Transform1
set_translation

Open the RouteView Window with *View* -> *Route View* and move the nodes involved in animation.
Point the mouse on the input of the Transform-node in the RouteView. Compare them with the the dialog window at the begin of this tutorial.

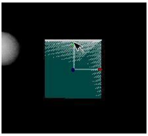
Z-fighting/"Thin Wall"-Problem

Use the menuitem *Create* -> *Shape* -> *Box* twice. They are created one upon the other exactly.
Click on the "Plus"-symbol in the SceneTreeWindow at the Appearance node of one of the objects and select the material node which is responsible for color effects.


PositionInterpolator1
Transform
Shape
Appearance
Box
Transform
Shape
Appearance
Material
Box

Field	Value
ambientIntensity	0.20
diffuseColor	R: 0.00 G: 0.28 B: 0.27
emissiveColor	R: 0.00 G: 0.00 B: 0.00
shininess	0.20
specularColor	R: 0.00 G: 0.00 B: 0.00
transparency	0.00

Change the color value for the field "diffuseColor", e.g. via the menu item *Action* -> *Color Circle*.
Move a object a little upside and look to the result effect.



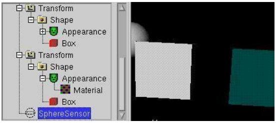
It can be seen, that the two surfaces that are very close to each other produce problems in realtime-3D. These problems appear also in other programs e.g. in 3D computer games or the 3D preview window of a movie-modeller. Indeed these problem can be ignored by a movie_modeller: during the lengthy render process of a movie-modeller the view will be very calculated exactly, which of the two surfaces is in the front and nothing about the Z-Flighting problems will be find in the completed pictures of the end-product.

This is different in VRML, the creation of pictures in the VRML-Viewer works also via a realtime-3D-technique, which must render a picture in about 1/25 second. Use *File* -> *Preview* in order to view your VRML-file with the help of a VRML-browser-plugin.

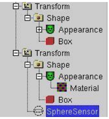
The Z-fighting problem is very damaging, because its effects could depend on the used software (VRML-Viewer and graphic driver) and hardware (graphic cards with 3D-acceleration).

Interaction

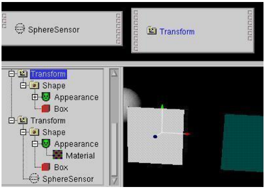
Move the both objects enough apart.
Use the menuitem *Create* -> *Sensor* -> *SphereSensor* in order to insert a sphere sensor.


Transform
Shape
Appearance
Box
Transform
Shape
Appearance
Material
Box
SphereSensor

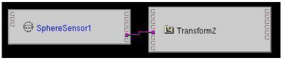
Shift the spheresensor now in a path of the scenengraph branch that contains a box.


Transform
Shape
Appearance
Box
Transform
Shape
Appearance
Material
Box
SphereSensor

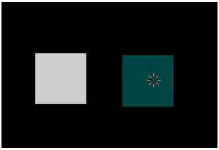
and look for the Transform node of the other box in the RouteView window. In the RouteView window the selected node is labeled blue.


SphereSensor
Transform
Transform
Shape
Appearance
Box
Transform
Shape
Appearance
Material
Box
SphereSensor

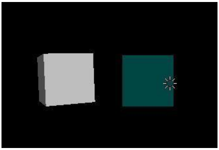
Set a route from SphereSensor.rotation_changed to Transform.set_rotation now.


SphereSensor1
Transform2

Unfortunately "dune/white_dune" is only a VRML editor but not a adequate VRML browser for a long time. To show interaction you must use a "true" VRML browser:
Use *File -> preview* to start a VRML browser.



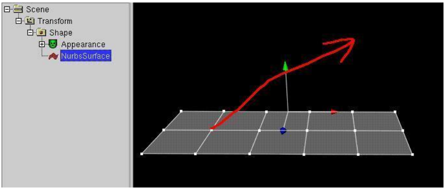
The change of the cursor shows the possibility of a interaction, so that you can intervene the world with click and drag of the mouse.



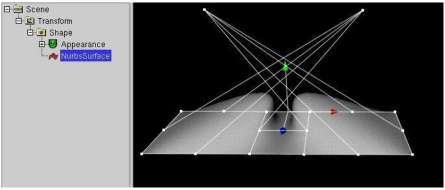
Later: a list with examples about simple interaction can you find at the URL http://wdune.ourproject.org/docs/typical_vrml_examples/index.html

Simple 3D modelling

"dune/white_dune" is has also some simple NURNS nodeller features. Create a nurbs-surface with the menu-item *Create -> VRML 200x -> NurbsSurface -> Plain/Box/Sphere/Cone/Cylinder* or convert a according seleted Box/Sphere/Cone/Cylinder (or NurbsCurve) object with the menu-item *Action -> convert to NurbsSurface*.
Most useful is symetric modelling: one side of the object ought to be the same as the other side. Use the menuitem *Action -> X symmetric modelling*. If this menuitem is active, every movement of the control point (the white small box) of one side


Scene
Transform
Shape
Appearance
NurbsSurface

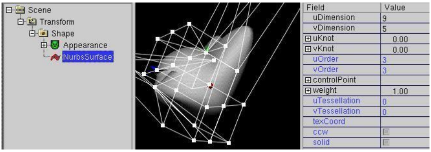
will be transfered to the other side.


Scene
Transform
Shape
Appearance
NurbsSurface

Later: a introduction to the theme NURBS you can find under:
http://wdune.ourproject.org/docs/usage_docs/dune_de.html#nubs .
further informaions to work with NURBS in "dune/white_dune" you can find under:
http://wdune.ourproject.org/docs/usage_docs/dune_de.html#nurbssymetric

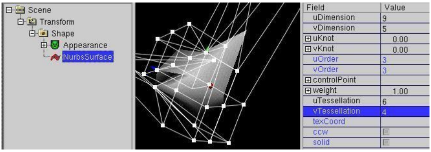
Too many polygons

Click the NurbsSurface node and change the fields u/vTesselation


Scene
Transform
Shape
Appearance
NurbsSurface

Field	Value
uDimension	9
vDimension	5
⊞ uKnot	0.00
⊞ vKnot	0.00
uOrder	3
vOrder	3
⊞ controlPoint	
⊞ weight	1.00
uTessellation	0
vTessellation	0
texCoord	
ccw	☐
solid	☐

Besides very small values

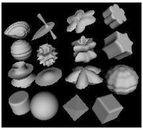

Scene
Transform
Shape
Appearance
NurbsSurface

Field	Value
uDimension	9
vDimension	5
⊞ uKnot	0.00
⊞ vKnot	0.00
uOrder	3
vOrder	3
⊞ controlPoint	
⊞ weight	1.00
uTessellation	6
vTessellation	4
texCoord	
ccw	☐
solid	☐

you should big values also test. The number of the polygons lie about by "uTesselation * vTesselation".
Test, whether moving of the object lead to jerks, when these values are bigger than 100 or 1000.
Save your VRML file now (under M$Windows best at "C:\temp") with the menuitem *File -> Save as*. When a NURBS shape is converted to a mesh (IndexedFaceSet in VRML) large uTesselation/vTesselation values will create a unnessesary very big file. Saving such a mesh would rigorously test your patience (especially on a M$Windows netdrive).
Automatic conversion from NURBS to a IndexedFaceSet occures when using *File -> Export as... -> pure VRML97* or with a unmindful click on the menuitem *file -> preview* with the setting *pure VRML97* in the dialog *Options -> Preview Settings...* (which is needed when your VRML browser do not support ISO/IEC 14992:2002 (VRML97 Amendment 1)).

Superformula Modellierung

White_dune has support for 3D-modelling based on the so called "superformula"
This formula has been found by a biologist a few years ago and can be used to form n-symetric shapes similar to shapes in nature like flowers, leafs, insect bodies, shells or starfishs.

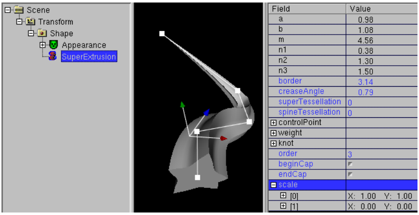


See this range of shapes, which are all done with the SuperShape PROTO.

Superformula based shapes are not part of VRML97 by itself and are implemented by a PROTO (self defined VRML97 node) with scripting ("scripted PROTO").

- **SuperExtrusion**

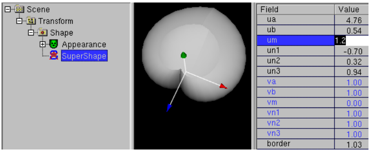
  The SuperExtrusion PROTO uses the superformula to account a 2D polygon in the X-Z-plane and form a shape by repeating this polygon in the Y direction along a curve. The curve is similar to a NurbsCurve and can be changed by moving the controlpoints. This shape can be converted to a Extrusion and some of its parameter work similar to a Extrusion. Unlike the Extrusion node, the scale parameters are not applied to each spine point, they are smeared over the whole spine.

  
  Scene
  Transform
  Shape
  Appearance
  SuperExtrusion

Field	Value
a	0.98
b	1.08
m	4.56
n1	0.38
n2	1.30
n3	1.50
border	3.14
creaseAngle	0.79
superTessellation	0
spineTessellation	0
⊞ controlPoint	
⊞ weight	
⊞ knot	
order	3
beginCap	☑
endCap	☑
⊟ scale	
⊞ [0]	X: 1.00 Y: 1.00
⊞ [1]	X: 0.00 Y: 0.00

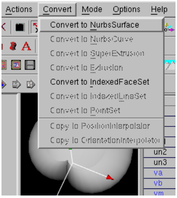
- **SuperShape**

  The SuperShape PROTO uses the superformula to account a 2D polygon in the X-Z-plane and form a shape using the superformula also in the Y-Z-plane similar to spherical coordinates.

  
  Scene
  Transform
  Shape
  Appearance
  SuperShape

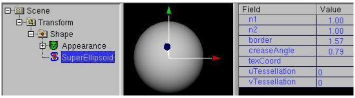
Field	Value
ua	4.76
ub	0.54
um	1.2
un1	-0.70
un2	0.32
un3	0.94
va	1.00
vb	1.00
vm	0.00
vn1	1.00
vn2	1.00
vn3	1.00
border	1.03

  This shape can be converted to a IndexedFaceSet or approximated to a NurbsSurface.

  
  Actions
  Convert
  Mode
  Options
  Help
  Convert to NurbsSurface
  Convert to NurbsCurve
  Convert to SuperExtrusion
  Convert to Extrusion
  Convert to IndexedFaceSet
  Convert to IndexedLineSet
  Convert to PointSet
  Copy to PositionInterpolator
  Copy to OrientationInterpolator
  un2
  un3
  va
  vb
  vm

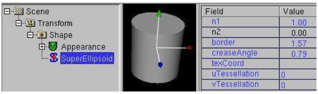
- **SuperEllipsoid**

  White_dune also has a PROTO for the superellipsoid, a special case of a supershape and is working similar. It can be used to form a sphere,

  
  Scene
  Transform
  Shape
  Appearance
  SuperEllipsoid

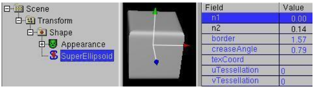
Field	Value
n1	1.00
n2	1.00
border	1.57
creaseAngle	0.79
texCoord	
uTessellation	0
vTessellation	0

  a box, a cylinder,

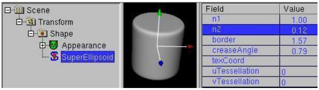
  
  Scene
  Transform
  Shape
  Appearance
  SuperEllipsoid

Field	Value
n1	1.00
n2	0.00
border	1.57
creaseAngle	0.79
texCoord	
uTessellation	0
vTessellation	0

  a octaeder and rounded forms of this shapes

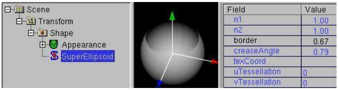
  
  Scene
  Transform
  Shape
  Appearance
  SuperEllipsoid

Field	Value
n1	0.00
n2	0.14
border	1.57
creaseAngle	0.79
texCoord	
uTessellation	0
vTessellation	0


Scene
Transform
Shape
Appearance
SuperEllipsoid

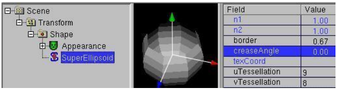
Field	Value
n1	1.00
n2	0.12
border	1.57
creaseAngle	0.79
texCoord	
uTessellation	0
vTessellation	0

with only 2 parameters. Like the SuperShape PROTO the SuperEllpsoid PROTO has a field "border", e.g. to form a half sphere.


Scene
Transform
Shape
Appearance
SuperEllipsoid

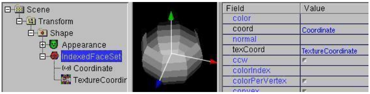
Field	Value
n1	1.00
n2	1.00
border	0.67
creaseAngle	0.79
texCoord	
uTessellation	0
vTessellation	0

The Field "creaseAngle" (available at all superformula based PROTOs) works like in the IndexedFaceSet or Extrusion nodes to show or smooth edges.


Scene
Transform
Shape
Appearance
SuperEllipsoid

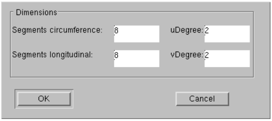
Field	Value
n1	1.00
n2	1.00
border	0.67
creaseAngle	0.00
texCoord	
uTessellation	9
vTessellation	8

This shape can be converted to a IndexedFaceSet


Scene
Transform
Shape
Appearance
IndexedFaceSet
Coordinate
TextureCoordir

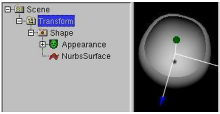
Field	Value
color	
coord	Coordinate
normal	
texCoord	TextureCoordinate
ccw	☑
colorIndex	
colorPerVertex	☑
convex	☑

or approximated to a NurbsSurface.

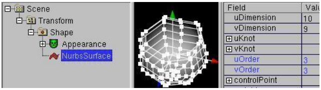

Dimensions

Segments circumference: 8
uDegree: 2
Segments longitudinal: 8
vDegree: 2

A superformula shape converted to a NurbsSurface loose some of its exact geometry


Scene
Transform
Shape
Appearance
NurbsSurface

but can be changed via the controlpoints.


Scene
Transform
Shape
Appearance
NurbsSurface

Field	Valı
uDimension	10
vDimension	9
⊞ uKnot	
⊞ vKnot	
uOrder	3
vOrder	3
⊞ controlPoint	

Superformula based PROTOs have (similar to NURBS nodes) Field for tessellation and can be converted automatically to a IndexedFaceSet or Extrusion via *File -> Export as... -> pure VRML97* or at the preview for "classic" (ISO/IEC 14772:1997) VRML97 browsers.

Finishing of VRML model

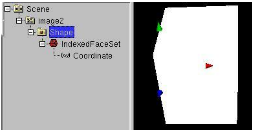
Different 3D modelling program like catia, 3D Studio Max, Cinema4D, maya, fromZ, blender etc. can export VRML97 (or at least write convertable data formats). But you will not always be lucky with the results. Jockers talk about "black holes from maya".

The reason of it is not always concerned with program error. You should remember that many of these programs are not primary made for the creation of realtime-3D-data, but e.g. made for the creation of movie-data, so that a picture will be calculated for minutes/hours (or longer). Thus there are effects, like e.g. "true" multiple reflexes, which can not be calculated within 1/25 second on a normal computer system.

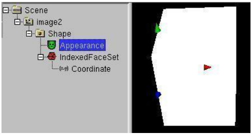
Therefore it will not be so easy to convert the according matrial properties to VRML.

Create a (simple ?) VRML file with another 3D Modeller (e.g. Wings3D, Art of Illusion, ac3D, maya, 3D Studio MAX, Cinema 4D etc...). Use the menu-item *File-> Import* in order to insert the 3D Modell in your 3D world. The most 3D modeller export entirely IndexedFaceSet nodes ("mesh", compounds composed of single polygons) for geometry.

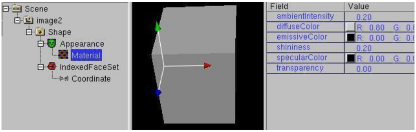
The "raw" geometry data is the simplest case:


Scene
image2
Shape
IndexedFaceSet
Coordinate

If your export did not fail to this situation, you can try to reach the situation via deleting all the other nodes in a VRML file.
Click on the "shape" node and use *Create -> Material/Texture -> Appearance*

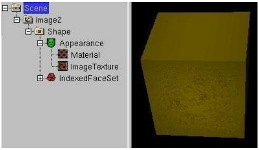

Scene
image2
Shape
Appearance
IndexedFaceSet
Coordinate

Click on the "Appearance" node and use *Create -> Material/Texture -> Material*


Scene
image2
Shape
Appearance
Material
IndexedFaceSet
Coordinate

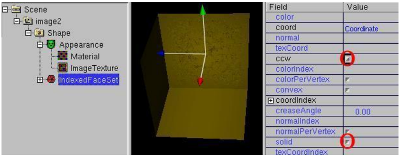
Field	Value
ambientIntensity	0.20
diffuseColor	R: 0.80 G: 0.
emissiveColor	■ R: 0.00 G: 0.
shininess	0.20
specularColor	■ R: 0.00 G: 0.
transparency	0.00

so that the color of the whole object (not the single polygons as with the Color node) can be changed. Click on the "Appearance" node in order to paste a picture onthe object. Use *Create -> Material/Texture -> ImageTexture* and choose a picture file. The VRML standard requires the support of the open standard picture formats ".jpg" and ".png" exclusively. Using other picture formats is asking for trouble.


Scene
image2
Shape
Appearance
Material
ImageTexture
IndexedFaceSet

Texture files (also MovieTexturs (.mpeg (MPEG1)) are often exported, but with a wrong or problematic path. When the VRML file is copied to another place, the path can become invalid. When the VRML file is transfered to a UNIX/Linux-based Webserver Driverletter, whitespaces and non ASCII Letters (like umlauts) in the path (and filename) become a real problem.
To reduce handlingproblems it is recommended to copy all files in the same path as the VRML file and use the menuitem *Actions -> Set Path of all URLs to* to set all paths to the relativ path . ("." means current path).

If you have bad luck, the object was exported with false side information.

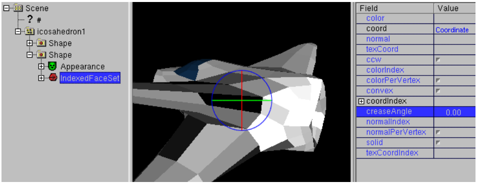

Scene
image2
Shape
Appearance
Material
ImageTexture
IndexedFaceSet

Field	Value
color	
coord	Coordinate
normal	
texCoord	
ccw	☑
colorIndex	
colorPerVertex	☑
convex	☑
⊞ coordIndex	
creaseAngle	0.00
normalIndex	
normalPerVertex	☑
solid	☑
texCoordIndex	

Change the fields "ccw" ("other side") or "solid"("one-sided"/"two-sided") in order to solve the problem.

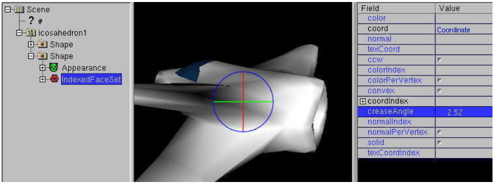
Be careful about the two-sided thin compounds, as the backside could be "translucent" due to Z-flighting/"thin wall"-problems.

In order to blur the edges you can use the field "creaseAngle". The angel of the edges in radians (1.57 are about 90 degree, 3.14 ("Pi") are about 180 degree) must be less than the value of "creaseAngel" The blur of edges allows to improve 3D-objects with few faces.


Scene
? #
icosahedron1
Shape
Shape
Appearance
IndexedFaceSet

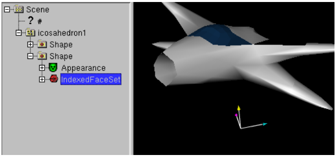
Field	Value
color	
coord	Coordinate
normal	
texCoord	
ccw	☑
colorIndex	
colorPerVertex	☑
convex	☑
⊞ coordIndex	
creaseAngle	0.00
normalIndex	
normalPerVertex	☑
solid	☑
texCoordIndex	

3D-objects with few edges are very important for a high framerate in realtime-3D.


Scene
? #
icosahedron1
Shape
Shape
Appearance
IndexedFaceSet

Field	Value
color	
coord	Coordinate
normal	
texCoord	
ccw	☑
colorIndex	
colorPerVertex	☑
convex	☑
⊞ coordIndex	
creaseAngle	2.52
normalIndex	
normalPerVertex	☑
solid	☑
texCoordIndex	

Several 3D-modellers with VRML export create VRML objects with the problem, that the center of rotation (symbolized as a trihedron or 3 colored rings in white_dune, field Transform.center) is setted far away from the object itself.
Usually this modellers set the center of rotation at the null point of VRML-world instead.

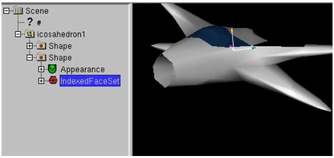

Scene
? #
icosahedron1
Shape
Shape
Appearance
IndexedFaceSet

If try to roll the object around its center of the Transform node, a small roll angel cause the object to leave its position. Especially in the case of big distance to null point, the orbit movement around the turn point could be wrongly seen as a shift movement. Similar strange effects can also occure by scale up/scale down.
The position of the roll point is definited by the fields "center" of Transform node.

Besides over the Fieldview the field "center" can also be changed in the 3D Preview window by using the menuitem *Mode -> Center* and the trihedron in the 3D Preview window.

Indeed the change of the value for "center" affect also the rotation and the scale of the compound. The order of the graphic operations in VRML is defined in a way, that a movement of the center also lead to a movement of the object in case of a already set non-zero rotation (or a non-one scale). In the 3D-Preview-Window this can lead to the impression, the object seems to dodge the center of the rotation .

In order to reduce this problems a menuitem *Actions -> Set center to (need Transform ->Shape ->geometry) -> mid of boundingBox* is part of white_dune.
Thereby a geometry node (e.g. IndexedFaceSet, PointSet, Box etc.) must be selected, which is contained in a Shape node and in a Transform node.
By the excution of the command *Actions -> Set center to...* the center of rotaion will be setted in the center of the box that surround the geometry.


Scene
? #
icosahedron1
Shape
Shape
Appearance
IndexedFaceSet