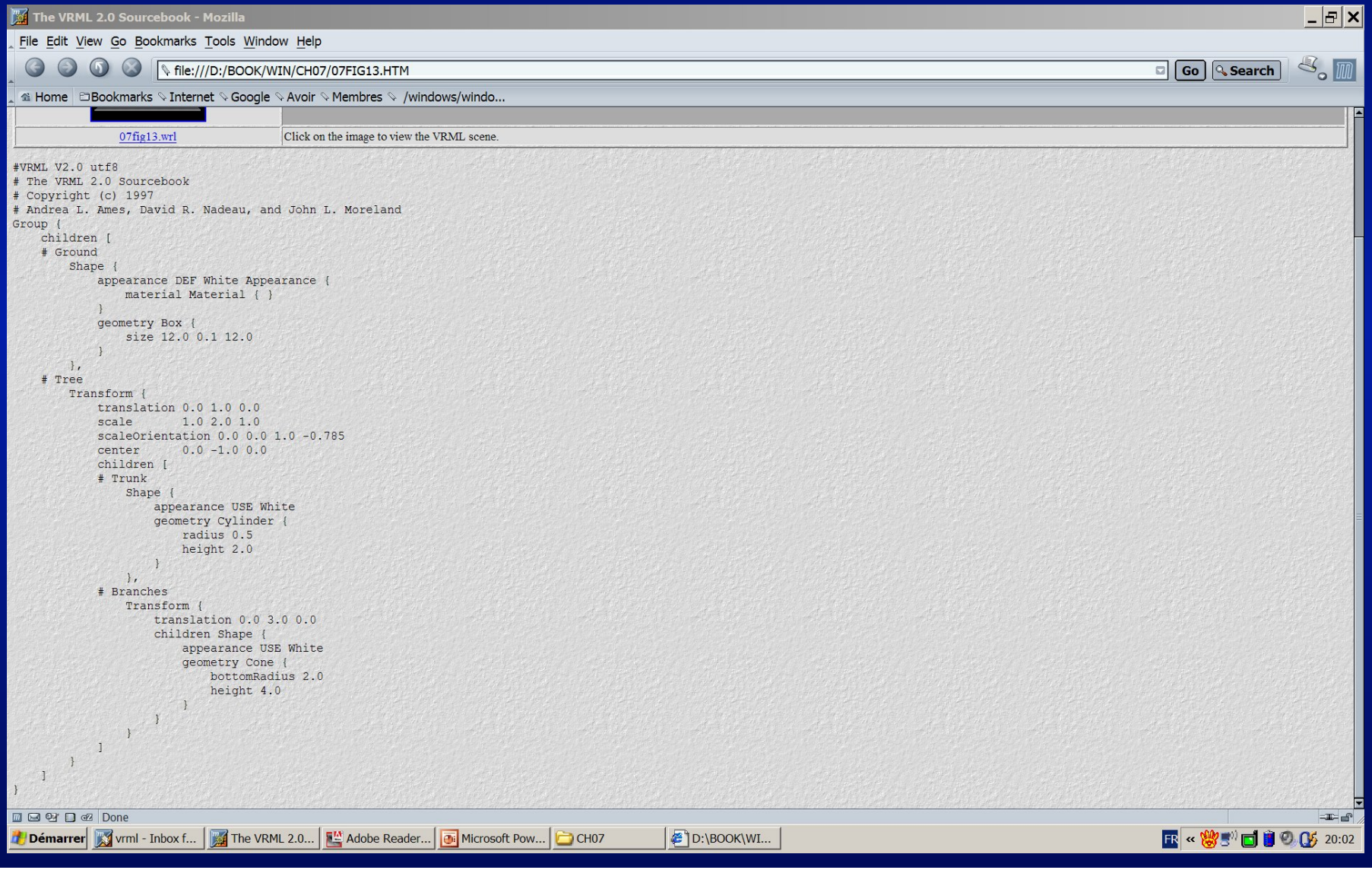
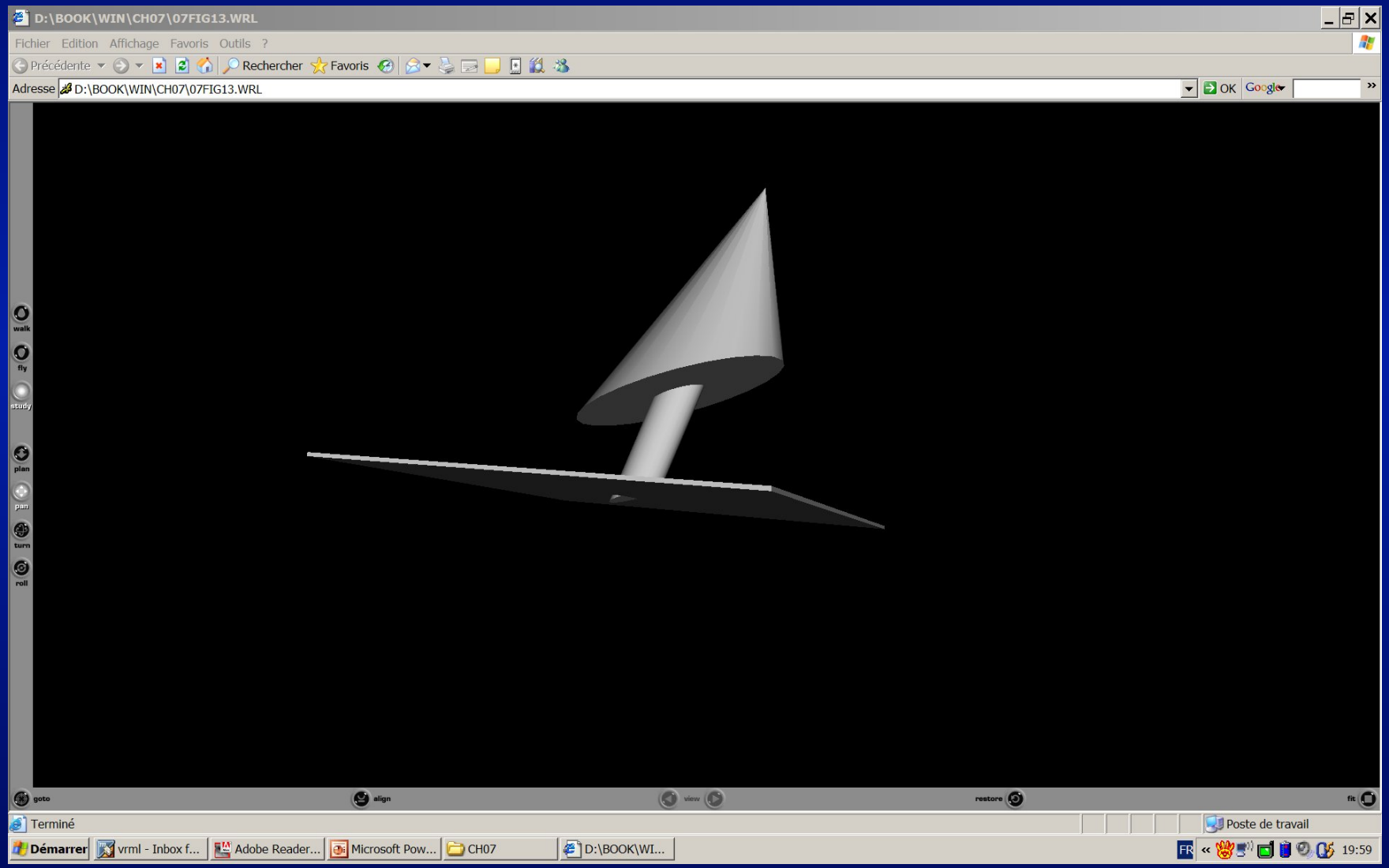
VRML


The VRML 2.0 Sourcebook - Mozilla
File Edit View Go Bookmarks Tools Window Help
file:///D:/BOOK/WIN/CH07/07FIG13.HTM
Go
Search
Home Bookmarks Internet Google Avoir Membres /windows/windo...
07fig13.wrl
Click on the image to view the VRML scene.
#VRML V2.0 utf8
# The VRML 2.0 Sourcebook
# Copyright (c) 1997
# Andrea L. Ames, David R. Nadeau, and John L. Moreland
Group {
children [
# Ground
Shape {
appearance DEF White Appearance {
material Material { }
}
geometry Box {
size 12.0 0.1 12.0
}
},
# Tree
Transform {
translation 0.0 1.0 0.0
scale 1.0 2.0 1.0
scaleOrientation 0.0 0.0 1.0 -0.785
center 0.0 -1.0 0.0
children [
# Trunk
Shape {
appearance USE White
geometry Cylinder {
radius 0.5
height 2.0
}
},
# Branches
Transform {
translation 0.0 3.0 0.0
children Shape {
appearance USE White
geometry Cone {
bottomRadius 2.0
height 4.0
}
}
}
]
}
]
}
Done
Démarrer
vrml - Inbox f...
The VRML 2.0...
Adobe Reader...
Microsoft Pow...
CH07
D:\BOOK\WI...
FR
20:02

VRML


D:\BOOK\WIN\CH07\07FIG13.WRL
Fichier Edition Affichage Favoris Outils ?
Précédente
Rechercher
Favoris
Adresse D:\BOOK\WIN\CH07\07FIG13.WRL
OK
Google
walk
fly
study
plan
pan
turn
roll
goto
align
view
restore
fit
Terminé
Poste de travail
Démarrer
vrml - Inbox f...
Adobe Reader...
Microsoft Pow...
CH07
D:\BOOK\WI...
FR
19:59

VRML

http://diuf.unifr.ch/people/schweizp/VRML/VrmlDoc/Vrmlbase/start.htm
http://www.parallelgraphics.com/products/cortona/download/iexplore/

API Windows

http://chgi.developpez.com/windows/

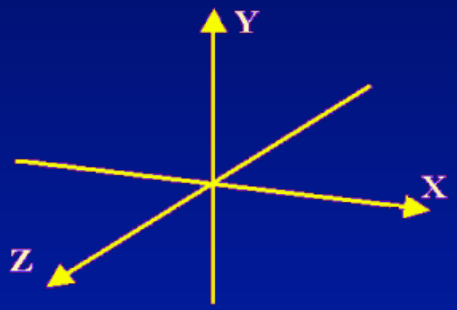
VRML

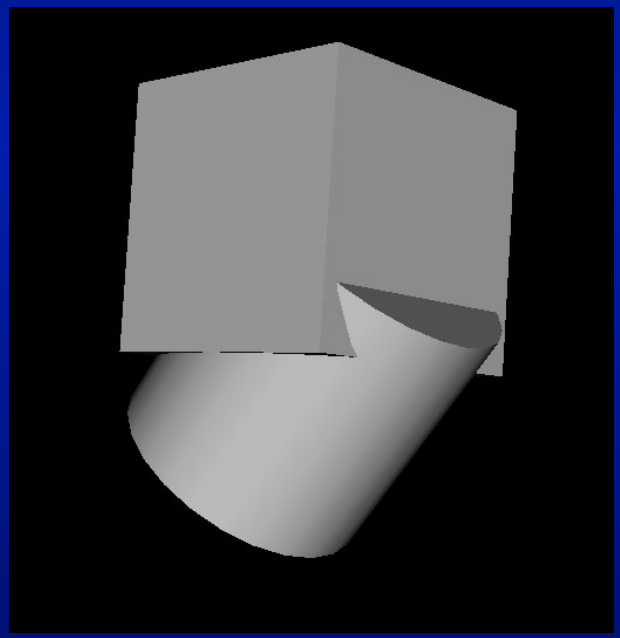
VRML satisfait 3 critères:

- **Indépendance de la plate-forme (Windows,MAC OS, UNIX etc..)**
- **Extensibilité**
- **Travailler avec une faible bande passante (modem 14.4 kBps)**

Structure

```
#VRML V2.0 utf8
Group {
  children [
    DEF objet1 Transform {
          translation 0.000000 0.000000 0.000000
          rotation 1.000000 0.000000 0.000000 0.700000
          children Shape {
                appearance Appearance {
                      material Material { }
                                  }
                 geometry Cylinder{
                      radius 1.000000
                      height 2.000000
                            }
                                  }
                           },
     DEF objet2 Transform {
        translation 0.000000 1.000000 0.000000
        rotation 1.000000 0.000000 0.000000 0.000000
        children Shape {
              appearance Appearance {
                    material Material { }
                  }
              geometry Box{
                    size 2.000000 2.000000 2.000000
                       }
                              }
                    },
        ]
      }
```

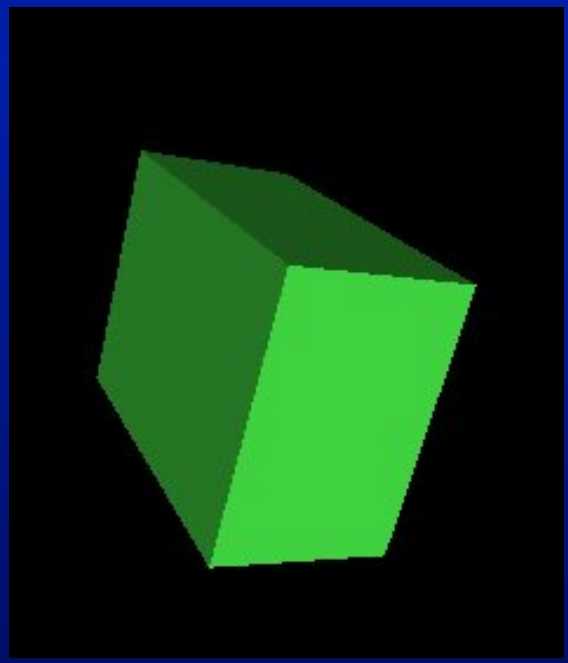




Neoud (« Node ») Shape

```
Shape {
        appearance NULL   # exposedField SFNode
        geometry    NULL  # exposedField SFNode
       }
```

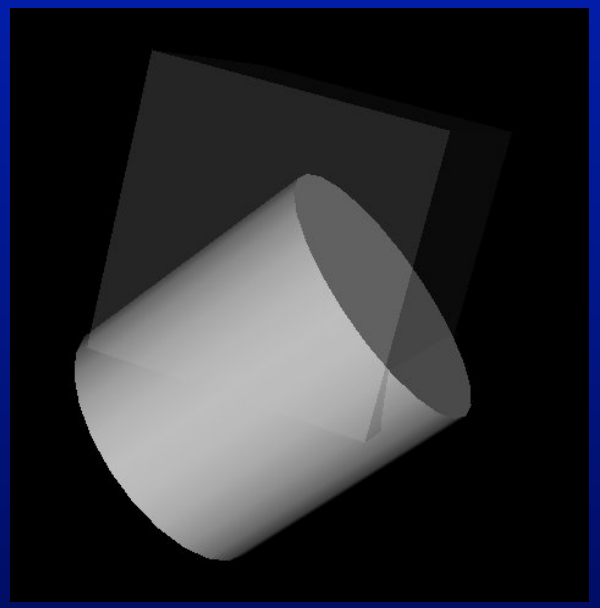
```
# VRML V2.0 utf8
    Shape {
        appearance Appearance {
        material  Material {
                ambientIntensity 0.4
                diffuseColor  0.3 1.0  0.3
                        }
                                }
        geometry Box {
                        size   2 3 4
                       }
         }
```



Node Appearance

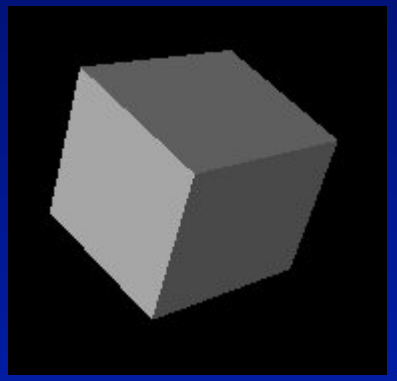
```
Appearance {
        material            NULL        #exposedField SFNode
        texture             NULL        #exposedField SFNode
        textureTransform NULL           #exposedField SFNode
            }
```

```
Material {
    ambientIntensity    0.2
    diffuseColor        0.8 0.8 0.8
    emissiveColor       0 0 0
    shininess           0.2
    specularColor       0 0 0
    transparency        0
        }
```

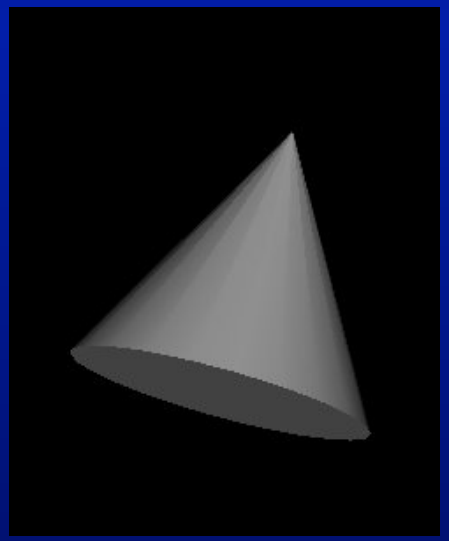


Géométrie

```
Box {
   size 2.0 2.0 2.0
      }
```



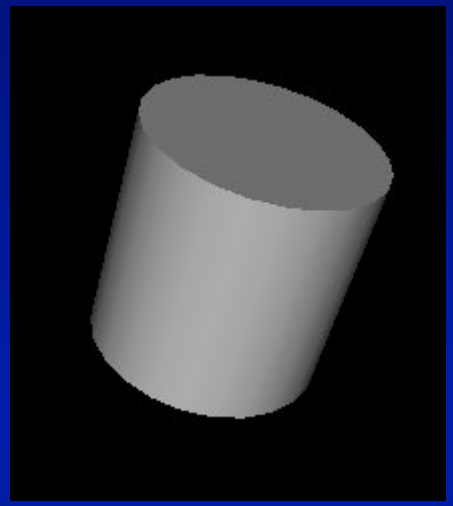
```
Cone {
   bottomRadius      1.0
   height            2.0
   side              TRUE
   bottom            TRUE
        }
```

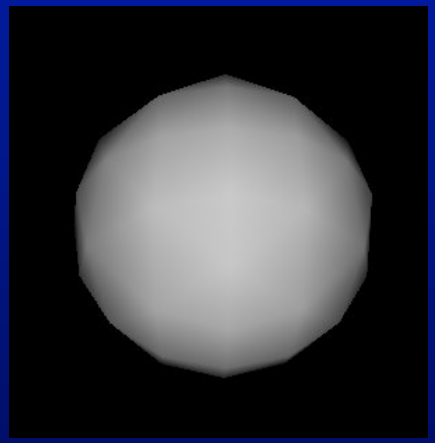


Géométrie

```
Cylinder {
    bottom      TRUE
    height      2.0
    radius      1.0
    side        TRUE
    top         TRUE
}

Sphere {
     radius 1.0
          }
```





TEXTE

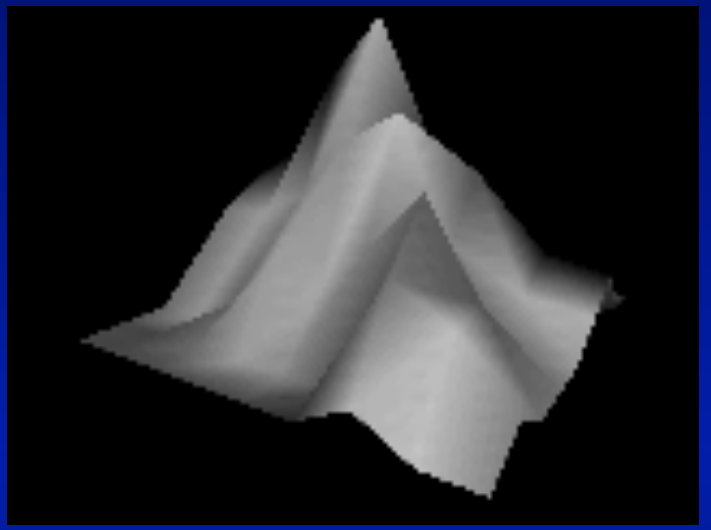
```
Text {
    string []                   #exposedField MFString
    fontStyle NULL              #exposedField SFNode
    length []                   #exposedField MFFloat
    maxExtent 0.0               #exposedField SFFloat
      }
FontStyle {
     family                 ["SERIF"]       #field MFString
    horizontal              TRUE            #field SFBool
    justify                 "BEGIN"         #field MFString
    leftToRight             TRUE            #field SFBool
    size                    1.0             #field SFFloat
    spacing                 1.0             #field SFFloat
    style                   "PLAIN"         #field SFString
    topToBottom             TRUE            #field SFBool
}
```

TEXTE

```
Shape {
    appearance Appearance {
        material Material { }
    }
    geometry Text {
        string ["Bonjour et" , "Bon appétit" ]
        fontStyle FontStyle {
            family "SERIF"
            style  "BOLD"
        }
    }
}
```

Grille d'élévation

```
#VRML V2.0 utf8
Shape {
        appearance Appearance {
                material Material { }
        }
        geometry ElevationGrid {
                xDimension  9
                zDimension  9
                xSpacing    1.0
                zSpacing    1.0
                solid       FALSE
                creaseAngle 0.785
                height [
                        0.0, 0.0, 0.5, 1.0, 0.5, 0.0, 0.0, 0.0, 0.0,
                        0.0, 0.0, 0.0, 0.0, 2.5, 0.5, 0.0, 0.0, 0.0,
                        0.0, 0.0, 0.5, 0.5, 3.0, 1.0, 0.5, 0.0, 1.0,
                        0.0, 0.0, 0.5, 2.0, 4.5, 2.5, 1.0, 1.5, 0.5,
                        1.0, 2.5, 3.0, 4.5, 5.5, 3.5, 3.0, 1.0, 0.0,
                        0.5, 2.0, 2.0, 2.5, 3.5, 4.0, 2.0, 0.5, 0.0,
                        0.0, 0.0, 0.5, 1.5, 1.0, 2.0, 3.0, 1.5, 0.0,
                        0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 2.0, 1.5, 0.5,
                        0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.5, 0.0, 0.0,
                ]
        }
}
```



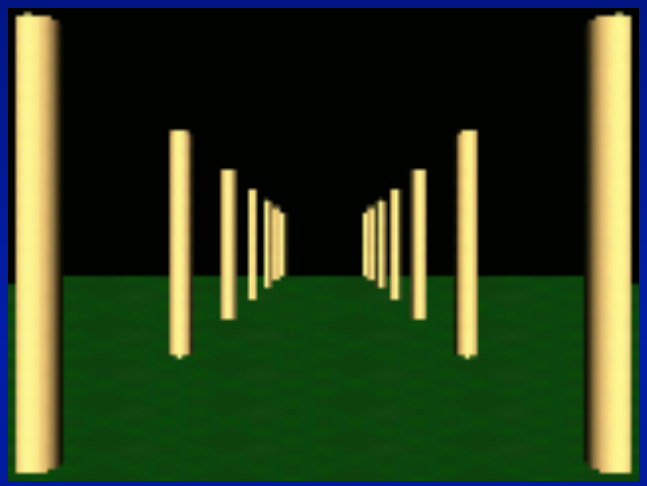
EXTRUSION

```
geometry Extrusion {
        crossSection [
                1.00  0.00,   0.92 -0.38,
                0.71 -0.71,   0.38 -0.92,
                ......
        ]
        spine [
                0.0 0.0 0.0,  0.0 0.4 0.0,
                0.0 0.8 0.0,  0.0 1.2 0.0,
                .....
        ]
        scale [
                1.8  1.8,  1.95 1.95,
                2.0  2.0,  1.95 1.95
                ....
        ]
}
```

Groupe

```
Group {
   children [ ]          #exposedField
    addChildren          #eventIn MFNode
    removeChildren       #eventOut MFNode
    bboxCenter           0 0 0
    bboxSize             -1 -1 -1
}
```

DEF nom type
USE nom



```
#VRML V2.0 utf8
Group {
        children [

        # Paire de colonnes
                DEF ColumnPair Group {
                        children [
                                Transform {
                                        translation -4.0 3.0 0.0
                                        children DEF Column Shape {
                                                appearance Appearance {
                                                        material Material {}
                                                        }
                                                geometry Cylinder {
                                                        radius 0.3
                                                        height 6.0
                                                }
                                        }
                                },
                                Transform {
                                        translation 4.0 3.0 0.0
                                        children USE Column
                                }
                        ]
                },
        # Plusieurs paires de colonnes
                Transform { translation 0.0 0.0  -8.0  children USE ColumnPair },
                Transform { translation 0.0 0.0   8.0  children USE ColumnPair },
                Transform { translation 0.0 0.0 -16.0  children USE ColumnPair },
                Transform { translation 0.0 0.0  16.0  children USE ColumnPair },
                Transform { translation 0.0 0.0 -24.0  children USE ColumnPair },
                Transform { translation 0.0 0.0  24.0  children USE ColumnPair },
        ]
}
```

```
#VRML V2.0 utf8
Group {
        children [
                Shape {
                        appearance DEF White Appearance {
                                material Material { }
                        }
                        geometry Box {
                                size 25.0 2.0 2.0
                        }
                },
                Shape {
                        appearance USE White
                        geometry Box {
                                size 2.0 25.0 2.0
                        }
                },
                Shape {
                        appearance USE White
                        geometry Box {
                                size 2.0 2.0 25.0
                        }
                }
        ]
}
```

Positionnement

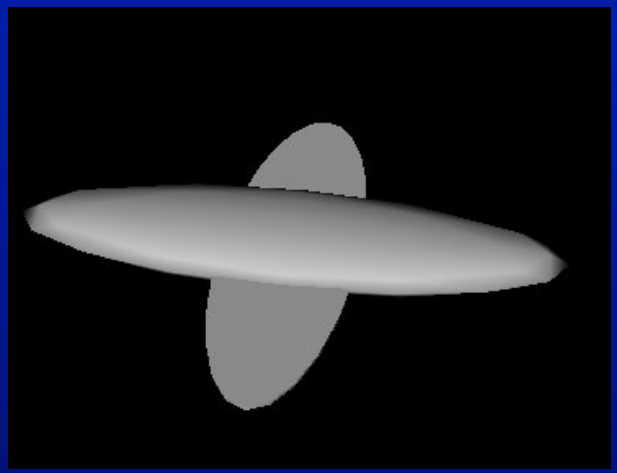
```
Transform {
    addChildren                         #eventIn MFNode
    removeChildren                      #eventIn MFNode
    center              0 0 0           #exposedField SFVec3f
    children            []              #exposedField MFNode
    rotation            0 0 1 0         #exposedField SFRotation
    scale               1 1 1           #exposedField SFVec3f
    scaleOrientation    0 0 1 0         #exposedField SFRotation
    translation         0 0 0           #exposedField SFVec3f
    bboxCenter          0 0 0           #field SFVec3f
    bboxSize            -1 -1 -1        #field SFVec3f
}
```

E/S: **set_var et var_changed**

Exemple: **set_translation et translation_changed**

Positionnement

```
Group {
    children [
    # Ailes
        Transform {
            scale 0.5 1.0 1.5
            children Shape {
                appearance DEF White Appearance {
                    material Material { }
                }
                geometry Cylinder {
                    radius 1.0
                    height 0.025
                }
            }
        },
    # Fuselage
        Transform {
            scale 2.0 0.2 0.5
            children Shape {
                appearance USE White
                geometry Sphere { }
            }
        }
    ]
```



Animation par Interpolation

```
TimeSensor {
    cycleInterval   1           #exposedField SFTime
    enabled         TRUE        #exposedField SFBool
    loop            FALSE       #exposedField SFBool
    startTime       0           #exposedField SFTime
    stopTime        0           #exposedField SFTime
    cycleTime                   #eventOut SFTime
    fraction_changed            #eventOut SFFloat
    isActive                    #eventOut SFBool
    time                        #eventOut SFTime
}

PositionInterpolator {
    set_fraction                #eventIn SFFloat
    key []                      #exposedField MFFloat
    keyValue []                 #exposedField MFVec3f
    value_changed               #eventOut SFVec3f
}
```

Exemple

```
Group {
 children [
 DEF objet Transform {
     translation 0.000000 0.000000 0.000000
     rotation 1.000000 0.000000 0.000000 0.000000
     children Shape {
             appearance Appearance {
             material Material {  }      }
             geometry Box{
                     size 2.000000 1.000000 2.000000}
                     }
                     },
#animation-> horloge
DEF horloge TimeSensor {
 cycleInterval 5.000000
 loop TRUE           },
#animation-> trajet
DEF ObjetTrajet PositionInterpolator {
   key [0.5 0.990000 ]
   keyValue [ 0.0      1.00     0.000
          0.000000 3.000000 0.000000  ]
}] }
ROUTE horloge.fraction_changed TO ObjetTrajet.set_fraction
ROUTE ObjetTrajet.value_changed TO objet.set_translation
```

Interpol_position.wrl

Animation-Suite

```
OrientationInterpolator {
    set_fraction        #eventIn SFFloat
    key []              #exposedField MFFloat
    keyValue []         #exposedField MFRotation
    value_changed       #eventOut SFRotation
}
```

Interpol_orientation.wrl

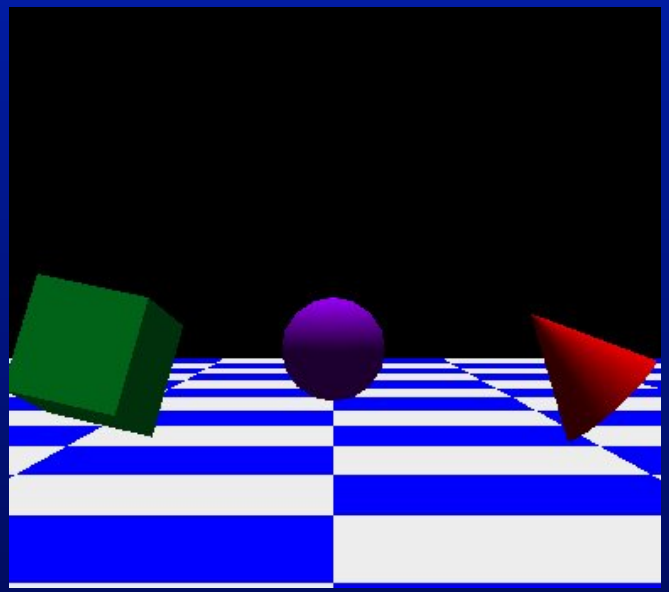
```
ColorInterpolator {
    set_fraction        #eventIn SFFloat
    key []              #exposedField MFFloat
    keyValue []         #exposedField MFColor
    value_changed       #eventOut SFColor
}
```

Idem pour :ColorInterpolator, NormalInterpolator, …

```
Group {
children [
DEF objet1 Transform {
      rotation 1.000000 0.000000 0.000000 0.000000
      children Shape {
            appearance Appearance {
                  material Material { }
                                                }
            geometry Cylinder{
                  radius 1.000000
                  height 2.000000
                                    }
                                                }
            },
DEF horloge TimeSensor {
      cycleInterval 6.000000
      loop TRUE },
DEF ObjetTrajet OrientationInterpolator {
key [0.5, 0.990000 ]
 keyValue [ 0.000000 0.000000 1.000000 3.14
          0.000000 0.000000 1.000000 6.28 ]
}] }
ROUTE horloge.fraction_changed TO ObjetTrajet.set_fraction
ROUTE ObjetTrajet.value_changed TO objet1.set_rotation
```

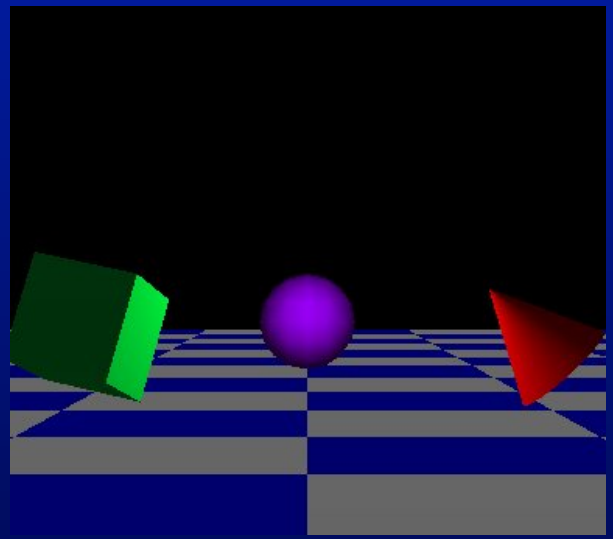
Eclairage

```
DirectionalLight {
    ambientIntensity    0       #exposedField SFFloat
    color               1 1 1   #exposedField SFColor
    direction           0 0 -1  #exposedField SFVec3f
    intensity           1       #exposedField SFFloat
    on                  TRUE    #exposedField SFBool
}
```



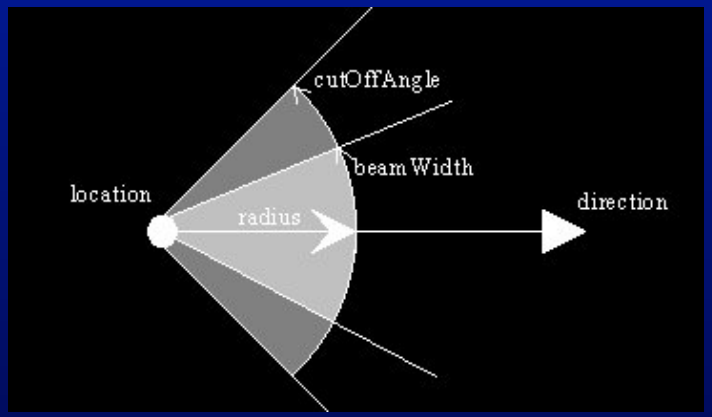
Eclairage

```
PointLight {
    ambientIntensity    0       #exposedField SFFloat
    attenuation         1 0 0   #exposedField SFVec3f
    color               1 1 1   #exposedField SFColor
    intensity           1       #exposedField SFFloat
    location            0 0 0   #exposedField SFVec3f
    on                  TRUE    #exposedField SFBool
    radius              100     #exposedField SFFloat
}
```



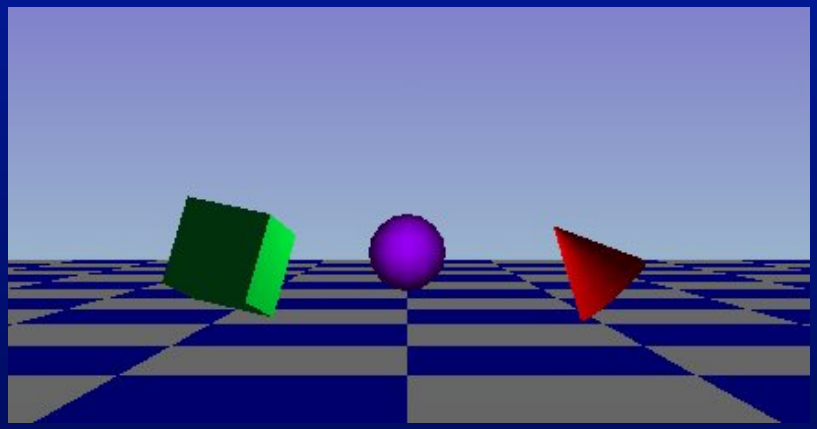
Eclairage

```
SpotLight {
    ambientIntensity    0           #exposedField SFFloat
    attenuation         1 0 0       #exposedField SFVec3f
    beamWidth           1.570796    #exposedField SFFloat
    color               1 1 1       #exposedField SFColor
    cutOffAngle         0.785398    #exposedField SFFloat
    direction           0 0 -1      #exposedField SFVec3f
    intensity           1           #exposedField SFFloat
    location            0 0 0       #exposedField SFVec3f
    on                  TRUE        #exposedField SFBool
    radius              100         #exposedField SFFloat
}
```

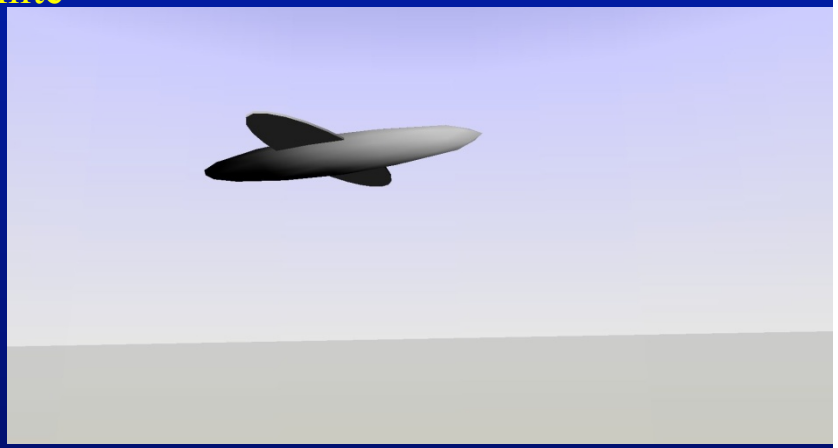


Fond

```
Background {
eventIn SFBool set_bind
    groundAngle  []          #exposedField MFFloat
    groundColor  []          #exposedfield MFColor
    backUrl      []          #exposedField MFString
    bottomUrl    []          #exposedField MFString
    frontUrl     []          #exposedField MFString
    leftUrl      []          #exposedField MFString
    rightUrl     []          #exposedField MFString
    topUrl       []          #exposedField MFString
    skyAngle     []          #exposedField MFFloat
    skyColor     [0 0 0]     #exposedField MFColor
    isBound                  #eventOut SFBool
}
```



```
Group {
    children [
        Transform {
            scale 0.5 1.0 1.5
            children Shape {
                appearance DEF White Appearance {
                    material Material { }
                }
                geometry Cylinder { radius 1.0
                    height 0.025}
            }
        },
        Transform {
            scale 2.0 0.2 0.5
            children Shape {appearance USE White
                geometry Sphere { } }
        }
    ]
}
Background {
  skyAngle [0.0, 1.1, 1.57]
  skyColor [0 0 1, 0 0 0.5, 0.8 0.8 1, 0.9 0.9 0.9 ]
  groundAngle [0.0, 1.1, 1.57]
  groundColor [0.8 0.8 0.4, 0.8 0.8 0.4, 0.8 0.8 0.7, 0.8 0.8 0.8 ]
}
```



background.wrl

Sensors

```
CylinderSensor {
    autoOffset          TRUE        #exposedField SFBool
    diskAngle           0.262       #exposedField SFFloat
    enabled             TRUE        #exposedField SFBool
    maxAngle            -1           #exposedField SFFloat
    minAngle            0           #exposedField SFFloat
    offset              0           #exposedField SFFloat
    isActive                        #eventOut SFBool
    rotation_changed                #eventOut SFRotation
    trackPoint_changed              #eventOut SFVec3f
}
```

cylidersensor.wrl

```
PlaneSensor {
    autoOffset          TRUE        #exposedField SFBool
    enabled             TRUE        #exposedField SFBool
    maxPosition         -1 -1       #exposedField SFVec2f
    minPosition          0 0        #exposedField SFVec2f
    offset              0 0 0       #exposedField SFVec3f
    isActive                        #eventOut SFBool
    trackPoint_changed              #eventOut SFVec3f
    translation_changed             #eventOut SFVec3f
  }
```

planesensor.wrl

Sensors (SUITE)

```
SphereSensor {
        autoOffset              TRUE        #exposedField SFBool
        enabled                 TRUE        #exposedField SFBool
        offset                  0 1 0 0     #exposedField SFRotation
        isActive                            #eventOut SFBool
        rotation_changed                    #eventOut SFRotation
        trackPoint_changed                  #eventOut SFVec3f
                }
```

spheresensor.wrl

```
#VRML V2.0 utf8
Group {
      children [
            DEF objet Transform {
                  scale 0.5 1.0 1.5
                  children Shape {
                        appearance DEF White Appearance {
                              material Material { }
                        }
                        geometry Cylinder {   radius 1.0
                              height 0.025}
                  }
            },
            DEF objet2 Transform {
                  scale 2.0 0.2 0.5
                  children Shape {appearance USE White
                        geometry Sphere { }   }
            }
      ]
}
DEF tourneur SphereSensor{}
Background {  skyAngle [0.0, 1.1, 1.57]
  skyColor [0 0 1, 0 0 0.5, 0.8 0.8 1, 0.9 0.9 0.9 ]
  groundAngle [0.0, 1.1, 1.57]
  groundColor [0.8 0.8 0.4, 0.8 0.8 0.4, 0.8 0.8 0.7, 0.8 0.8 0.8 ]
}
ROUTE tourneur.rotation_changed TO objet.set_rotation
ROUTE tourneur.rotation_changed TO objet2.set_rotation
```

spheresensor.wrl

```
Group {
    children [
        DEF objet Transform {
            scale 0.5 1.0 1.5
            children Shape {
                appearance DEF White Appearance {
                    material Material { }
                }
                geometry Cylinder { radius 1.0
                    height 0.025}
            }                    },
        DEF objet2 Transform {
            scale 2.0 0.2 0.5
            children Shape {appearance USE White
                geometry Sphere { }          }
        }
    ]
}
DEF capteur PlaneSensor{}
Background { skyAngle [0.0, 1.1, 1.57]
  skyColor [0 0 1, 0 0 0.5, 0.8 0.8 1, 0.9 0.9 0.9 ]
  groundAngle [0.0, 1.1, 1.57]
  groundColor [0.8 0.8 0.4, 0.8 0.8 0.4, 0.8 0.8 0.7, 0.8 0.8 0.8 ]}
ROUTE capteur.translation_changed TO objet.set_translation
ROUTE capteur.translation_changed TO objet2.set_translation
```

planesensor.wrl

Texture

```
ImageTexture {
    url         []          #exposedField MFString
    repeatS     TRUE        #field SFBool
    repeatT     TRUE        #field SFBool
}
#VRML V2.0 utf8
Group {
    children [

        Shape {
            appearance Appearance {
                material Material { }
                texture ImageTexture {
                    url "canlabel.jpg"
                }
            }
            geometry Cylinder {
                top FALSE
                bottom FALSE
                height 2.7
            }
        }
    ]
}
```

texture.wrl

Texture

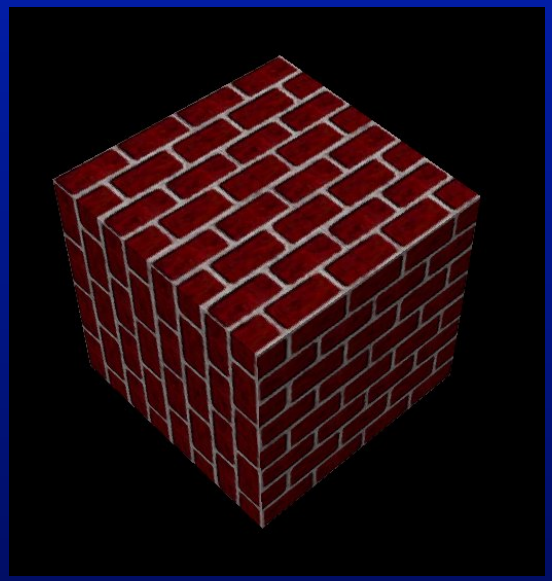
```
MovieTexture {
loop                FALSE     #exposedField SFBool
speed               1.0       #exposedField SFFloat
startTime           0         #exposedField SFTime
stopTime            0         #exposedField SFTime
url                 [ ]       #exposedField MFString
repeatS             TRUE      #field SFBool
repeatT             TRUE      #field SFBool
duration_changed              #eventOut SFTime
isActive                      #eventOut SFBool
}
```

```
#VRML V2.0 utf8
Group {
    children [
        Shape {
        appearance Appearance {
            material Material { }
            texture MovieTexture {
                loop TRUE
                url "wrlpool.mpg"
            }
        }
        geometry Cylinder {
            bottom FALSE
            side FALSE
            height 2.7
        }
    }
    Shape {
        appearance Appearance {
            material Material { }
            texture ImageTexture {
                url "canlabel.jpg"
            }
        }
        geometry Cylinder {
            top FALSE
            bottom FALSE
            height 2.7
        }
    }
  ]
}
```

texture_animée.wrl

Texture

```
TextureTransform {
    center          0 0     #exposedField SFVec2f
    rotation        0       #exposedField SFFloat
    scale           1 1     #exposedField SFVec2f
    translation     0 0     #exposedField SFVec2f
}
```



texture_transformée.wrl

Points

PointSet {

color NULL #exposedField SFNode
coord NULL #exposedField SFNode

}

```
NavigationInfo {
type "EXAMINE"
}
DirectionalLight {
ambientIntensity 1
}
Shape {
geometry PointSet{
coord Coordinate {
point [
        -2 -2 2, 2 -2 2, -2 2 2, 2 2 2,
        -2 -2 -2, 2 -2 -2, -2 2 -2, 2 2 -2
]
}
color Color {
        color [
                1 1 1, 1 1 1, 1 1 1, 1 1 1,
                1 1 0, 1 1 0, 1 1 0, 1 1 0
                ]
                        }
}
```

points.wrl

Lignes

```
IndexedLineSet {
    set_colorIndex          #eventIn MFInt32
    set_coordIndex          #eventIn MFInt32
    color NULL              #exposedField SFNode
    coord NULL              #exposedField SFNode
    colorIndex []           #field MFInt32
    colorPerVertex TRUE     #field SFBool
    coordIndex []           #field MFInt32
}
```

lignes.wrl

Polygones

```
IndexedFaceSet {
    set_colorIndex                          #eventIn MFInt32
    set_coordIndex                          #eventIn MFInt32
    set_normalIndex                         #eventIn MFInt32
    set_texCoordIndex                       #eventIn MFInt32
    color           NULL                    #exposedField SFNode
    coord           NULL                    #exposedField SFNode
    normal          NULL                    #exposedField SFNode
    texCoord        NULL                    #exposedField SFNode
    ccw             TRUE                    #field SFBool
    colorIndex      []                      #field MFInt32
    colorPerVertex  TRUE                    #field SFBool
    convex          TRUE                    #field SFBool
    coordIndex      []                      #field MFInt32
    creaseAngle      0                      #field SFFloat
    normalIndex      []                     #field MFInt32
    normalPerVertex TRUE                    #field SFBool
    solid                   TRUE            #field SFBool
    texCoordIndex   []                      #field MFInt32
}
```

polygone.wrl