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1. 3D Transformations Flash Demo

2. FrAid scripts used in the demo

2.1. Serpinski 3D Pyramide

```
clear(); ff(r,a,b,x,y,z)=r*( cos(b)*x + sin(a)*sin(b)*y + cos(a)*sin(b)*z );
gg(r,a,b,x,y,z)=r*( cos(a) *y - sin(a) *z ); hh(r,a,b,x,y,z)=r*( -sin(b)*x + sin(a)*cos(b)*y
+ cos(a)*cos(b)*z ); r1=.5; a1=0; b1=0; xOff1=0.2; yOff1=0.4; zOff1=0; controlVar(r1,
a1, b1, xOff1, yOff1, zOff1 ); f1(x,y,z)=ff(r1,a1,b1,x,y,z); g1(x,y,z)=gg(r1,a1,b1,x,y,z);
h1(x,y,z)=hh(r1,a1,b1,x,y,z); r2=.5; a2=0; b2=0; xOff2=.55; yOff2=0; zOff2=0;
controlVar(r2, a2, b2, xOff2, yOff2, zOff2 ); f2(x,y,z)=ff(r2,a2,b2,x,y,z);
g2(x,y,z)=gg(r2,a2,b2,x,y,z); h2(x,y,z)=hh(r2,a2,b2,x,y,z); r3=.5; a3=0; b3=0;
xOff3=0.25; yOff3=.15; zOff3=.5; controlVar(r3, a3, b3, xOff3, yOff3, zOff3 );
f3(x,y,z)=ff(r3,a3,b3,x,y,z); g3(x,y,z)=gg(r3,a3,b3,x,y,z); h3(x,y,z)=hh(r3,a3,b3,x,y,z);
r4=.5; a4=0; b4=0; xOff4=0; yOff4=0; zOff4=0; controlVar(r4, a4, b4, xOff4, yOff4,
zOff4 ); f4(x,y,z)=ff(r4,a4,b4,x,y,z); g4(x,y,z)=gg(r4,a4,b4,x,y,z);
h4(x,y,z)=hh(r4,a4,b4,x,y,z); transform3( "zTransform3PlugInDemo2", f1,xOff1,
g1,yOff1, h1,zOff1, f2,xOff2, g2,yOff2, h2,zOff2, f3,xOff3, g3,yOff3, h3,zOff3,
f4,xOff4, g4,yOff4, h4,zOff4, "pyramid.3d");
```

2.2. Cube 3d

```
clear(); ff(r,x,y,z)=r*x; //the generic transformation gg(r,x,y,z)=r*y; hh(r,x,y,z)=r*z;
r=.3; //the parameters I want to control for the first transform xOff1=-.660;
yOff1=-.660; zOff1=-.660; f1(x,y,z)=ff(r,x,y,z); //the first transform
g1(x,y,z)=gg(r,x,y,z); h1(x,y,z)=hh(r,x,y,z); xOff2=0; yOff2=0; zOff2=0;
f2(x,y,z)=ff(r,x,y,z); g2(x,y,z)=gg(r,x,y,z); h2(x,y,z)=hh(r,x,y,z); xOff3=0;
yOff3=-1.220; zOff3=-1.220; f3(x,y,z)=ff(r,x,y,z); g3(x,y,z)=gg(r,x,y,z);
h3(x,y,z)=hh(r,x,y,z); xOff4=0; yOff4=0; zOff4=-1.220; f4(x,y,z)=ff(r,x,y,z);
g4(x,y,z)=gg(r,x,y,z); h4(x,y,z)=hh(r,x,y,z); xOff5=-1.22; yOff5=-1.220; zOff5=0;
f5(x,y,z)=ff(r,x,y,z); g5(x,y,z)=gg(r,x,y,z); h5(x,y,z)=hh(r,x,y,z); xOff6=0;
yOff6=-1.220; zOff6=0; f6(x,y,z)=ff(r,x,y,z); g6(x,y,z)=gg(r,x,y,z);
h6(x,y,z)=hh(r,x,y,z); xOff7=-1.220; yOff7=0; zOff7=-1.220; f7(x,y,z)=ff(r,x,y,z);
g7(x,y,z)=gg(r,x,y,z); h7(x,y,z)=hh(r,x,y,z); xOff8=-1.220; yOff8=0; zOff8=0;
f8(x,y,z)=ff(r,x,y,z); g8(x,y,z)=gg(r,x,y,z); h8(x,y,z)=hh(r,x,y,z); xOff9=-1.220;
yOff9=-1.220; zOff9=-1.220; f9(x,y,z)=ff(r,x,y,z); g9(x,y,z)=gg(r,x,y,z);
h9(x,y,z)=hh(r,x,y,z); controlVar(r, xOff1, yOff1, zOff1 ); //variable controller
transform3( "zTransform3PlugInDemo3", f1,xOff1, //first g1,yOff1, h1,zOff1, f2,xOff2,
```

```
//second g2,yOff2, h2,zOff2, f3,xOff3, //third g3,yOff3, h3,zOff3, f4,xOff4, g4,yOff4,  
h4,zOff4, f5,xOff5, g5,yOff5, h5,zOff5, f6,xOff6, g6,yOff6, h6,zOff6, f7,xOff7,  
g7,yOff7, h7,zOff7, f8,xOff8, g8,yOff8, h8,zOff8, f9,xOff9, g9,yOff9, h9,zOff9,  
"pyramid.3d");
```