

# VEX

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# Camera Stuff

auto focus, get distance from object and camera:

```
vlength(vtorigin("/obj/geo1", "/obj/cam1"))
```

# Points

divide points into 3 equal parts:

```
i@part = floor(fit(rand(@ptnum+.258), 0, 1, 0, 2.9));
```

Nage replacement

```
@nage = fit(@age,0,@life,0,1);
```

# If then statements

If the pscale is greater than .4 then set it to .2, if not set it to its current pscale

```
@pscale = @pscale>.4?.2:@pscale
```

# Transforms and Junk

## 1. transforms to attribute matrix:

```
p@orient = quaternion(3@transform);  
v@scale = cracktransform(0,0,2,set(0.0.0). 3@transform);
```

## 2. rotate packed fracture based on point + distance:

[Screenshot from 2023-06-21 11-48-58.png](#)

```
vector p1= set(@P.x, @P.y, @P.z);  
  
vector crack1 = point(1, "P", 0);  
vector crack2 = point(2, "P", 0);  
vector p2 = crack1-p1;  
vector p3 = crack2-p1;  
  
float n = fit ( length ( p2 ), 0, ch("maxdist"), ch('mult'), 0 );  
float n2 = fit ( length ( p3 ), 0, ch("maxdist2"), ch('mult2'), 0 );  
  
vector4 q0 = quaternion ( 0 );  
vector4 q1 = sample_orientation_uniform ( rand ( @ptnum ) );  
vector4 q2 = slerp ( q0, q1, n+n2 );  
matrix3 xform = qconvert ( q2 );  
  
setprimintrinsic ( 0, "transform", @ptnum, xform );
```

## 3. Blending spiral (end beg):

[Screenshot from 2023-06-21 15-48-58.png](#)

```
vector target = point(1, "P", @ptnum);  
float blend = chramp("blendAlongSpiral", @curveu)*chf("multiplier");  
  
@P = lerp(@P, target, blend);
```

## 4. Position copy via uv:

[Screenshot from 2023-06-21 15-51-53.png](#)

```
v@P = uvsample(1, "P", "uv", @P);
```

## 5. move near points together:

```
int near = nearpoint(1, @P);  
vector target = point(1, "P", near);  
@P = target;
```

## 6. Affect the scale of packed prims:

```
//vector scale = fit01(vector(rand(@primnum)), 0,1.46) *@growth;  
vector scale = ch("scale");  
  
matrix3 trn = primintrinsic(0, "transform", @primnum);  
matrix scalem = maketransform(0, 0, {0,0,0}, {0,0,0}, scale, @P);  
trn *= matrix3(scalem);  
setprimintrinsic(0, "transform", @primnum, trn);
```

# Orientation

Get transform and orientation from camera:

```
string camera = "/obj/alembicarchive1/Camera2/CameraShape2"; // path to your camera
@P = ptransform(camera, "space:current", {0,0,0});
@N = ntransform(camera, "space:current", {0,0,-1});
```

# Spiral

```
#include "math.h"
#include "voplib.h"

float easeOutCirc ( float t )
{
    return sqrt ( 1 - ( pow ( ( 1 - t ), 2 ) ) );
}

float index = @ptnum;
float numpts = @numpt;
float startAngle = radians ( ch("angle") );
float dir = 2 * ch("dir") - 1;
float steps = ( numpts - 1 ) / ch("turns");
float stepAngle = ( 2 * PI / steps ) * dir;

float inc = index / ( numpts - 1 );
int mirror = chi("spherical");
float linear = ( 1 + mirror ) * inc;
if ( mirror && index + 1 > numpts / 2 )
    linear = ( 1 + mirror ) * ( 1 - inc );

float circ = easeOutCirc ( linear );
float interp = linear + ( circ - linear ) * ch("roundness");
float r = ( ch("rx") + interp * ( ch("ry") - ch("rx") ) );

// Apply power to radius at the end (after curvature)
inc = ( ( numpts - 1 ) - index ) / ( numpts - 1 );
float theta = 2 * PI * inc;
if ( mirror && index + 1 > numpts / 2 )
    theta = 2 * PI * ( 1 - inc );
r *= pow ( ch("falloff"), theta );

float angle = index * stepAngle + startAngle;
float x = sin ( angle ) * r;
float z = cos ( angle ) * r;
```



```
float h = index / ( numpts - 1 );  
float y = vop_bias ( h, 0.5 * ch("bias") + 0.5 );  
y = vop_gain ( y, 0.5 * ch("gain") + 0.5 ) * ch("height");  
  
matrix3 xform = dihedral ( { 0, 1, 0 }, { 0, 0, -1 } ) * lookat ( 0, normalize ( chv("n") ) );  
@P = ch("scale") * set ( x, y, z ) * xform + chv("t");
```

# Links

Big resource:

<https://lex.ikoon.cz/vex-snippets/>

# Comparing array

Find the difference between input 1's ids and input 0's:

```
int delete_ids[] = array();

int numPrims = nprimitives(1);
for (int i = 0; i < numPrims; i++) {
    int leaf_id = prim(1, "leafid", i);
    append(delete_ids, leaf_id);
}

int my_id = i@leafid;

if (find(delete_ids, my_id) >= 0) {
    @group_keep=1;
}
```