Boppers – points, paths, shapes – Oct 2024

Harrys boppers – paths and related entities October 17, 2024

I am at least pretending to be working on a demo program for harrys boppers (aka boppers). I am using the JavaScript/Three.js book and ChatGPT. My goals are :

1) Create a simple demo of a program to create and store paths (3D point to point with straight lines initially) and a program to display a number of paths with objects moving along them. Each path could either be invisible or displayed
2) Some attempt to synchronize the display with a pre-recorded piece of music like “Sixteen tons” by Tennessee Ernie Ford
3)

However, I also enjoy fantasizing about possible future developments of the boppers digital ecology.

Here are some concepts I have related to the graphics that will be displayed on a screen or in a VR environment.

It seems to me that there are a large variety of things that could be displayed. I think of them as kind of graphic entities. Here is an initial list that I hope to use as a base for comments:

All of these concepts are to be thought of as 3D, but including anything on a flat surface.

3D Points
Paths : lines connecting two or more points
Paths made up of lines with only angles, no curves
Paths made up lines with only curves, no angles

Paths with mixed angles and curves
Shapes – solid, granular

Paths:

Segments of lines - one segment is the line between two points

Grouped segments - a list of segments to be displayed in a sequences. The sequence can contain :

- seg : a single line between two points
- Csegs : A single collection of two or more contiguous segments
- MCsegs ; A collection of Csegs all from the same path

3D Frames : a sequence of points that forms a 3D shape

Technically this is just a 3D path where at least one point is connected to two or more other points. An obvious example is six lines making up a cube.

It seems to me that 3D frames that form a shape that a viewer may be able to see are different than paths that do not appear to be a 3D shape. Standard shapes, which could be stretched and or twisted, are cubes, multisided pyramids, multisided spheres, etc.

I think seeing a frame of a cube moving along a path will be significantly different than seeing a solid cube moving on the path. This also opens up the possibility of frames in which some “sides” (forming a closed flat shape) are filed in and some are not.

Imagining the range of such things can get very messy very fast. However, simple ones can be easily created and worked with without making it messy.

Here is a simple display idea. Imagine a cube frame in which each segment blinks in and out of visibility, changes color, shape (square shaped tube or circular tube), or width (larger diameter of circular tube). These changes could be synchronized with the music. The cube could also be moving on a path, rotating about any axis, and changing size.

Shapes – contiguous surfaces confining visible content.

Solid shapes

like a cube, a ball, a potato, a torus (inner tube)

These could be a static shape or a changing shape.

Each shaped object could have a level of transparency from opaque to nearly invisible.

Granualar shapes

This concept starts to become difficult to define.

Think of smoke, or a cloud, or a sandstorm.

The idea is that the “shape” has some kind of center and there are visible elements and varying levels of density as one moves out from the center.

An example would be an explosion of smoke starting at a point, or with a shape, and the going out. The smoke could have levels of density (sort of like transparency) and colors. Creating these would be programming challenge.

How does smoke, fog and sandstorm (sand cloud?) differ.

A “sand cloud” could be made of particles. A normal sand cloud would have tiny particles, a “hail cloud” could have bigger particles. A “cloud” could have a mix of particle sizes, and distribution.

Things like Brownian motion could be displayed.

In thinking about shapes in general it seems to me that in the real world each shape has a surface that defines its shape.

However in the digital display world each shape has a kind of invisible shell for a surface. All of the visible elements inside the shape (fog, haile, sand, pebbles …) stay within the invisible shell. An explosion is one kind of growing shape.

Conside an invisible shell shaped like a cone. The source of the “explosion” (I need a better word for this) could be at the small end of the cone and the stuff exploding would be filling up the cone as it moves out. Or it might move out in spurts – like smoke rings, or like disks moving out the cone and growing to fill the cone as they move.

I could get lost in these ideas. Add in colors (swirling mix of colors?), pulsing varieties of shapes (the rubber heads you squeeze to make the eyes and ears pop out). Add in a group of non-contiguous shapes (like balls at each of the six corners of an invisible cube) that change together – or relatedly in some sequence and “the road goes on forever and the party never ends.