


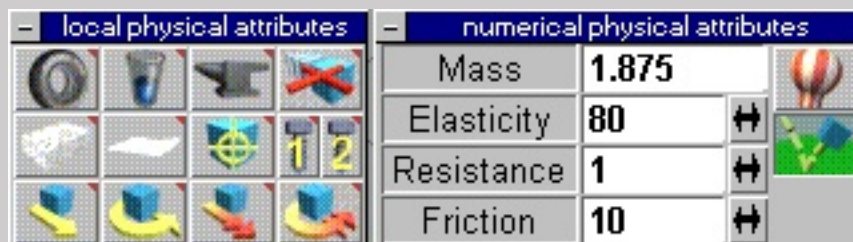
Dropping Balls Animation © Matthew Bennett

If you haven't yet explored dropping things in trueSpace, you are missing out on some fun. The plan for this tutorial is to drop a ball off a series of banked targets. Each target will be banked so that it bounces the ball to the next target.

What you will need for this tutorial is TS3 or higher.


The first thing to do is to start a new scene in TS. Create a sphere primitive with about a 20X16 resolution. Scale it down to about .25 along all axis.

Now right click on the physical properties button.  This should bring up the Physical Attributes panel. Set the sphere to the characteristics of glass using the glass button. This one works well for bouncing balls. I don't use the rubber because it tends to bring in the rotation of the ball into the way it bounces. Remember playing with super balls as kids, if you gave the ball a spin it would bounce back and forth...that's not the motion we want for this to work however, it is something cool to keep in mind for later animations....



Ok, so we have a sphere set with glass attributes. The next thing to do is to raise it up to about 10 units in the Z direction. The ground, Z=0, is the default

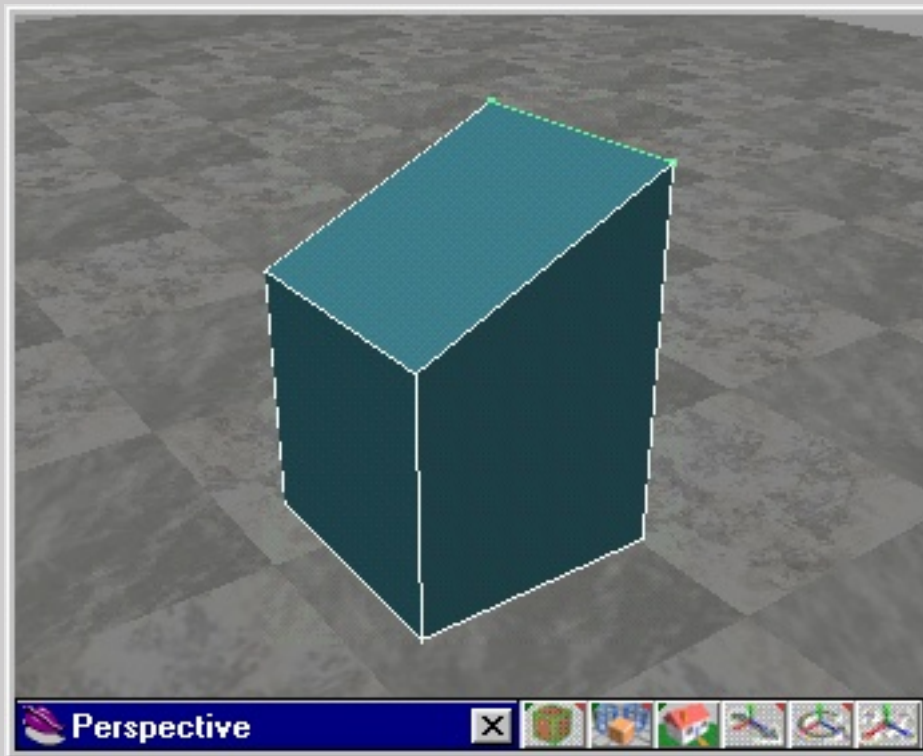
ground and can not be changed. So for something to fall, you have to put it up above the ground.

Next, open the global physical attributes panel.  Turn off the atmosphere settings (we don't need them for this), and if desired, you can adjust gravity to be a stronger or weaker force.




The next step is to set the bottom frame with the solid rendered frames as an animated texture. (refer to the Animated Texture tutorial listed on the right for a more detailed description of how this is done).

We now need to make a target. To keep things simple, create a cube primitive, and then using the point edit tools, grab one of the top edges, and move it up in the Z direction. We now have a solid target with a tilted top. We could have selected the top face of the cube and used the rotation button, however this would make the sides non-verticle. Not a terrible thing, but I wanted them to be verticle. Scale this object down so it is just a little bigger then the sphere.

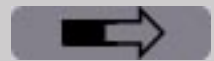
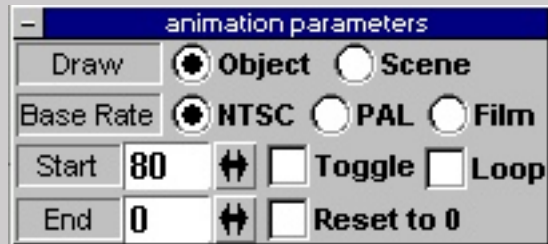


The target objects should not have any physical properties set. We don't want them to fall, just to get in the way of the ball. Please note that we did not have to set any collision properties for the targets, doing so would have accomplished nothing. The only effect would have been when positioning the targets, if you moved it into the space of a ball or other target, it would have stopped.

Select the target object, and position it about 2 units directly under the ball. The ball will now fall and bounce off in the target in a new direction.

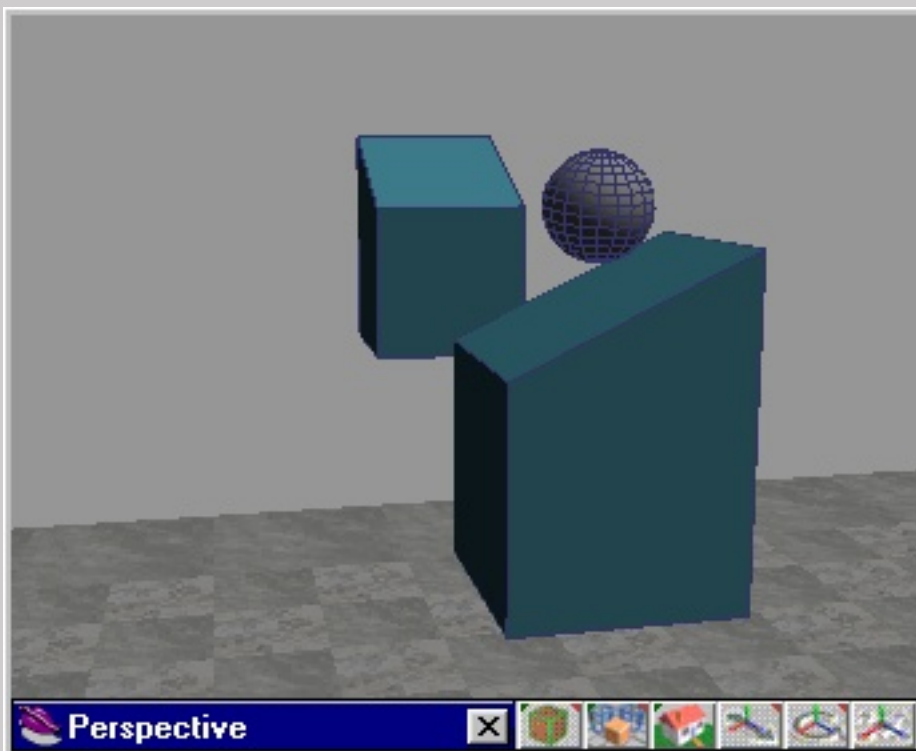
Have a top view and a front view open before beginning the simulations. Make sure the sphere is the selected object, and press the 'start' simulation button.  Let the simulation run until the ball has bounced away from the target and has fallen a little bit below it. Press 'esc' to stop the simulation.

What we need to do now is to create a 2nd target and position it so that it is in the way of the ball after the ball has bounced off the first target. Make sure the animation panel is set to 'object'.



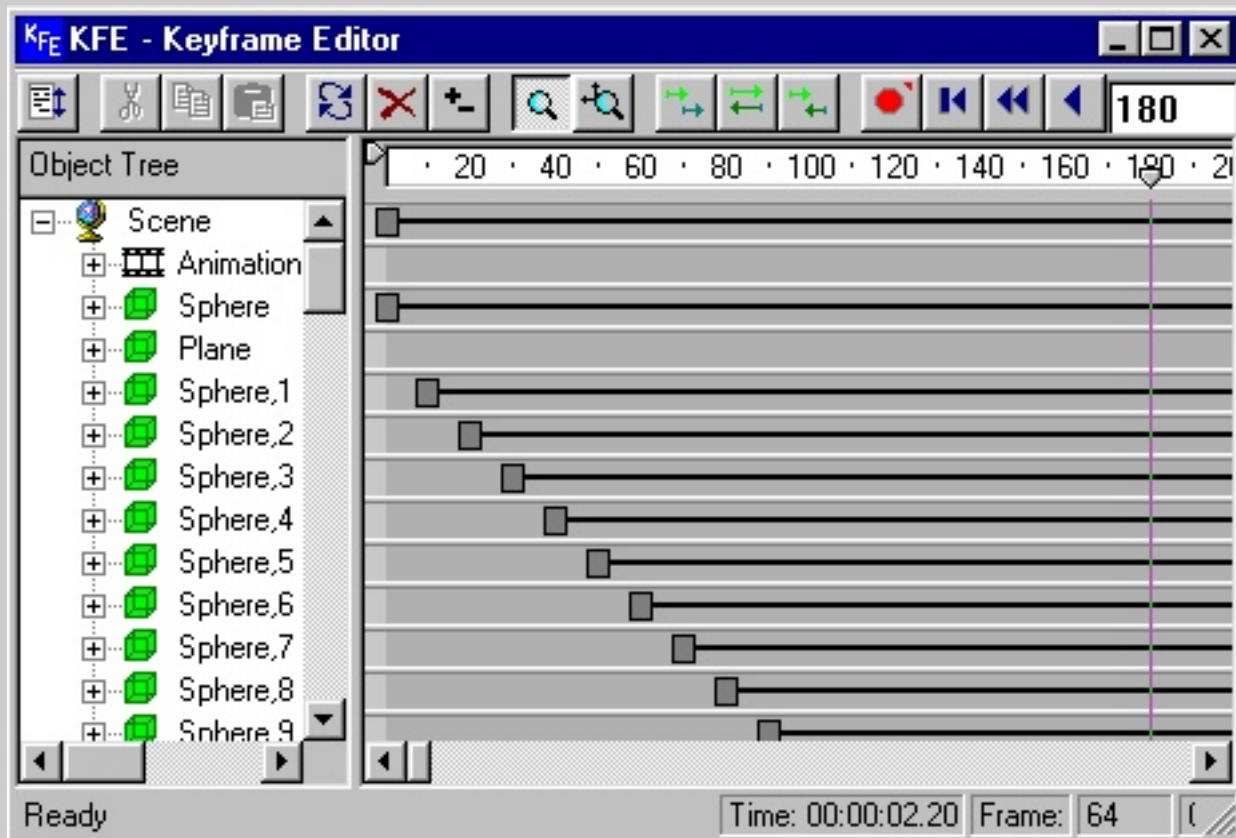
Dropping Balls Animation © Matthew Bennett

Forward the animation to the frame where we want the ball to hit the next target and make a copy of the first target object. Position it just under the ball. Since the animation panel is set to Object, the ball that was just dropped will keep its position allowing us to position the 2nd target accurately. If instead we had the animation panel set to scene, we would have to forward the animation to the needed frame, and then moving the target would actually set a keyframe for the target. -- of course the effect there would be a target moving into position to be hit --- Well, for this we want stationary targets. Rotate the 2nd target around in the Z direction so that the ball will bounce off in a new direction.




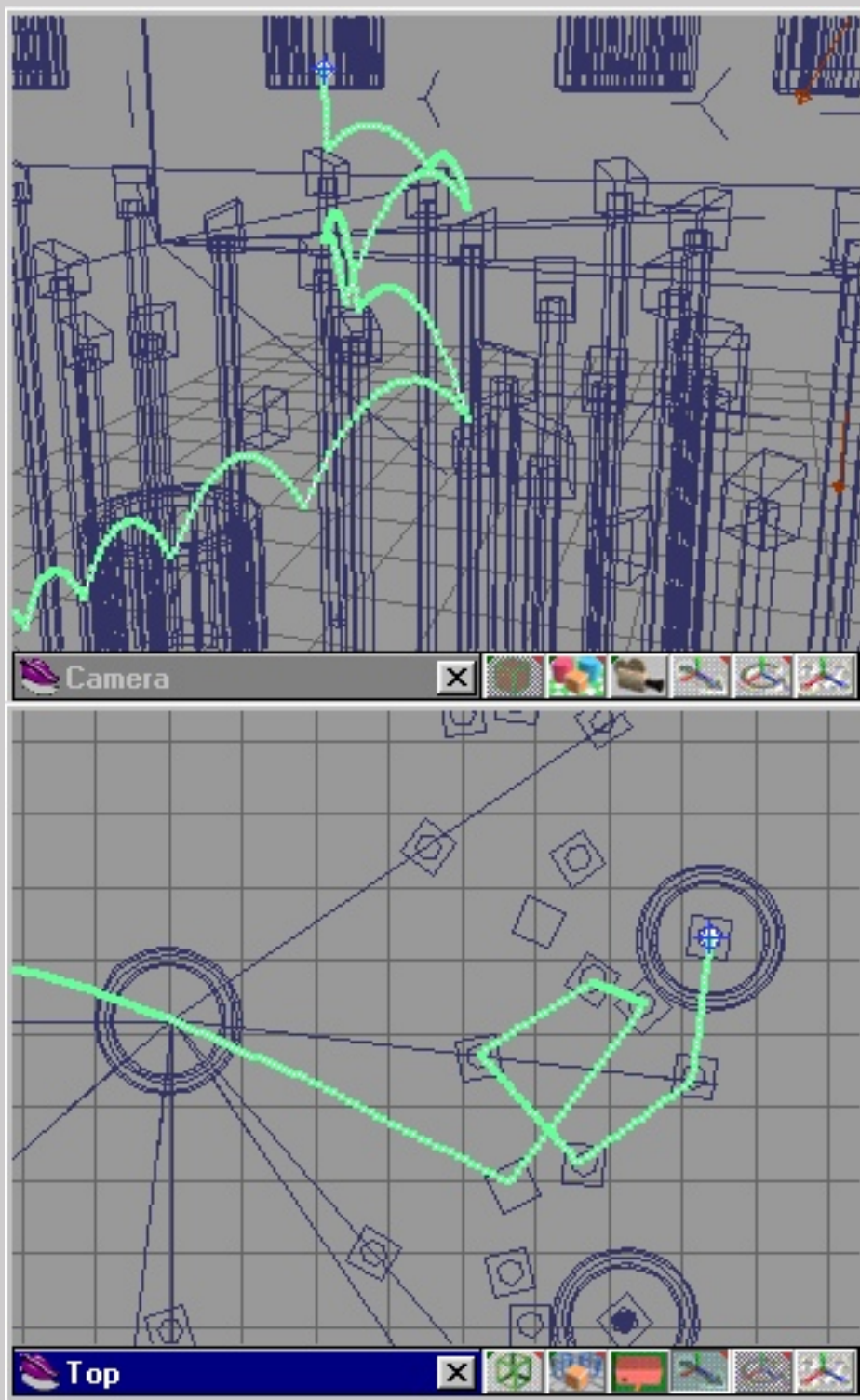
As an example of what you can do, after I did the

steps above enough times to place 7 targets, I added in a hollow cylinder for the ball to drop out of, and one for it to land in. NOTE: At this point I never used the start physical simulation button again. I had the animation path that I wanted, so now I was just using the regular play button to have the ball bounce. This makes it possible to put things for balls to fall out of, and to land in without effecting the animation path. The next thing I did was to set a keyframe for the ball to be invisible just after it enters the target cylinder. Then I saved this ball as ball1.cob. Next I made 15 copies of the ball, opened up the KFE - Key Frame Editor, and slid the animation bars for each object over by 10 frames. This makes the 15 balls all start falling one after the other.



After that I added added supports for all the targets I the glued all of the targets, supports, entry and exit

cylinders together making them all one object. I set this objects axis at the exit cylinder. I then copied this object a few times. Each time rotating it around so I had 4 sets of targets. Next I loaded up the original ball object, and using the path button  so that the path is visible, I moved the ball to the copied targets, and then rotated it's animation path so that it would hit all the targets. I then changed the color and resaved this ball as ball2.cob. I then copied this object 15 times and used a 10 frame offset again. Note: It is critical to have the animation path visible before moving the ball. If it is not, then it is nearly changing the first position of the first keyframe. I repeated this ball positioning and copying with each of the grouped targets. Within about 30 minutes I had 60 balls jumping all over the place! Below is what it looked like positioning the third set of targets with a ball. Since I had rotated the targets around the exit cylinder, all the balls bounce down to the same place. I could have just as easily sent them all off in different directions. You might notice the animation path extends past the exit cylinder. Before the ball actually leaves the exit cylinder, I had set a keyframe to make it invisible.



Ok, so finally here's a snapshot of about frame 180 with about 60 balls bouncing all over the place.



These animations are easy to set up, fun to create, and fun to watch.

Close