

Maya QNA_116	First published in 3DWorld Magazine 114 May 2009
<b>Question:</b>	<i>How do I simulate a magnet, like balls rolling to a common point? - mattjakob via the forums</i>

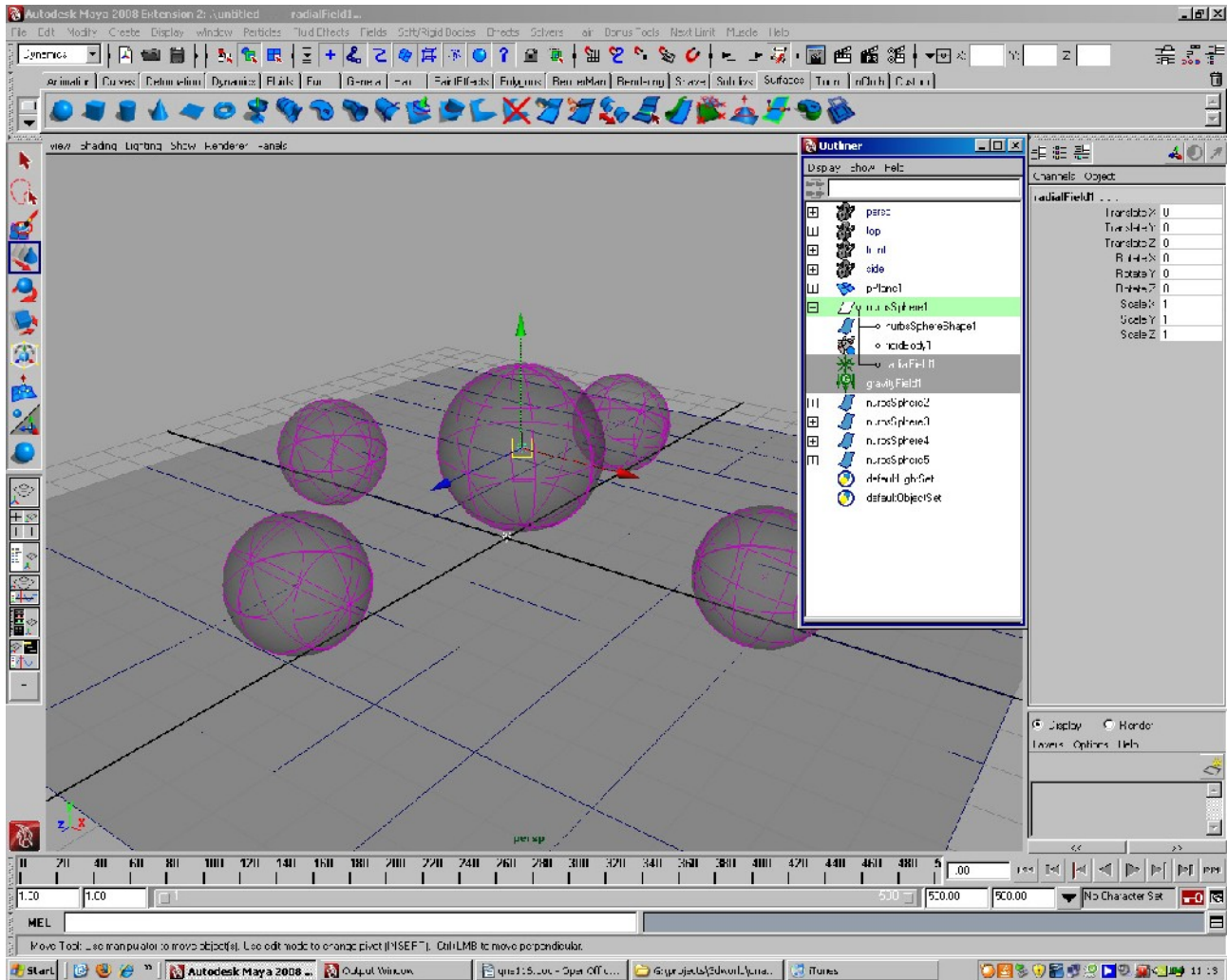


Far from being repulsive, creating a magnet in Maya is a really attractive problem. Okay, all puns out of my system.

Firstly, there is a magnet in the toolset but it is, by default, set to repulse. It is a radial field and the purpose of it is to push whatever is dynamic in the scene away from it. Therefore, where a positive factor of a magnitude is repulsive, a negative is attractive, so this sorts out your problem of where the magnet button is. A great example of this is Universaleverything's work for the Nokia E71 campaign at <http://www.nokia.co.uk/e71>. To replicate this sort of effect, create a nurbPlane and then a nurbSphere. Raise the nurbSphere to sit just above the nurbPlane. Now create a radial field, making sure not to have anything selected. Change the magnitude value of the radial field to  $-0.5$ . Next select your sphere and in the Dynamics toolset select Soft/Rigid Bodies > Active Rigid Body. Select your nurbsPlane and from the same menu make it a Passive Rigid Body. Now select your radial field and

parent it to the sphere. This is your magnet object. Reset your playback range to around 500 frames long and set your Timeline Preferences to Play Every Frame. Create a new sphere, bring it above the nurbPlane as you did before and make it an active rigid body. Selecting both sphere's, create a gravity field so that they can rest on the nurbPlane and roll about. Now open the Window > Relationship editors > Dynamic relationships and select your new sphere. In the right hand side of the window, select the radial field so that both it and the gravity are selected. Playback your animation. Your new sphere should act as if pulled by the original magnet ball. If you now repeatedly duplicate your new sphere and, using the Dynamic Relationships window, attach them to the gravity and radial you can have non-inter penetrative balls rolling to the magnet as you like.

Im1.



In this image you can see four spheres rolling up to the bigger sphere. Ish. Well, subtle dynamics don't really translate to images.



IM2

A finished version that truly looks better moving. To see if properly check out the movie file in the Maya archive for this project

**Quick tip**

Once your dynamics is finalised, select your active objects and under Edit select Keys > Bake Simulation. This takes your rigid body dynamics and bakes a key for every frame of motion and enables easier editing.