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The Domino Effect

Altering one metaball, even slightly, effects a 'mass' of surrounding metaballs to varying degrees. This alteration of a 'mass' of metaballs can effect another 'mass' of metaballs. This effect is often visible when there are metaballs protruding out the sides of a metaball body, (eg: legs or a tail of a metaball animal/creature suddenly change shape even though you were manipulating a metaball on the opposite side of the model). This Domino Effect is more likely to occur when a large amount of metaballs are present in a model and usually when dealing with a metaball which is protruding from a body of metaballs and will effect another metaball(s) protruding from the body elsewhere. This makes accurate metaball modeling of complex objects more difficult and frustrating.

Other problems which may contribute to this Domino Effect include rotation of one metaball parallel to another, (eg: one metaball 'leg' rotated and perhaps slightly moved may drastically change the shape of the other 'leg' despite the fact that these two 'legs' aren't close and the VOI of these two metaball 'legs' aren't touching each other.). Slight movement and rotations of particular 'protruding' metaball primitives can fix the problem. It's a good idea to use the axis reposition tool if necessary so the metaball primitives don't move as they rotate. This Domino Effect seems to occur more or have worse results when using the rounded cylinder

metaball primitive or several metaball primitives are overlapping quite a bit.

The shape of particular metaballs can also effect the 'skin' between other metaballs. This is especially true with the cube metaball primitive, which in certain cases will make the skin between two other metaball primitives sharper and more cube like, (for example two cylindrical or spherical metaball primitives with a cubic primitive at the end of one of these other metaball primitives).

Metaball Artifacts

To help cut down on metaball artifacts the VOI of interacting metaballs should be approx. proportionally equal.

Sometimes using metaballs as "fillers" around places where artifacts are present can help take those artifacts away. Be careful how you use them though since this technique obviously effects the shape of your metaball object.

Metaballs with VOI's at the min. and max. settings have the tendency to create artifacts.

Metaballs with a negative VOI 'cutting' into another can cause artifacts, experiment with the VOI.

Metaball Volume of Influence

The metaball volume of influence does not get smaller than the object, only larger. It has little or no effect on

the metaball itself, rather effecting the connection and other metaballs around it.

If you select a positive volume of influence and make that volume of influence larger the connection and size of the metaballs around it will increase. However, if you select a negative volume of influence, this metaball will vanish and 'cut away' from surrounding metaballs. To increase its 'cut away' power, make the volume of influence larger.

If for example you want to cut an eye socket into a face, your metaball with the negative volume of influence should be half to a third of the size of the metaball which you are cutting into. If the metaballs are the same size you'll just get the appearance of a metaball with a portion missing or sliced away. You may get some artifacts around the edges of your 'eye socket', try increasing the render res.

When the volume of influence is selected you can't select another metaball.

Misc. Tips

If you copy or create a metaball from another altered metaball the new metaball will inherit the same dimensional traits. So don't forget the normalize location, rotation and scale functions...

After working a while on a metaball model and you have the metaballs set to on release/move you may encounter a noticeable difference between the "working mesh" and the final mesh after metaball conversion

takes place. It's a good idea to click on the object tool once in awhile to see how the final mesh will look like. Check the final mesh more frequently when your metaball objects become more complex.

Remember metaballs often will not work well in situations where a great deal of detail is necessary.

If you want to delete several metaballs fast without having to group, remember that metaballs are selected by tS in the order in which they were created. If you follow this order, you'll be able to delete them fast...

If you do not need to edit your metaball model or animate it once complete, it's a good idea to convert the model to a polyhedron before rendering. If it's still in metaball format it will take longer to render. I'd still advise saving your scene or object with the metaballs intact in case you do want to alter the metaballs later. Rendering a scene with a few lights set to shadow mapping and a relatively simple metaball object which hasn't been converted into a polyhedron can raise the time it takes to calculate the shadow maps considerably. Another reason to convert your metaball object into a polyhedron if you're not animating it...

"Mirror" is another useful tool with metaballs that can be easily overlooked...

If you've just about got that part of your metaball object perfect but you need a subtle addition to its form try adding an entire metaball within a larger metaball.

If you're exporting your metaball object to another program remember to convert it to a polyhedron first. Apparently if this is not done, in some programs, such as Bryce 2, the metaball primitives will still be visible.

Creature/Animal Creations using Metaballs

If you're creating a complex metaball object of an animal or creature which you'd like fairly accurate and realistic try developing the outline first with several metaballs from the left or front views so you get a decent profile. Then start refining till you get the profile 'right', this will be easier and give you greater control if you created the outline with several metaballs. After this work on getting the proportioning right.

I've found that elongated Metaball primitive spheres work well for creature bodies, cylinder metaball primitives work well for the legs of creatures/animals.

Often with certain parts of animals such as a horse's hoof, metaballs just don't work if you want close up detail. Try making it without metaballs and fitting it to the model and then gluing or booleaning it to the metaball leg (the latter is only possible if you convert the metaballs to a polyhedron first).

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