



2014/05/30

## Features :

- Voronoi fracturation plug-in modifier. (See change-log.txt for the modifications)
- Supports convex, concave and hollow meshes.
- Fragmentation of opened surfaces without creating volume.
- Allows creation of gaps between fragments (two methods are proposed).
- Allows to detach fragments in separate nodes.
- It takes in account the mapping coordinates and the normals.
- Box Mode, an optimized and quick mode for fracturing boxes.
- Custom particles by using ParticleFlow, Particle System or any object type (EditMesh, EditPoly...)

## Installation notes :

Depending on your 3ds Max version you have to copy the corresponding file into the standard plug-in directory. For example : copy the file "VoroFrag\_2015\_2.5a\_64bits.dlm"

in the folder "C:\Program Files\Autodesk\3ds Max 2015\stdplugs"

You will find the "VoroFrag" plug-in in the Modifier Tab when you select an object that could be converted in Editable Mesh.

## Compatibility :

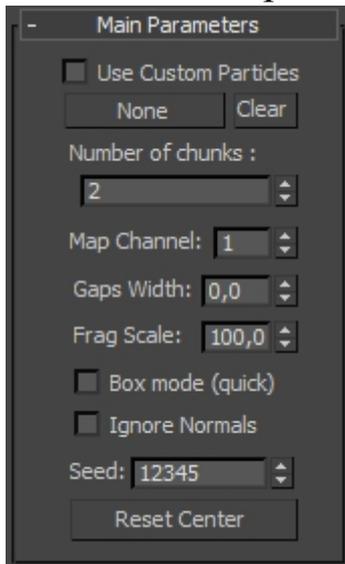
3ds Max 2008 to 2015 in 32bits / 64bits (N.B.: 2014 and 2015 are in 64bits only)

## License :

This plugin is initially a private project and was entirely made without business intentions.

It is free, without time limitation and can be used for personal or professional purposes. It is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY. Accordingly, by using it and in case of problems, you accept to have full responsibility for any loss of data, time or money.

## Interface description :



### **Use Custom Particles :** (Available from the version 1.5)

This option allows to use an external object as a reference of particles.

For that, use the pick button under this check box. When an object is picked, the button takes its name. It is possible to pick a Particle Flow source, a standard Particle System object (like SuperSpray). Notice that any object type defined by points in the space are compatible, therefore understand that Helper objects are not selectable. Another thing to know is that 3ds Max doesn't allow to make "reference loops", for example : if the plug-in references the PArray object, the PArray cannot reference the plug-in. To solve this problem, you have to duplicate an object.

### **Number of chunks :**

Specify the number of fragments. If you move the center sub-object pivot, this value will not reflect the real number of fragments.

### **Map Channel :**

Enter the Map Channel number that you want to be applied on this modifier. (If it does exist.)

### **Gaps Width :**

It is the space that separates the fragments.

### **Frag Scale :** (Available from the version 1.5)

It modifies the scale (in %) of each fragment relative to the particle center. In some particular situations, this technique can replace or complement the Gaps Width.

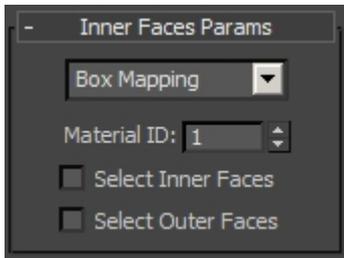
### **Box Mode :**

This mode is recommended for speed by using boxes...

**Ignore Normals :** Only applies the smoothing groups.

**Seed :** Change the uniqueness of the fragmentation.

**Reset Center :** Reset the sub-object center pivot to its origine.



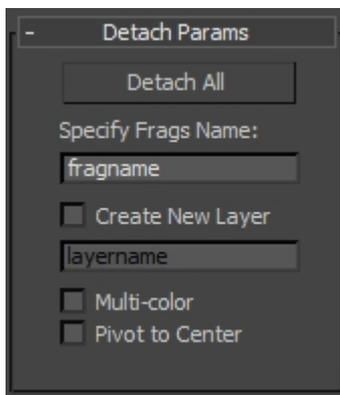
**Mapping type :**

The mapping applied to the inner faces relative to the object space, between : Box, Spherical, Planar, None.

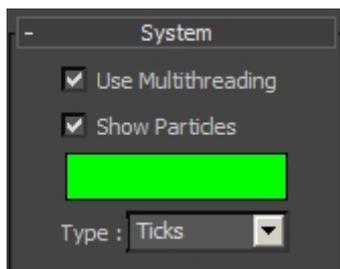
**Material ID :**

Material ID for the inner faces (in case you use Multi/Subobject materials).

**Select Inner/Outer Faces :** Simple selection method.



**Detach Params :** Detach all the fragments in separate pieces. First, specify the name and eventually a separate layer. Also choose if you want a multi-color wireframe and the pivot to the center.



**Use Multithreading :**

The use of multithreading depends on your system capabilities. If you encounter problems with it, just uncheck this box.

**Show Particles :** (Available from the version 1.5)

It allows to draw in the viewport the particles generated by the plug-in. The color and the type are customizable. This option is automatically de-activated when using custom particles.

## Object types and topology :

All the standard object types or objects that can be converted by the system in Editable Mesh are supported. The only restriction is that the modifier does not support overlapped faces. If some overlapped faces are detected, the modifier is inactivated.

Accordingly, if you want to apply the modifier multiple times, you will have to add some space between the fragments by using the parameter "Gaps Width". But for the sake of performance, this is not recommended.

VoroFrag also handles open surfaces (objects without volume) but in that case, it will just cut the faces. If you really want the modifier to create a volume, you could add, for example, a Cap\_Holes modifier just before VoroFrag.

In case of hollow meshes, the inner faces have to be inverted relative to the outer faces : a perfect example would be a Shell modifier applied on a sphere.

## Mapping coordinates and material ID :

There is no restriction about the material types : any material supported by the system is also supported by the plug-in.

If a Multi/Sub-Object Material is used, it is possible to specify which Material ID will be applied on the inner faces.

If an object does not contain already mapping coordinates, the plug-in does not add a default mapping, therefore the Map Channel and Material ID options will not work.

For the inner faces, you have the choice between three different mappings but you also have the possibility to ignore it, select the inner faces and apply a Unwrap\_UVW modifier on the top of the modifier stack.

## Performance tips :

The box mode is made to fragment very quickly but it is limited to boxes... So it is useful to fragment walls, windows or create many debris on the floor. In another side, the normal mode can handle any object type but is also slower depending on the topology. So, what are the factors ?

Is slower :

- Objects with a high resolution.
- Concave meshes with a small thickness.
- Hollow meshes.
- Objects containing multiple elements.

Is faster :

- Objects with a low resolution.
- Convex meshes.

All the properties are exposed to Maxscript except for the buttons "Detach All" and "Reset Center".

Use the command "ShowProperties" in the maxscript listener to see the list.

VoroFrag contact :

If you want to leave comments and/or report bugs, you can use the forum on [scriptspot.com](http://scriptspot.com) or the following email address : [myc3dev-plug@yahoo.fr](mailto:myc3dev-plug@yahoo.fr) (French, English and German languages are accepted.)

If you have used this plug-in in an interesting project, I would be glad to see what you have made with it.