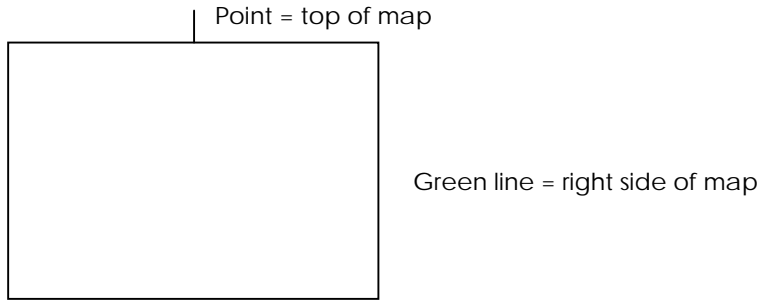


# 3d materials and maps

## Basic Rules:

- 1) Materials are added to the object; maps add complexity to the material
- 2) Object must have built in mapping coordinates or a UVW modifier in its stack
- 3) UVW = XYZ
- 4) Planar, Cubic, or Cylinder Mapping work effectively
- 5) Planar map position (*see illustration below*) is determined when gizmo is selected



## What is the difference between a map channel / material id?

**Map channel:** use map channels with composite mapping or UVW modifier or bitmaps with alpha channels.

**Material id:** use material ids with multi/sub-object material or edit mesh/patch or select mesh/patch modifier.

**Use:** Select mesh/patch modifier: to select pre-assigned ids in object

**Use:** Edit mesh/patch modifier: to reassign ids to object

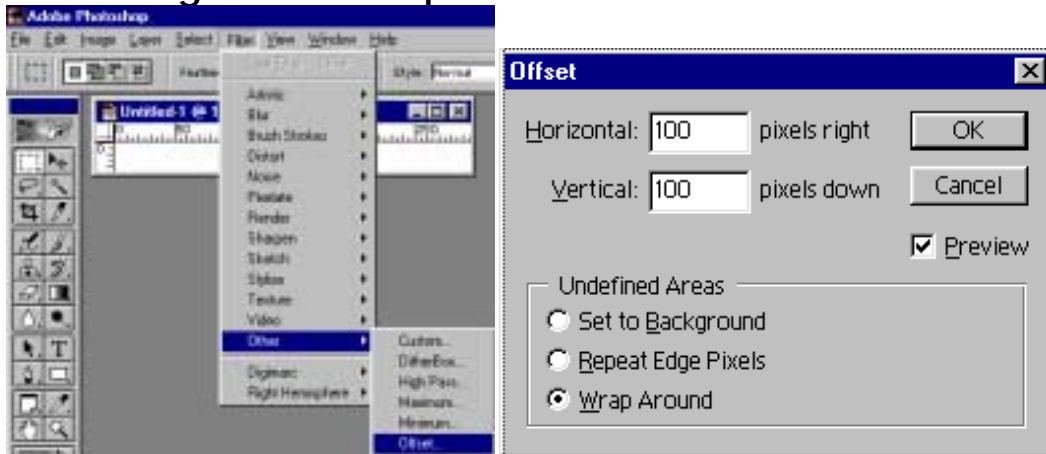
## Materials with levels or depth

**Composite or mix mapping:** mixes maps or blends maps together for more interesting or complex surfaces with depth.

## Tile-able Textures using Photoshop

Create a tile-able texture in Photoshop using the offset filter (*Filter: Other: Offset*); set number for offset and toggle wrap around. Use rubber stamp tool or other similar tool to blend edge; then use offset filter again and set a negative offset to reposition back to original.

## Controlling those Bitmap textures

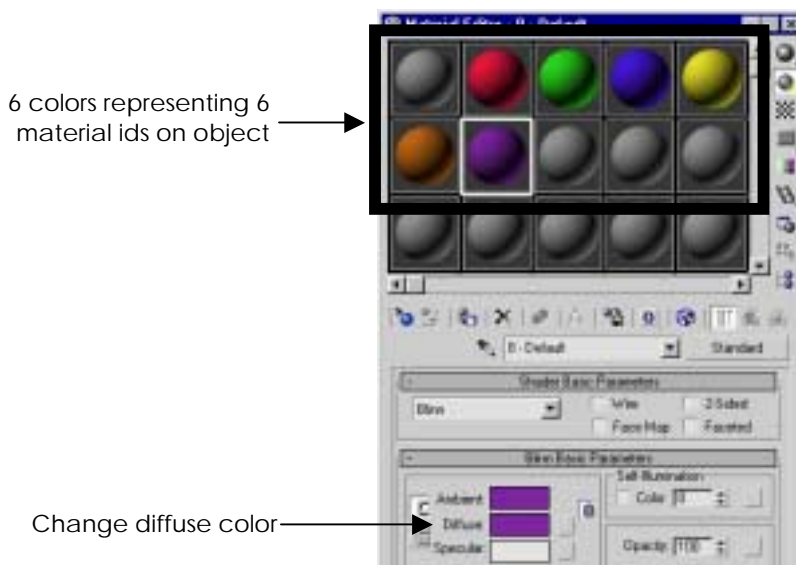


**Unwrap UVW:** use with cylinder, planar, or cubic mapping to move vertices when material shows signs of stretching on surface.

## Vertices are hard to manipulate in Unwrap UVW

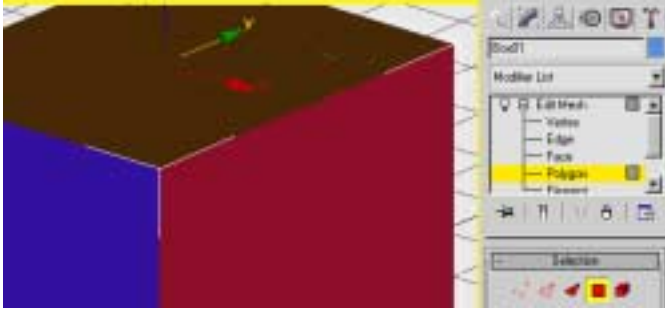
*map parts of object not whole object and use Planar mapping whenever feasible:*

1. Decide how many material ids will be in single object
2. Open Material Editor
3. Change diffuse material colors for number of assumed ids in object to colorful palette color choices (*such as red, blue, yellow, green, etc.*)

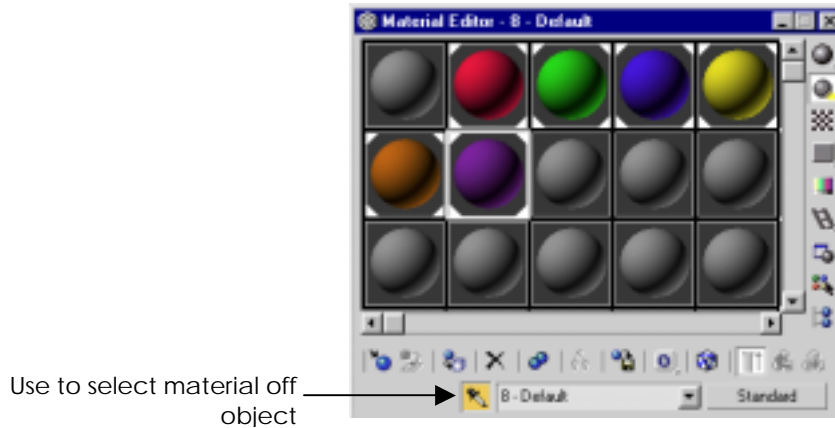


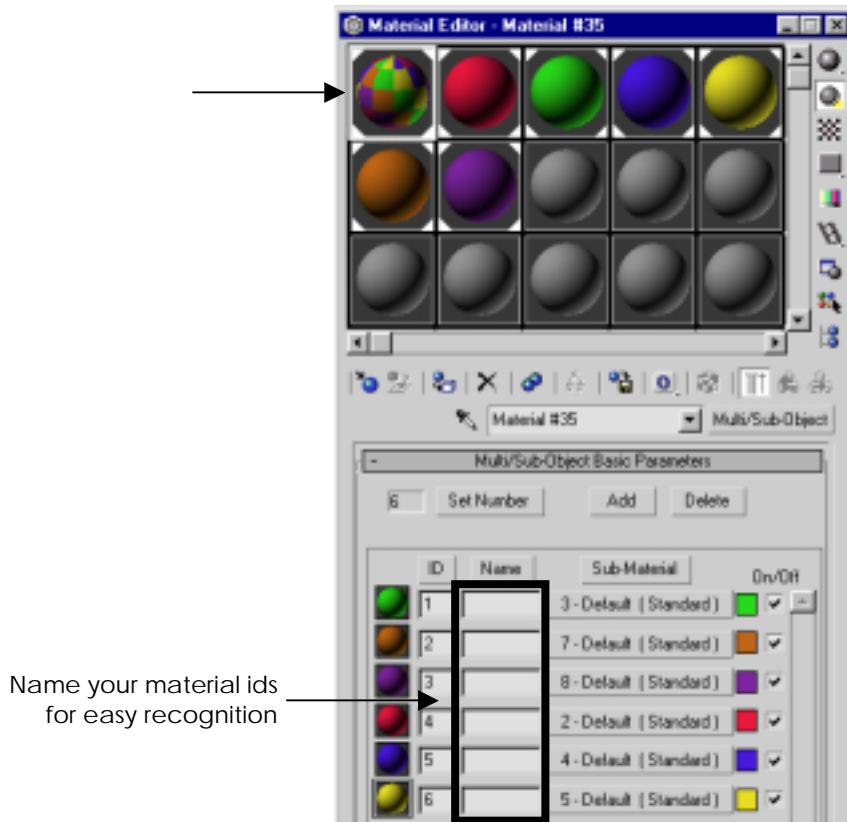
4. Add edit mesh/patch to object
5. Select polygon/patch sub-object level
6. Select the faces for first material id

7. Drag material from color slot in material editor onto object's selected faces; the material is added to the selected faces and the material id is reassigned automatically.
8. Repeat for next set and drag new color onto object; again the face loads this material and the material id is reassigned automatically.
9. You will have a very colorful object but you can figure out which faces are part of which id easily. Reassign ids by dragging the material from its slot onto the new faces replacing the old color.



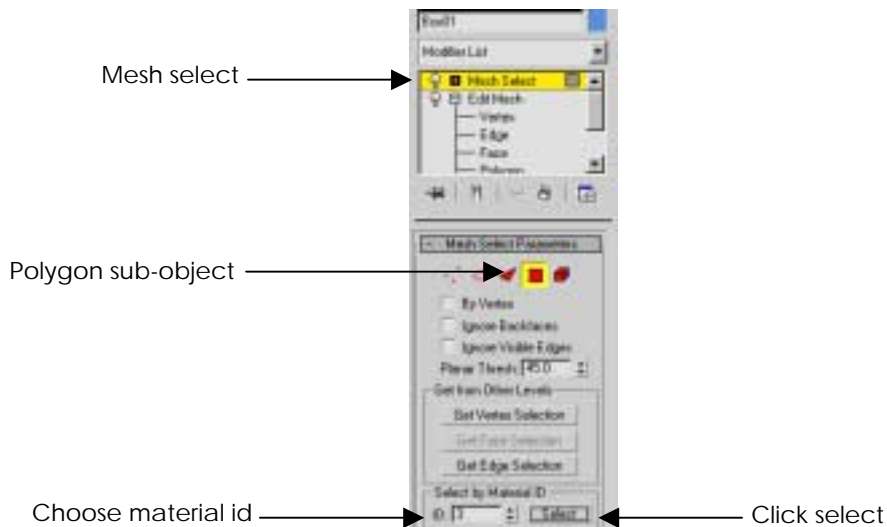
10. Turn off sub-object selection.
11. Create a multi/sub-object material based on assignment on object in scene. Select eyedropper in material editor; select an empty slot and click on object in scene. Multi/sub-object material will be automatically created.





Name your material ids for easy recognition

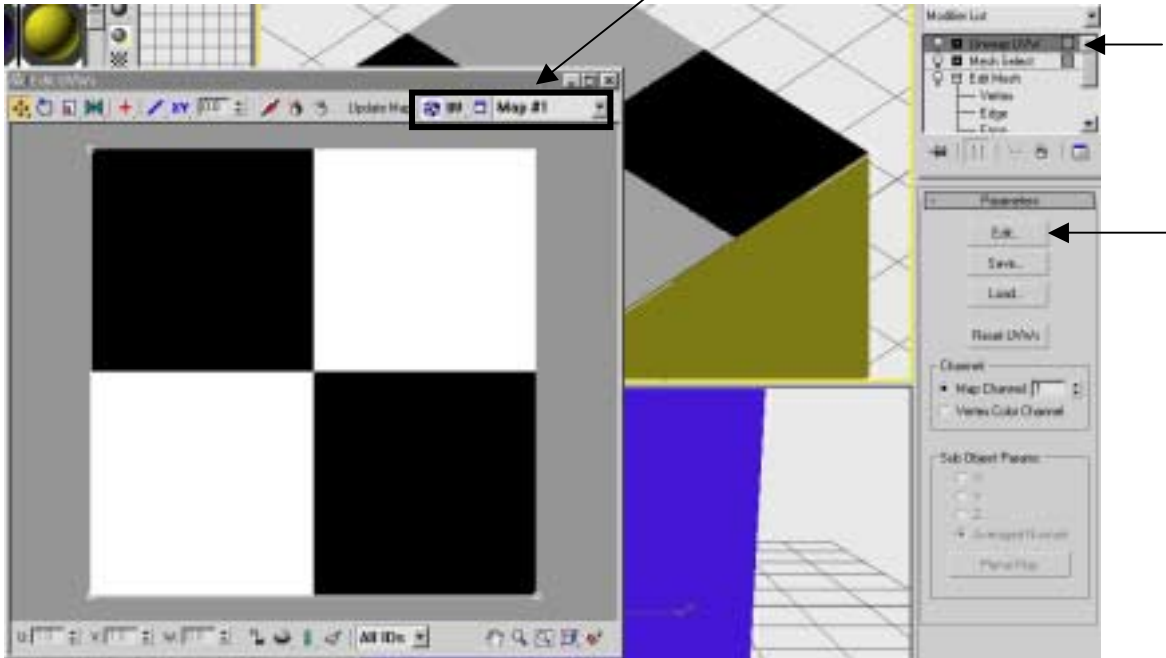
12. Add names to sub-material ids
13. Add Mesh/Patch Select to object
14. Select material id of object you want to map and click select button to select



15. With polygons selected add UVW mapping selected faces (generally use planar mapping for best results; this of course depends)

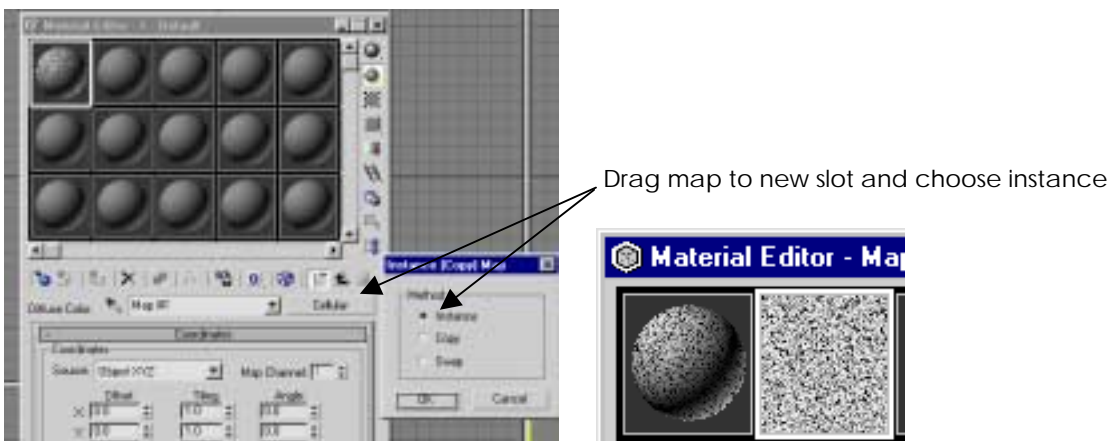
16. Add diffuse map to material id using material editor and check for stretching. (sometimes I use checker map to check map size / stretching)
17. Add UVW Unwrap to fix stretching of map. Click edit and move vertices to align polygons in to map. Watch mapping in viewport update.

Select map for object and show in viewport



## Exploring variations of material or map without altering original

*If you want to edit a map or use the map in another material slot drag the map into an empty material slot and choose instance so that any changes to the map in the slot will change the map in the material.*



Material on left; map on right

**Morph Targets:** If you have a hard time using Unwrap UVW - try morph targets. Consult Bill Fleming's books for advise or ask me for references!

**Bump Map:** white is high; black is low; use negative bump levels for reverse effect of texture on surface.

**Specular Level:** the shininess of light on the surface

*Add noise or cellular to specular level to roughen up the light bouncing off the surface.*

**Glossiness:** the size of the light on the surface

**10 Principles of 3d Photorealism** (Bill Fleming):

- Clutter and chaos
- Personality and Expectations
- Believability
- Surface Texture
- Specularity
- Aging-dirt, dust, rot
- Flaws, tears, cracks
- Rounded edges
- Object material depth
- radiosity

**Finally:** consider the following resources for texture mapping and digital painting

Digital texturing & Painting: Owen Demers (New Riders)

Advanced 3d Photorealism Techniques: Bill Fleming (Wiley)