A TOUCH OF DIRT FOR IRAY

README

1. How to do the initial set up?

Use the "V3DPD Apply Dirty Shell" script on any object, figure or group of objects and figures you want.
For this, go in your scene and select any figure, outfit, or object that you want.
Double click on "V3DPD Apply Dirty Shell". Depending on the number of objects and surfaces involved, the process may take from a few seconds to a few minutes (DAZ Studio will become unresponsive during the process).
"V3DPD Apply Dirty Shell" will create geometry shells for all selected elements and apply the base dirt shader to all the surfaces of these shells.
The shader applied is a procedural shader, which means that it is independent of any type of UV map. The shader is calculated at each frame on the figure and depends on the figure geometry, this is why it is not compatible with animations using animated figures (the dirt will seem to slide on the animated parts of the figure).
The dirt applier is optimized for use on Daz People, this is why:
- **The shell offset distance is optimal for Daz People and their outfits**. *For large objects, if the shell is not or not totally visible, you may have to increase this offset, up to a maximum of 1 (0.1 is generally enough).* This parameter is found in the Parameters tab, General/Mesh Offset when the geometry shell is selected in the Scene tab.
- **The scale of the dirt is optimal for figures of around 1 to 2 meters**. *For larger or smaller objects or figures, you may want to adjust the tile of the noise. For this, you have a single slider that allows changing all scales (tiling) of all the dirt noises at once, which is called "Tile Them All". For larger objects, it is better to decrease "Tile Them All".*
- The colors of the underlying noises and the parameters of the noise driving the opacity are chosen for best efficiency on light human skins. You may have to change colors and/or increase opacity strength for more visible effects on dark objects.
- **The shell is set as "not visible" for all eyes, teeth, and inner mouth parts of any figure from Generation 4 (M4, V4), up to Genesis 3.** You can reactivate this in the parameters tab, shell/visibility.
- *Several Shells can be created on a same object, but you have to change a bit the offset of each shell.* You cannot create a shell using shell as the parent object : you have to use the parent (main) object or figure instead.
- Some specific morphs with high slopes variations and/or inversion on the mesh may have as a consequence a mesh poking through the shell. This is due to the shell technology, in this case, don't try to solve it using the shader, try instead to change the subdivision algorithm used on the parent figure (in Parameters/Mesh Resolution of the parent figure), or try to change the shell offset.
- For objects using displacement maps :
you have to copy the displacement maps of the object to the shell, using the tool provided in this product "V3DPD Transfer Original Figure Maps". This tool allows you to copy also the strength of the displacement map. But in order to match the SubD levels, it is better to convert the surfaces of the initial objects to an "Iray Uber Base" shader, so that you have access to this parameter. I generally use a 1 or 2 SubD Level. The min and max of displacement must also match between the original object and the shell, but this has to be done manually.
- For objects using opacity maps : the same way, using the copy tool "V3DPD Transfer Original Figure Maps", you have to copy the maps and strength of opacity from the original object to the shell (see part 4.)

2. Understanding the shader

The shader uses several Perlin Noises. Using procedural noises eliminates all UV map issues.

You have Perlin Noises available for :
- The base color : 2 noises you can mix.
- The opacity : 2 noises you can mix (also allows opacity map use).
- The glossy layered weight as well as the glossy roughness : 1 noise for each.
- The bump : 1 Perlin bump noise plus one optional mapped noise.

All noises are independent. The only common factor they have is the "Tile Them All" slider which allows changing the global tiling of all of them at the same time to adjust to the object scale you are using the shader on.

The glossy layered weight as well as the glossy roughness can be set as constant or noisy using respectively the buttons "Remove Noise From GLW" and " Remove Noise From Glossy Rougness". They are set by default to "On" meaning that these properties do not use Perlin noise by default.

The KEY setting for the REPARTITION of the dirt (where there is more, where there is less) are the two Perlin noises for opacity which you can find in the surface tab, group 04 (04.a. up to 04.c)
- Groups 04.a. and 04.b allow you to set up 2 independent noises.
- 04.c allows you to choose if you want to have only the noise of 04.a., only the one of 04.b, or if you want to blend them (as well as the proportion and type of the blend).
You can also decide in 04.c to remove the noise and opt for a constant opacity. The global strength of the opacity, noisy or not, is driven by "Noises Opacity Amplify" slider. You can finally decide to add an opacity map on top of all that (for instance if you want specific areas to be clean), but in this case you will again become dependent on the UV set.

Important fact : you can use the cutout opacity map, even if this parameter is unmapped, in order to lower the opacity strength of the dirt. For this, you have to check first that the "Also Use Opacity Map" dial is "On" (It is by default off). Then, you can dial down the "Mapped Cutout Opacity - Activate It By: Also Use Opacity Map" down.

Then once the repartition of the dirt is set up, the color of the dirt is set up using 2 other color Perlin noises, which you can blend. The properties of each of these noises can be adjusted in the Surfaces Editor tab respectively in 01. Main Dirt Color, and in 02. Secondary Dirt Color. You are not forced to use both color noises. The way you blend can be set up using the parameters included in 03. Base Color Noise Mixing. You can blend them a first time (on a first layer), and then blend a second time the second noise with the result of first blend (layer 2).

A few other parameters can influence the final render, such as the gloss and the top coat.

The shader includes the possibility to be emissive, not for dirt purposes, but to enhance the possible special effects you can eventually make with them. In order to activate the emission, the "Luminance Amplify" must be set to a positive value. The emission property do not work exactly as on the classical "Iray Uber" shader. The emission mode must be set to "intensity radiant exitance".

Two different shaders are included in this product.

They differ in the way the opacity is treated:
        - In V3D Procedural Dirt 1, the opacity inversion, the Strength of the Opacity (Opacity Amplify) as well as the power applied to the opacity, is applied only on the first opacity noise (And the Opacity Amplify is also applied to the final blend).

- In V3D Procedural Dirt 2, all the elements mentioned above are applied directly to the *blend* of the opacity noises.

Keeping these two options allowed a wider variety of noises.

The final perceived color also depends on color of the underlying object.
Where the dirt opacity is null, of course, you will render the color of the underlying object.
Where the opacity is one, of course, you will render the color of the dirt (defined by the blend of color noises).
But everywhere the opacity is neither 0, nor 1, then the resulting rendered color will be the underlying figure or color above which there is partially (depending on the opacity) the dirt color.
Furthermore, the color is perceived by the brain in comparison with the surrounding colors. This is a characteristic of the human brain, not of the shader itself.

3. Refining the initial shader :

For figures and outfits you have 3 ways to change the dirt settings:
- load full or partial presets
- Refine manually using the Surfaces Editor Tab,
- Refine by the "V3DPD Manage Dirt Base"

3.1.a Loading Full Presets

Located of folders 00.Full Shaders presets, these shaders will modify almost all the parameters of the noise, including the shader type (Procedural Dirt 01 and 02).
In order to apply them, you have to select the shell using the Scene Tab since they are made not selectable via the viewport. Of course, if you plan to work a lot on them, you can make them selectable in the Scene tab, and afterwards select them via the viewport. Then, in the Surfaces Editor Tab, you have to select all the surfaces of the shell you want to modify. Finally you can apply the shaders.
These shaders are set up so that they don't modify the settings you have for the eventual maps you added on the shell (Displacement, Normal, Bump, Opacity)
WARNING : as mentioned before, there are 2 types of shaders. If you are swapping from one shader to another, then if you changed the limits "manually" of some of the mapped parameters, this limits will be reset by the new shader.
If the shader name begins with V3D PD1, they you will call the Procedural Dirt 01, and if the shader name begins with V3D PD2, they you will call the Procedural Dirt 02. If no number is mentioned, the shader is not changed.

3.1.b Loading Partial Presets

You will find 2 types of partial presets : Colors and Opacity.

- Colors Only Shaders Presets file will modify only the colors characteristics of the noises, but not the repartition of the opacity. *The tiles of the colors Perlin noises will not change in order to respect your previous choices, you can change these tiles afterwards if you want.*
The parameters loaded are : the colors, the levels, the thresholds, the blend type and amount of the two perlin color noises. The relative tile and placement are not included in these shaders.
They are "shader independent", meaning that they won't change the shader type that you used (the Procedural Dirt 01 or 02)

- Opacity shapes Shaders will change the opacity repartition of the dirt, without changing the color choice you made. They are "shader dependent", meaning that they WILL change the shader type that you used (the Procedural Dirt 01 or 02). The will also change the tile of the noise, but will not change the "Tile Them All" adjustment you might have made. They will also change the "strength" of the dirt.

None of the partial presets will change the maps settings you would have made before, except for the Opacity shapes if they are swapping from the Procedural Dirt 01 to 02 from the Procedural Dirt 02 to 01, in which case the risk is that the limits you manually set on the maps will be reset to their initial limits (in case you changed them).

3.1.c Manual Refining of the dirt

AS LONG AS YOU DON'T USE MAPS, Since the whole shader is map independent and UV independent, I would recommend adjusting it on only one surface to benefit the organization of the surface parameters by group. Then once done, copy and paste your surface (right click on surfaces for that) on the other surfaces of the shell. But of course you can also select immediately all the surfaces you want.

The properties names have been set so that you can easily "filter" them using the "Enter text to filter by..." research area located at the top of Surfaces Editor tab. The key words you will use the most for manual adjustment of the noise are :
- "til" (without a "e" at the end), will give you access to all the tiling all together, in order to be able to change all scales (tiles) easily, both for the noises and the maps.
- "off" will give you access to the offsets, which are parameters moving the noises up down, right left, and front back, both for the noises and the maps (no front back for the map).
- "rot" will give you access to the parameters rotating the noises, but it is in most cases useless.
For all these filters, N1 and N2 represent the color noises, Opa and Opa2 the opacity noises, GLW represents the glossy layered weight and GRO the glossy roughness.
-"N1" or "N2", will give you access to key parameters of the two color noises and their blend.
- "OPA" will give you access to all noise opacity parameters (including the second noise used for opacity, and the mapped opacity),
- "OPA2" will give you access to the parameters of the second noise used for opacity,
- "Amplify" will give you access to the total opacity (driven by noise), as well as the Glossy Layered Weight Strength, the Glossy Roughness Strength, and the Luminance Strength,
- "Opac" will give you access to the opacity strength as well as the mapped opacity. Take care that the "Opacity Amplify" does not act the same on the two shaders. Please read the "Important Note Concerning Opacity" of the next part.
- "GLW" and "GRO" will give you respectively access to the Glossy Layered Weight and Glossy Roughness properties,
- "BUMP" will give you access to all the bump parameters, mapped or not (take care bump noise is not driven by colors, don't look for them),
-"norm" will give you access to the normal map,
- "disp" will give you access to all the displacement settings,
- "Top" will give you access to all the top coat settings

For more elements about noise management, please read the next part.

3.1.d Refining by the "V3DPD Manage Dirt Base"
The shell must be selected in the Scene Tab, then all the surfaces you want to change must be selected in the Surfaces Editor Tab. Select all the surfaces you want to tweak.
Open the "V3DPD Manage Dirt Base".
You will access most of the key parameters for driving the dirt : repartition, color, as well as a few other parameters.
The details of the parameters can be read by clicking on the "More Information" button for for the first four pages (or tabs).
The tabs available are :
- Colors Basics,
- Colors Shaping,
- Opacity Basics,
- Opacity Shaping,
- More Options.
Above these tabs, you will find a menu to activate or deactivate the noise in opacity, 2 sliders to increase or decrease the opacity of the noise, as well as a slider "Tile All Noises" to adapt the shader to the scale of your object : decrease if for big objects, eventually increase for small objects.

IMPORTANT NOTE CONCERNING OPACITY (dirt amount/dirt visibility) :

The " Noises Opacity Amplify -Strength (also if constant)" dial, displayed in the interface as "Increase Opacity (Noise 1 Only For Shader 01, Both Noises For Shader 02)", will act on both noises defining opacity ONLY if you are using shader Procedural Dirt 02.

*If you are using Procedural Dirt 01, then it will act <u>ONLY</u> on the first Perlin noise used to define opacity, not on the second one. In this case, **you can use the opacity map strength** (take care that the "Also Use Opacity Map" choice is ON, which is the case by default) to decrease the total opacity of the dirt (or to increase it, but for this you may have to remove the limit of the dial). This what the dial " Increase Opacity Full (Linear Variation Of All Opacities, Including Maps)" is here for (it will also update the limits if you want to go above 1).*

Another way to change the dirt amount is to reduce the highest grey levels used for the opacity noises. These colors define the maximum opacity.

Colors Basics tab :

The final color of the dirt depends on 2 Perlin noise. This page allows you to set up the base properties of these noises.
N1 and N2 refer to these two Perlin color noises.
- Each of these noises is basically defined by two colors, one tile, one noise levels.
- For each noise, the two colors are the two colors used by the Perlin noise. They are going to be represented with the black and white *repartition* of a Perlin noise, black and white being replaced by each of these colors.
- The tile is the inverted scale of the noise. The final tile also depends on the "Tile All" dial top of the interface, as well as on the "Stretch" values located in the "Colors Shaping" tab. The scale is proportionally inverted with the tile. Increase the tile for a lower scale. **For all the tiles, it is better to enter the value you want in the right of the dial** (the result is the same, but it is better in term of precision)
- The levels will determine the levels of details of the noise. When you increase it, the noise becomes more grainy and more detailed. The 0 of this dial will set the level to 1.
- MORE OPTIONS for placement and thresholds can be found on the colors shaping tab.
 - For beginners, in order to set up your colors patterns more easily, it may be useful to SET THE NOISE OPACITY TO INACTIVE, by using the dropdown menu located at the top if this interface and by raising Increase Opacity up to 1 or more. Then you can re-activate it and work on opacity as a second step.
- These 2 color noises can be blended a first time using the color blend proportion (Blend N1 and N2 dial control the strength of this blend). In this case N1 can be considered as a bottom layer, and N2 as the top layer. A 0 Proportion means that you are using only the noise 1, this may be the recommended option for beginners.
        - For other proportions, you can choose the blend type of these two noises using the dropdown menu just below the dial.
        - The result of this first blend can be blended a second time with noise 2. This time the strength of this blend is defined by the dial Blend N1 and N2.
        - IN MOST CASES, using a single noise, or a single blend, will be sufficient. The second blend is here for people who really want to achieve more specific patterns.
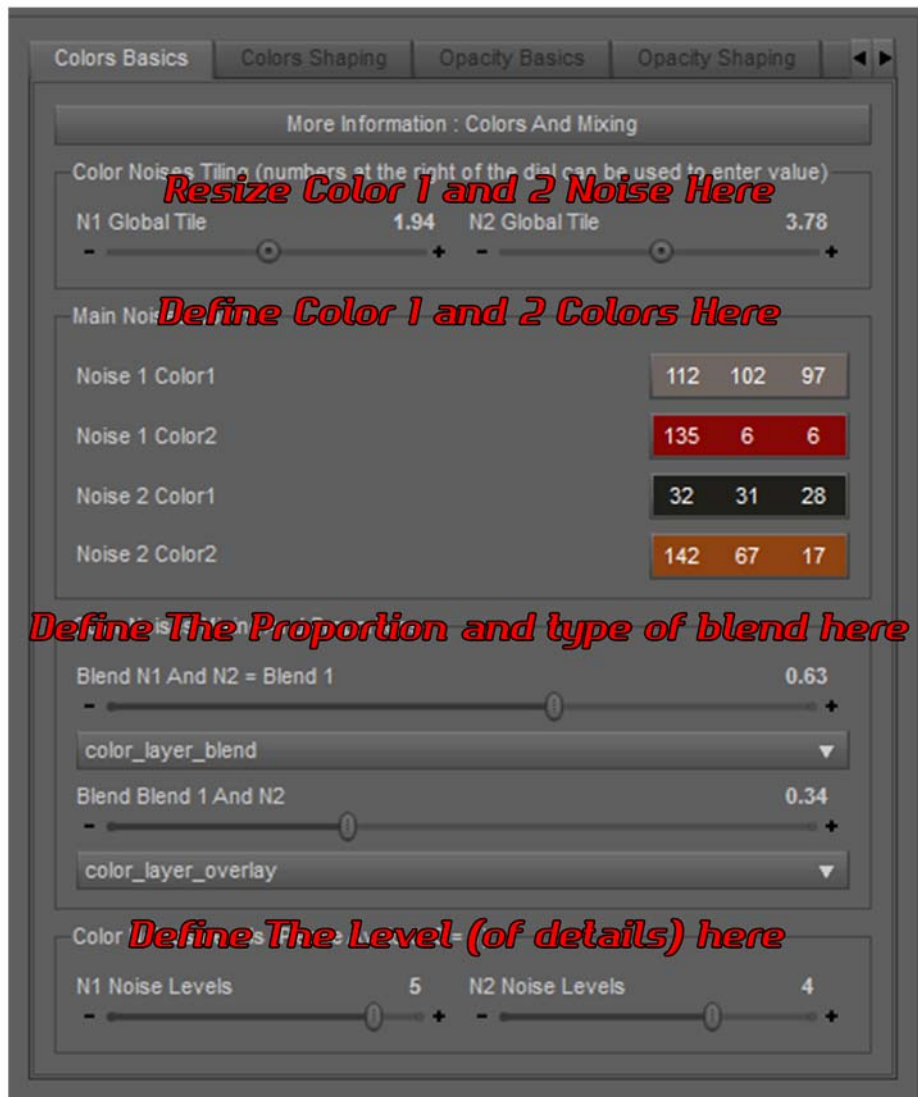
Colors Shaping tab :

This page allows you to shape more and place the colors noises. Take care, the opacity of the noise is not linked to the color, so if you want to change the place the dirt is, use the opacity pages instead.

- The thresholds will determine below which level and above which level the noise will be "ignored". A high lower threshold will show more the color 1, a low upper threshold will show more color 2.
- Thresholds values close to each other will create more sharp patterns and borders.
- If the 2 values are close and small, color 2 will be more visible, with small color 1 areas. If the 2 values are close and big, color 2 will be more visible, with small color 2 areas.
- The Stretches 1 and 2 define respectively for color noise 1 and 2 the horizontal (H dials), vertical (V dials) and depth (D dials) stretch. Since the noise is generated on the object

shape. High stretches tend to wrap the noise around objects curvatures for some of the objects views or orientation.

- For each of the 2 color noises :
The LR (left right) Offset dial will offset the noise to the left when increased,
The UD (up down)will offset the noise to the bottom when increased,
The FB (front back) will offset the noise to the back when increased.
Some deformations of the noise may occur with offsets due to the way the noise is generated on the object.
- For each of the 2 color noises :
- The X,Y and Z rotation of the noise will rotate it around the X (H : horizontal left/right), Y(V: vertical), and Z (depth) axes. This is not easy to handle the result, but this is very useful if you are using an high strech and you want to orient it.

Opacity Basics tab :

Opa1 and Opa2 refer to two Perlin color noises.
- Each of these noises is basically defined by two grey levels colors, one tile, one noise levels.
- For each noise, <mark>the two colors</mark> are the two colors used by the Perlin noise. Please keep grey levels for them for a better control*. **On black areas, the dirt won't be seen. On white areas, the dirt will be totally seen, on grey areas, there will be a partial opacity depending on the grey levels.**
- <mark>The tile</mark> is the inverted scale of the noise. The final tile also depends on the "Tile Them All" dial top of the interface as well as on the "Stretch" values located in the "Opacity Shaping" tab. Their scale is proportionally inverted with the tile. Increase the tile for a lower scale.
- For each noise, <mark>the levels</mark> will determine the levels of details of the noise. When you increase it, the noise becomes more grainy and detailed. The 0 of this dial will set the level to 1.
- MORE OPTIONS for placement and thresholds can be found on the opacity shaping tab.
- <mark>These 2 Opacity noises can be blended</mark> once using the color blend proportion (Blend Opa1 and Opa2 dial control the strength of this blend). In this case Opa1 can be considered as a bottom layer, and Opa2 as the top layer. A 0 Proportion means that you are using only the noise 1, this may be the recommended option for beginners.
- For other proportions, you can choose the blend type of these two noises using the dropdown menu just below the dial.
- The <mark>total strength</mark> of this blended opacity noise 1 and 2 (or of opacity noise 1 only if you don't use a blend), is dialed by the opacity strength dial found at the top of this interface *if you rely on shader Procedural Dirt 02. In the case of shader Procedural Dirt 01, it will dial only Opacity 1,* which means that you will have a residual Opacity 2 if you decide to blend it with Opacity 1. Both shaders are interesting in order to reach specific opacities.
- This is not available in this interface, but you can INCLUDE AN OPACITY MAP in order to "keep clean" some specific areas on your objects. For this you have to activate using the surfaces tab the "Also Use Opacity Map" and add the map in "Mapped Cutout Opacity".
- <mark>POWER function</mark> :
- All Opacity points presenting values between 0 and 1, a power function has been added to the shader in order to reshape the opacity. This set all values of opacity to the power of the value given by the dial. This allows a change in the contrast of opacity.
- If the dial of this power function rises above 1, all the opacity will be globally decreased, but the opacity of the points with initially a low opacity will decrease faster than the other ones.
- If the dial of this power function rises below 1, all the opacity will be globally increased, but the opacity of the points with initially a low opacity will increased faster than the ones with an higher opacity.
- In brief you can use this to change the contrast of your opacity, but since your global opacity changes, you will probably have to change afterwards the "Increase Opacity" dial located at the top of the interface.

Opacity Shaping tab :

This tab allows you to shape more and place the Opacity noises. Take care, the opacity of the noise is not linked to the Perlin color noises, so if you want to change the color the dirt is, use the color pages instead.
- Don't forget also that the opacity is also linked to the "Increase Opacity" dial located at the top of this interface. This will multiply all the levels of intensity of opacity 1 by this dial for shader Procedural Dirt 01, and of blended opacity 1 and 2 levels for shader Procedural Dirt 02. Take care that every point going above 1 will become totally visible, which may change the pattern shape.
- For each Opacity noise, the thresholds will determine below which level and above which level the noise will be "ignored". A high lower threshold will favorise opacity color 1, a low upper threshold will favorise opacity color 2 (for each opacity noise)
- Thresholds values close to each other will create more sharp patterns and borders.
- If the 2 thresholds values are close and small, color 2 will be more covering the object, with small color 1 areas, meaning the opacity induced by the color 2 will be the more covering the

object. If the 2 values are close and big, color 2 will be more covering, with small color 2 areas (and the corresponding effect on opacity).
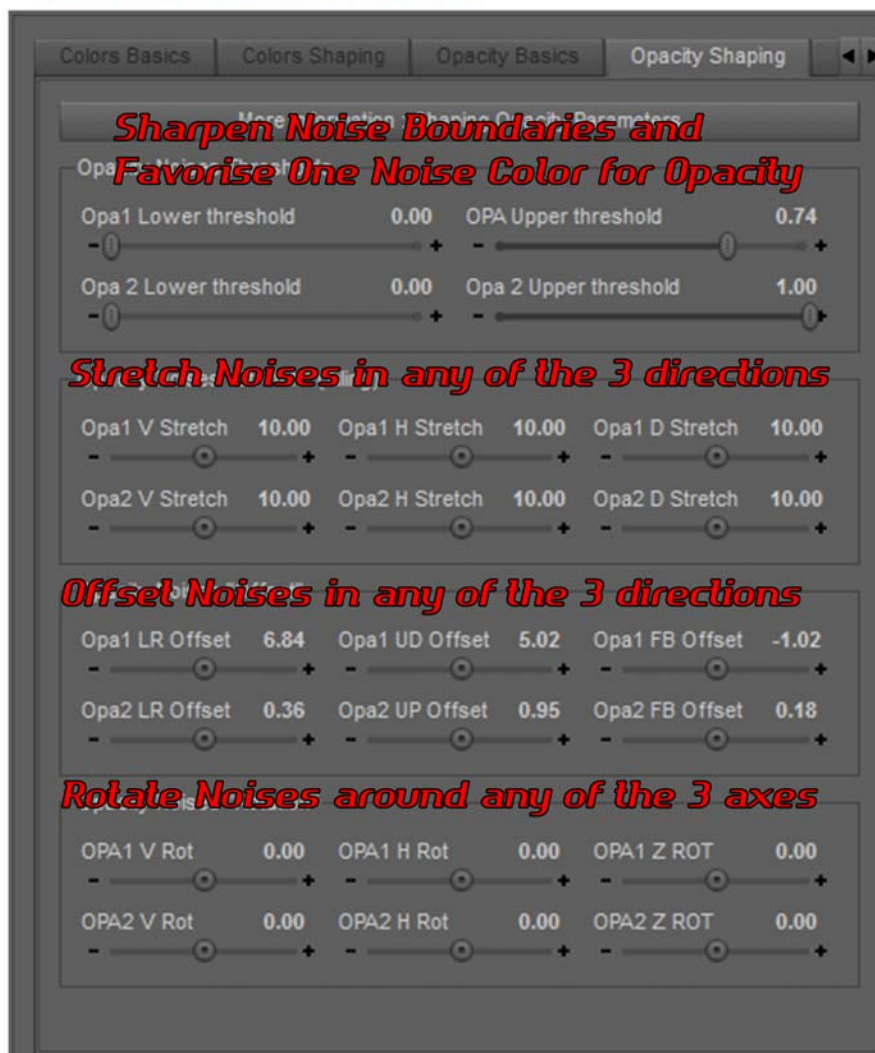
- The Stretches 1 and 2 define respectively for opacity noise 1 and 2 the horizontal (H dials), vertical (V dials) and "depth" (D dials) stretch. Since the noise is generated on the object shape. High stretches tend to wrap the noise around objects curvatures for some of the objects views or orientation.
- For each of the 2 Opacity noises :
 The LR (left right) Offset dial will offset the opacity noise to the left when increased,
 The UD (up down)will offset the opacity noise to the bottom when increased,
 The FB (front back) will offset the opacity noise to the back when increased.
 Some deformations of the opacity noise may occur with offsets due to the way the noise is generated on the object.
- For each of the 2 opacity noises :

- The X ,Y and Z <mark>rotation</mark> of the opacity noise will rotate it around the X (H : horizontal left/right), Y(V: vertical), and Z (depth) axes. This is not easy to handle the result, but this is very useful if you are using an high stretch and you want to orient it.

Remark concerning Calculation time :

Render time can be largely increased if you are using a large number of shells. Roughly speaking, the noise will slow the convergence of the render. Yet, you do not need to wait for the end of the render, most of the times, the calculation can be stopped much before the end, because the result reached is sufficient (regarding noise and all the underlying surfaces).

"More Options" tab :

I have gathered in this tab the most common operations I was doing when using this shader. You will find :
- A button so that the Glossy Roughness uses the noise repartition of the color 1 (tile, offset,...)
- A button so that the Glossy Layered Weight uses the noise repartition of the color 1 (tile, offset,...). Please note that by default the "remove noises" for these parameters are "on" and you can activate noise by setting "Remove Noise" for these two properties to "off".
- A box to handle Top Coat Weight. Top Coat Weight is whatever happens multiplied at the end by the opacity so that it does not appear where it should not be.
- A box to handle the Noise Bump tile and strength.
- A box to handle the Mapped bump strength.
- A box to invert the colors used for opacity 1 (color 1 becomes color 2 and inversely).

4. Adding Maps :

The tool "V3DPD Transfer Original Figure Maps" is here to catch some the maps, and strengths for these maps, and copy them from the parent of the shell (from the object it was created on) to the shell itself.

In order to have it working, you have to select the shell, and only the shell, in your scene. The shell must still be parented to the figure it was created on.
Once done, you use " V3DPD Transfer Original Figure Maps" and define which map (Bump, Displacement, Opacity, Normal) you want to pick up from the parent to place on the shell. You can do the same for the strength.

The parent figure should preferentially use "Iray Uber Base" as shader so that the maps are copied and that the script works. All these maps will be copied only if they exist on the parent figure.
- Using bump maps of the original figure on the shell generally renders better.
- Take Care : if you are transferring displacement maps, you have to adjust the Displacement Min, Max, and SubD Displacement Level yourself.\n"
- if you are transferring Normal Maps Strengths, 1 will be applied by default if the parent surfaces are using DS Default, OmUberSurface or AoA Type shader type.\
Warning : the strengths will be transferred only if the corresponding properties are mapped on the parent object, and the transfer will be done within the existing limits, meaning that if the strength used on the parent figure is bigger than the maximum of the dirt shader, then the maximum limit of the shader will he applied instead.
Of course you can increase these limits in the shaders themselves to prevent this.
If the horizontal and vertical tiles of the maps of the original figure differ from 1, and the offsets differ from 0, you will have to set the maps tiles and offsets values manually in the dirt shaders.

5. Using Decal Nodes
In the Addon Local Decal Node folder, a decal Node is provided as a wearable preset for figures, such as Generation 4, Genesis, Genesis 2 and Genesis 3 typical figures (meaning with typical dimension) and will be located around the neck for ZERO posed figures (if the figure is posed it may be somewhere else).

For other types objects or figures, **you can create your own decal Nodes**, by selecting your figure, and in the top menus, select Create/New Iray Decal Node.

The decal Nodes allow you to add the dirt ONLY ON SPECIFIC AREAS, and not on the whole object.

For these decal nodes, <u>several partial shaders</u> are included in order to handle the opacity of the border of the Iray Decal Node. They will change <u>only</u> the Opacity map Used on the shader, some are more round, some more squared, some more sharp borders.
You can use the other shaders presets included in this product, they will not remove the opacity maps you have chosen for the Decal Nodes.
For the Decal Nodes, you cannot (and there is no sense to do that) copy the parent maps to the decals.
In order to change the Decal Node shader, you have to select the Decal Node in the Scene Tab, then go in the surface editor tab to select the Decal Node Surfaces. Once done, you can load any shader of this product on it, and you can also use the Manage Dirt Base Interface to adjust them to your needs.

The decal nodes can be moved (they slide) along the body of the figures or of the objects, and their size can be adjusted.
In order to change the decal node height, depth, and width : you have to select the decal node in the scene tab. Then, once done, you have to go in the parameters tab, select "Decal" group, and in this group, change the "Clipping" value in the direction you want to change the size of the decal node.

The decal node will wrap or project on the underlying geometry and there are of course limitations to what it can do if the geometries are complex.

6 Having fun :

This shader is initially dedicated to add dirt, but you can use a constant opacity, an opacity strength set at one minimum with a V3D Procedural Dirt 01 shader, or a V3D procedural Dirt 02 shader (provided there is no opacity 2 blend in this case), and then you can also use it to create many other things based on the procedural color mixing.
A few examples are provided in the 03. Various Other Full Shader Presets folder, where you will find shaders which are not necessarily dedicated to dirt.

7. A few notes :
- The noise is "calculated" as a function on the object shape. When you offset the noise, rotate it, or stretch it, it is recalculated with the new parameters on each point of the object, and as a consequence, the offset, stretch and rotation tend to not only move the dirt, but can also create dirt where there was not, can deform. This is not as "direct" as if you did this with a map.
- If you are using outfits very close to the body, the shell might poke through the outfit. In this case, use the smoothing modifier, and set the shell as the collision item.
- If you want to balance differently the dirt on various parts of the body (for instance very dirty hands and less dirty everywhere), you can render a very dirty figure first, a clean figure then and in GIMP or Photoshop, use the 2 layers to slightly erase, using masks, the dirt on the other parts of the body). Another solution is to use the "Mapped Opacity" slot. This will ALSO map the dirt opacity (dirt opacity will be multiplied by map opacity) and use grey on the map where you want to see less dirt, and white where you want to see more dirt (and black where you want to remove the dirt). Of course you can also use Decal Nodes on so that some of the object parts look more dirty than others.

8. Video documentation :

A video documentation is accessible on Youtube (click titles to open).

You will find it in a playlist : "A Touch Of Dirt For Iray" and it includes :

Part 01 : A touch of Dirt Overview
Part 02 : Apply a Dirty Shell (includes advices on particular cases)
Part 03 : Perlin Noise Parameters 1
Part 04 : Perlin Noise Parameters 2
Part 05 : Modifying a Full Shader
Part 06 : Using A Decal Node