

# HeadShopPRO 2023

For Windows

User Manual

[www.printahead.net](http://www.printahead.net),



**Abalone LLC.**

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## System requirements

### Required hardware

**WIN:** HeadShopPRO runs with the following minimal hardware:

A Windows-based personal computer or laptop with the following minimal requirements:

8 Gb of RAM, 64-bit

Screen of a resolution at least 1024x768, but no more than 3000

800 MB free disk space

### Needed software

HeadShopPRO runs under the following software:

**Windows 10 operating systems, 64-bit only**

DAZ Studio 4.9 or later, 64-bit version

Genesis (3,8) Base (male and female), Genesis (3,8) Starter Essentials.

To read pdf manuals Adobe Acrobat is recommended

To watch "How-to" videos Windows Media player is recommended:

<https://youtu.be/L-wZLeR2l7o>

Abalone LLC offers tech support through email.

Email address is [abalonellc@yahoo.com](mailto:abalonellc@yahoo.com)

## **About the manual**

Preface – What is New in HeadShopPRO 2023?

Chapter 1 – Installation

Chapter 2 – Workflow

Chapter 4 – 3D Printing with HeadShop

Chapter 5 – Advanced Operation

Chapter 6 - Troubleshooting

Chapter 7 - White Paper

# What is HeadShopPRO?

HeadShopPRO 2023 is a software used to automatically create 3D heads from photographs. It is used inside DAZ Studio as a plugin and work with Genesis 3, 8, and 9 figures. Both are outputting a modified morph OBJ file and 4096x4096 texture files. HeadShop has been in development since 2007 and regularly introduces features not found in other photo-to-3D software.

## What is the difference between HeadShopPRO and OneClick?

OneClick is a simplified version of HeadShopPRO OneClick2023 misses LoveChild (a utility that allows making inbetweens between two photos), and it does not come with Style (hair), Accessories and Material libraries.

## What is new in HeadShopPRO 2023?

- The main news is the full support of Genesis 9 figure. Genesis 9 features many differences to previous Gen figures; smaller size, different head that incorporates neck, „unisex” figure that can be made Male or Female via sliders. In addition Gen 9 features very sophisticated deformer to mimic expressions and poses.
- HSPRO 2023 also provide better support to 3D printing busts. We added 3D mesh library items such as busts and shirts as well as dozens of 3D meshed hair styles. (Note: most of the hair you can buy on DAZ is procedural or strain based and cannot be 3D printed).
- Separated color picker for retouch and skin color. Fixes skin color in case auto skin-color is imperfect.

In Addition HeadShopPRO has

- Love Child, an additional piece of sophisticated software that allows the morphing between two photos to create a third image. A slider can regulate the degree of resemblance to one or the other photo.
- Introduction of much improved texture belending that samples 3 separate point of skin surface.
- HeadShopPRO features a number of breakthrough technologies that cannot be found in other similar programs. See Chapter 3 – White Paper.

To review Installation and Operation of HeadShopPRO visit:

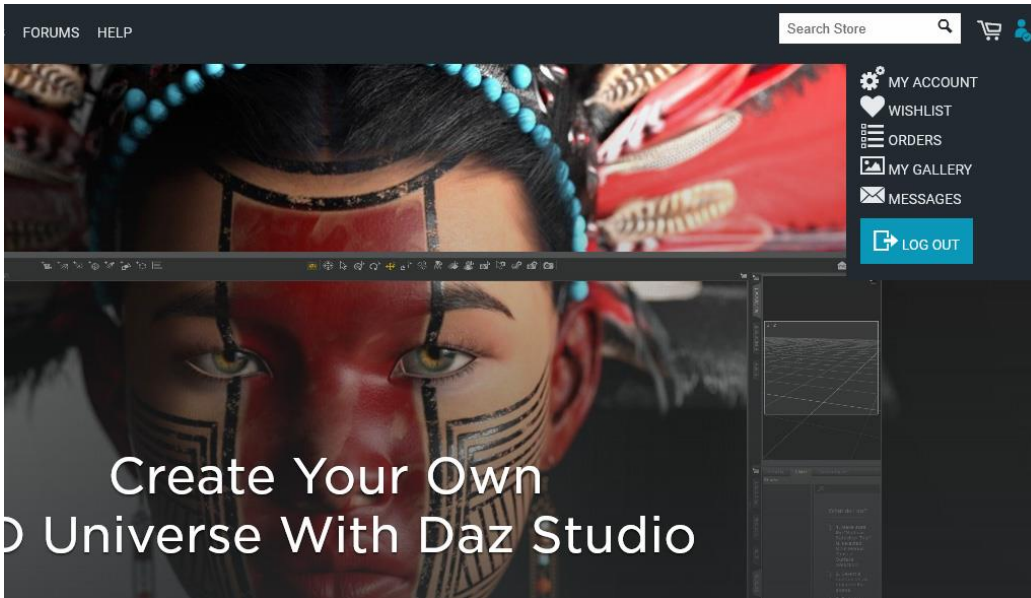
<https://youtu.be/qAn3ehnMhio>

# Chapter 1 -Installation

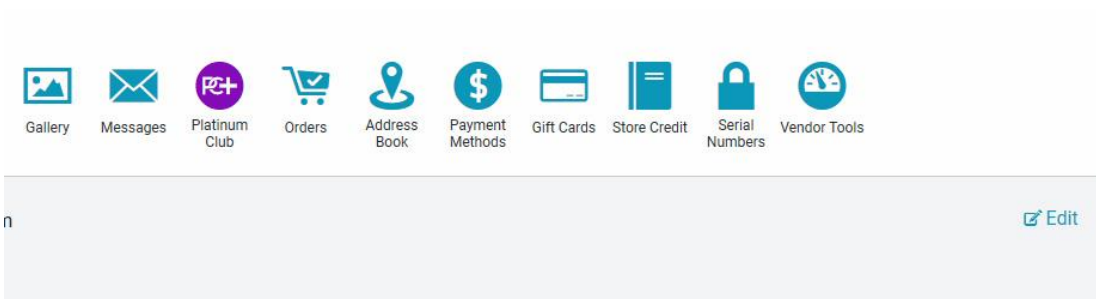
## HEADSHOPPRO README

### Where is my License key?

Open “daz3d.com” and go to “My Account”



Find “Serial Numbers” and open.



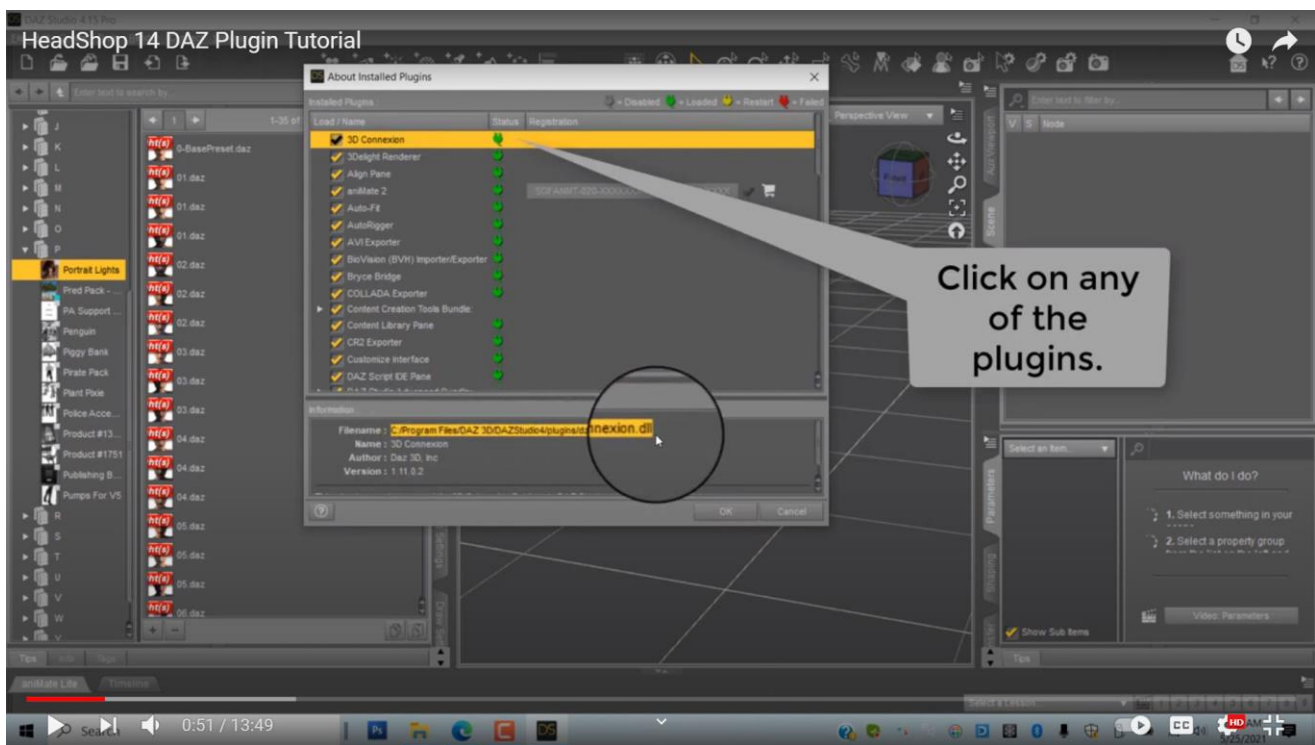
## How do I install HeadShopPRO?

HeadShop is a plugin that works inside DAZ Studio and must be installed to the same folder as the working copy of DAZ Studio.

While DAZ Studio installs by default into C:/DAZ 3D/Applications/64-bit/DAZ 3D, some users may have installed it to another drive and often do not remember where. Multiple Studio installations are the #1 mistake users make. If in trouble, send email to tech support at [abalonellc@yahoo.com](mailto:abalonellc@yahoo.com)

In this segment we show you an easy way to find the exact location of your DAZ Studio to avoid miss-installation of HeadShop.

1. Let's start by launching your DAZ Studio in order to read its installed location. Go to the Help menu and scroll for "About Installed Plugins". Highlight any of the plugins in order to read DAZStudio4's location. In this case we can see that the install location is on C: drive under Program Files/DAZ 3D. Make a note that C:/ Program Files/DAZ 3D. (This happens to be the default location. Make a note of this.



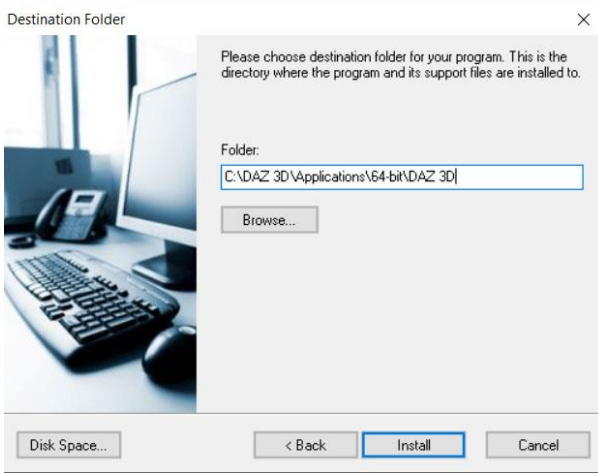
2. Now explore a possibility that DAZ Studio is NOT on the default location but somewhere else. We open another copy of DAZ Studio to explore.

Again, we open Help/About Installed plugins. Again we highlight one of the plugins to see where it is located. We find that this copy of Studio is located on the E:/ drive inside a folder called "Applications". You can make a note of this location. As you can see in this instance you have a choice of where to install HeadShop plugin.

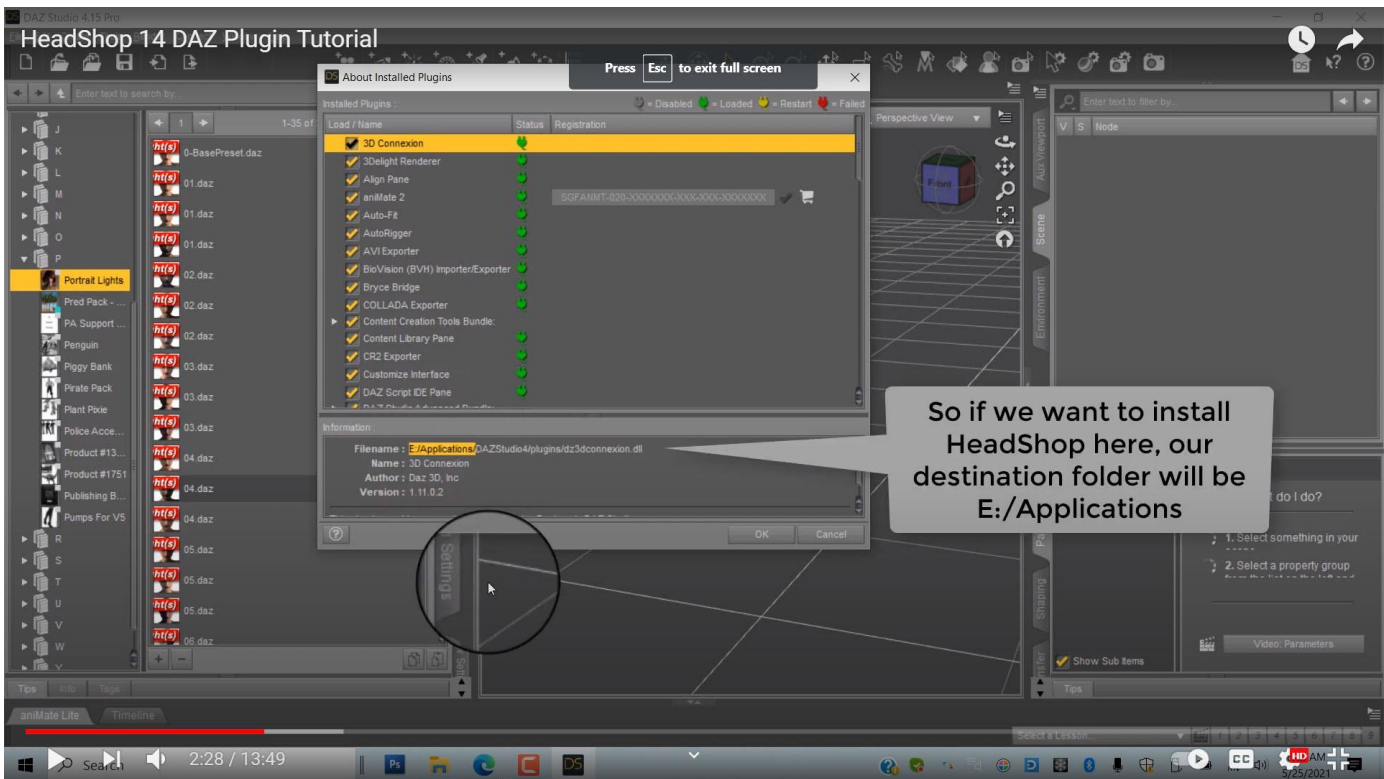
Note: We have noticed that DAZ changed the latest DAZ Studio install default from C://Program Files/DAZ 3D to C://DAZ 3D/Applications/64-bit/DAZ 3D. This confuses some users when installing plugins like HeadShop, since there are now two DAZ 3D folders (one enbeded in the other). The correct location for HeadShop plugins

is always the **last** DAZ 3D folder!!! (this is the folder that contains inside the "DAZStudio4" folder that contains the DAZ Studio application.

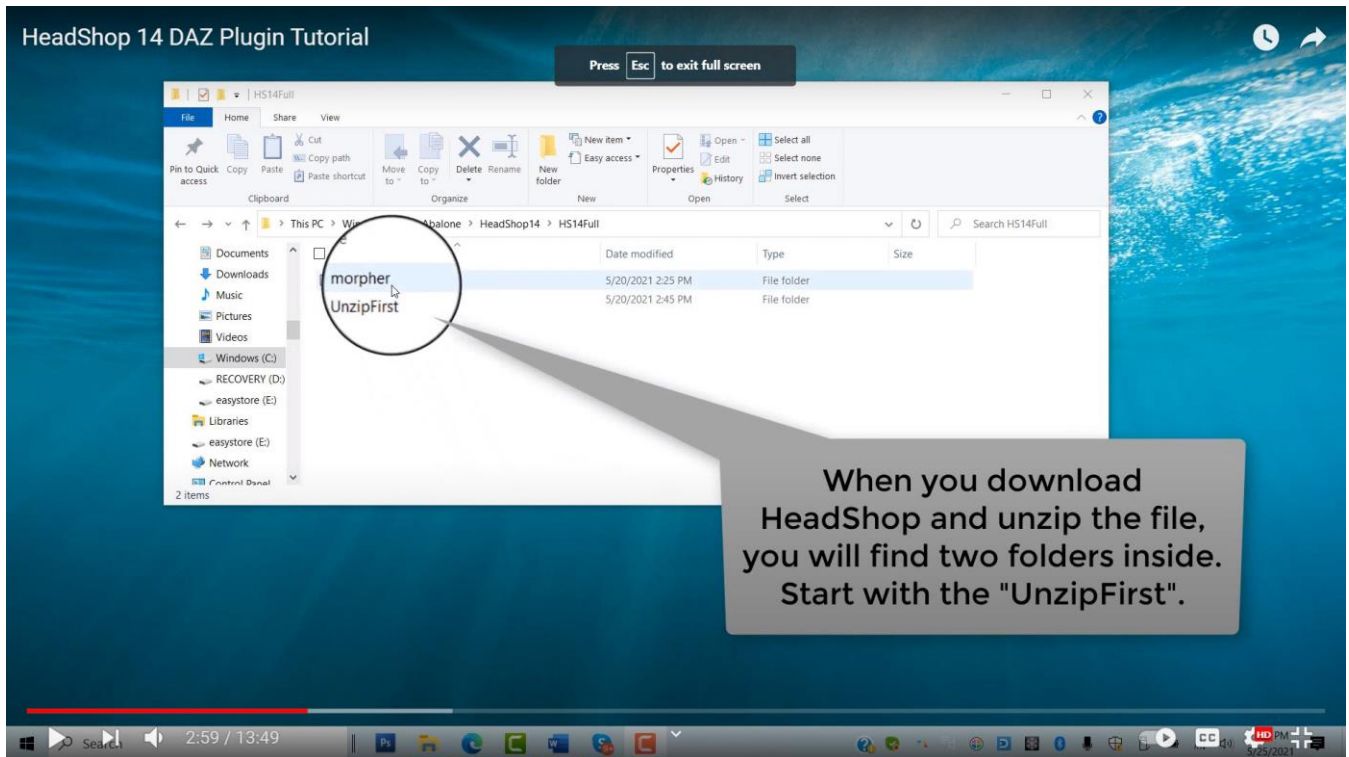
In this case you would browse to this DAZ 3D folder and your install path would be **C://DAZ 3D/Applications/64-bit/DAZ 3D**. (Notice that this path contains two! DAZ 3D folders).



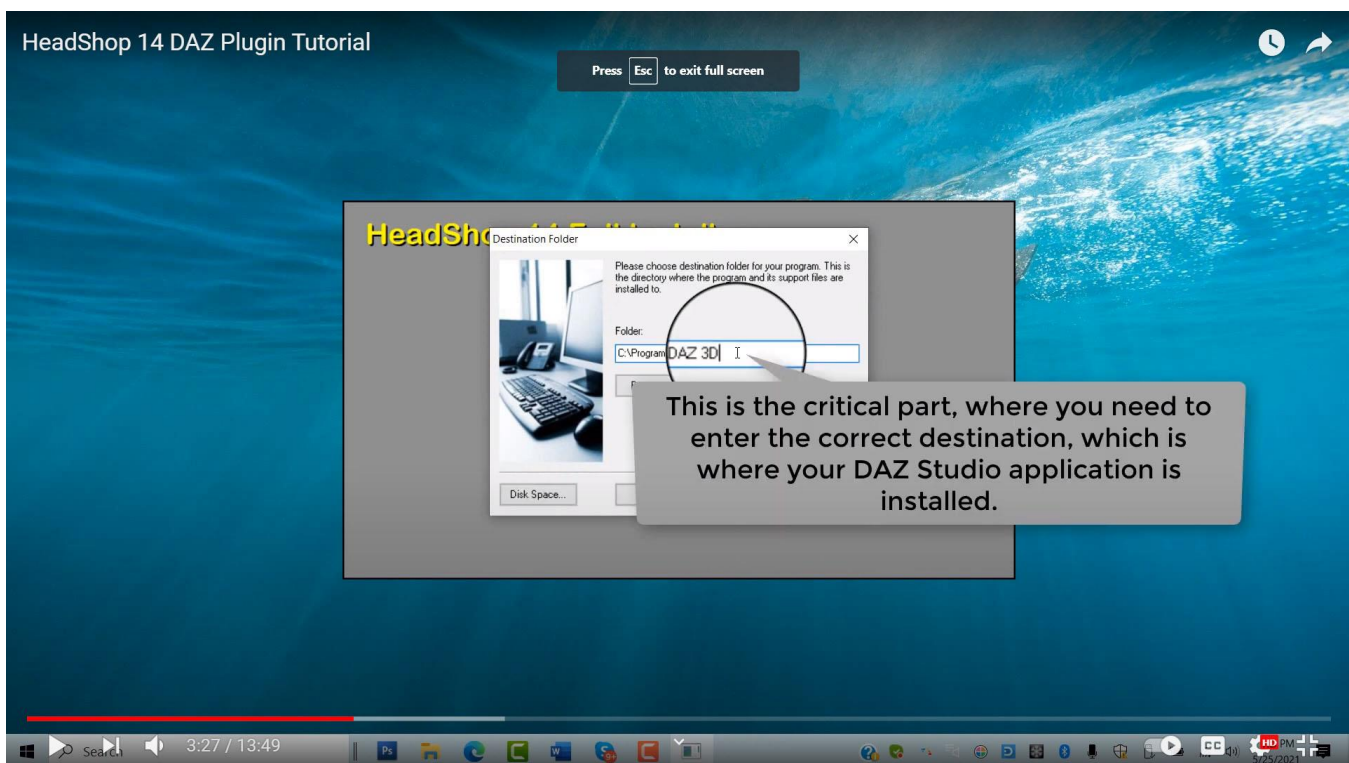
I hope this helps



3. Now we can start the actual installation. Opening and unzipping the downloaded HeadShop package, you find two folders: "Unzip1", "Unzip2", "AddOn10Pack" Opening "UnzipFirst" there is an installer and a README file. Launch installer.

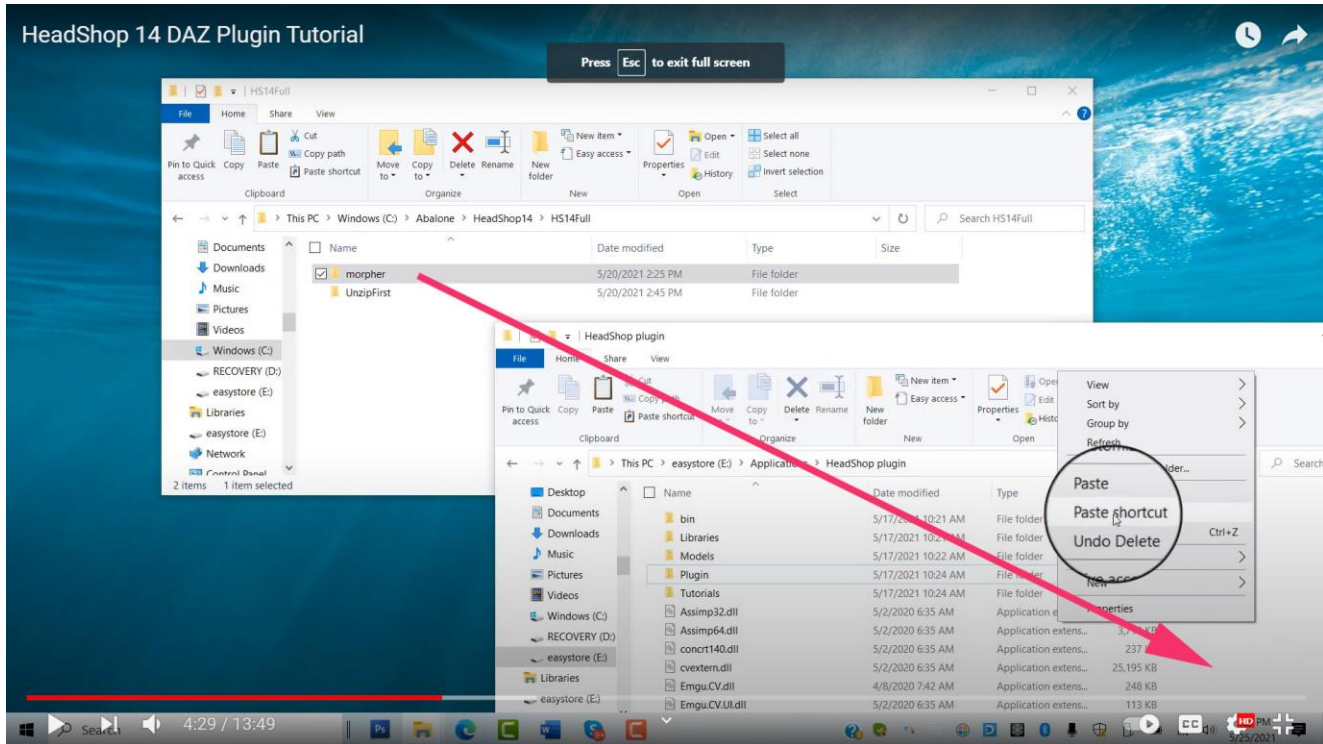


- The installer will walk you to the few steps needed. Enter your serial key (found in DAZ3D.com under "MyAccount/Serial keys"). Next is the critical step of browsing for destination. As we discussed, it could be either one of the locations we found. In the picture below we browse for the location we discussed in Point 1 (see above), C:/Program Files/DAZ 3D. Click "Install". In a few seconds the app is installed.





5. Next: Unzip the „Unzip2” package and copy/past the entire folder of “morpher” into the newly created E:\ Applications\HeadShop plugin folder. DO NOT EXTRACT THE CONTENT OF THE FOLDER, IT NEEDS TO TRANSFER AS A FOLDER WITH ALL PARTS INSIDE!



Finally unzip „AddOn10Pack” and you find two folders: „To-Models-Morphing-Gen8.1-Man” and „To-Models-Morphing-Gen8.1-Woman”. You may copy/paste any or all folders to the respective locations. You are all done. Time to run HeadShop.

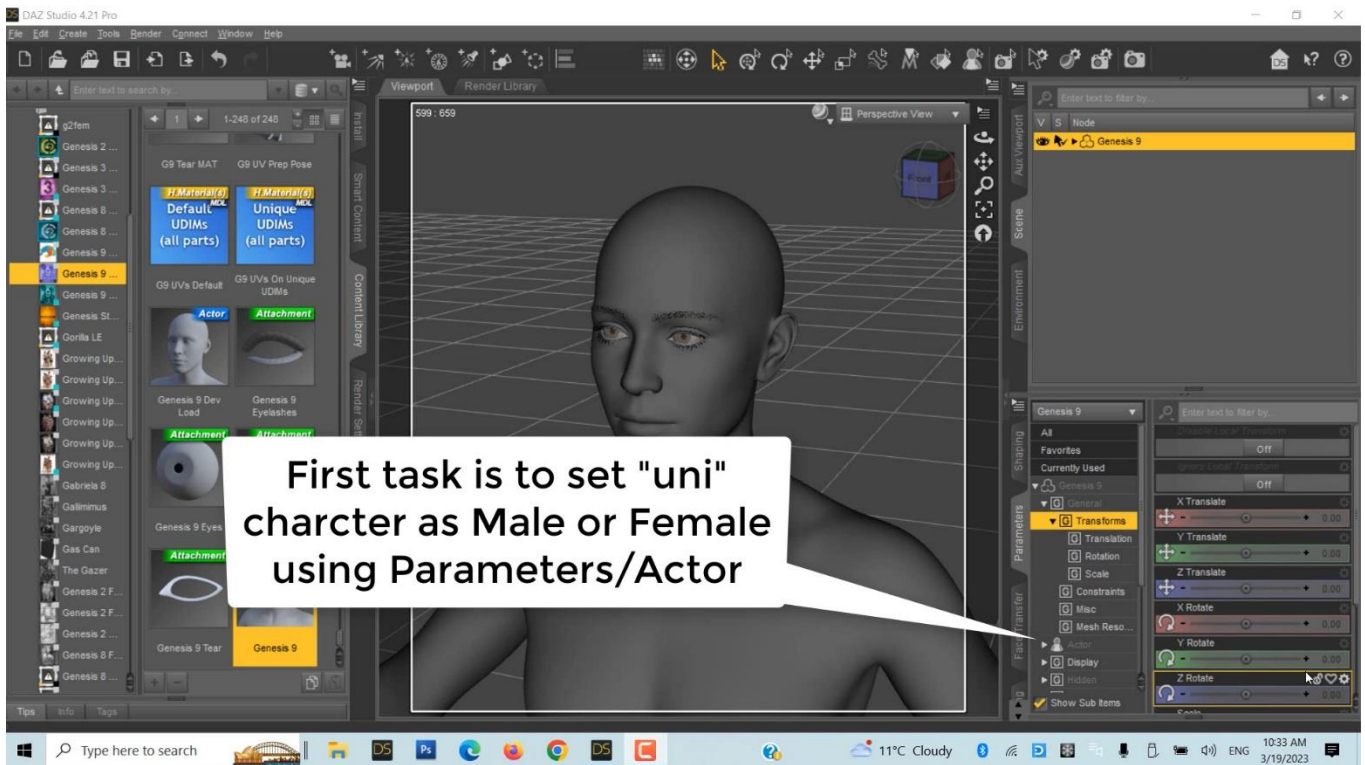
## Operation of HeadShopPRO DAZ plugin

A few words about operation: You will find that not all photos translate well into 3D heads. In general higher resolution photos make much better candidates. If one photo does not work well, we suggest that you try another photo. You may also encounter other issues (we talk about these in Chapter 6: Troubleshooting). HeadShopPRO offers new features over previous versions, but added features sometimes add complexity and complications, so the best advice is to watch the how-to videos and also when encountering artifacts consult Chapter 6 to read about remedies.

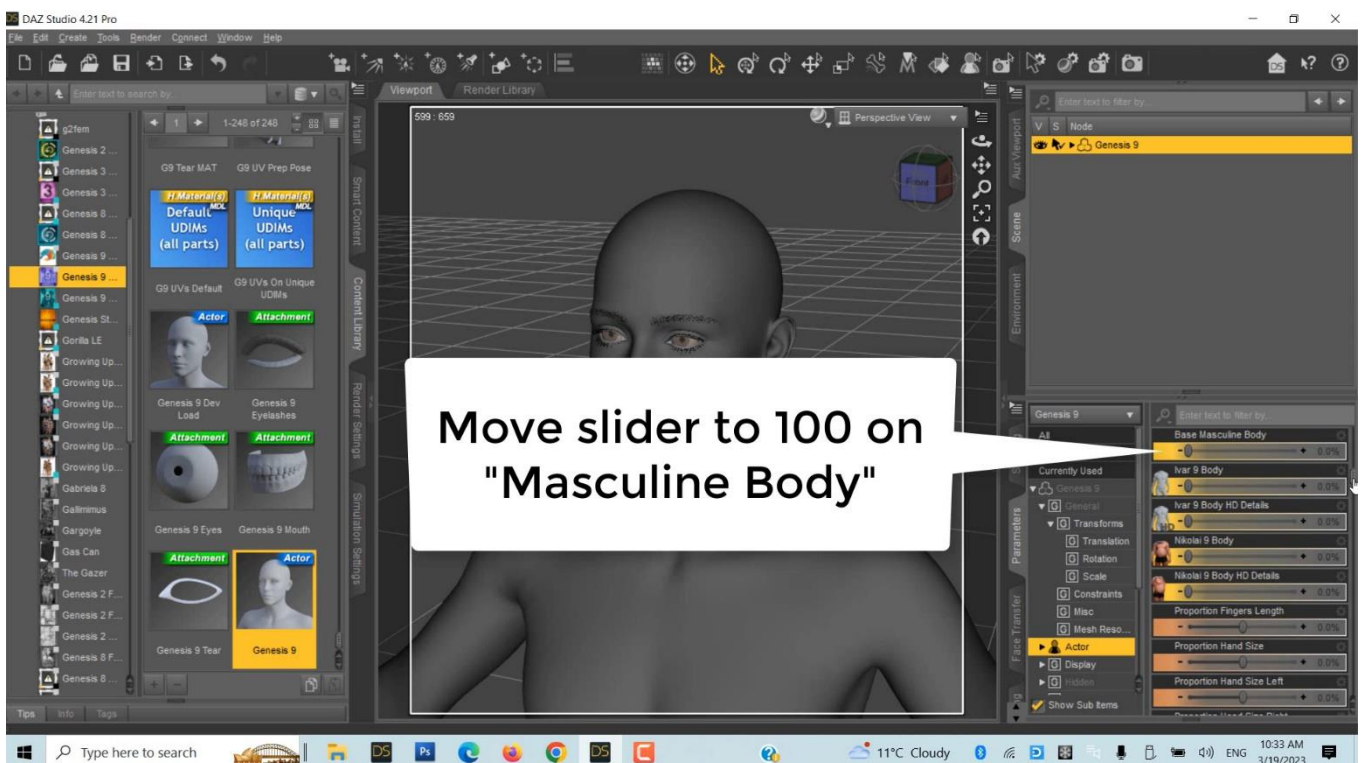
Also, due to the major changes brought by Genesis 9 figure, we advise to watch the „How-to” video on HeadShopPRO 2023 at: <https://youtu.be/L-wZLeR217o>

Now time to start!

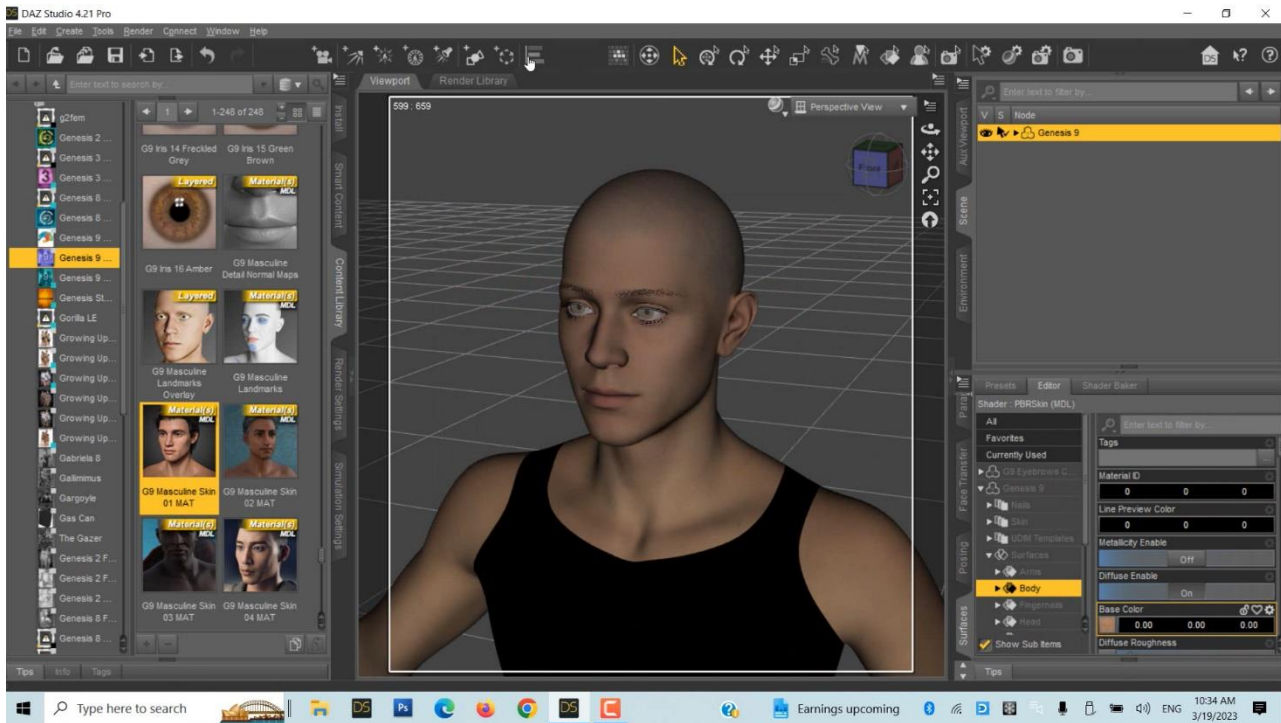
## Chapter 2 – Workflow for Genesis 9



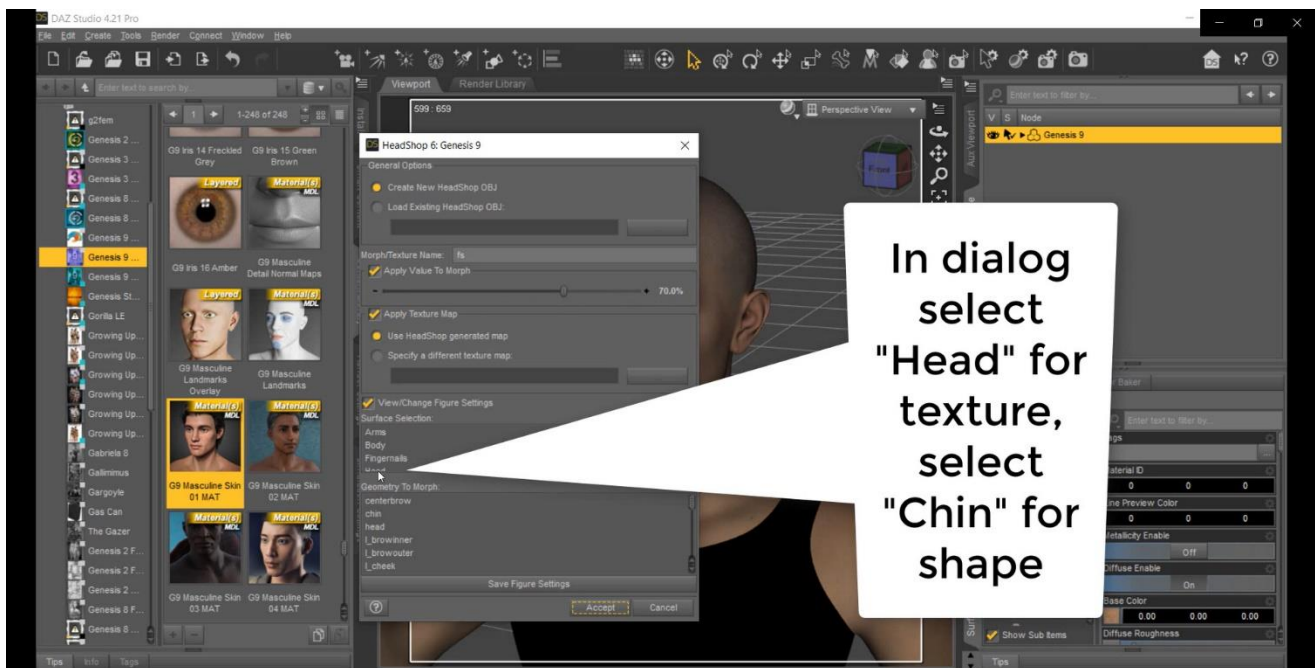
1. Start DAZ Studio and place Genesis 9 on stage. Unlike previous Genesis figures, Genesis 9 is a „unisex” figure and user needs to use sliders to shape more to Male or Female proportion. Setting up a figure for Male or Female before using the HeadShop plugin is important, as it increases the quality of the project.
2. Find „Parameters/Actor” and move slider to 100 „Masculine Body”. Repeat this with „Masculine Head”



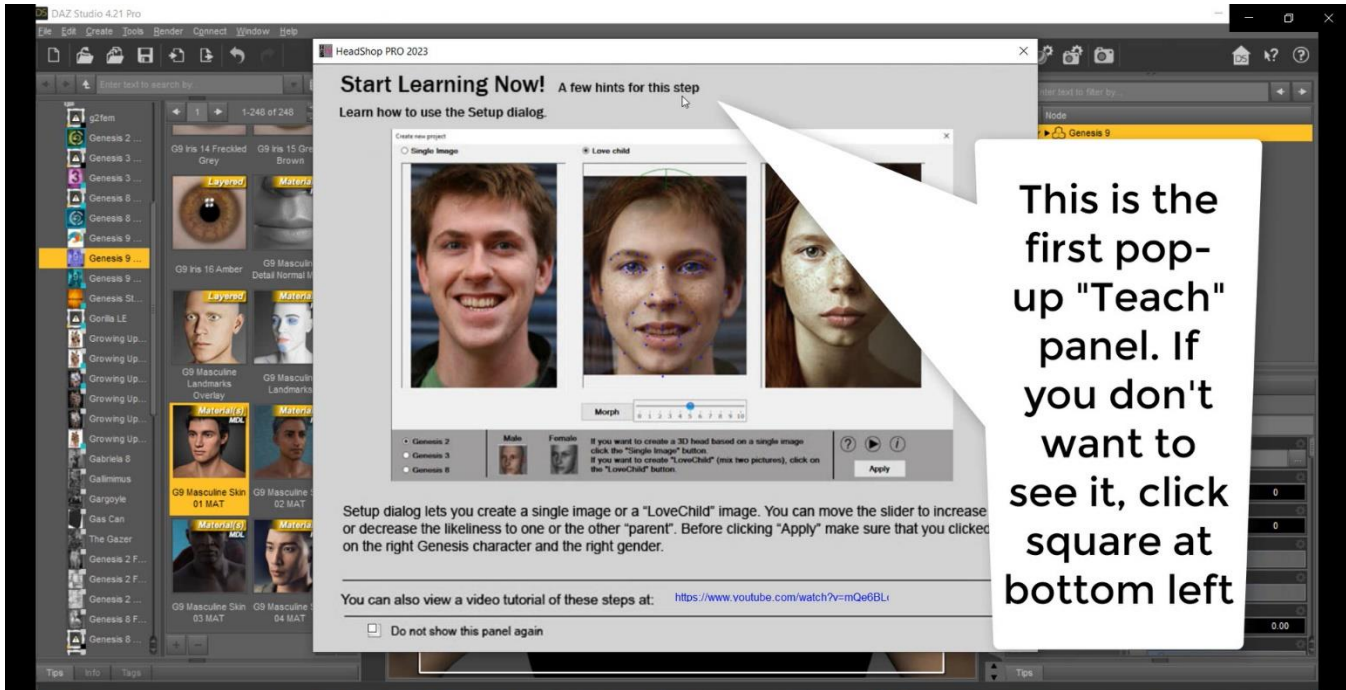
3. We suggest that you also add a masculine texture map from „Content Library”



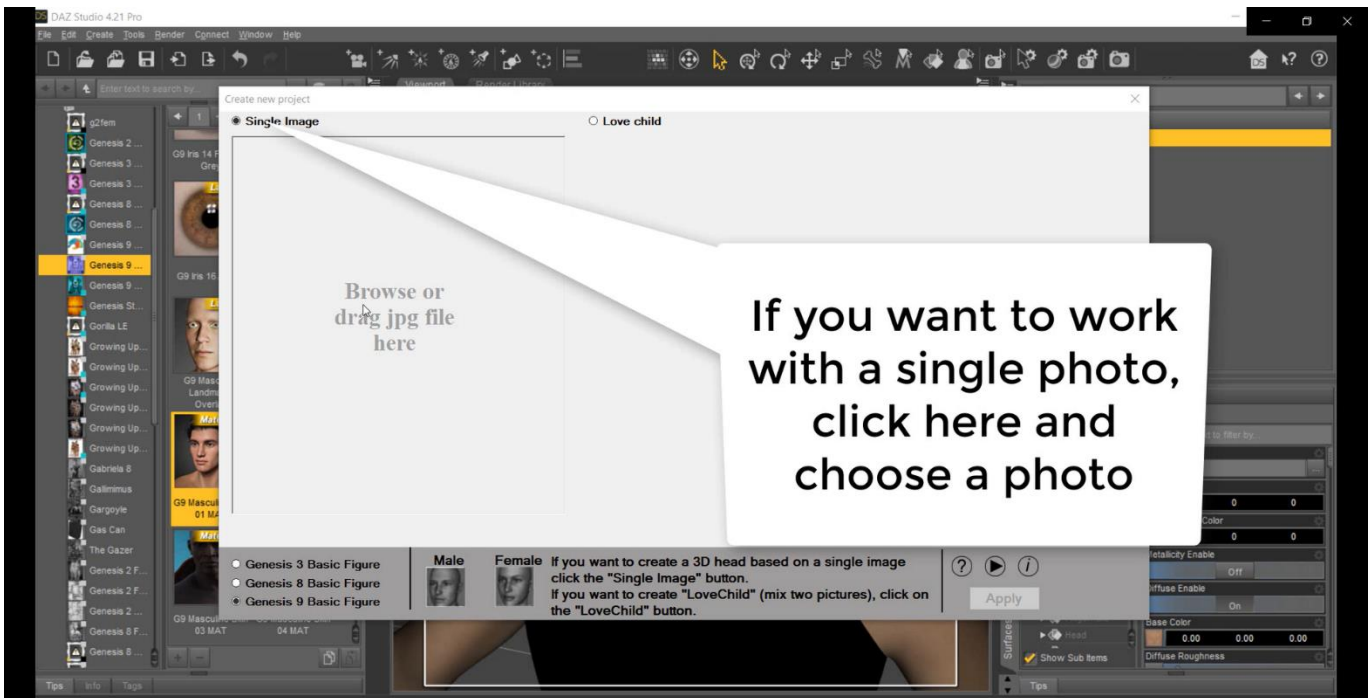
4. Start HeadShop from the „Edit” menu. In the first dialog select „Head” for texture and „chin” for shape.



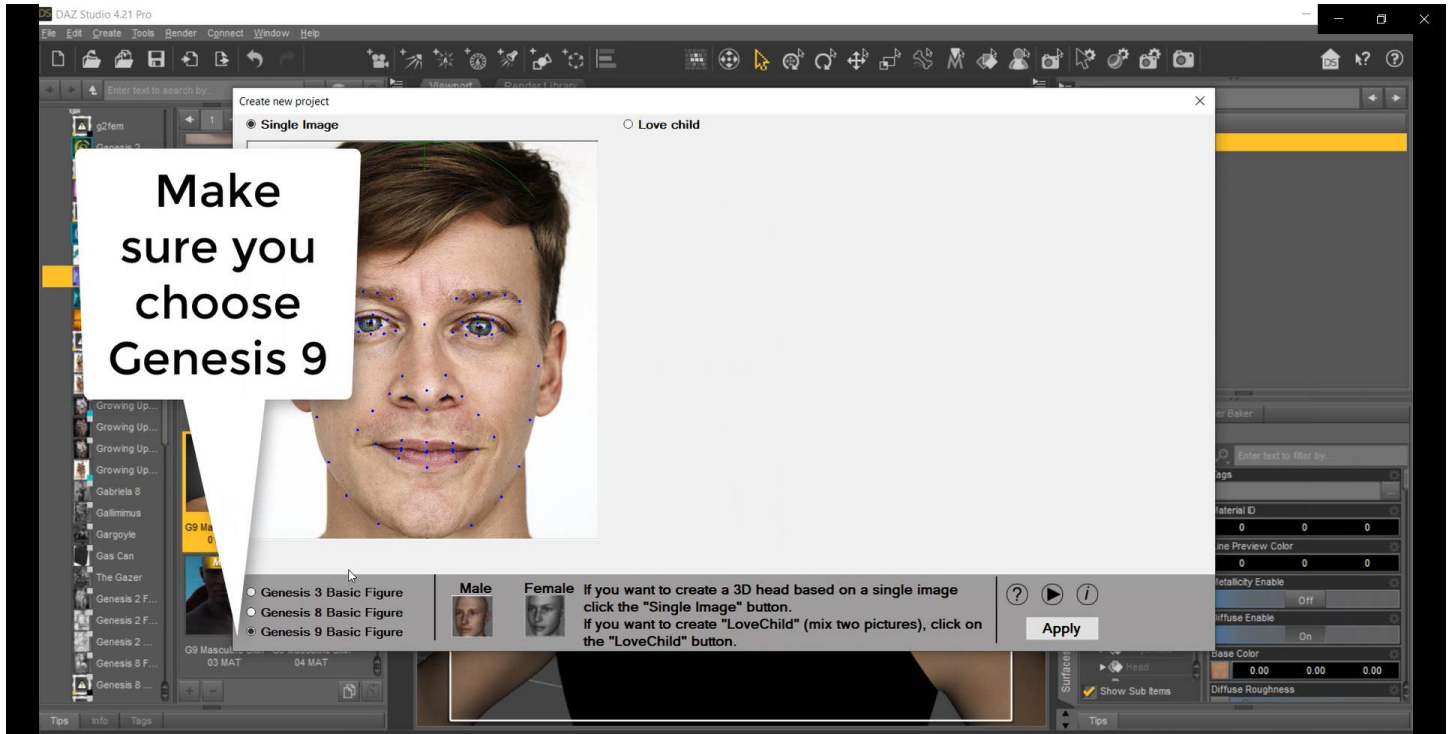
Next HeadShop loads and you will see a „Teach” panel pop up. Before each task you will see similar panels to guide you through the steps. This first panel explains the „Set-up” screen and the choice between image created by „LoveChild” (blending two separate photos) or using a „single” image



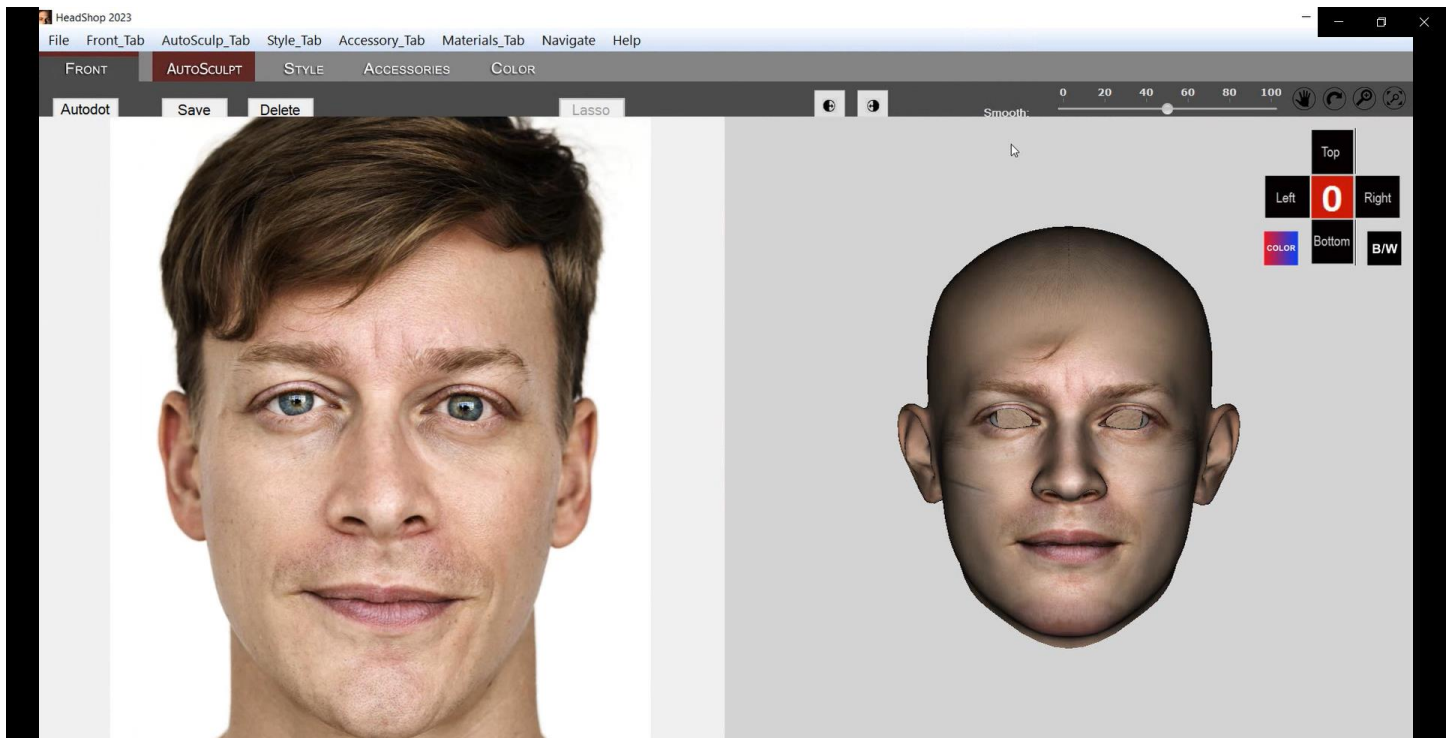
5. For this tutorial we use a simple Male photo, so we click on the „Single Image” button.



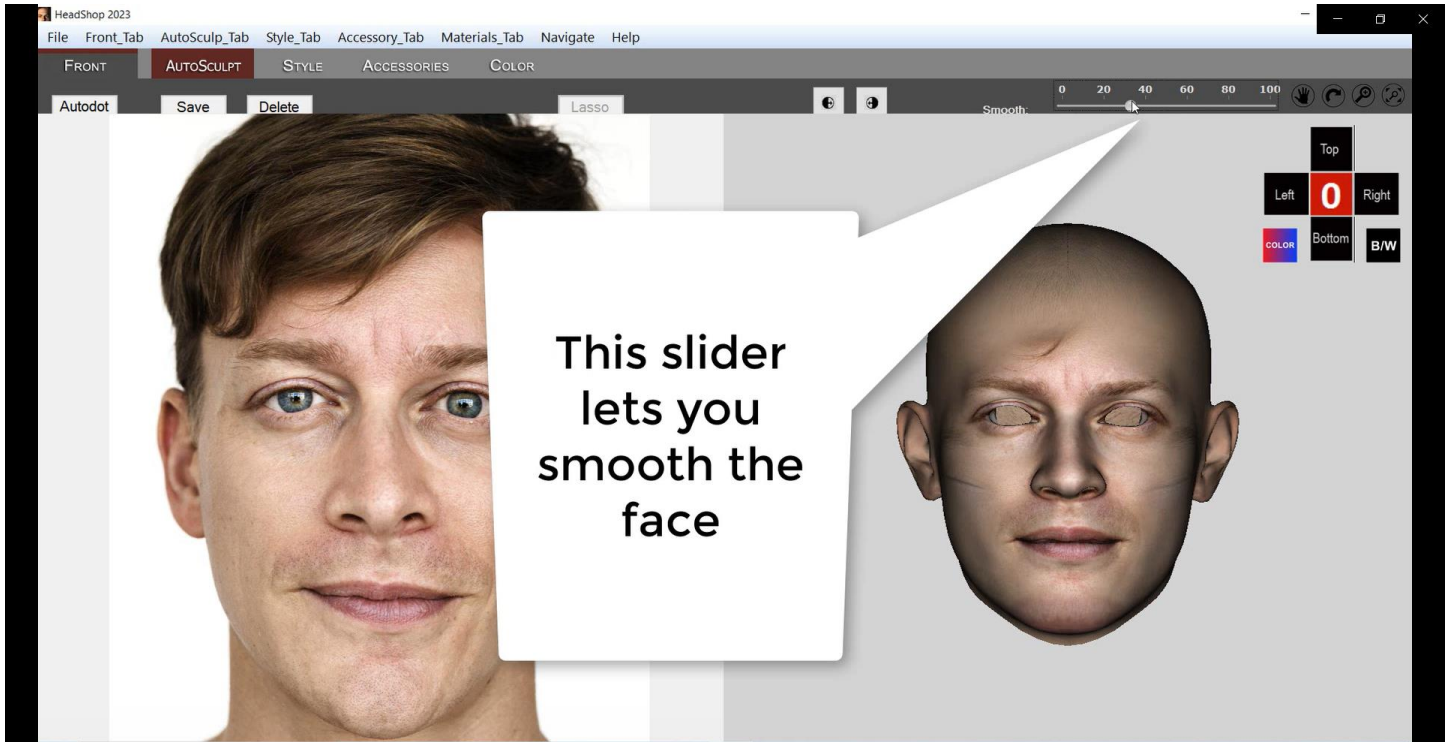
6. On selecting a photo, HeadShopPRO will auto-find 40 „landmark” points and also auto-detects the gender of the photo. MAKE SURE YOU CHOOSE THE CORRECT GENESIS FIGURE BELOW!



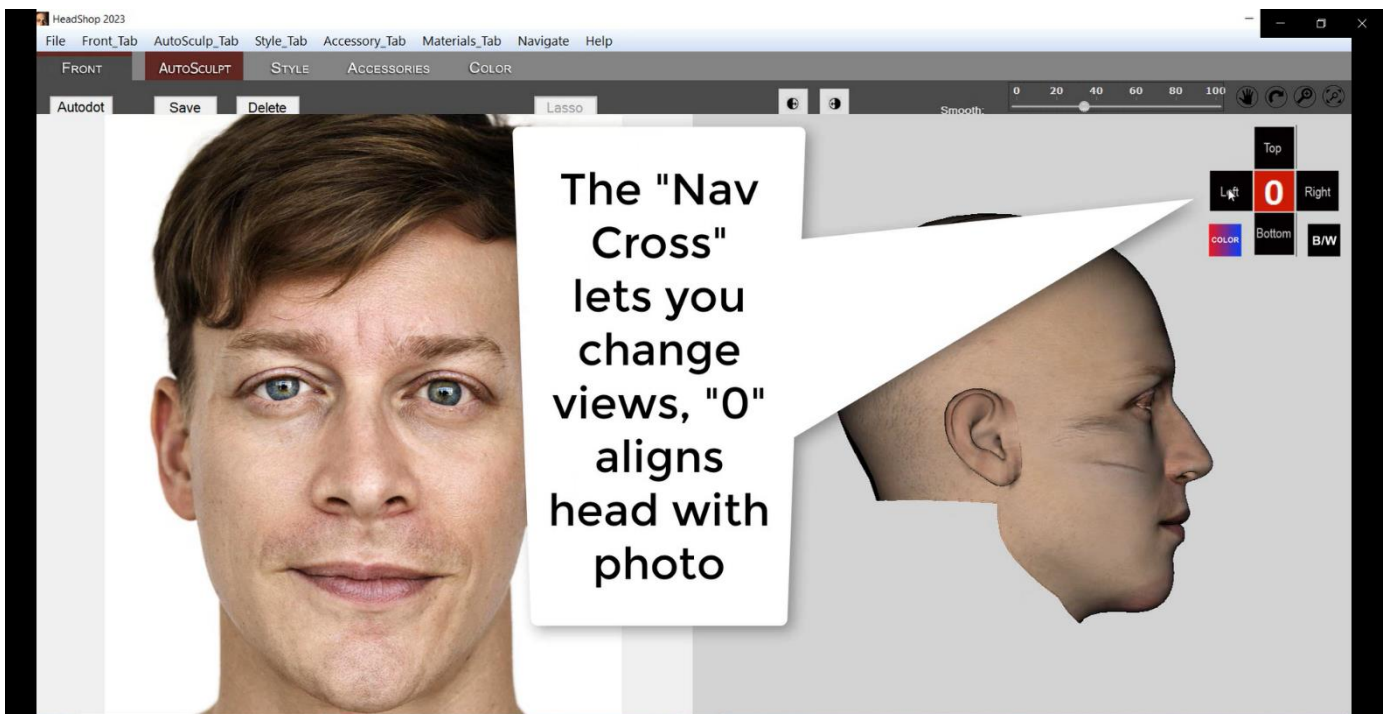
## 7. Workscreen



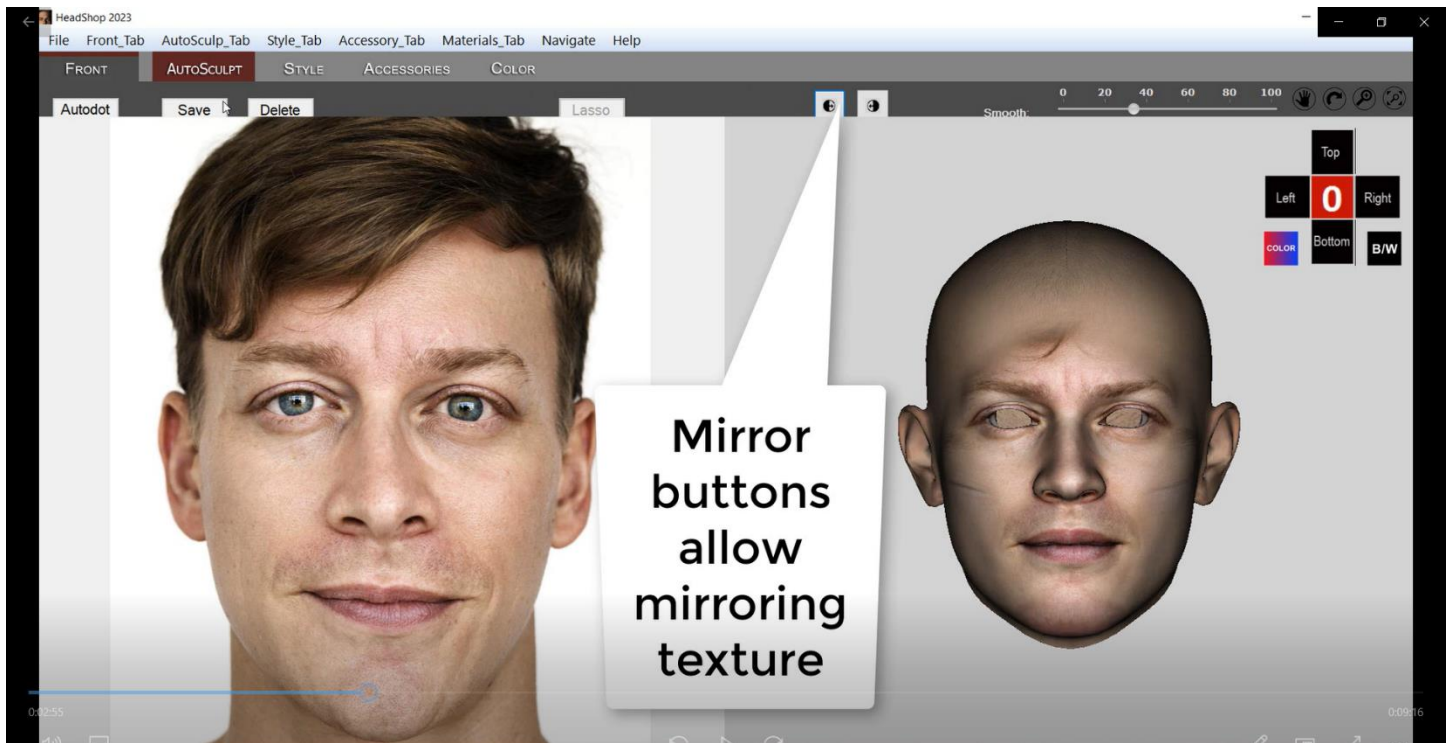
- Now the work screen opens, with the original photo on the left and the 3D head on the right. Note that the work screen has 5 tabs on top, each for a phase of the work. (Of course you don't need to use each phase. You can click "Export" at any time). There is a „Smooth" slider that lets you smoothen the 3D head on the right.



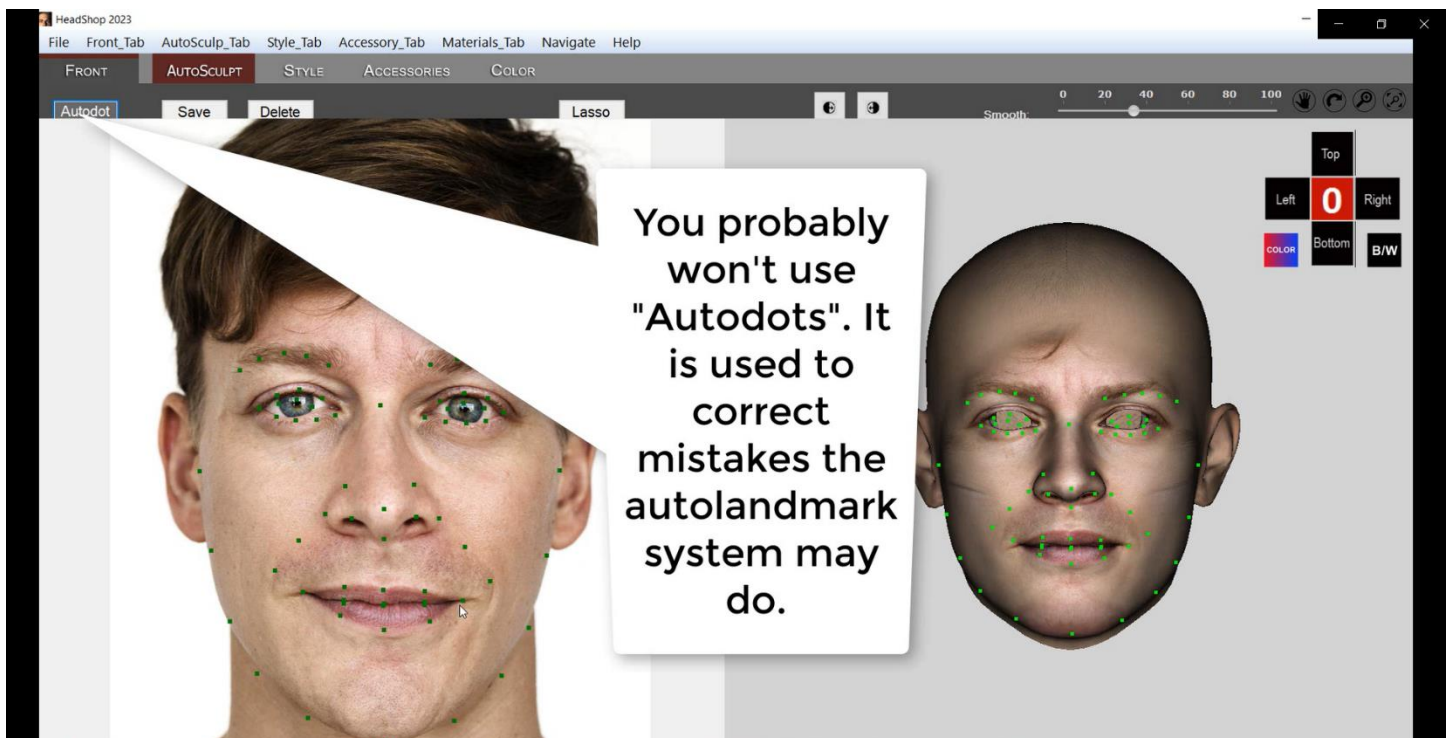
9. „Nav Cross” on the right helps to navigate, turn the 3D head left, right, fron and back, while clicking on „0” aligns the head with the photo



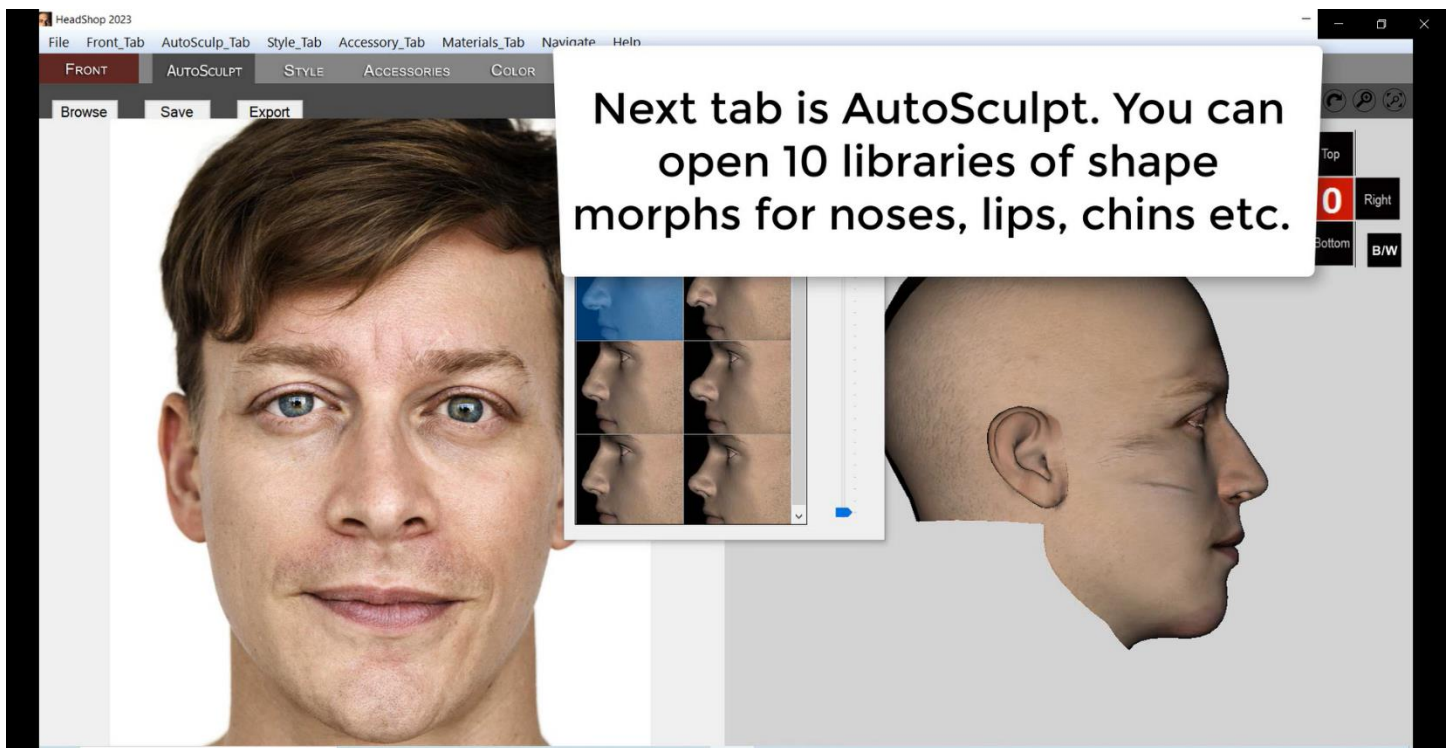
10. Not all photos are perfect. Often one side of the face is in shadow or covered by hair. The „Mirror” button lets you mirror the better side over to the other half.



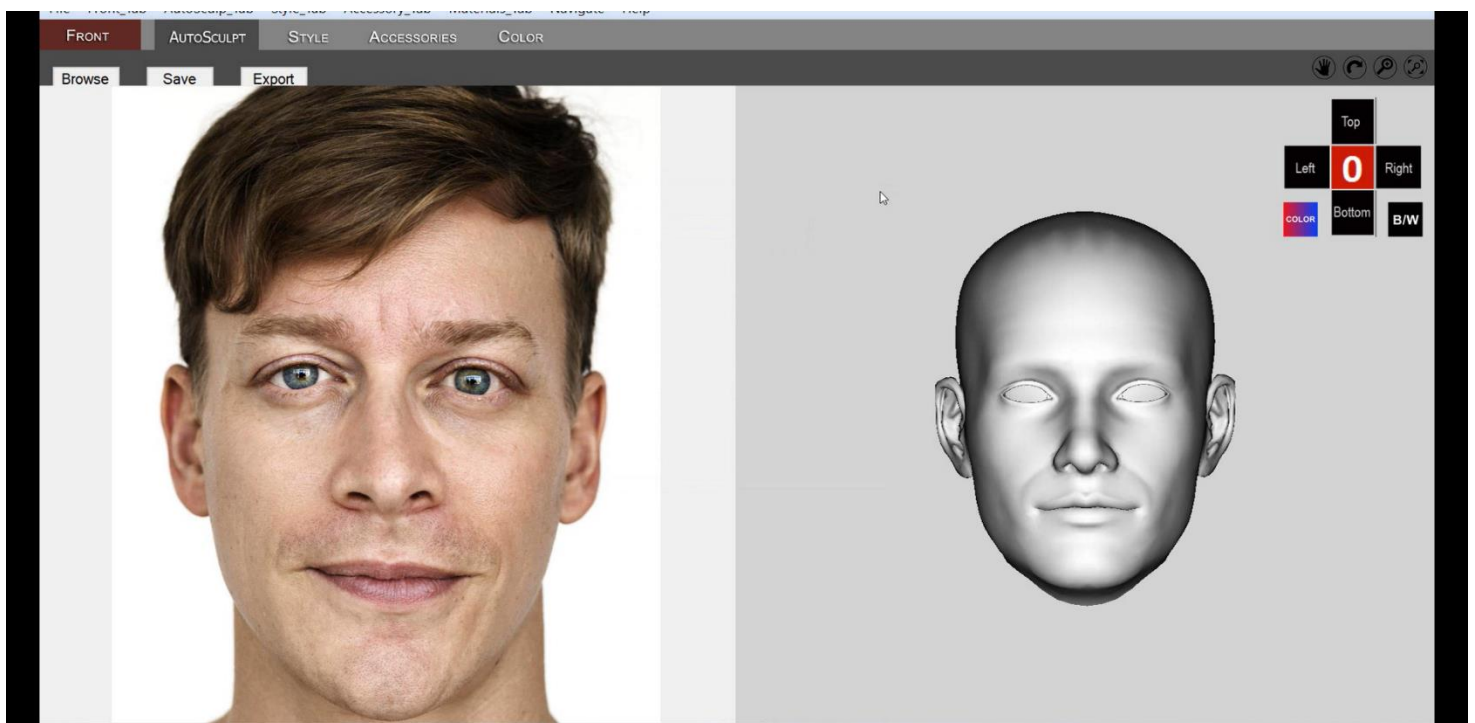
11. You probably never need to touch „Autodots“. It was created in case that the auto-landmark misses a point or is fooled by highlights on the photo. Fingers crossed that you don't use Autodots.



12. Next tab is the “AutoSculpt” tab where you can load up to 10 libraries of topographic morphs to shape nose, chin, lips, celebrities, creases, etc. Lots of fun.

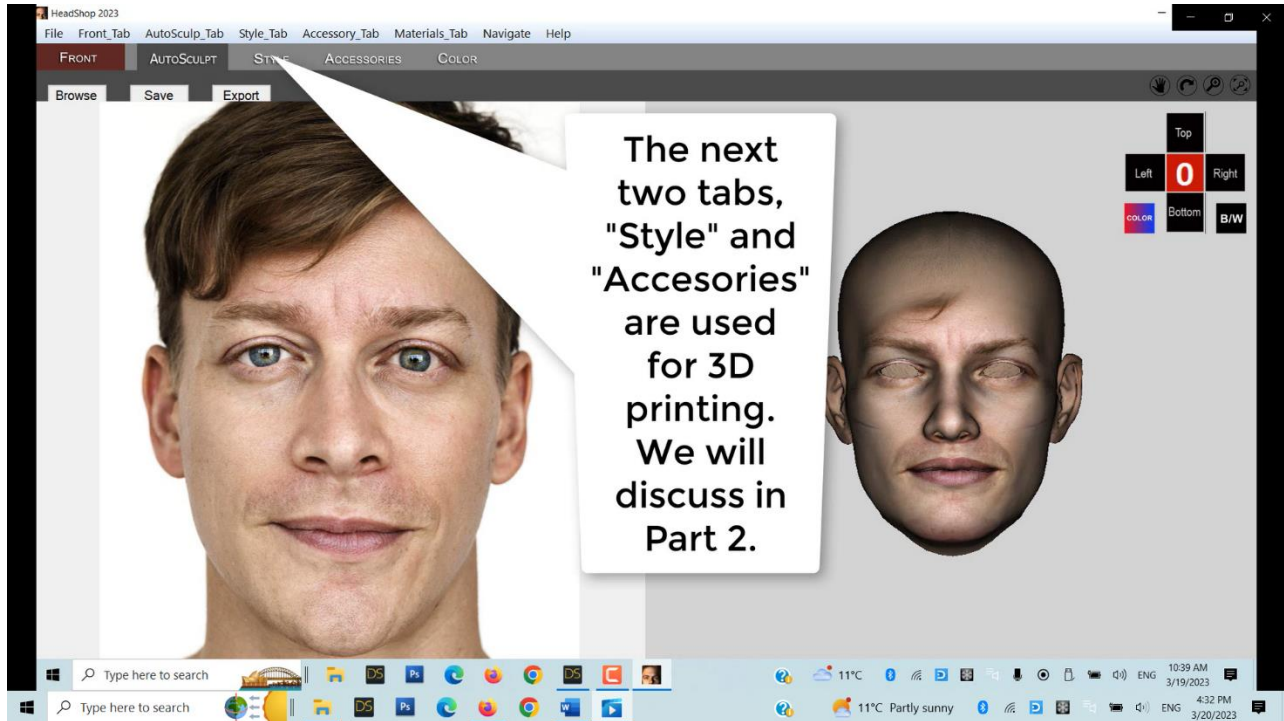


13. You can see better the topo of the 3D head when you switch to B/W button.

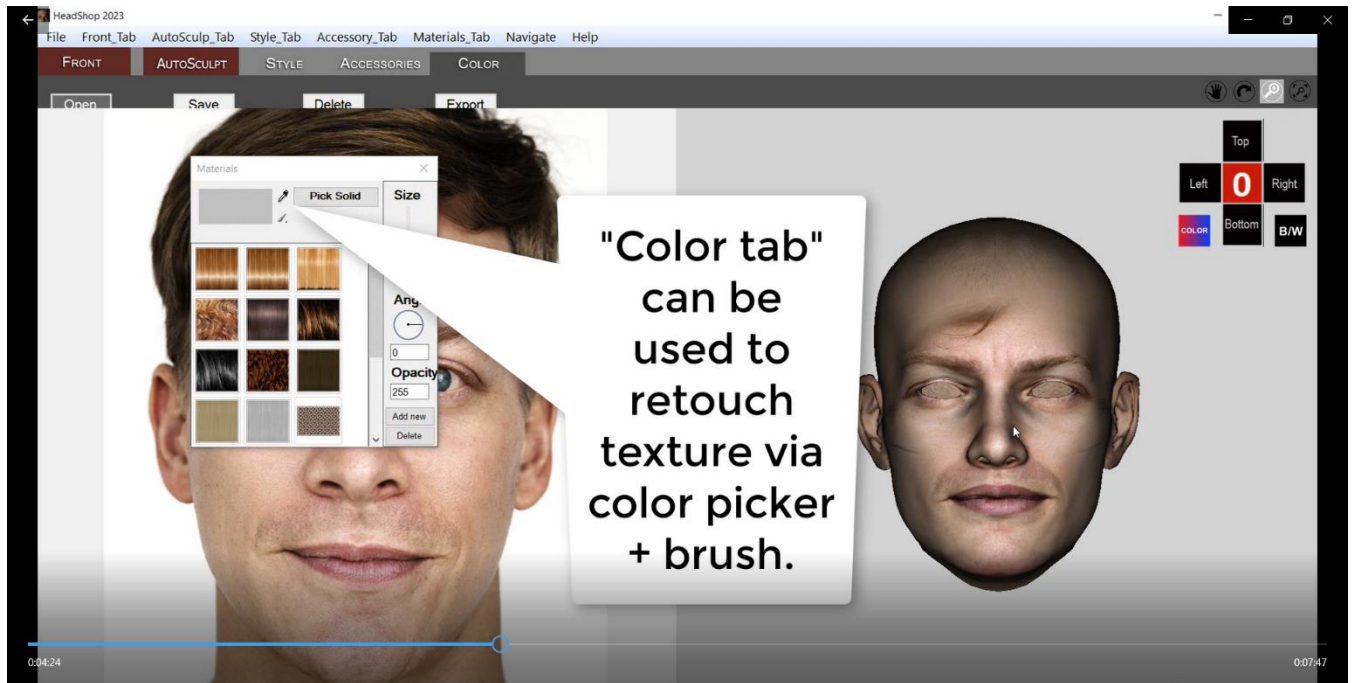




14. If you are not planning to create a 3D printable statue, chances are you won't need to use the next two tabs, „Style” and „Accessories”.



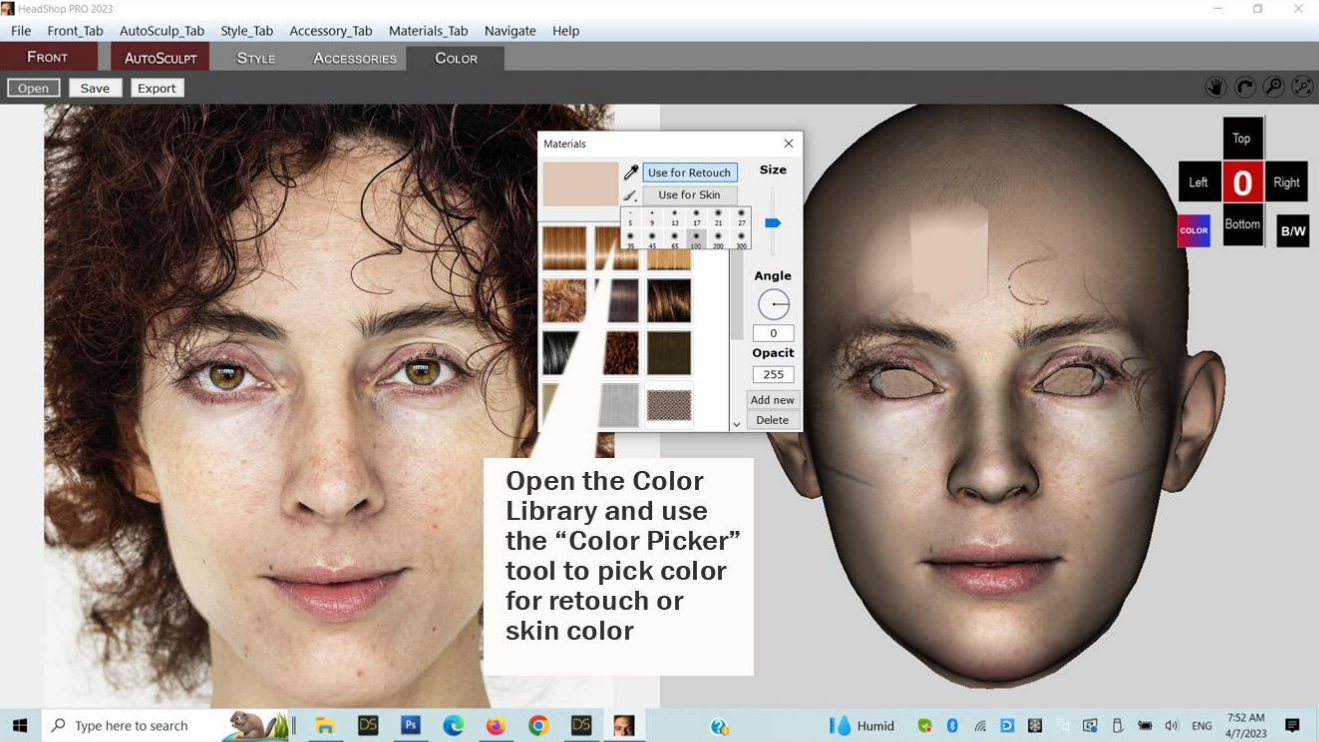
15. As it happens, we have the remnant of hair stuck in the face texture. In the „Color” tab you can find tools to sample the skin color and brushes to remove the artifact.



In addition, new color tab lets you correct skin color in case the auto skin-color not perfect. Just use the Skin Color and push the Skin Color button.

## Start Learning Now! A few hints for this step

### Learn How to use Color panel



Open the Color Library and use the "Color Picker" tool to pick color for retouch or skin color

The Color tab lets you retouch small blemishes (like hair) and also correct skin color. After you pick a color, make sure you click on the appropriate button (either Retouc or Skin Color). For 3D prints it also lets you pick hair texture or pattern for the bust.

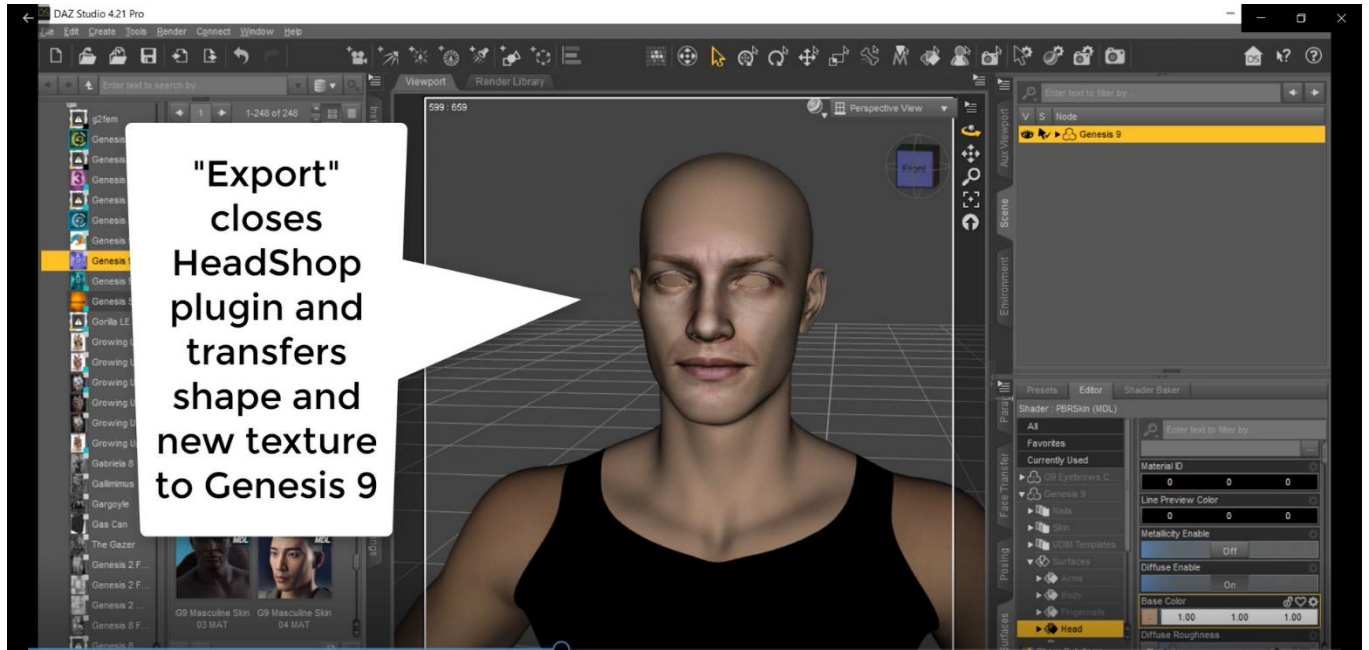
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You can also view a video tutorial of these steps at:

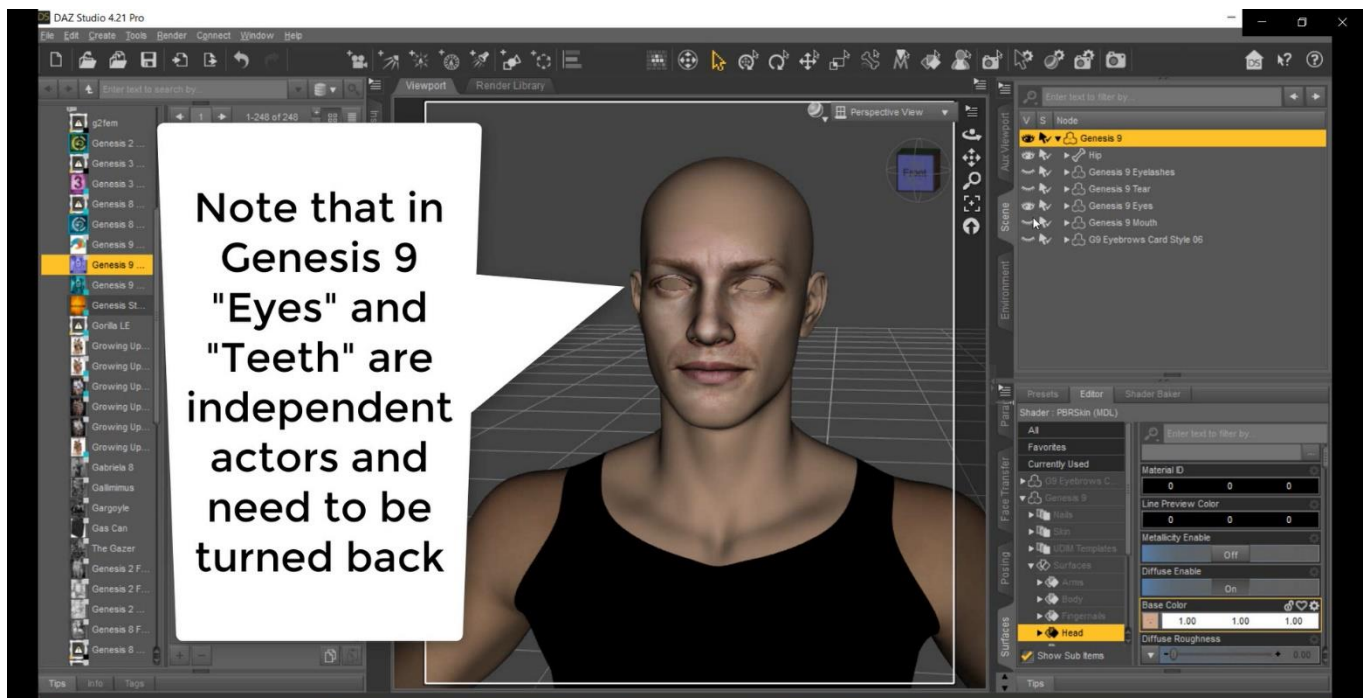
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Do not show this panel again

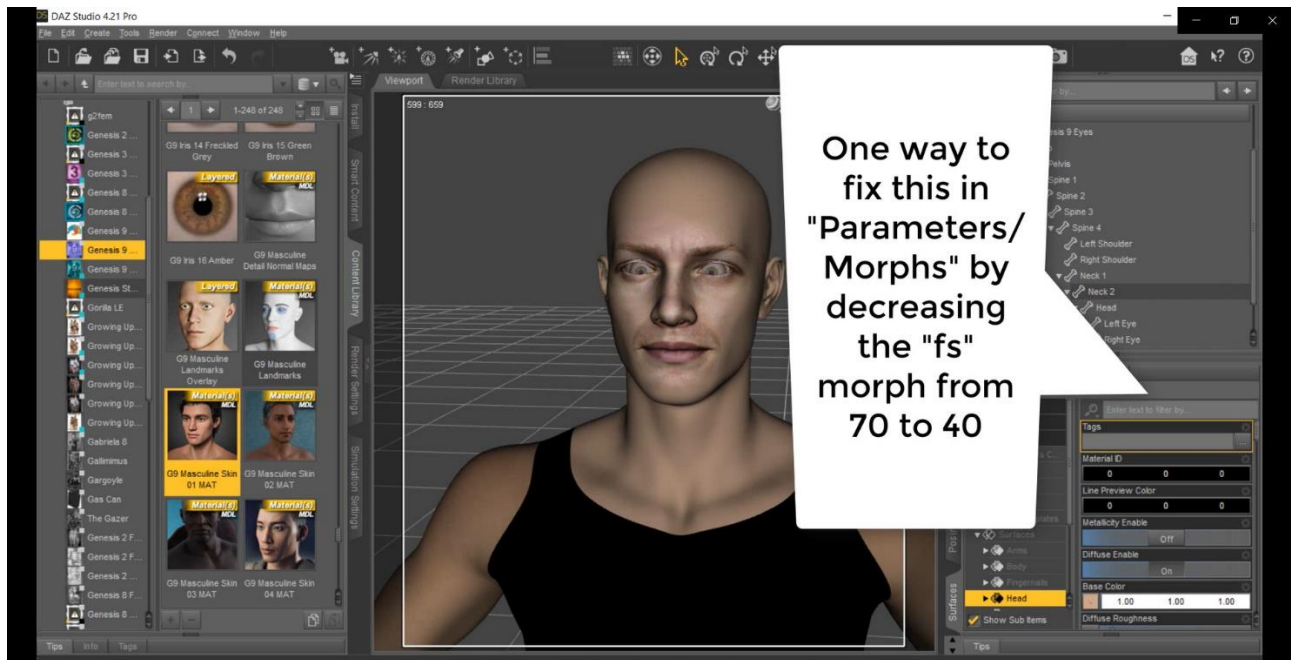
16. Once ready, click the „Export” button, which closes HeadShop plugin and transfers the shapes and textures back to Genesis 9 figure.



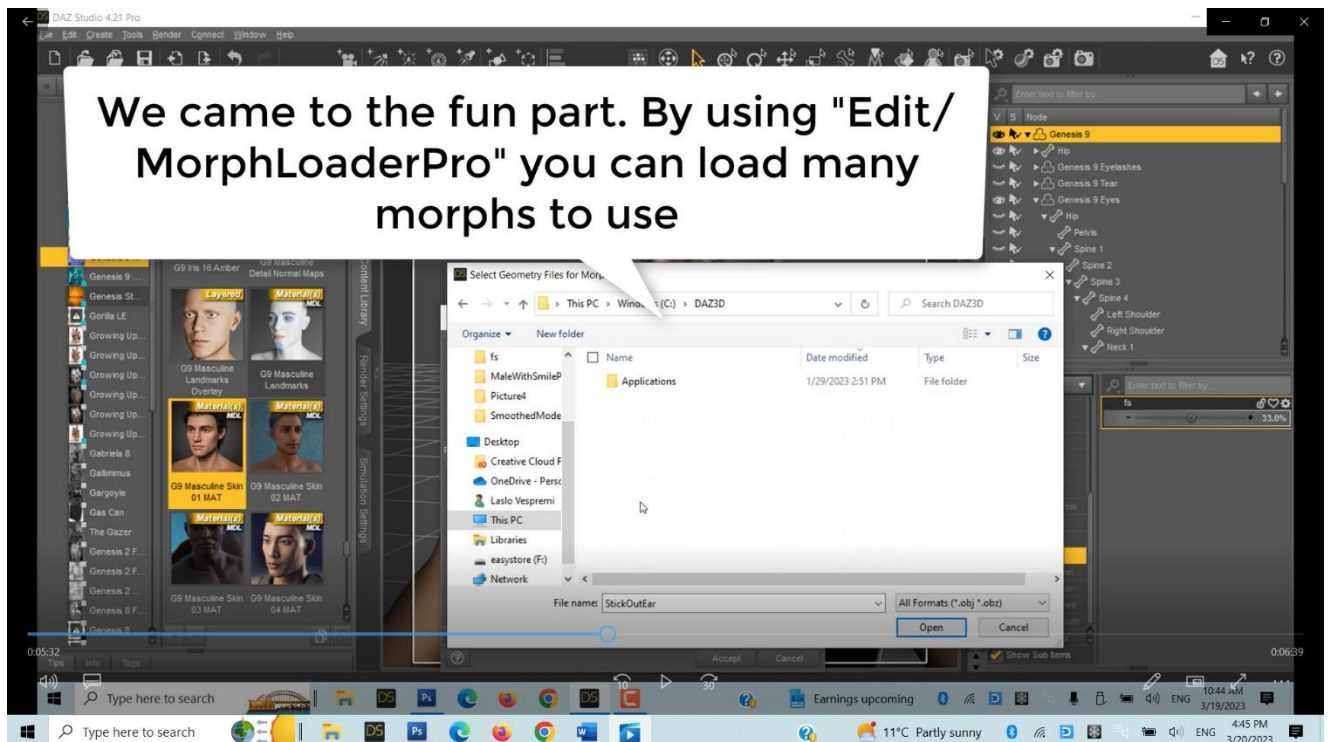
17. Since „Eyes” and „Mouth” are separate characters in Genesis 9, we need to manually turn them back to visible.



18. Notice that the eyes may be off. An easy way to fix this is to choose Genesis 9 in the „Scene” tab and go to „Parameters/Morphs” and decrease the „fs” morphs from 70 (default) to 40.



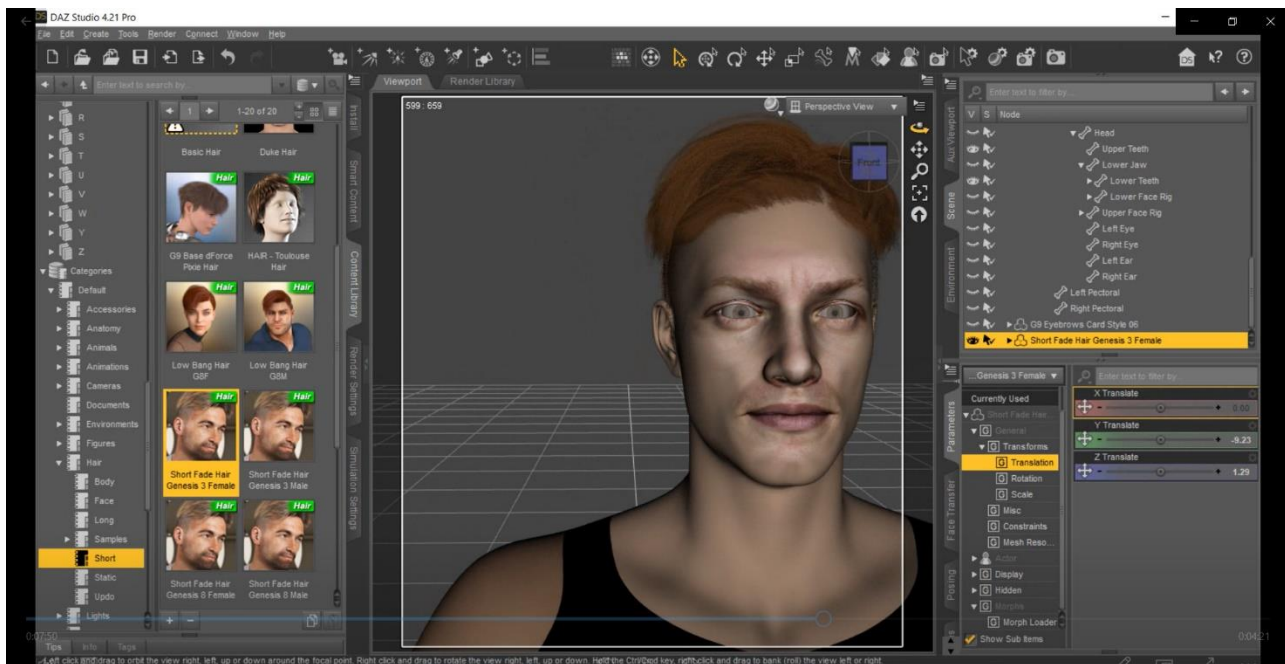
19. Now we are ready to load additional morphs via „Edit/Morphloader Pro”. Load as many as you like. Since morphs accumulate, it is recommended not to load too many or counter positive morphs with negative ones to restore the head’s shape.



20. As before, it helps to switch from „Texture Shaded” to „Smooth Shaded” for better viewing.

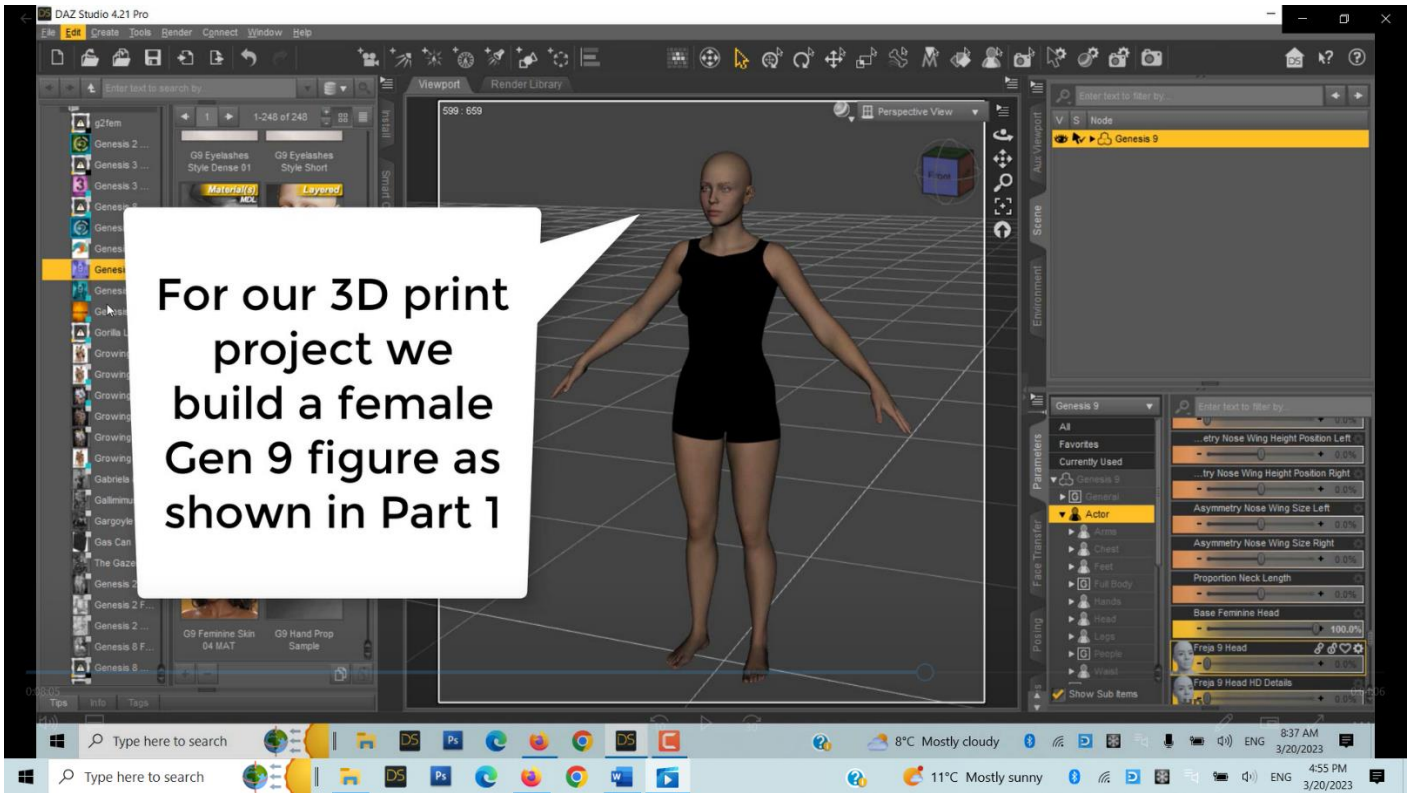


21. Add hair and wardrobe to finish!

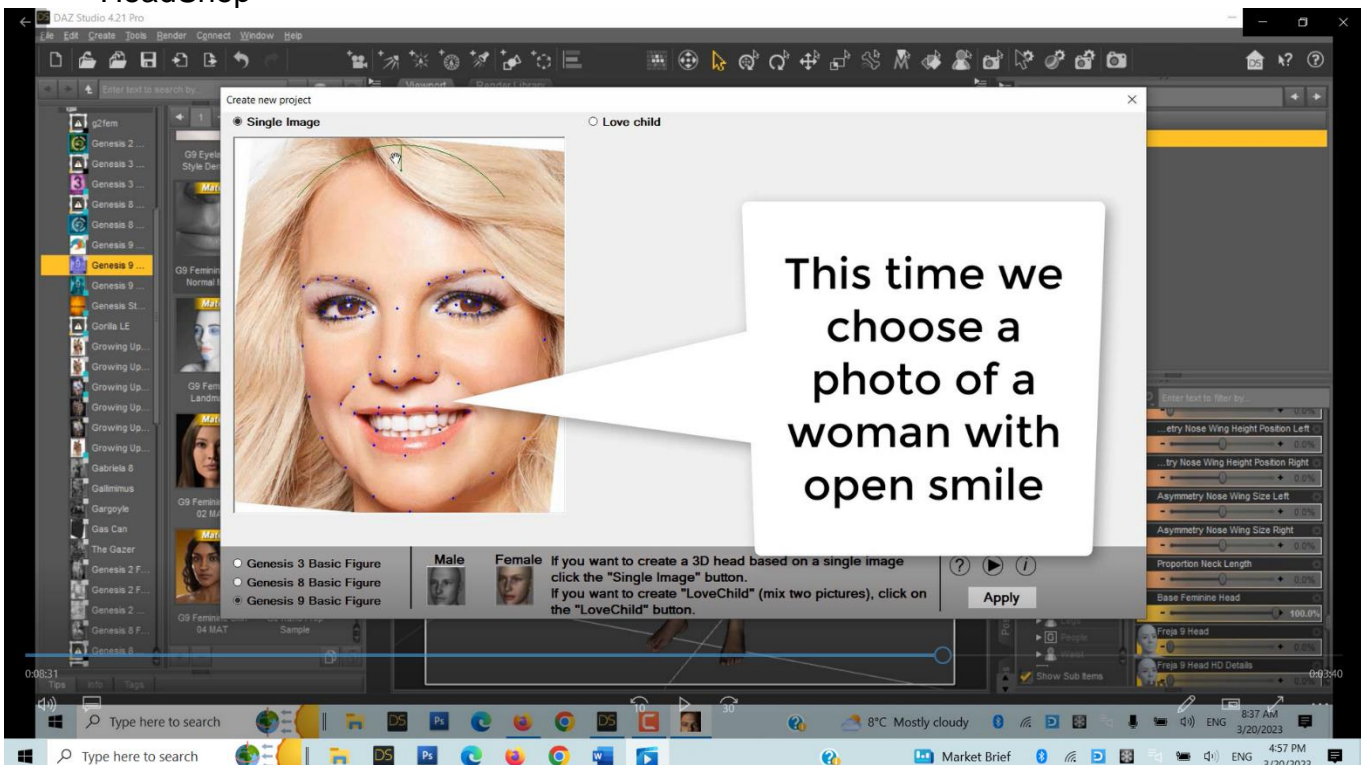


## Chapter 4 – 3D Printing with HeadShop

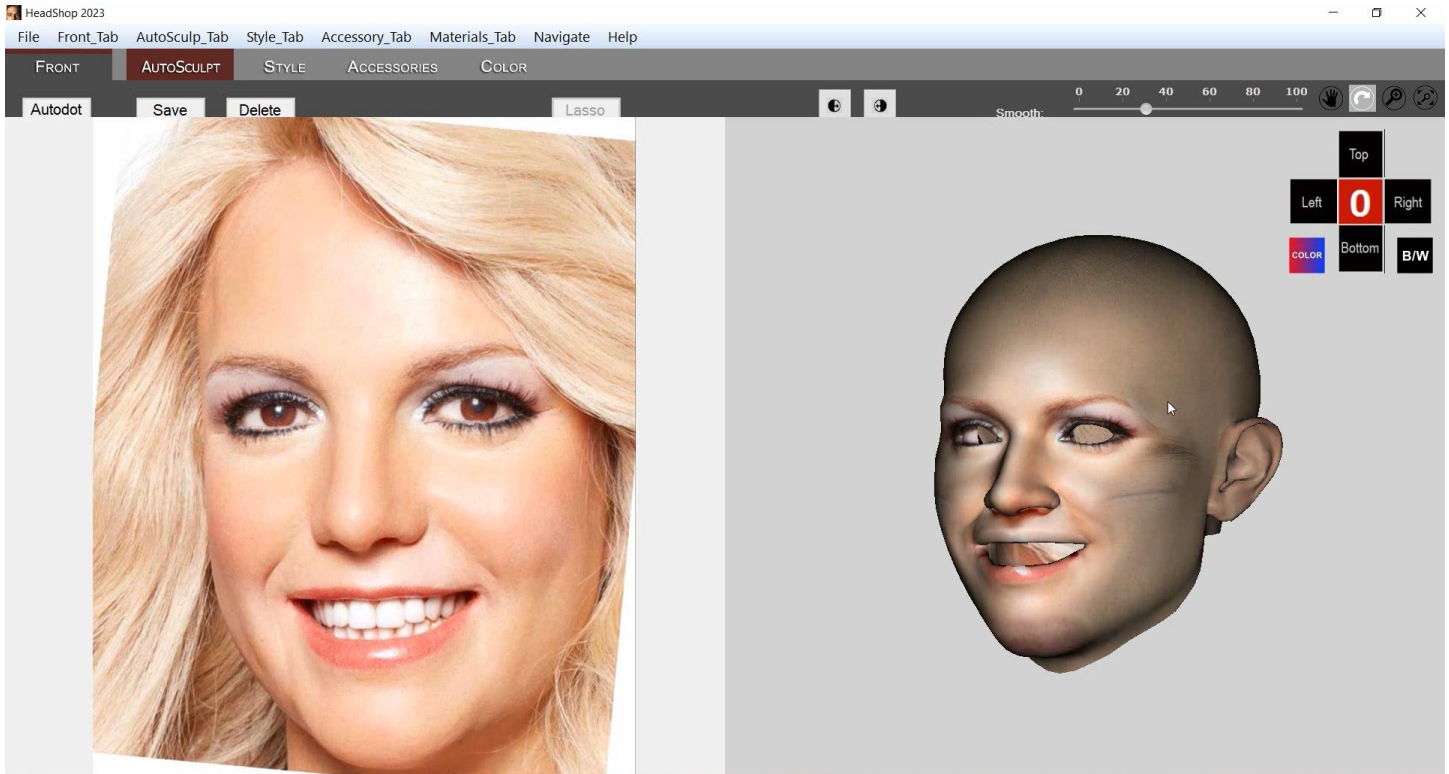
1. We can create 3D printable busts with HeadShop. Please follow these steps.



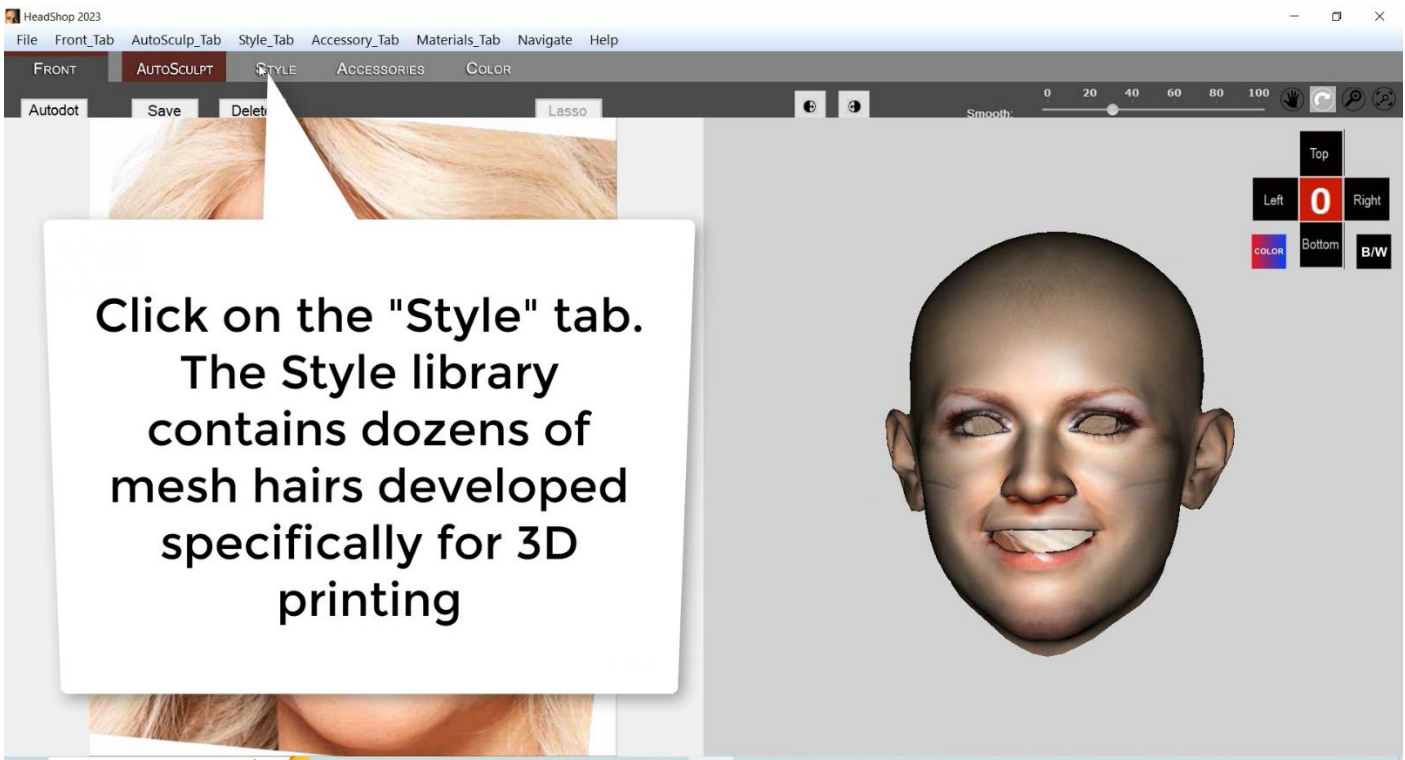
2. We start as discussed in Chapter 3, by creating a „Female” figure, adding texture and starting HeadShop



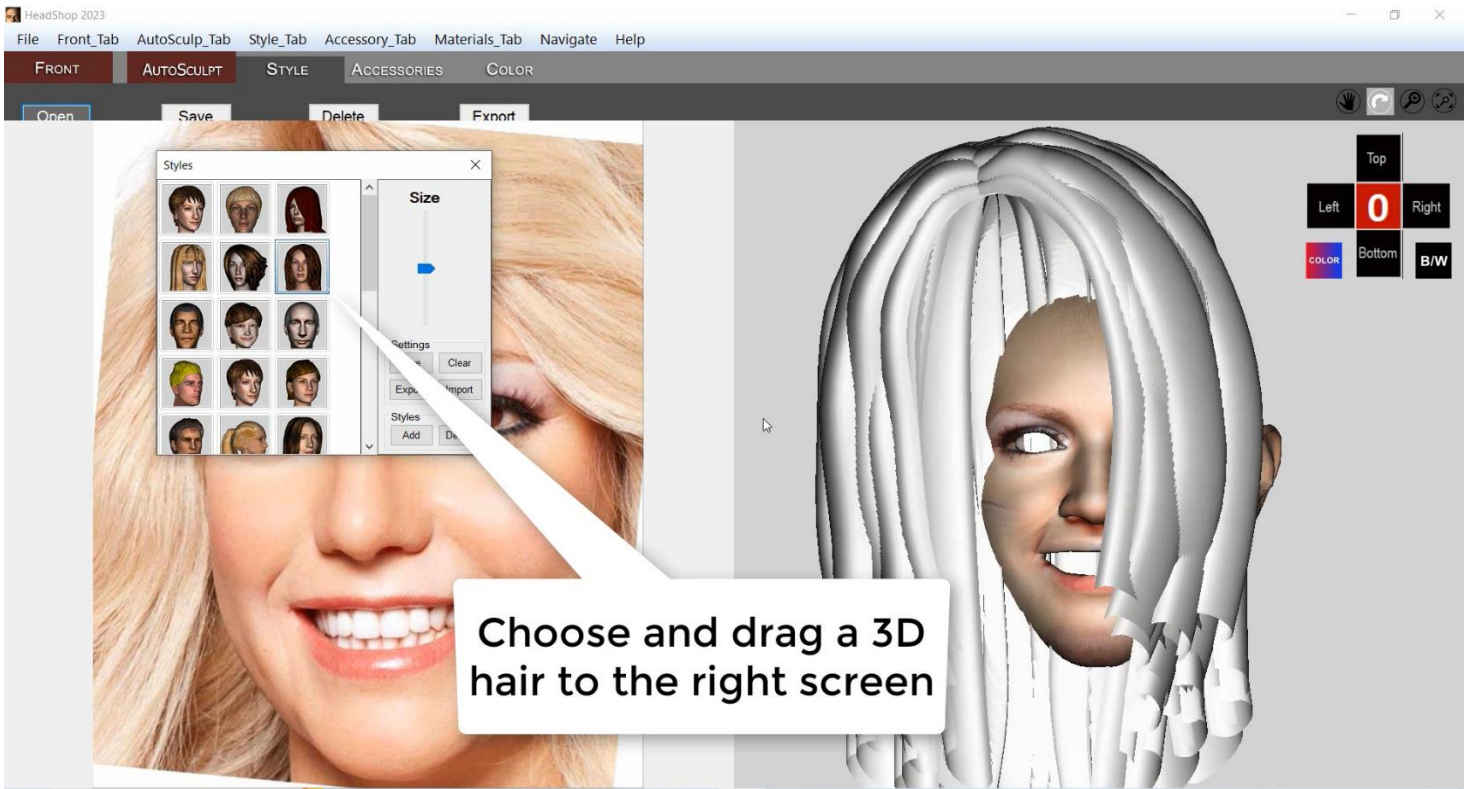
3. Notice that HeadShop loads Gen 9 head with an open smile. Because teeth and eyes are separate actors, they cannot display at this stage but will be added back in DAZ Studio.



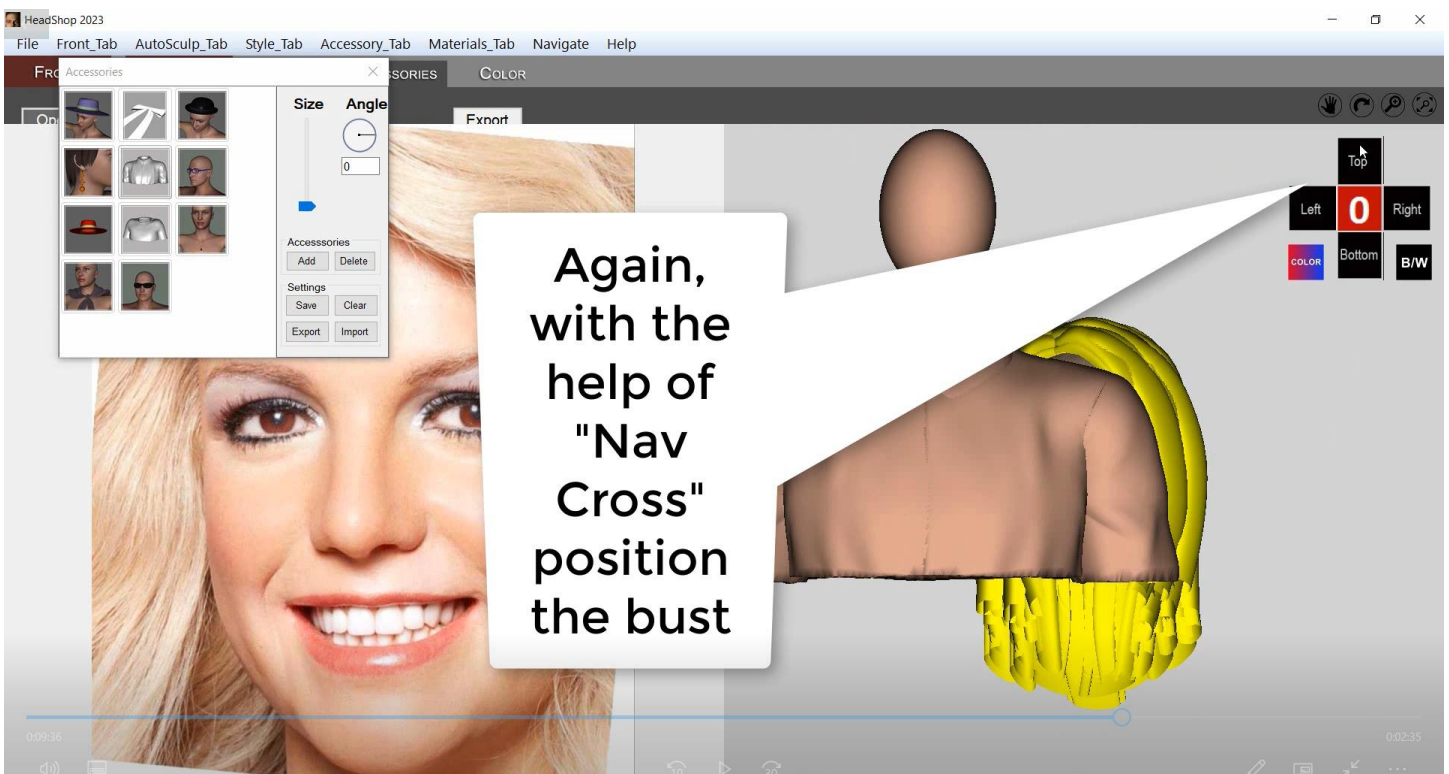
4. Move to the „Style” tab and open the Style Library



5. Select and drag a hair from the library to the 3D head on the right screen. You will need to use the „Nav Cross” to adjust the position of the hair. Note that you can also size the hair as long it is highlighted yellow.

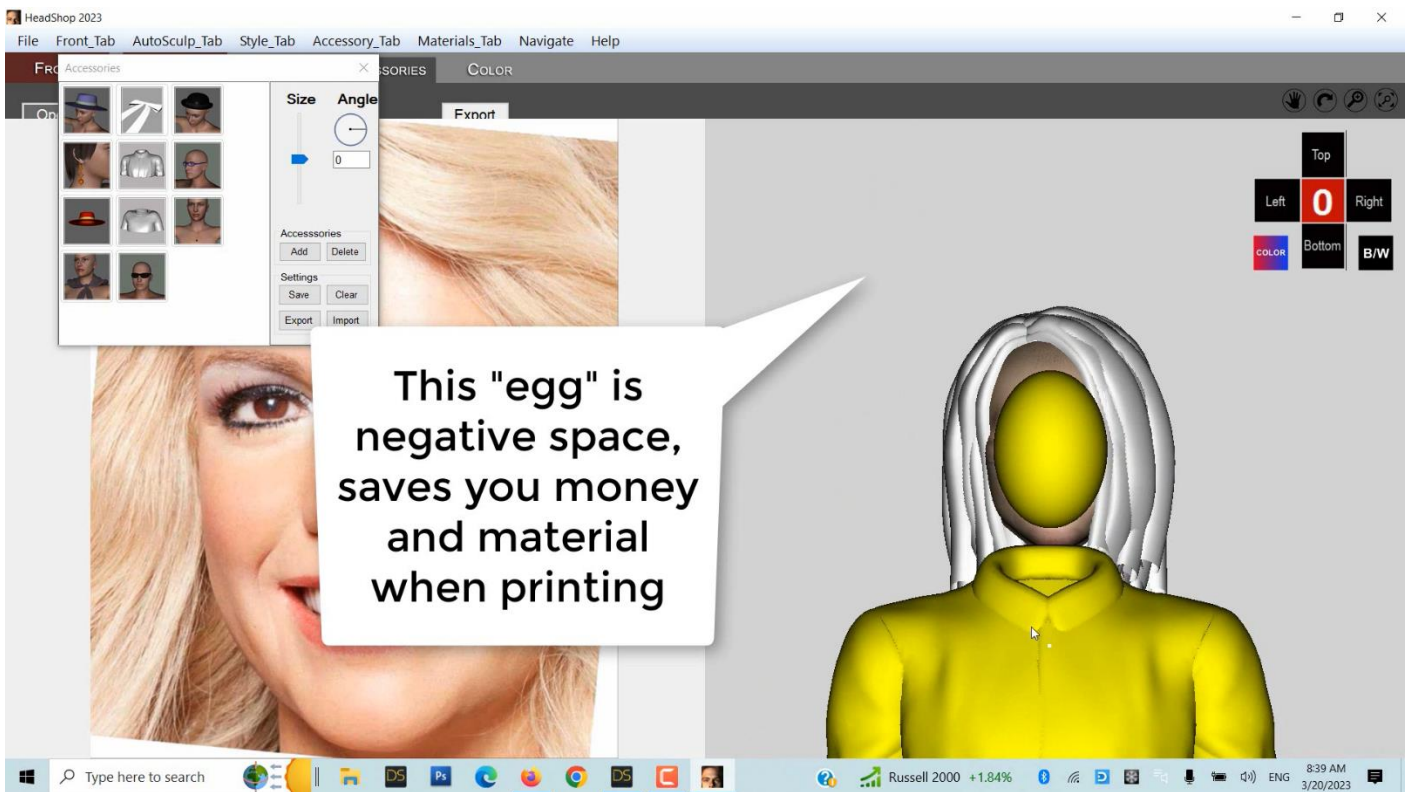


6. When finished, open the „Accessoires” tab. With the help of the „Nav Cross’ position the shirt.

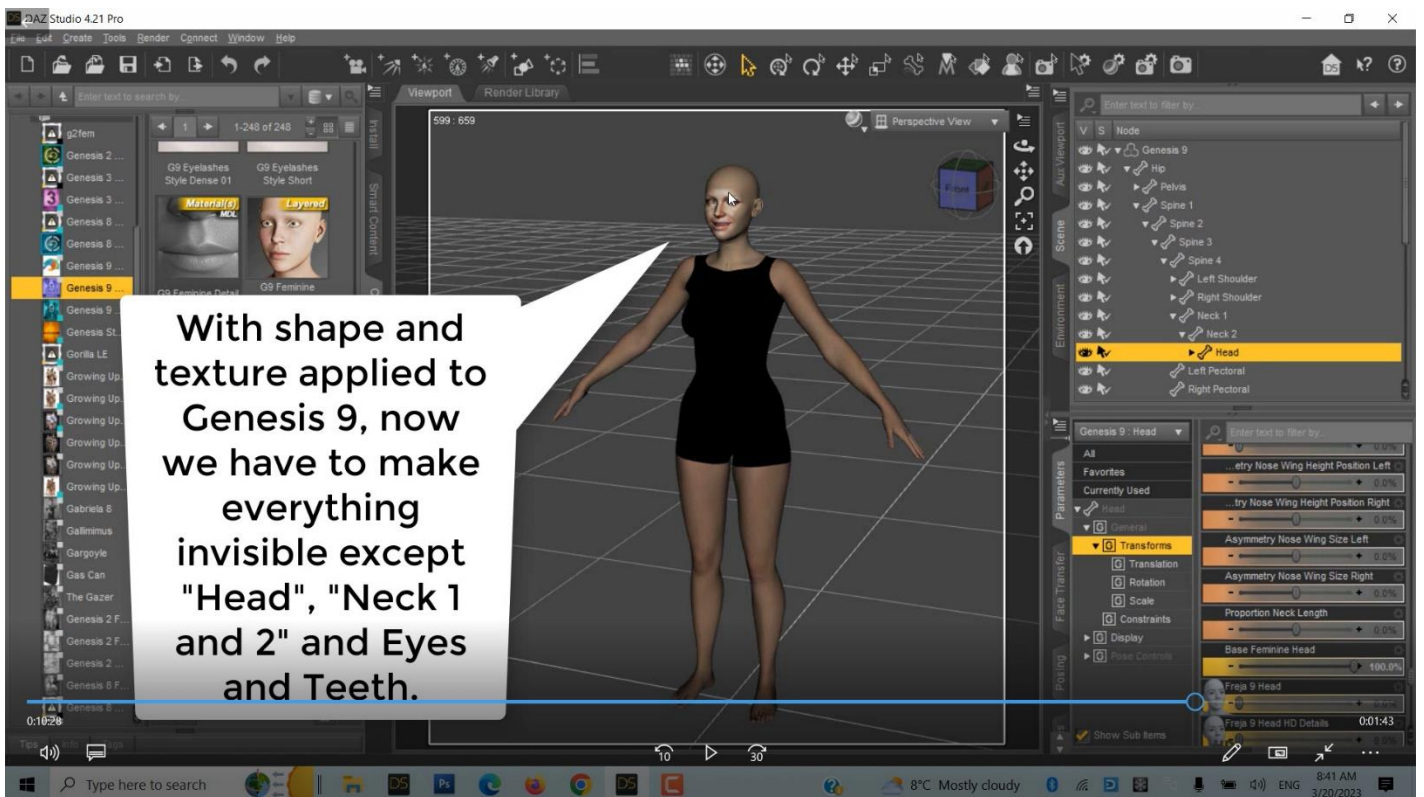




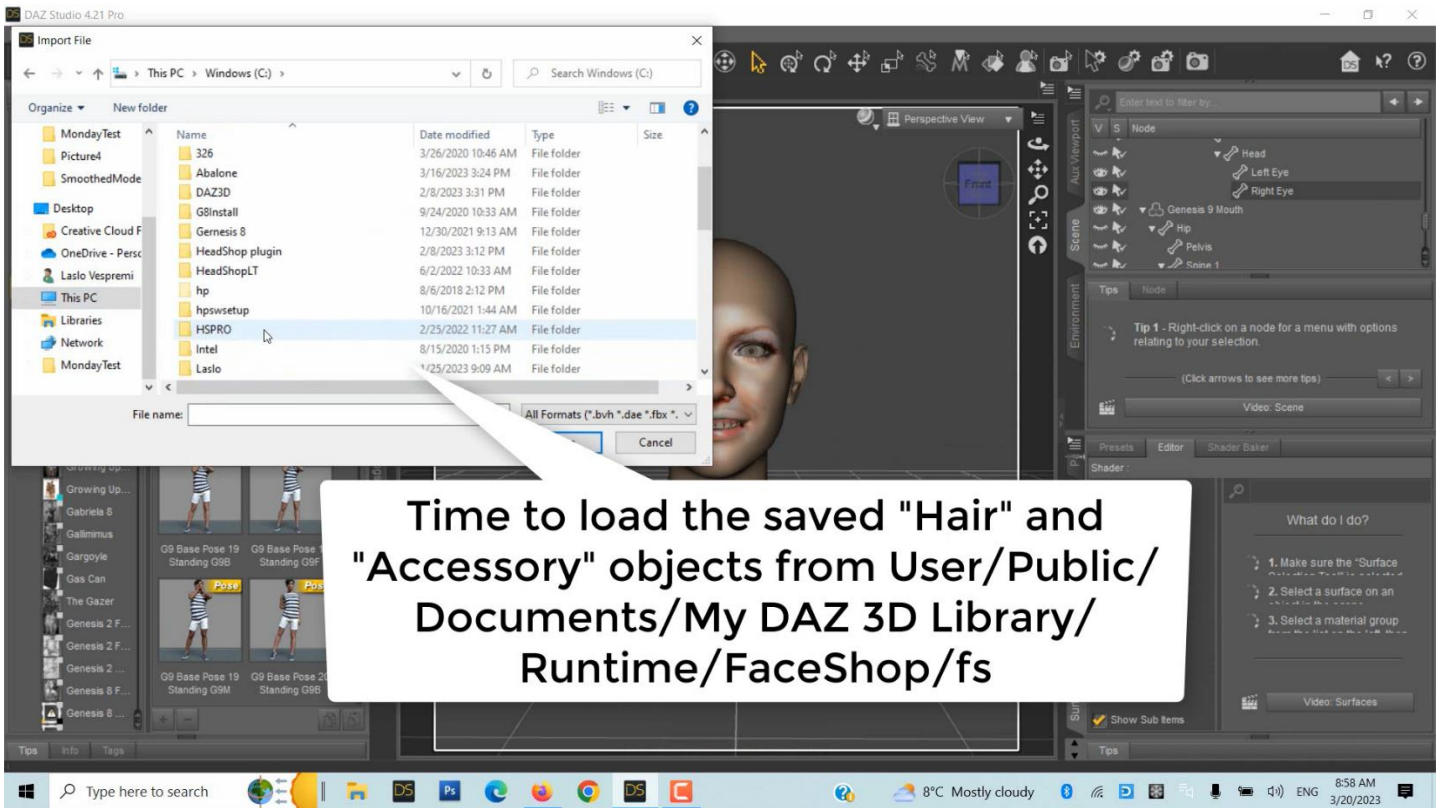
7. Notice that there is an egg shape of negative space attached. This will help to reduce material and save some money when printing.



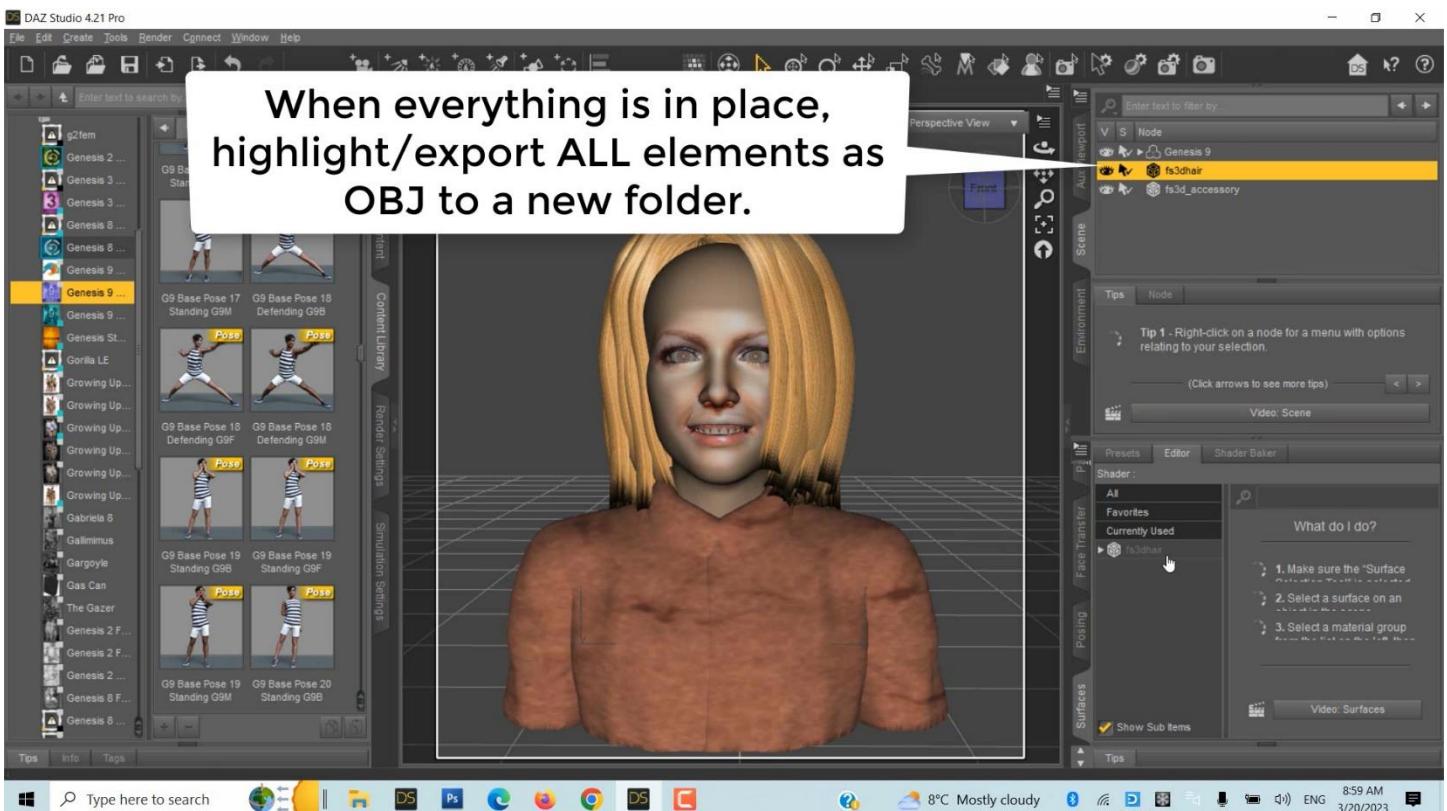
8. In DAZ Studio now you have to hide all body parts in the Scene view (unclick the eye symbol) except „Head”, „Neck 1 and 2”, „Left and Right Eyes” and „Upper and Lower Teeth”.



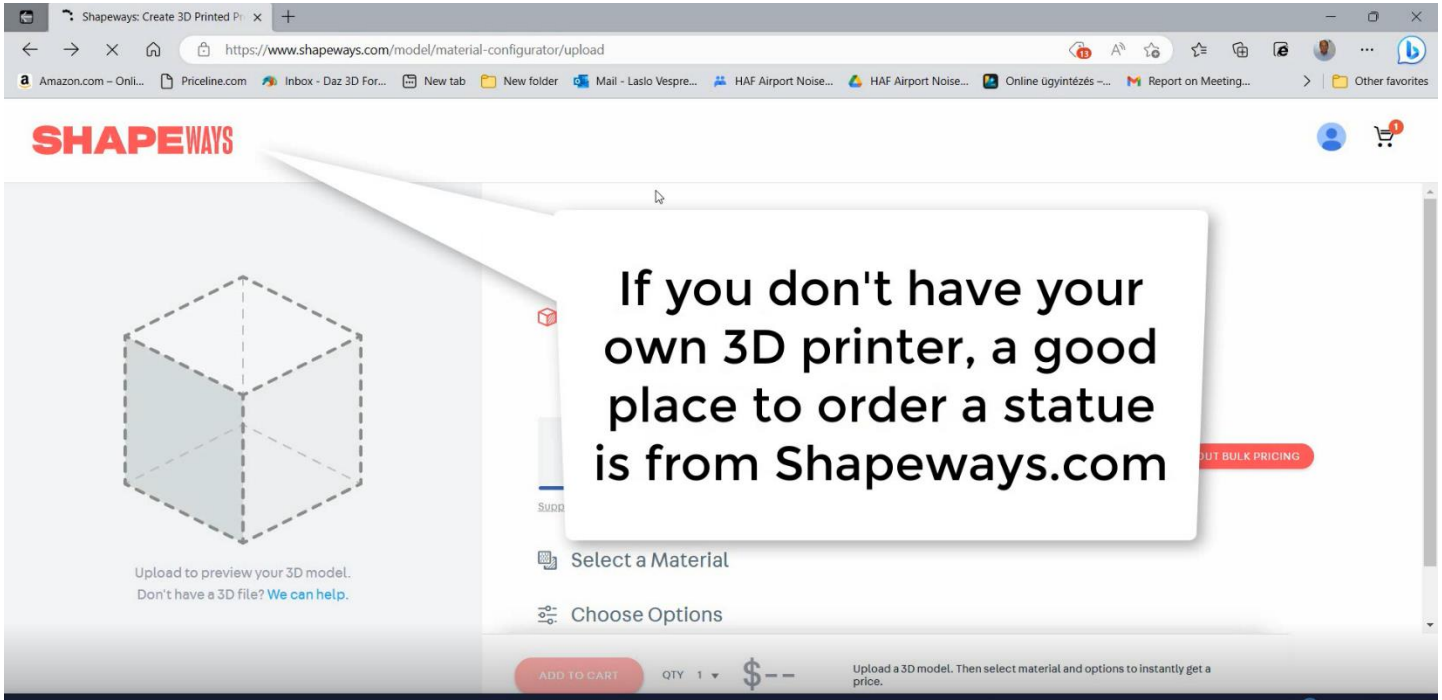
9. Time to load „Hair” and „Accessory” from User/Public/Documents/My DAZ 3D Library/Runtime/FaceShop/fs



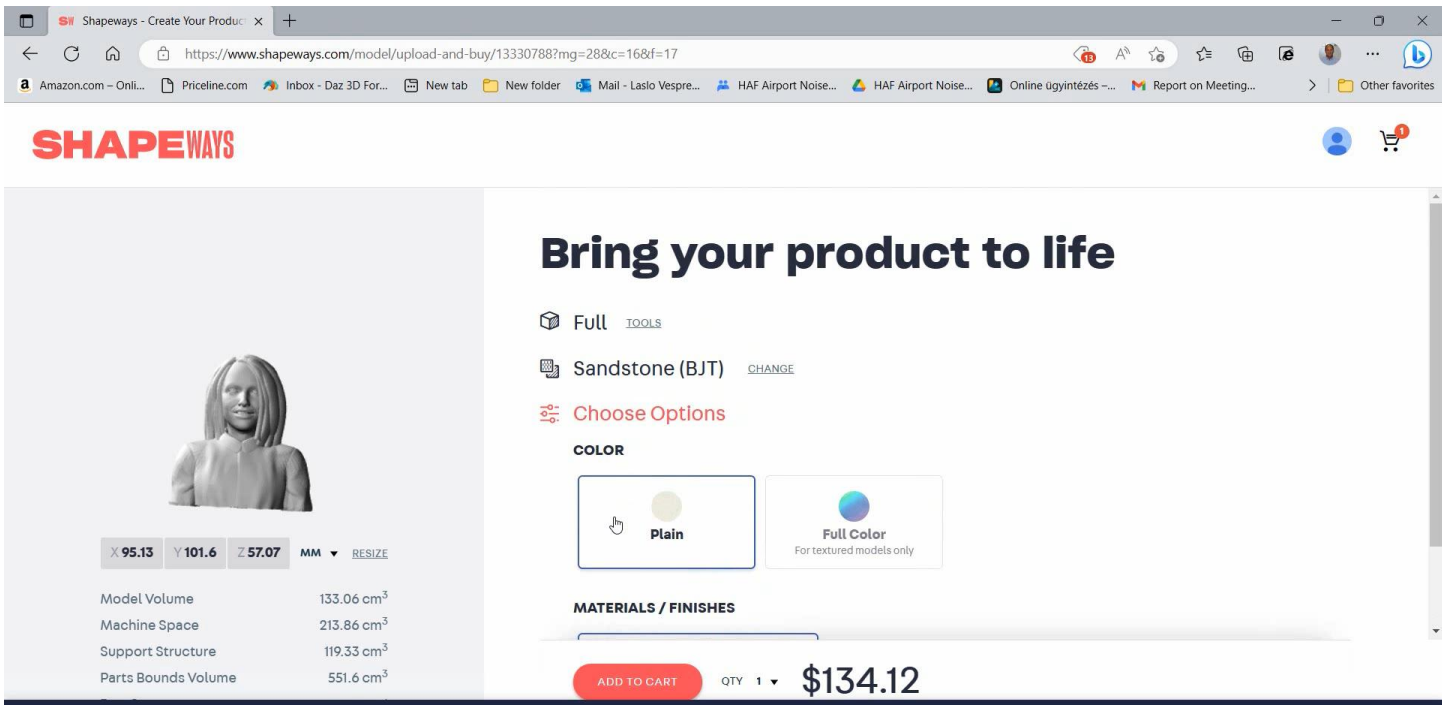
10. Export ALL 3 ITEMS (highlight in Scene) as OBJ. You are done!



11. If you don't have a 3D printer, a good place to upload your OBJ file is at Shapeways.com. Follow online instructions to preview your statue and select material (Dandstone is recommended), scale in inches and see pricing.



A 4" tall sandstone statue will print for appr. \$130, same made of plastic for \$80....



# Chapter 5: Advanced Operations

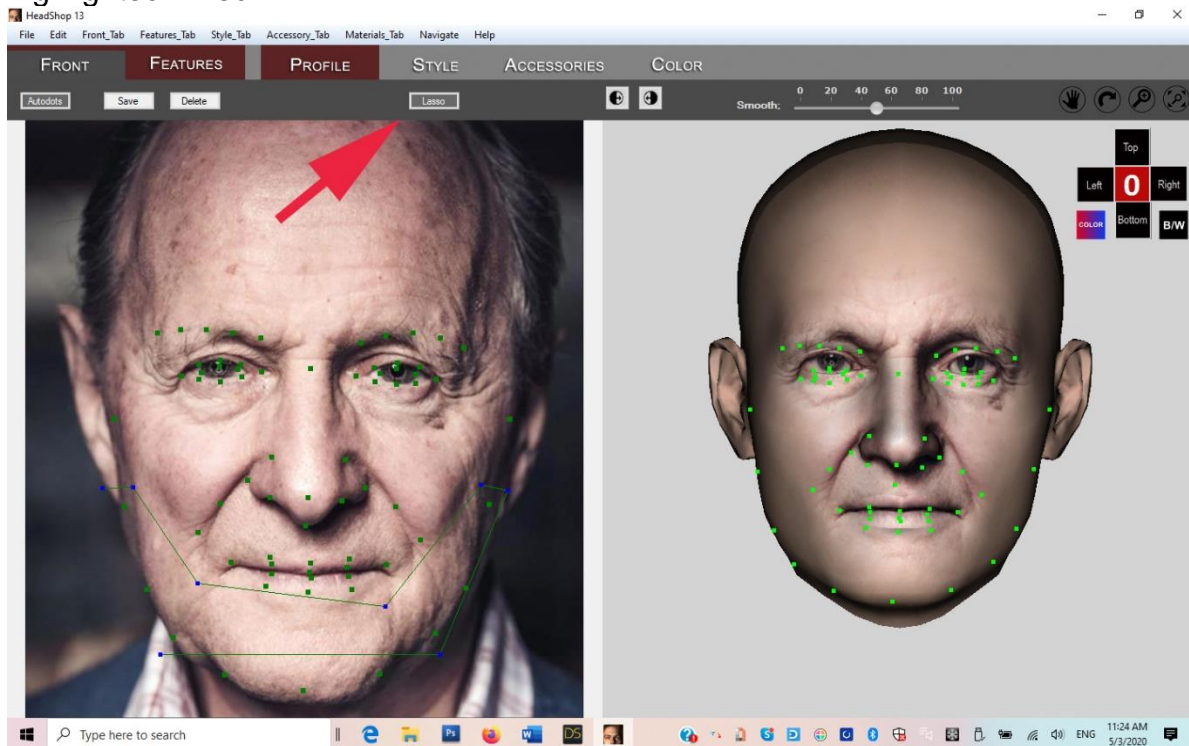
In the following we offer a few hints for Advanced Operations.

## Using (carefully) Autodots

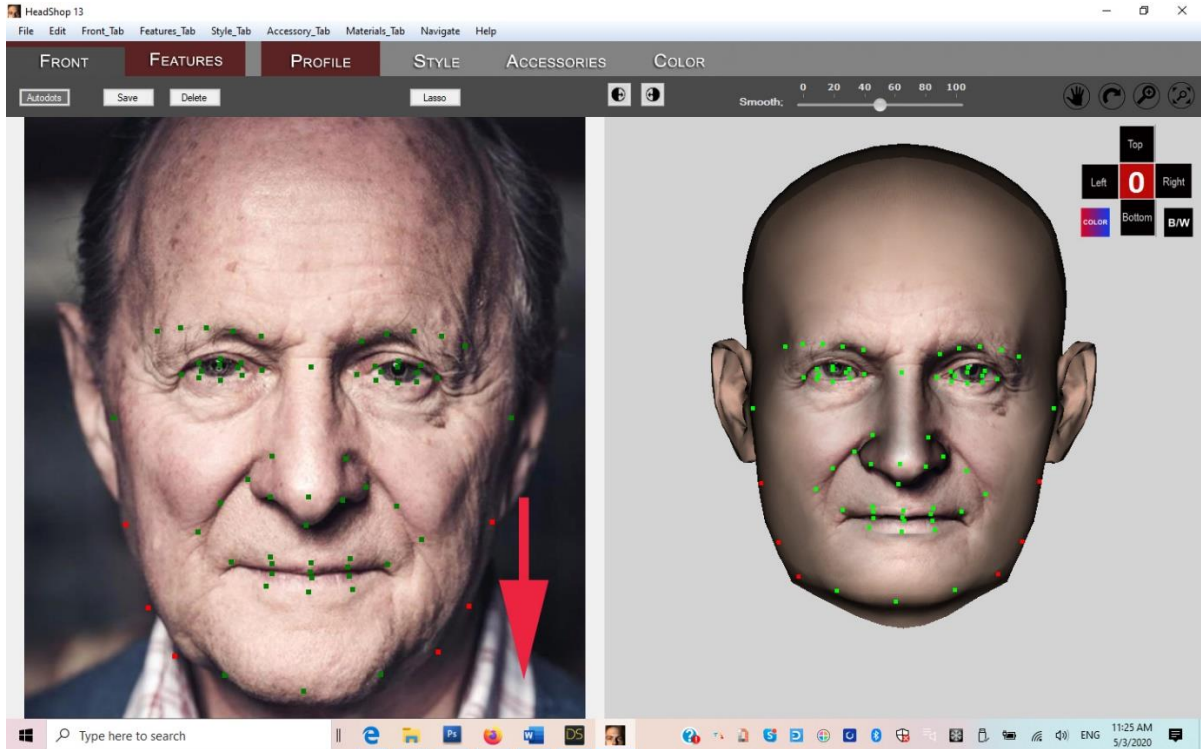
**In general Autodots are difficult to use, so use them only if you don't mind some failures.**

In this demo we show how to change the shape of the head to mimick sagging skin.

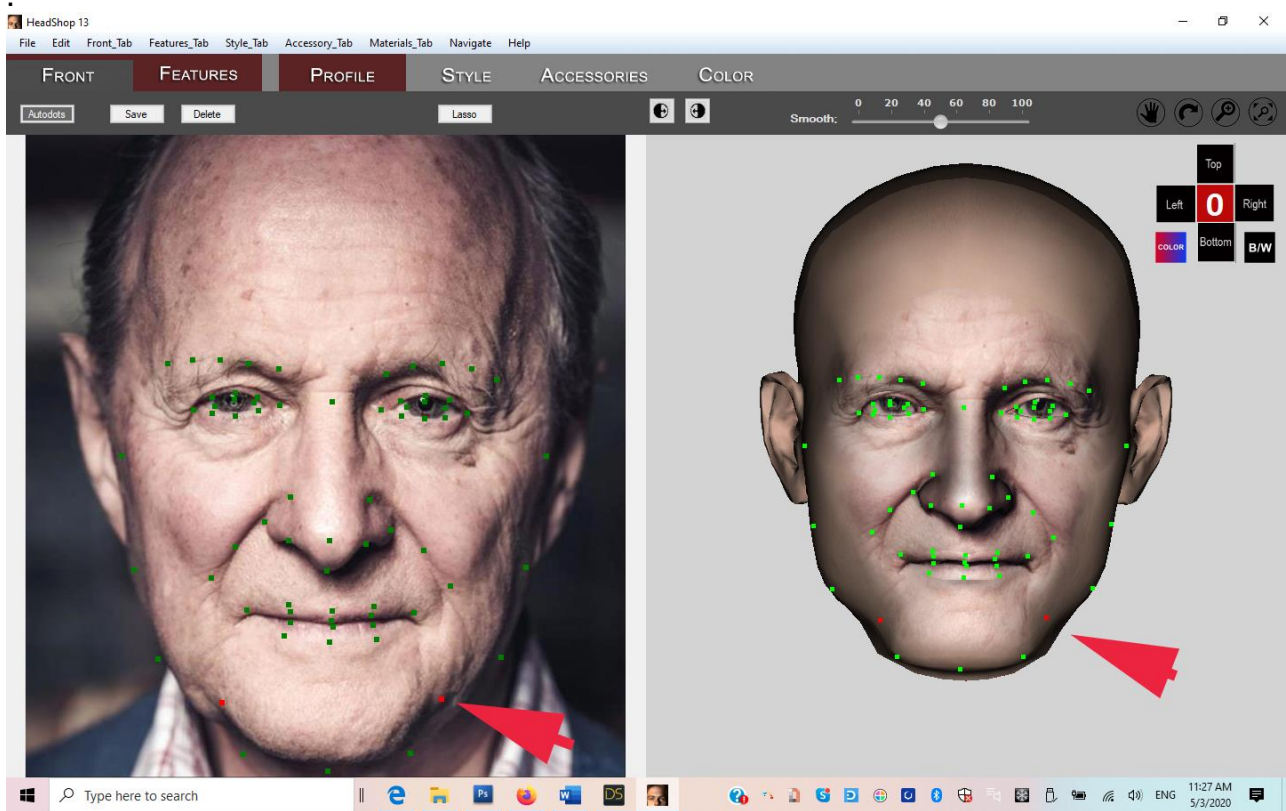
**Step 1.** Start by clicking on the Autodots button. This will place significant dots on both the photo (left screen) and the 3D head (right screen). Clicking on the „Lasso” button, you can draw around the dots you want to move „unison” to give the sagging look. The dots will be highlighted in red.

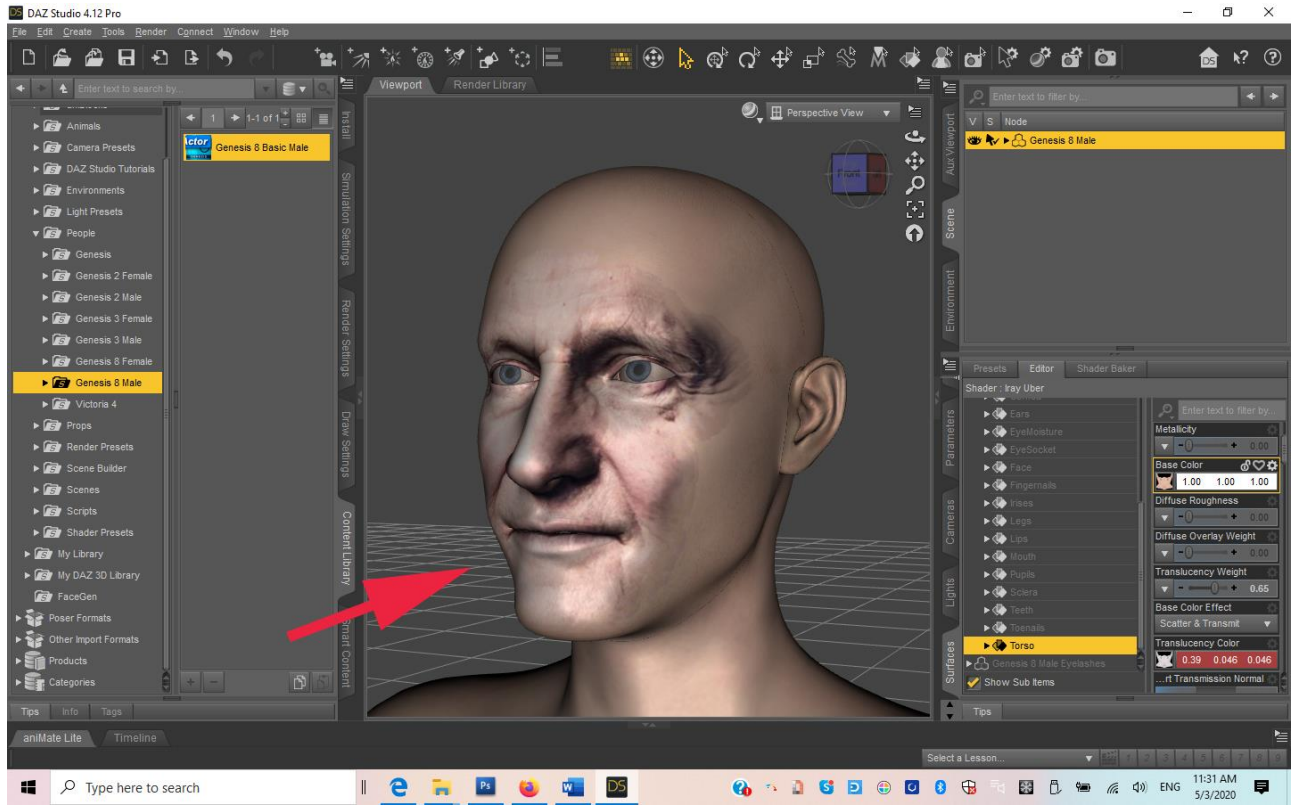


**Step 2.** Move down the dots together on the left screen to the desire position. Observe how the 3D head on the right also changes,



Step 3. Now select the 2 points of the indentation and move the inward. This way you get the desired shape with the sagging sides. Export.

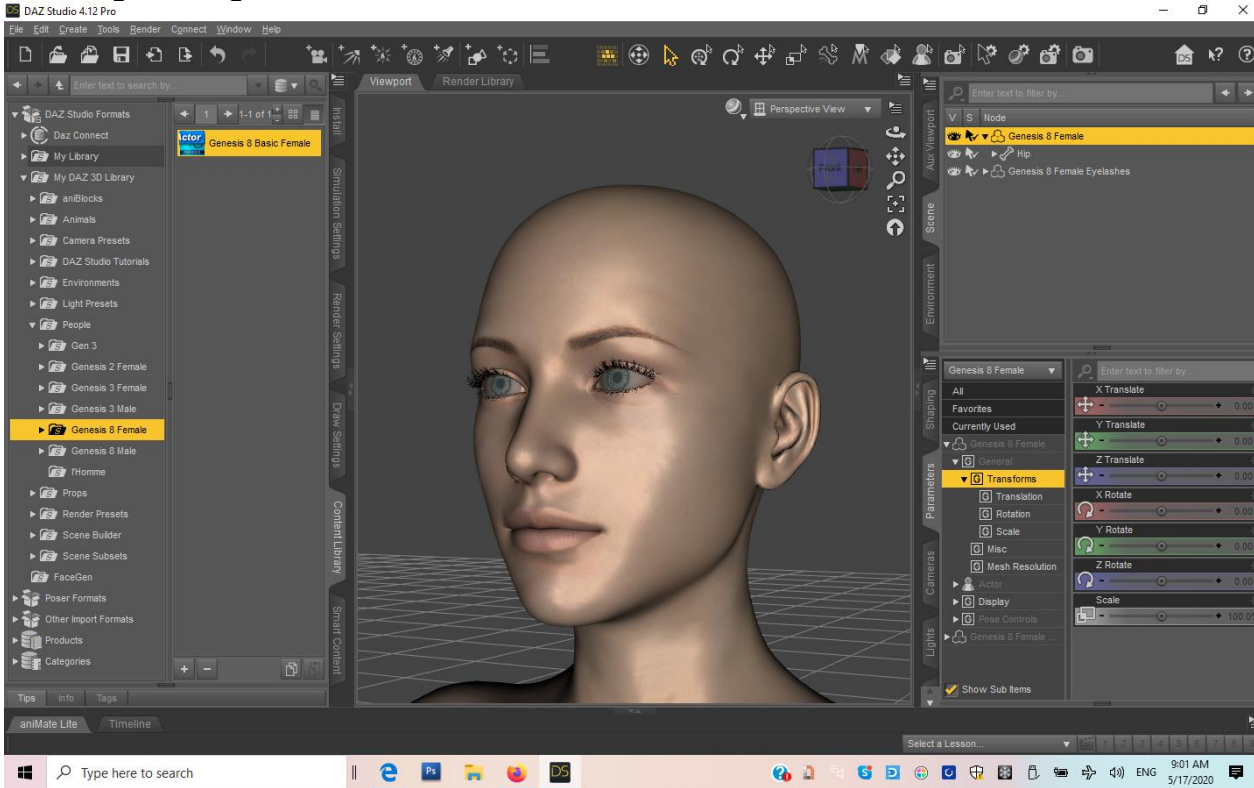




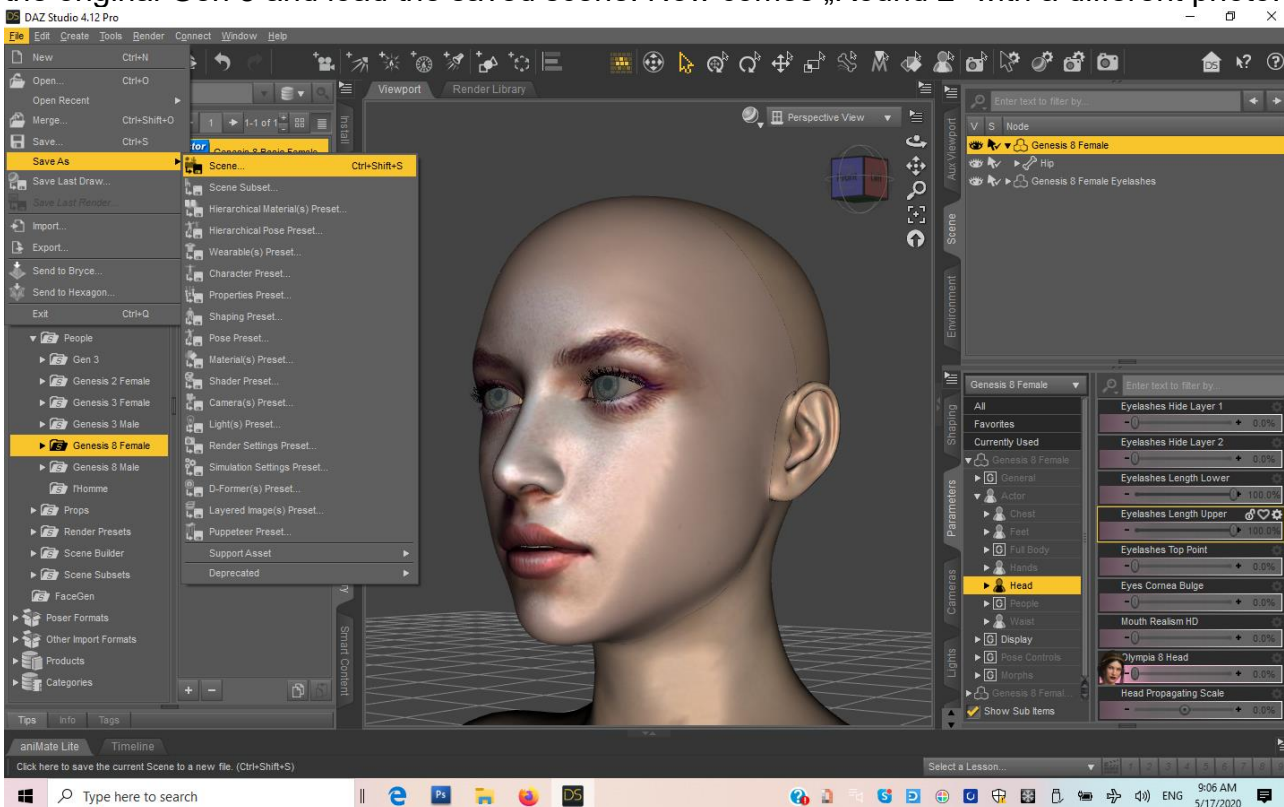
# „Layering” Different Characters

This is a technique that we have experimented with; compounding characters in the same workflow. We are not sure if this will be useful in creating new charcters – but it is an option.

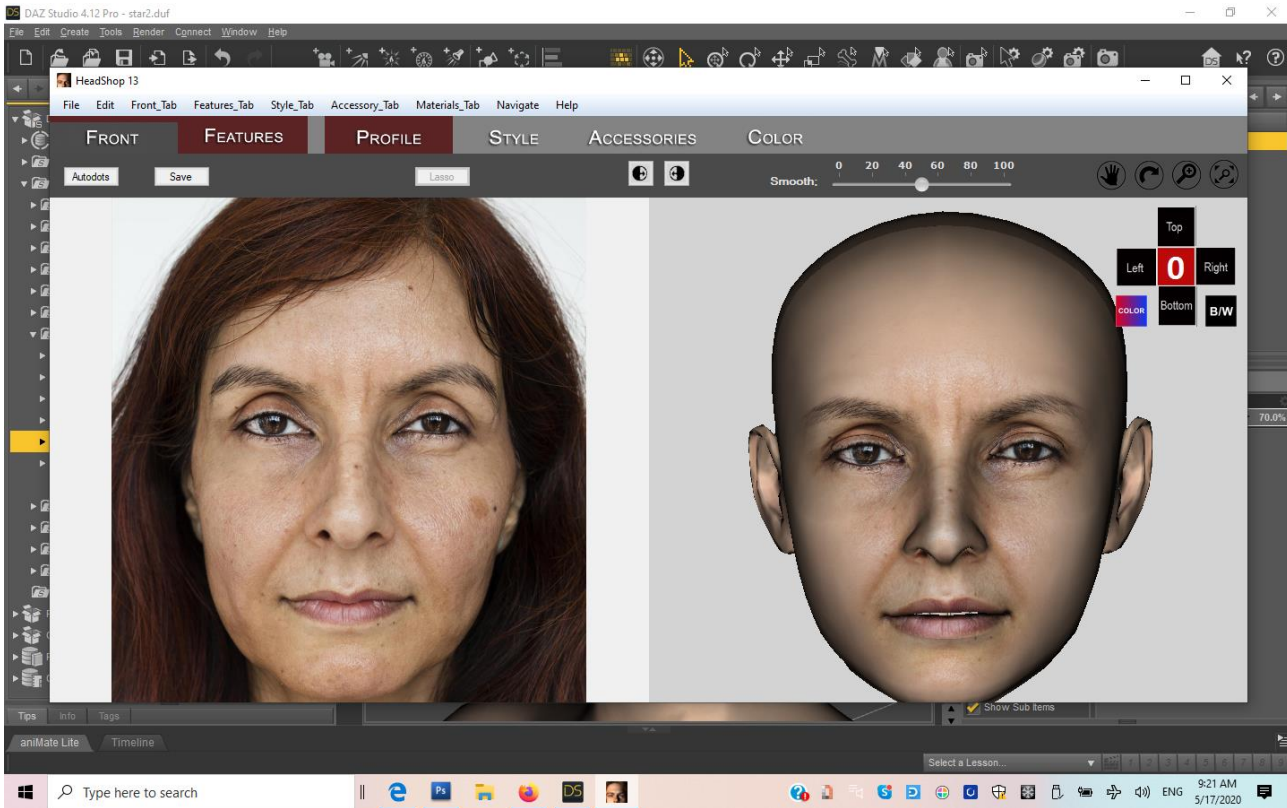
**Step 1.** We start as usual with a character (Gen 8 Base Female) on stage. Next we launch HeadShop 13 and go through „Round 1”



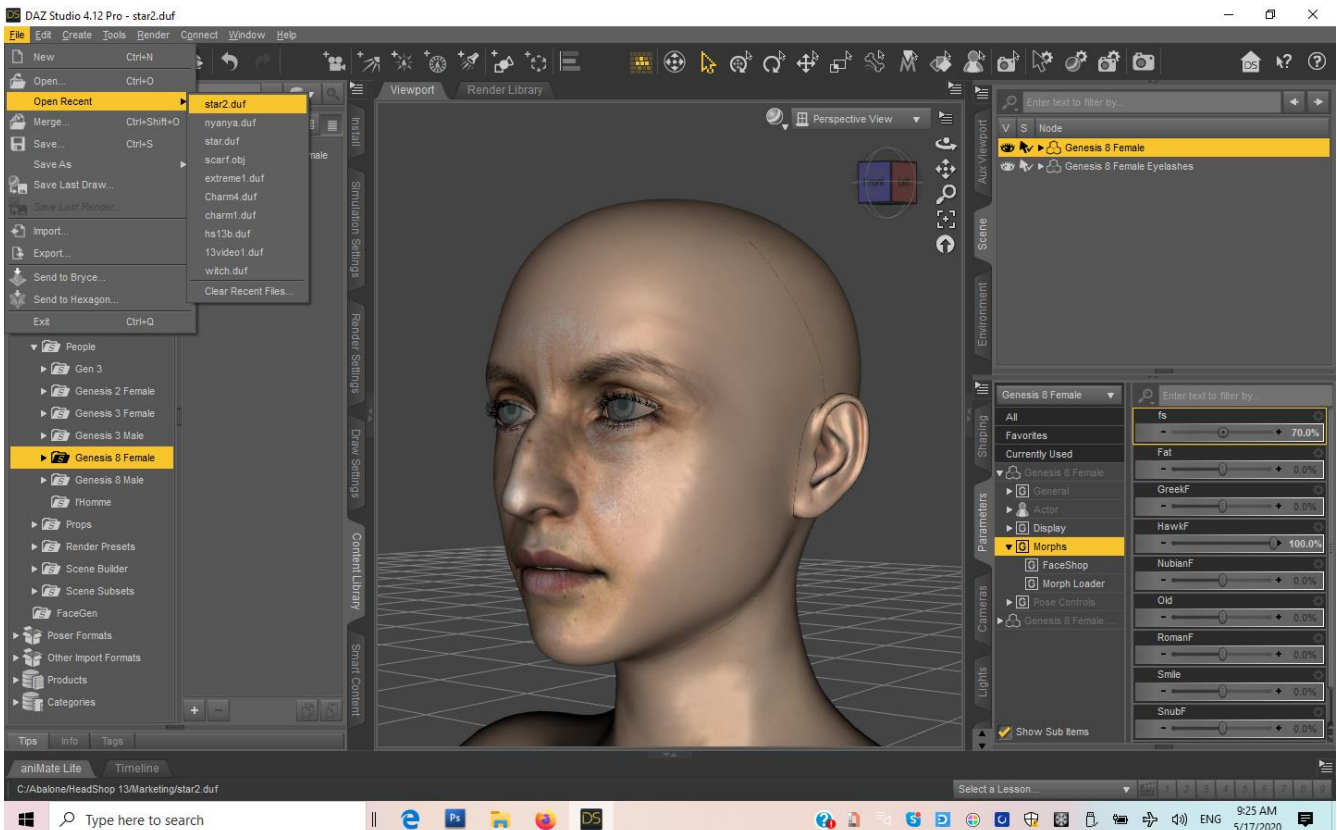
**Step 2.** After creating the new figure, we save this new figure as a „scene” for later use. Next we delete the original Gen 8 and load the saved scene. Now comes „Round 2” with a different photo.



**Step 3.** In „Round 2”: we find a different photo and load it with HeadShop. Create new figure and export it.



**Step 4.** Back in DAZ Studio the new head is not loading to the figure. We need to delete figure and reload the scene that we saved before. Low and behold, the new head is added to the saved scene and we now have an amalgam of the two different photos as expressed by shape but with the second photos texture.

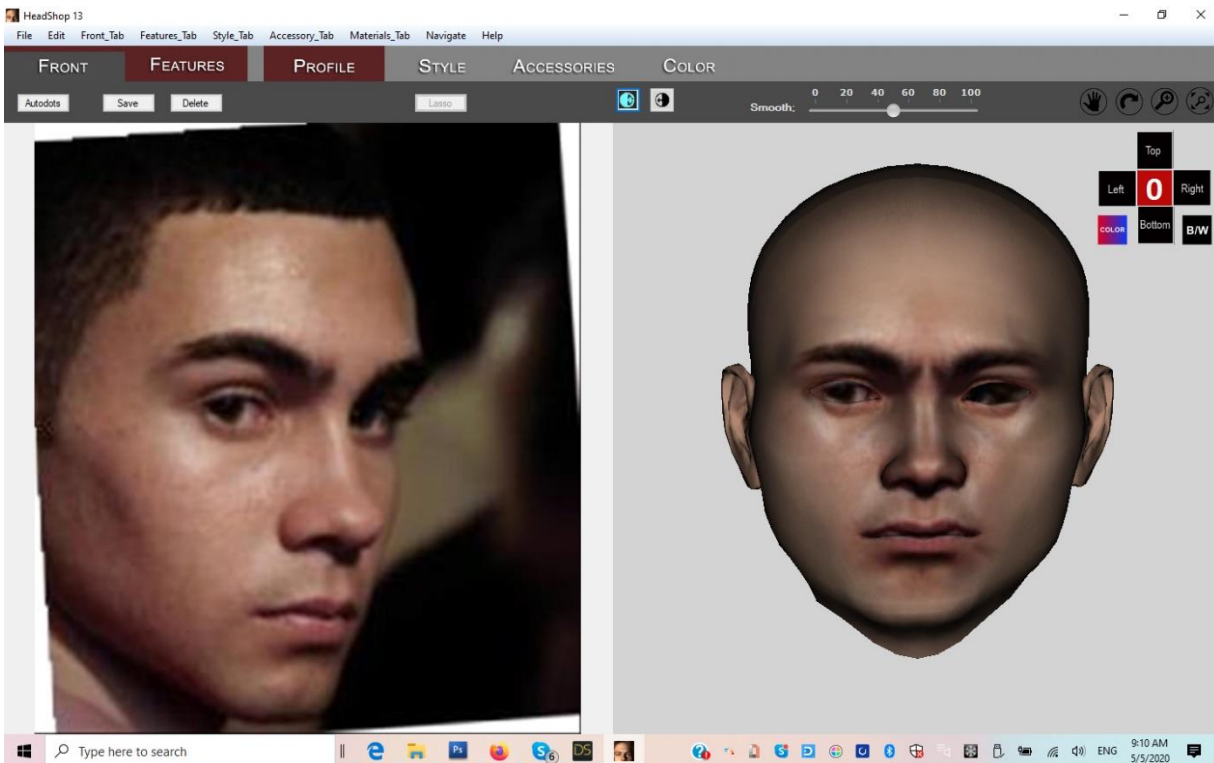




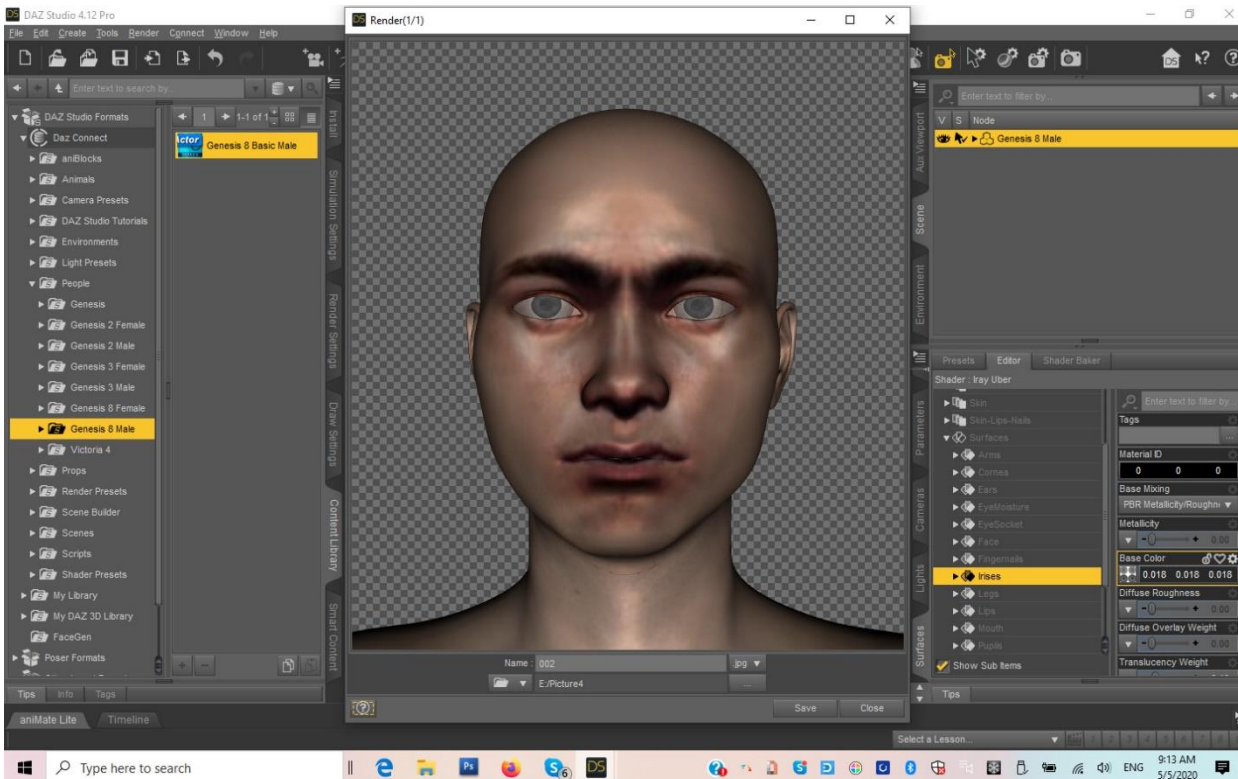
## Extreme Sculpting with Autodots

In this example we will take advantage of HeadShop's unique capability to take an extremely rotated head and turn it straight frontal. A little cumbersome but works 😊

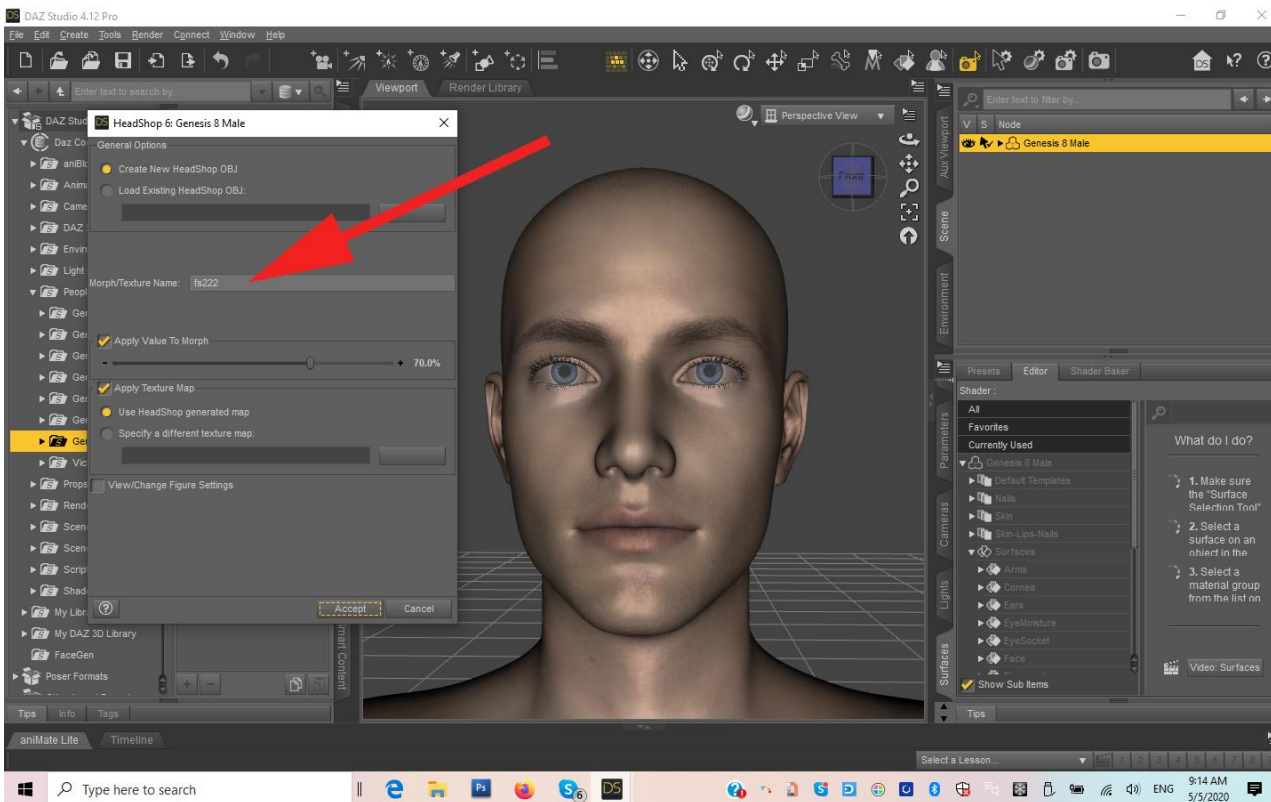
**Step 1.** Create a head of an extremely rotated photo as described in the previous chapter. Mirror good side's texture over to the missing right side. As you can see head shape needs work. Export back to DAZ Studio



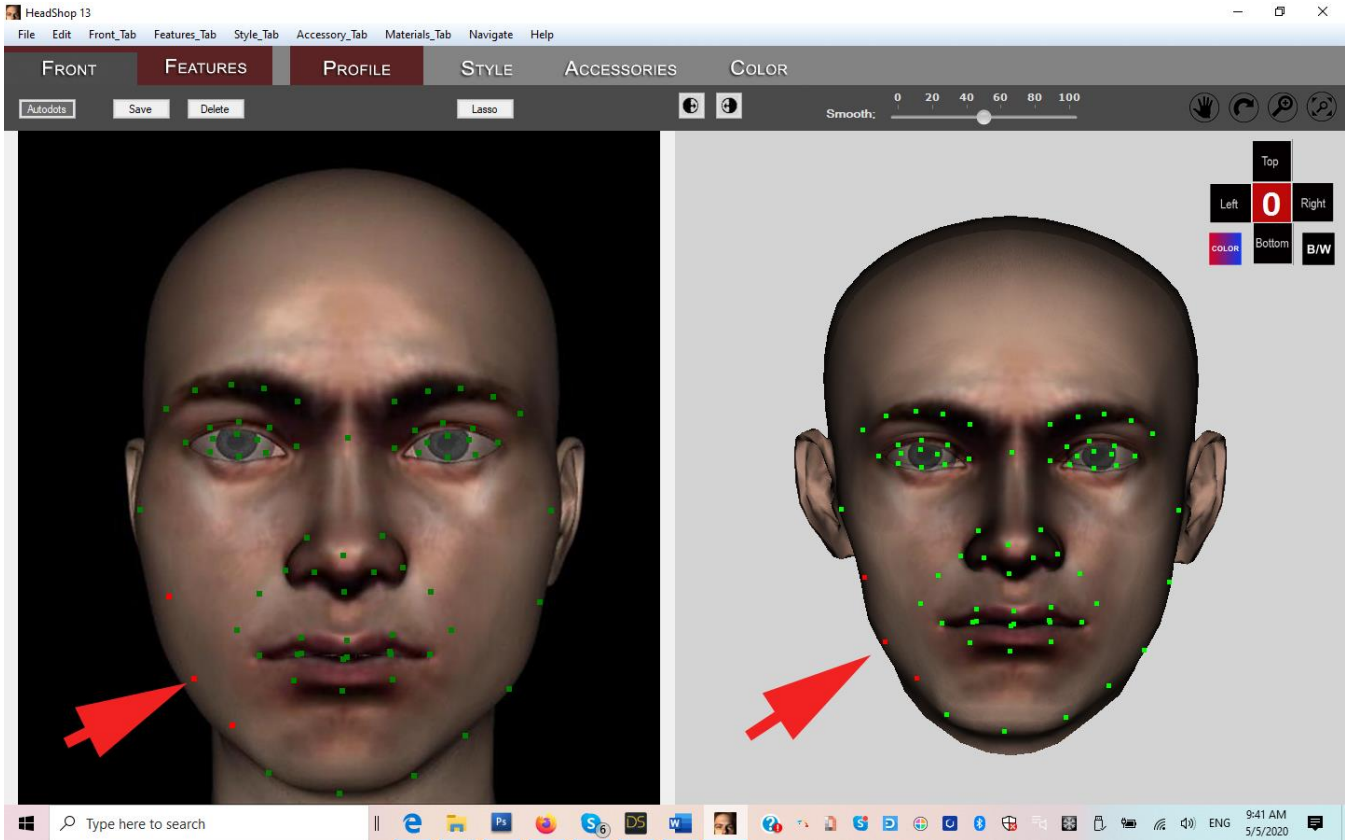
In DAZ Studio render a frontal image of the new head and save render as a JPG..



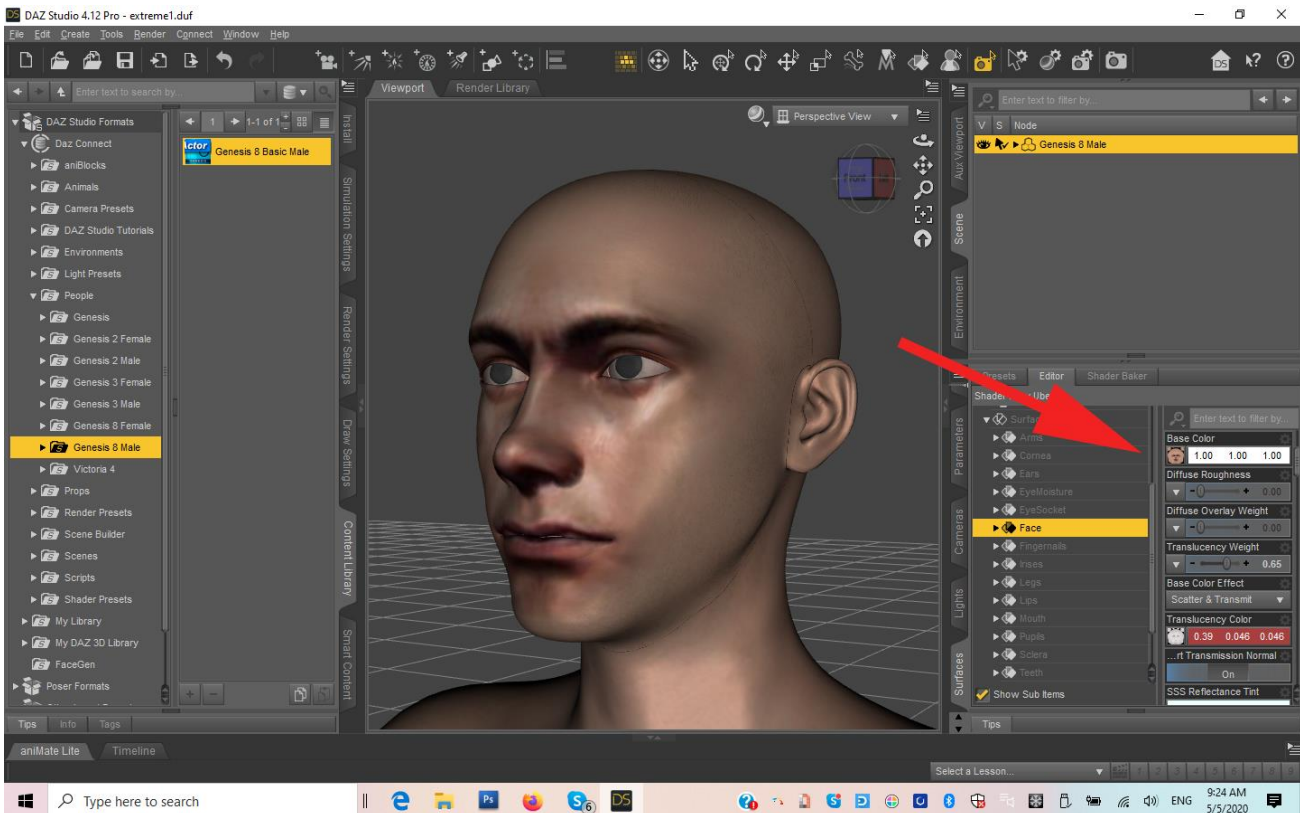
**Step 2.** Delete head and place new figure on stage. When starting HeadShop, make sure you name it differently than previous, so that Texture will not be overridden/replaced as it tends to deteriorate with each new iteration.



Load saved JPG as your photo. In HeadShop, now you have a frontal portrait where the Autodots coincide with you 3D head. Sculpt head by moving Autodots.



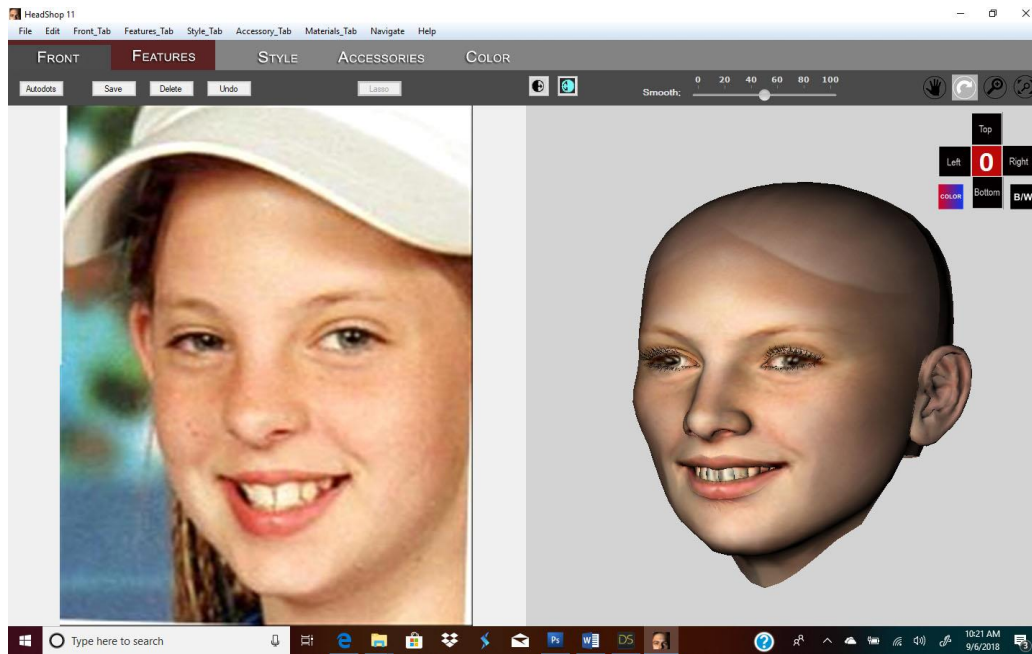
**Step 3.** When ready, Export back to DAZ Studio. Reload previous Face texture from User/Public/Documents/My DAZ 3D Library/Runtime/FaceShop/fs/SmoothedModelTextures



How to model a Child.

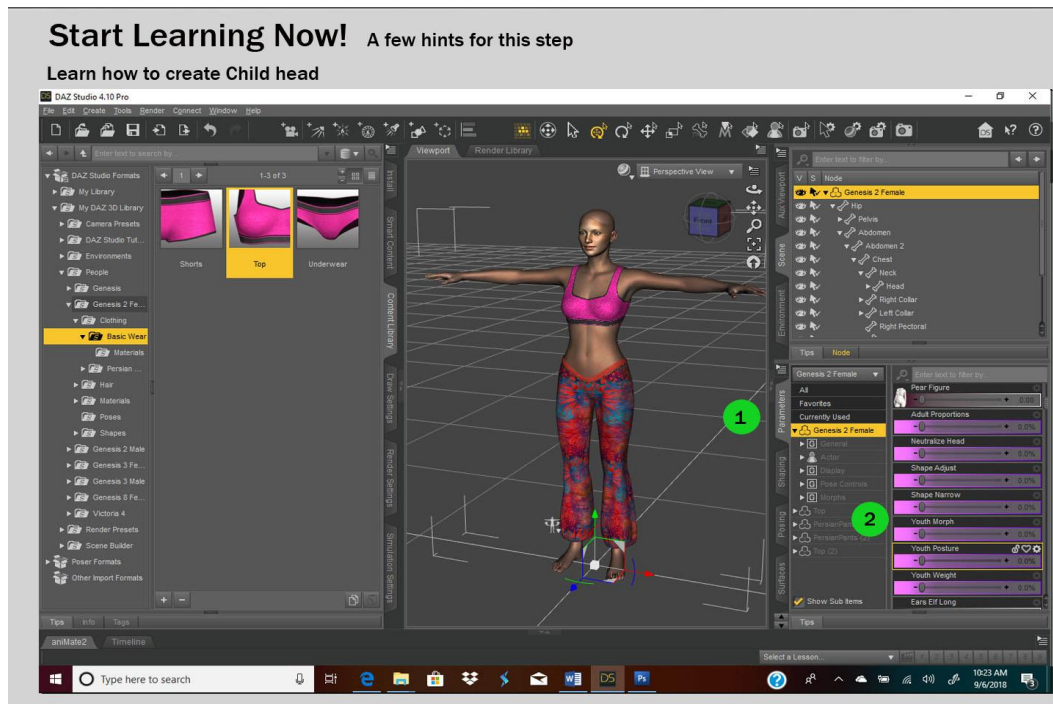
**Step 1.** Modeling children is relatively straightforward. You do need to have the Growing Up for Genesis Female installed in your DAZ Studio. It is available for both Gen 3 and Gen 8.

From here on you proceed as before, selecting either a Male (boy) or Female (girl) manually.



As you can see the head looks more like an adult head. That's OK, in the next two steps we will fix that.  
**Step 2.** Export head via the Edit/Export button. Now it will map back onto your Genesis Female figure.

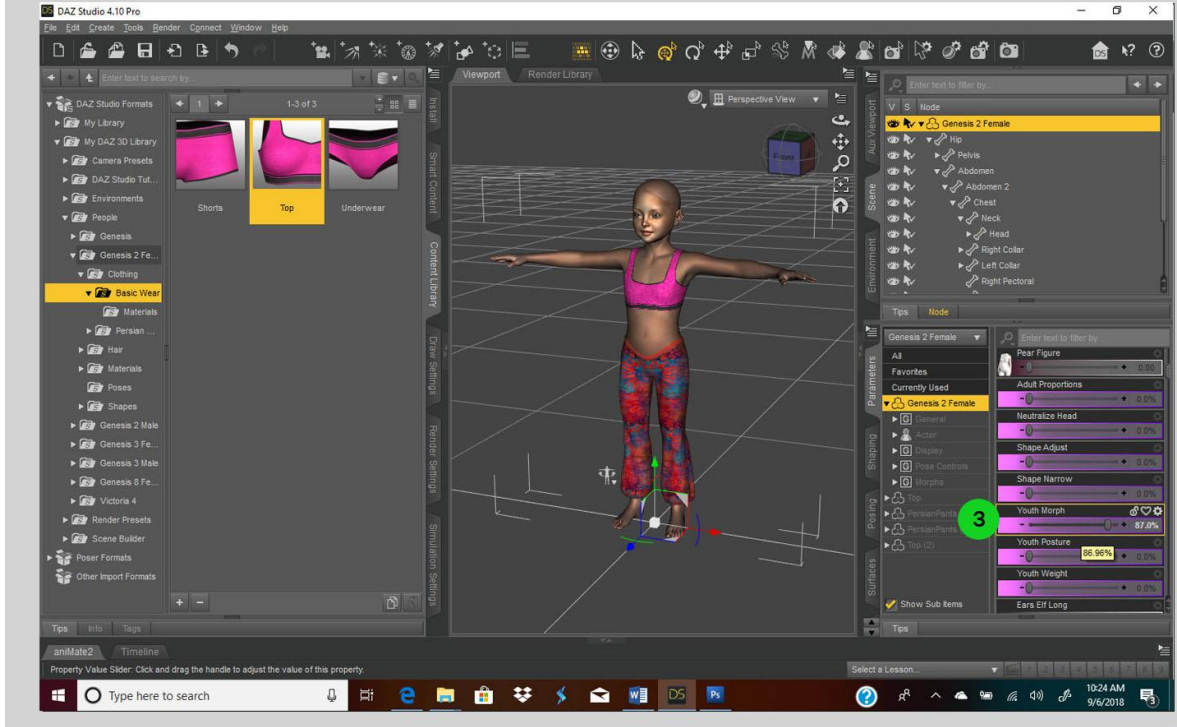
Select Parameters tab in Studio (1) and scroll to „Youth Morph” (2).



**Step 3.** Move the slider to the right to create a Child morph (3)

# Start Learning Now! A few hints for this step

Learn how to create Child head



# Chapter 6 : Troubleshooting

(Special Thanks for beta tester Catherine Faber for finding some issues). Note:

**Most install problems stem for the fact that users have multiple copies of DAZ Studio and end up installing to the wrong copy.**

## Installation:

HeadShop does not come with a standard DIM (DAZ installer). It has its own installer. When installing, please choose the **DAZ 3D** folder as the destination folder.

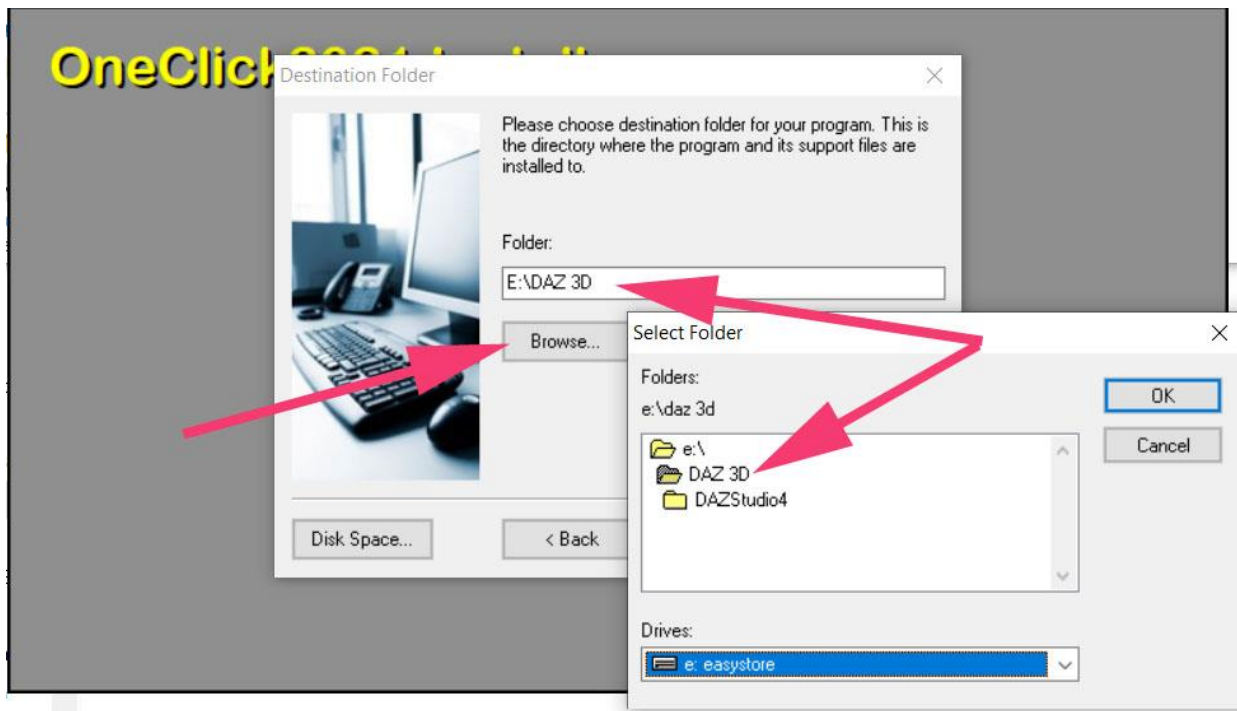
**CAUTION: Make sure that DAZ 3D folder contains the full DAZ Studio software and not just parts of it.**



HOW DO I KNOW WHICH LOCATION I NEED TO BROWSE TO INSTALL ONECLICK?

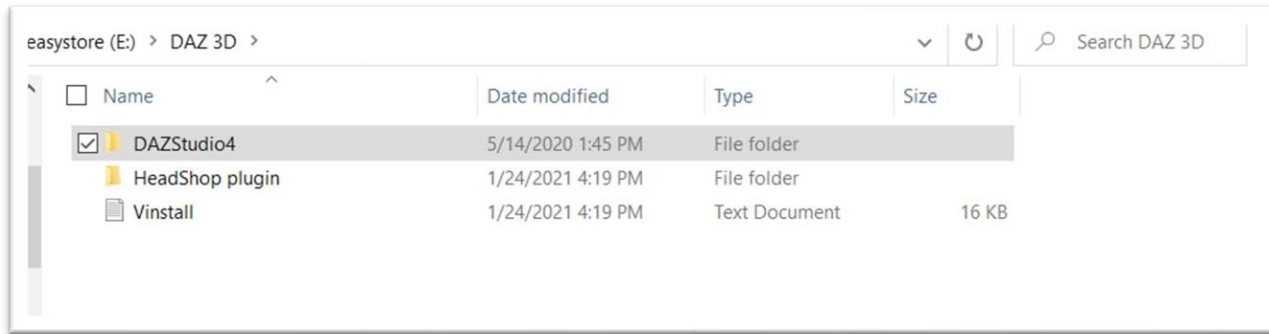
Read Chapter 1 of this manual (Installation) or watch video:

<https://youtu.be/5N-8KE4BCbo>

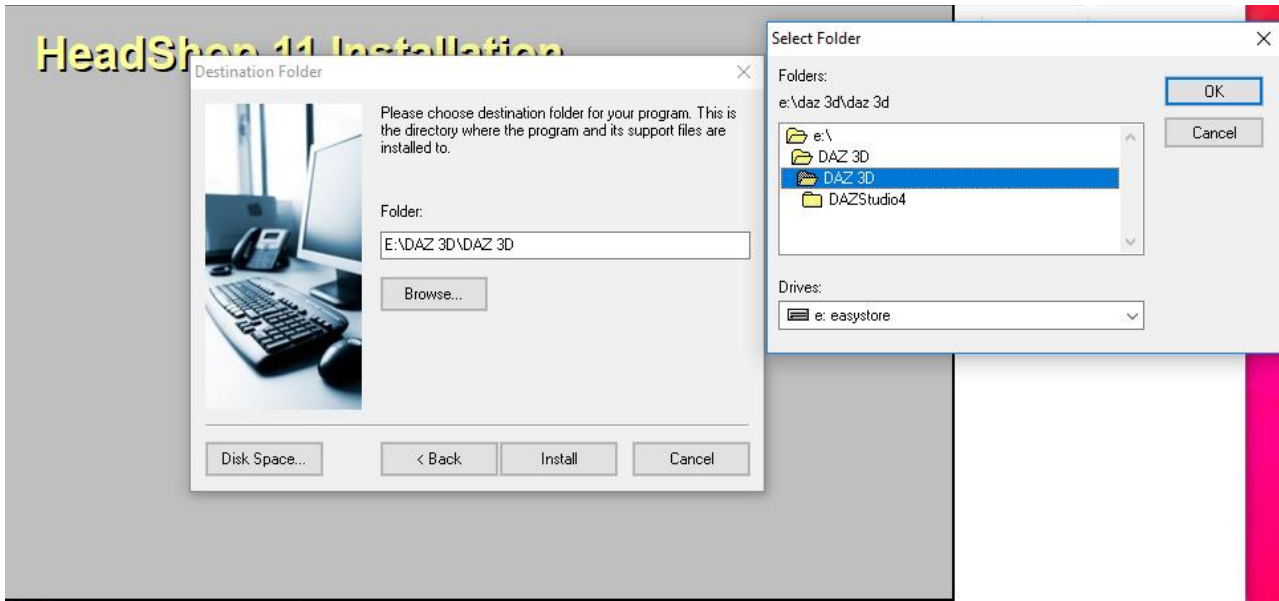


The main thing is that your location must end with "DAZ 3D".

After installation your folder will look like this:



When running the installer, make sure you browse to the destination of your folder DAZ 3D. For instance, if it is on the E: drive, your installer should look like this:

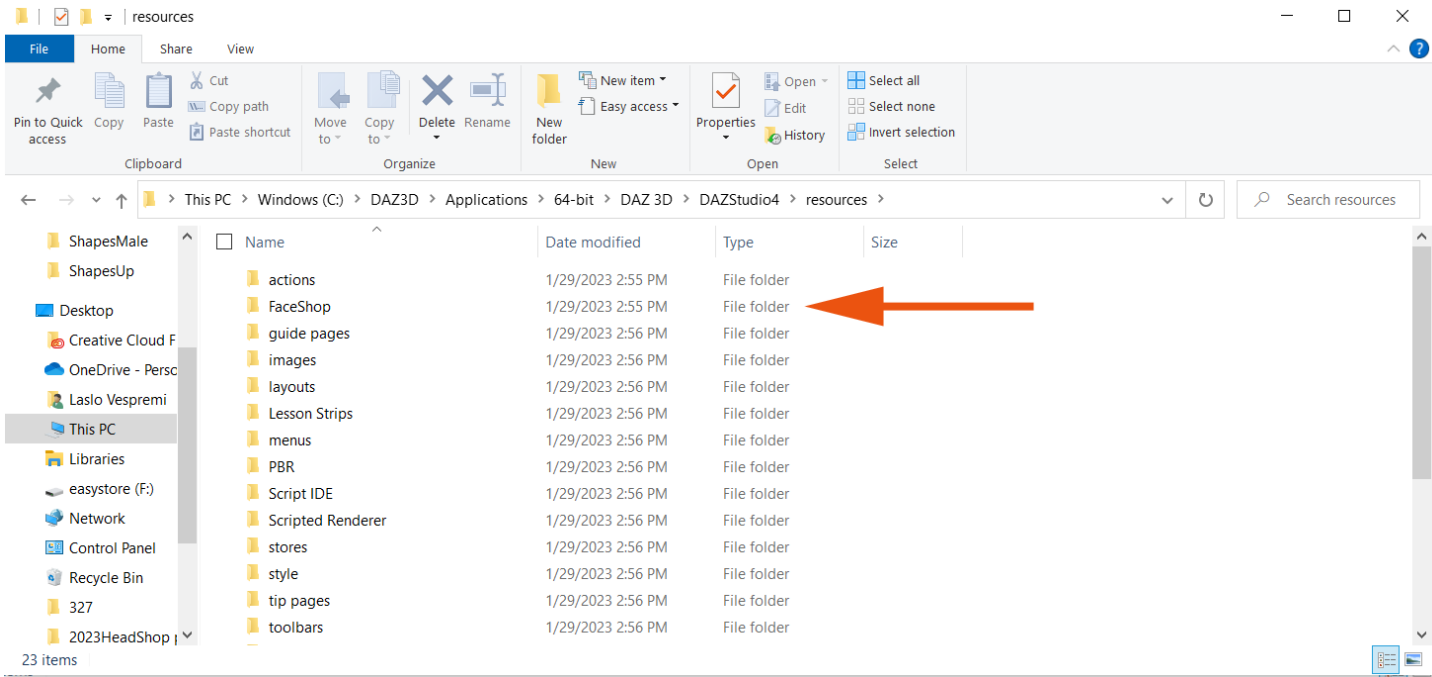


At the end, check the installation to make sure you have everything in the right place.

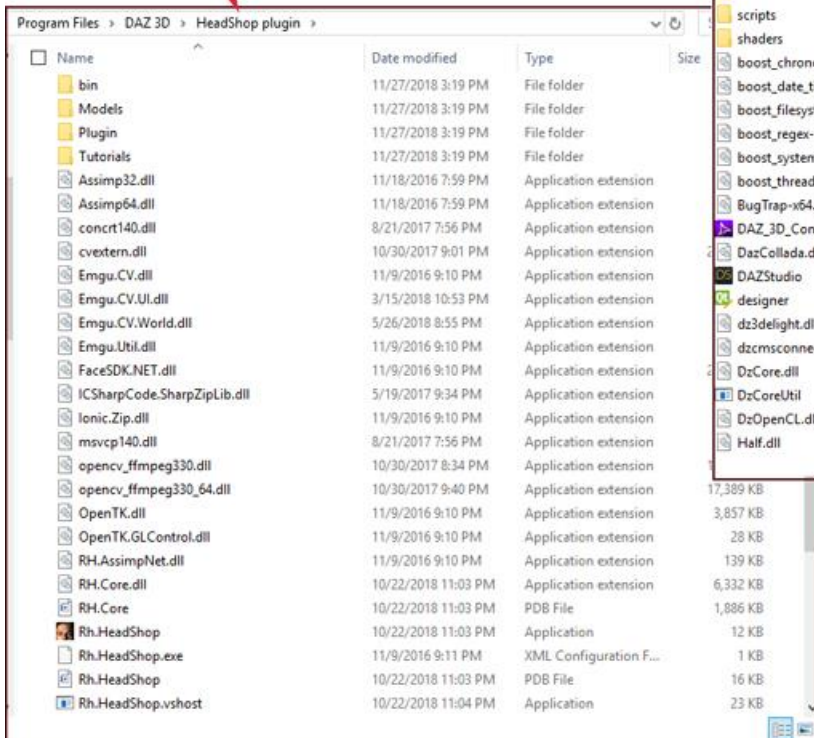
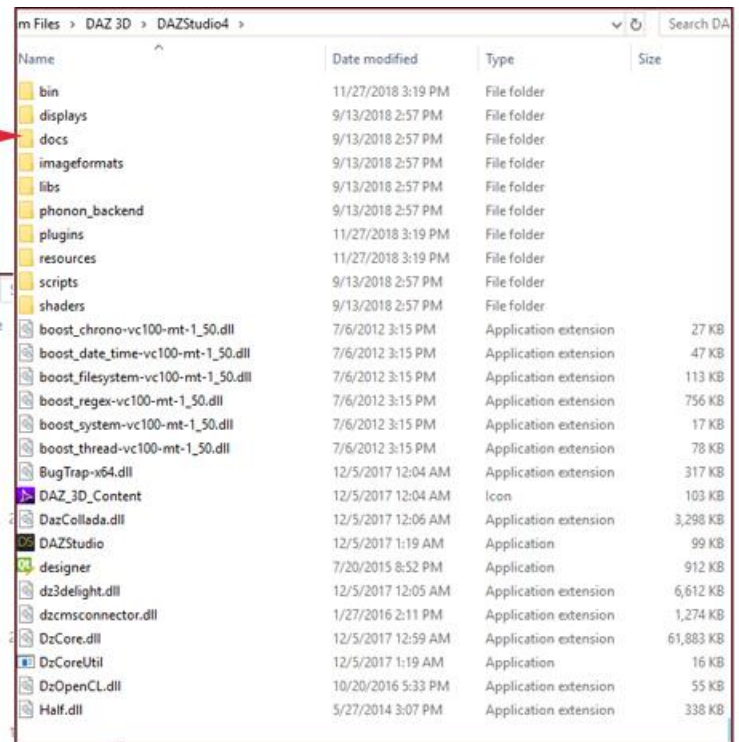
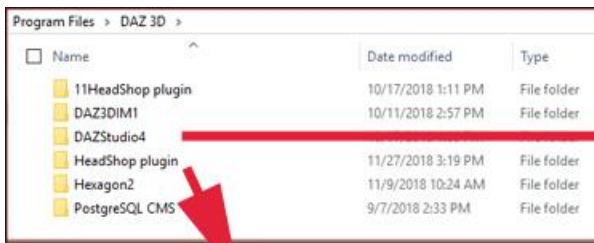
Basically four items are installed:

1. "HeadShop plugin" folder inside DAZ 3D folder
2. The second place where the installer put files is the aforementioned "DazStudio4" A file called FaceShop is placed into DazStudio4/bin folder
3. A second file called "abaloneHeadShopLoader.dll" is placed into "DazStudio4/plugins"
4. A folder called "FaceShop" is placed into DazStudio4/resources

That's all!



5.  
6.



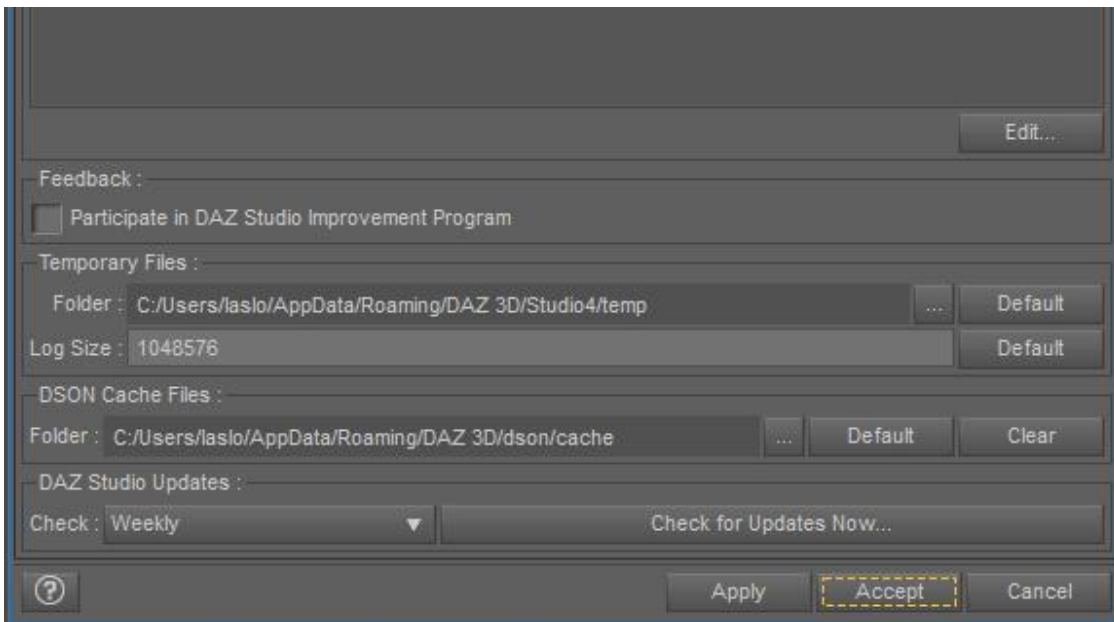
## What goes where?

There needs to be a "DAZ 3D" folder. Inside the "DAZ 3D" folder there needs to be a "DAZStudio4" folder that contains all the files (see above) including the DAZStudio application. There also needs to be a "HeadShop plugin" folder inside the "DAZ 3D" folder.

**Error message: HeadShop Can't Find fs figure or similar.**

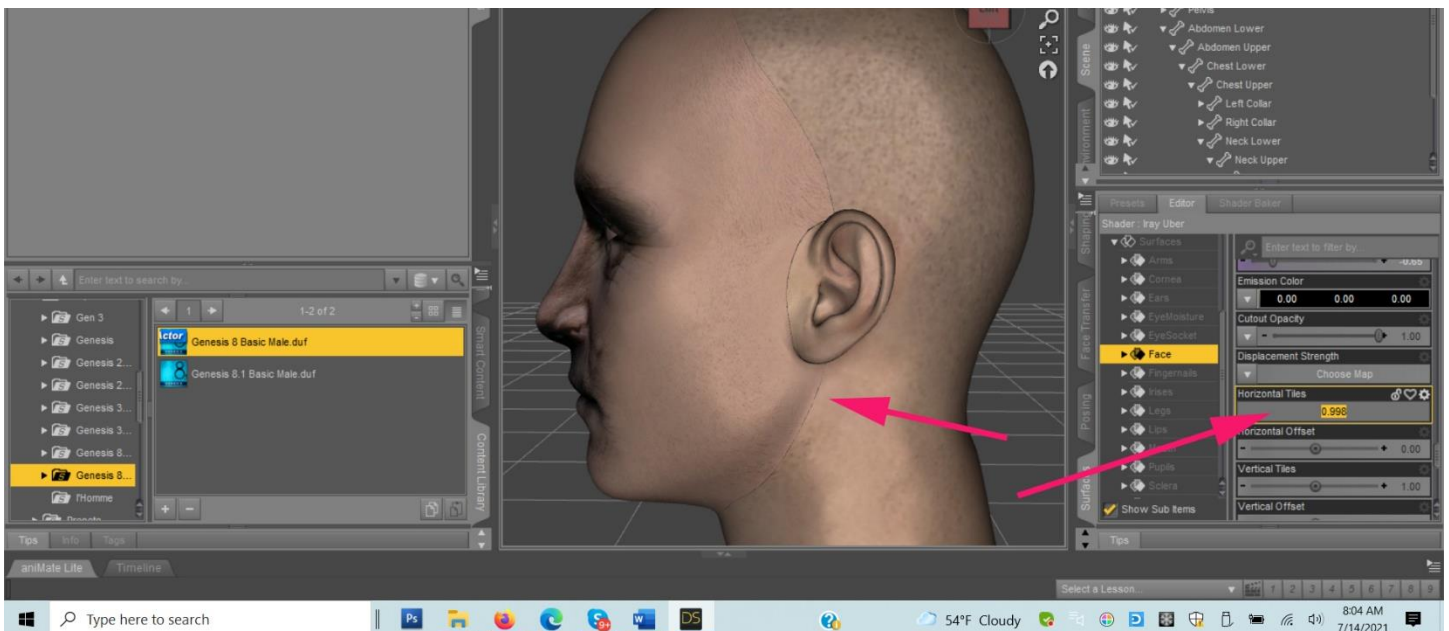


Pls. Make sure that your DAZ Studio Temp and DSON Preferences are set to Default As show:



## Gap between Texture Patches

Sometime there maybe a slight gap/line between Face, Ear and Head/Torso textures. There is an easy fix for this: Select „Face” in Surfaces tab, change the Horizontal Tile value from 1.00 to 0.998.

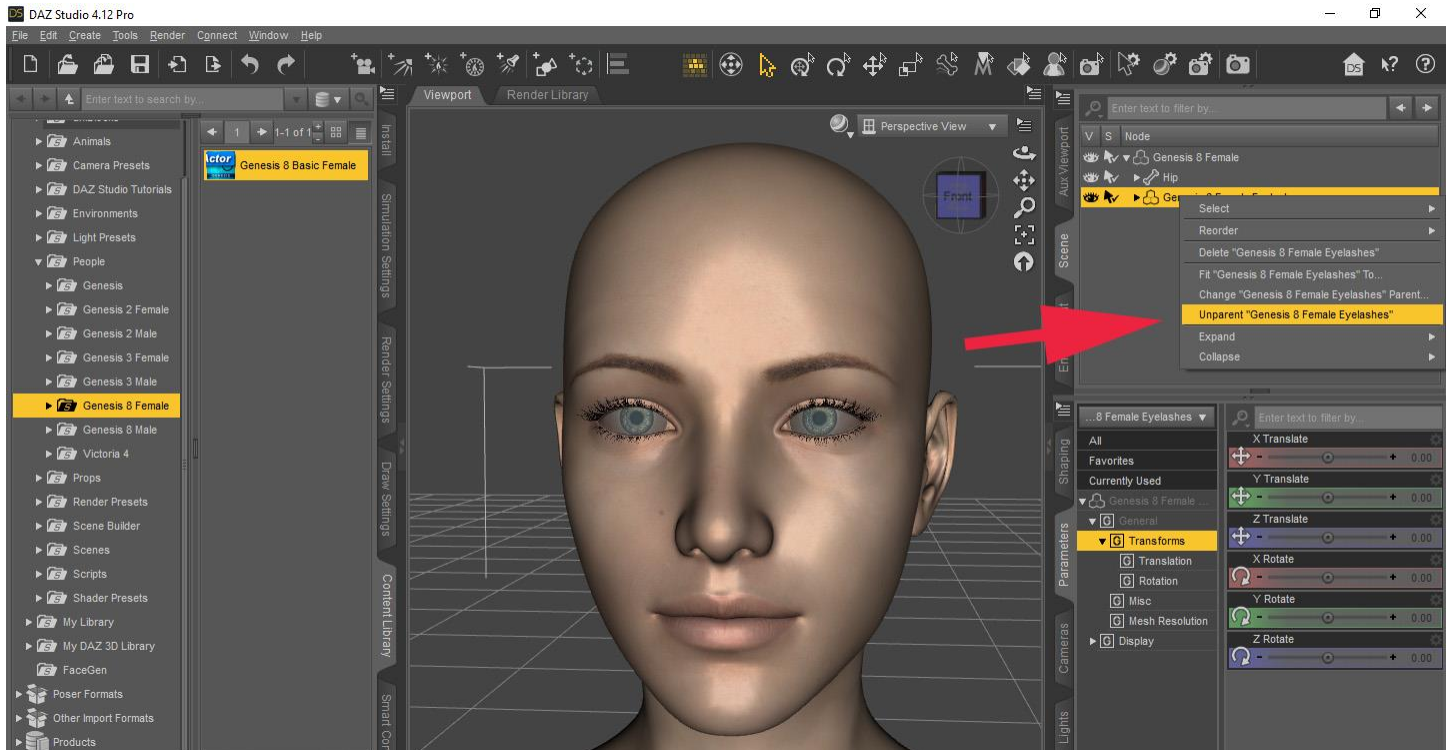


## Missing Eyelashes in Genesis 8

As mentioned in Chapter 1, DAZ designed Genesis 8 with making eyelashes a separate figure placed inside the Genesis 8 figure. This causes problems for morphs.

Solution: Before launching HeadShop, unparent the Eyelashes as shown.

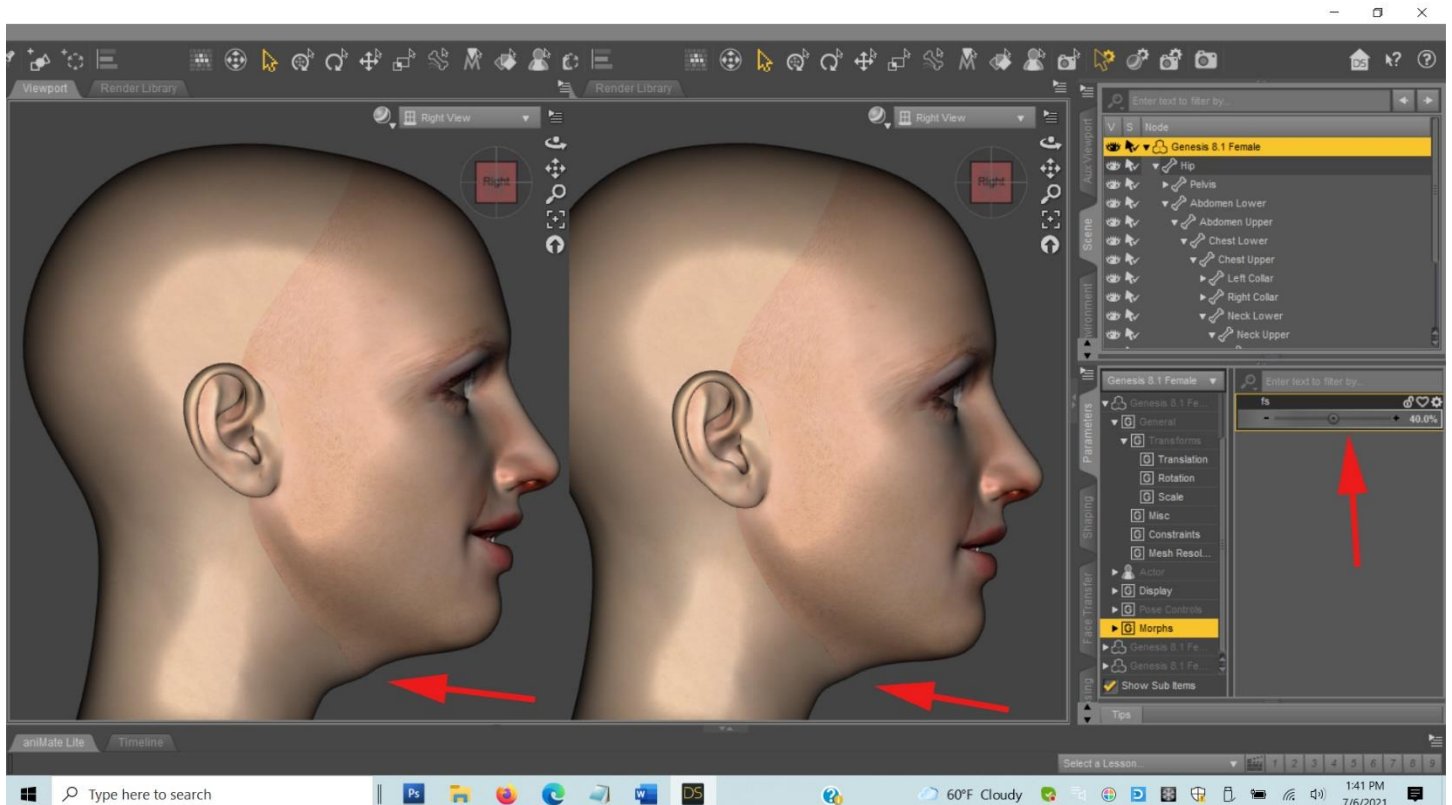
CAUTION! Before launching HeadShop, make sure that GENESIS 8 FEMALE IS SELECTED (not the eyelashes). Otherwise HeadShop will work on the eyelashes.



After HeadShop is closed, you can „re-parent” eyelashes to Genesis 8. Make sure you also select „Auto-follow” in Parameters.

### Neck protrusion with Genesis 8.1 Female with open smile.

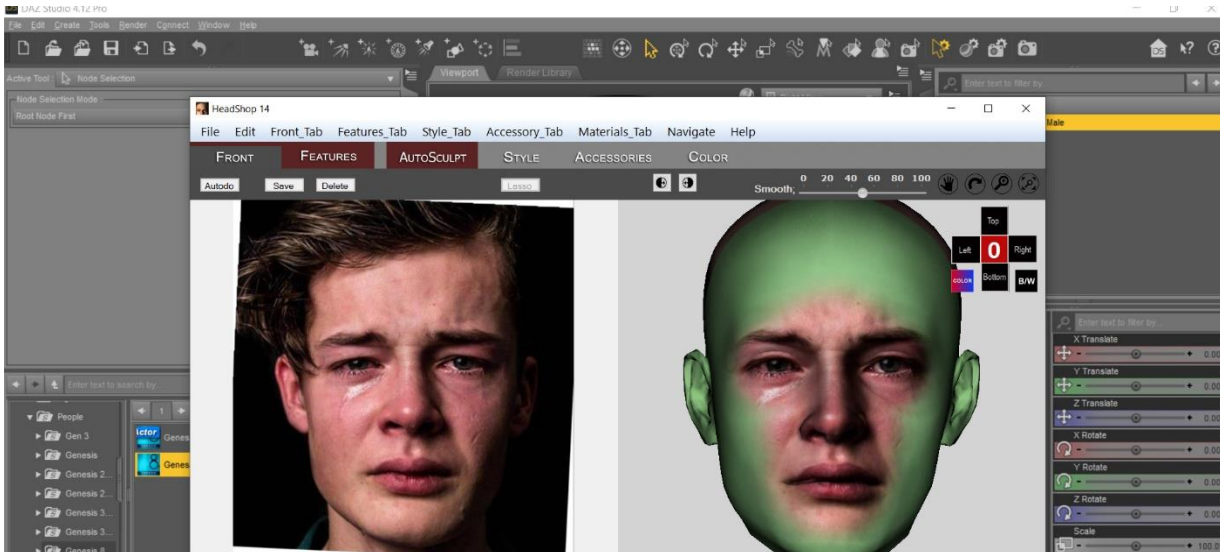
In a few photos with both open smile and rotated head there seem to be a slight neck protrusion. This seem to effect only Gen 8.1 Fem and can be countered by reducing the amount of Morph from 70% (default) to about 40% (see below).



## Discolored face texture

This also happens in a few instances (see below). The reason is that HeadShopPRO switched from a single point skin sampling to a better 3-point sampling, which in a few photos results in a funny skin color.

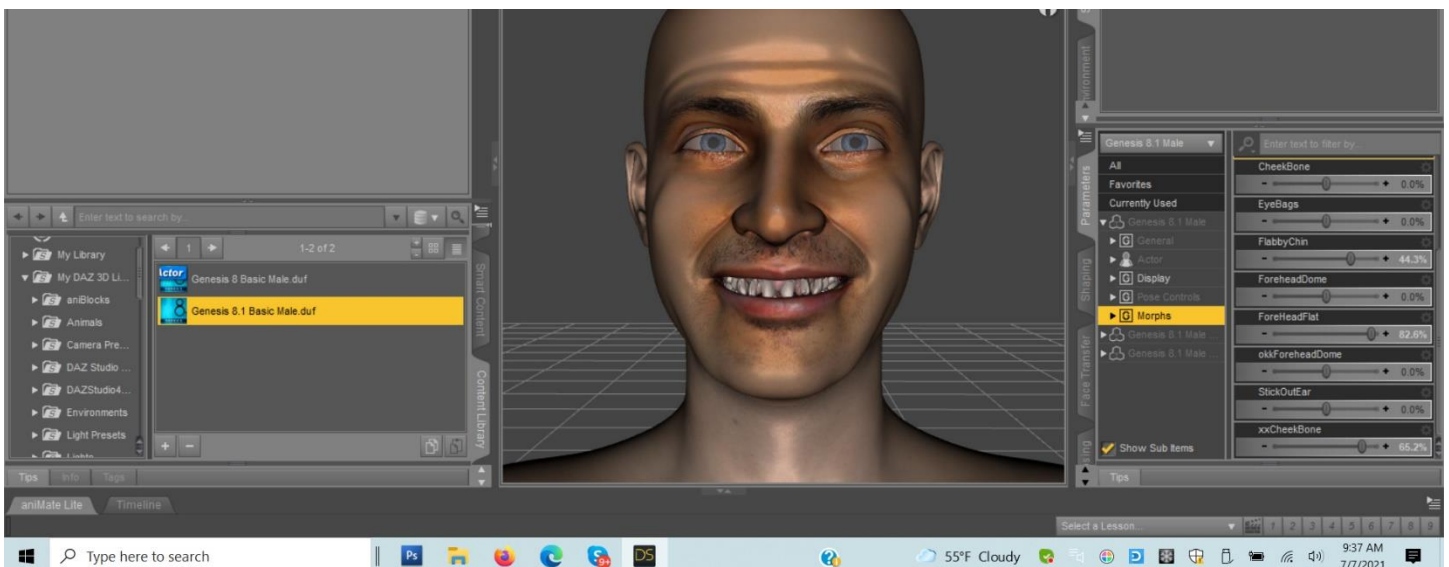
Solution: use different picture or slightly change the hue of the photo.



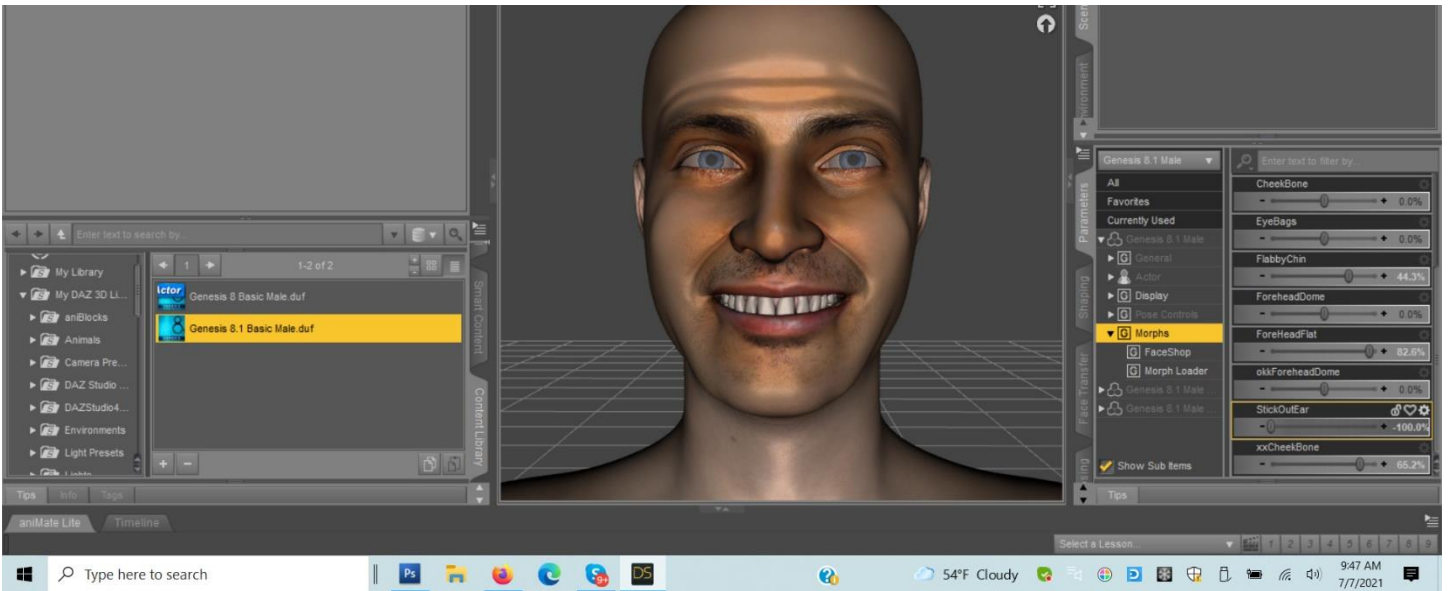
## Change teeth shape/color

The new AutoSculpt feature lets you add nose shapes, facial shapes or creases. You can add more than one of these in HeadShop and it won't affect the teeth of the output.

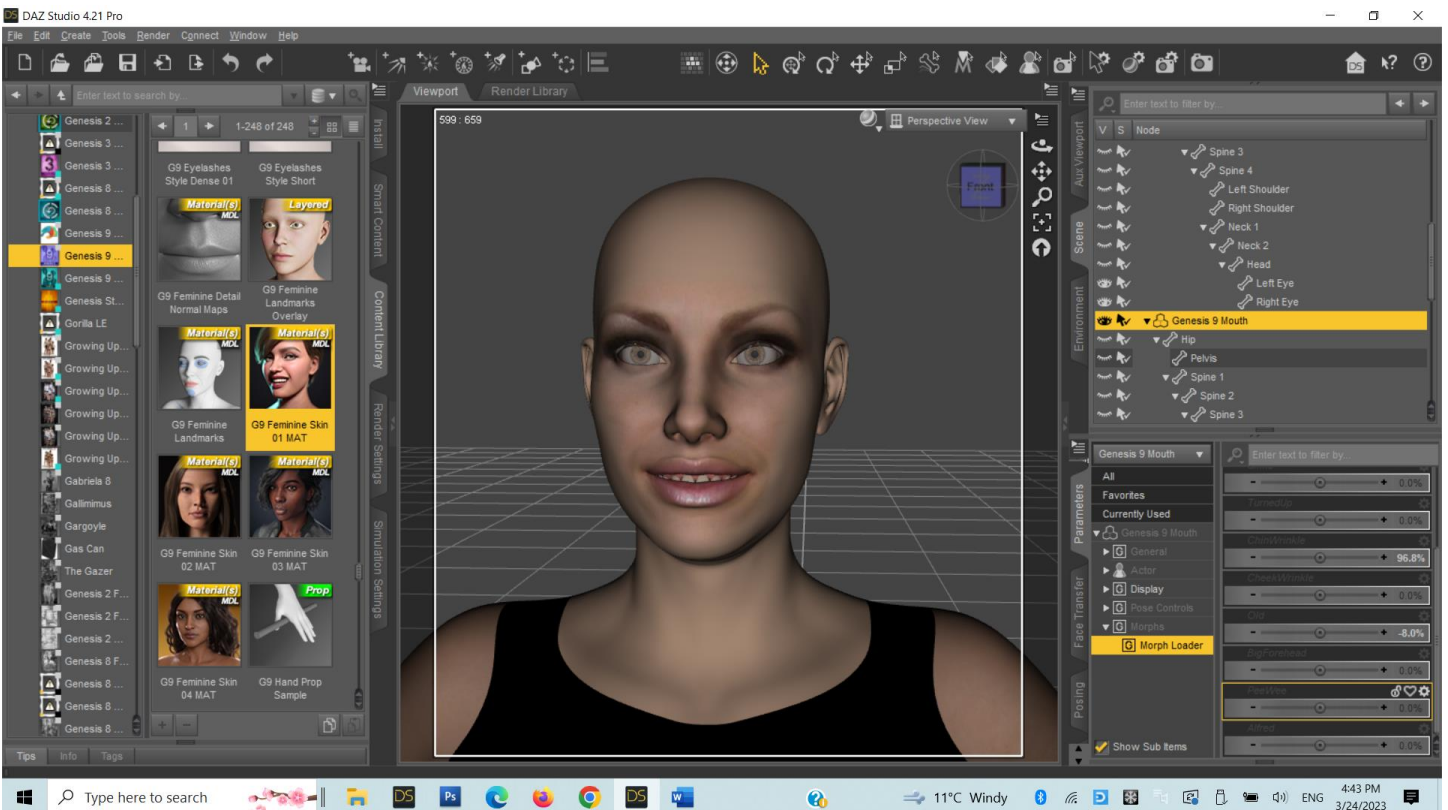
However, there's option to load these morphs in DAZ Studio via MorphLoader Pro. In this case, loading several morphs may create an artifact with the teeth (see below)



Solution: If you counter this deformation by moving another morph (for example the Stick-out ears) in the opposite direction into negative, this will restore the original teeth shape.

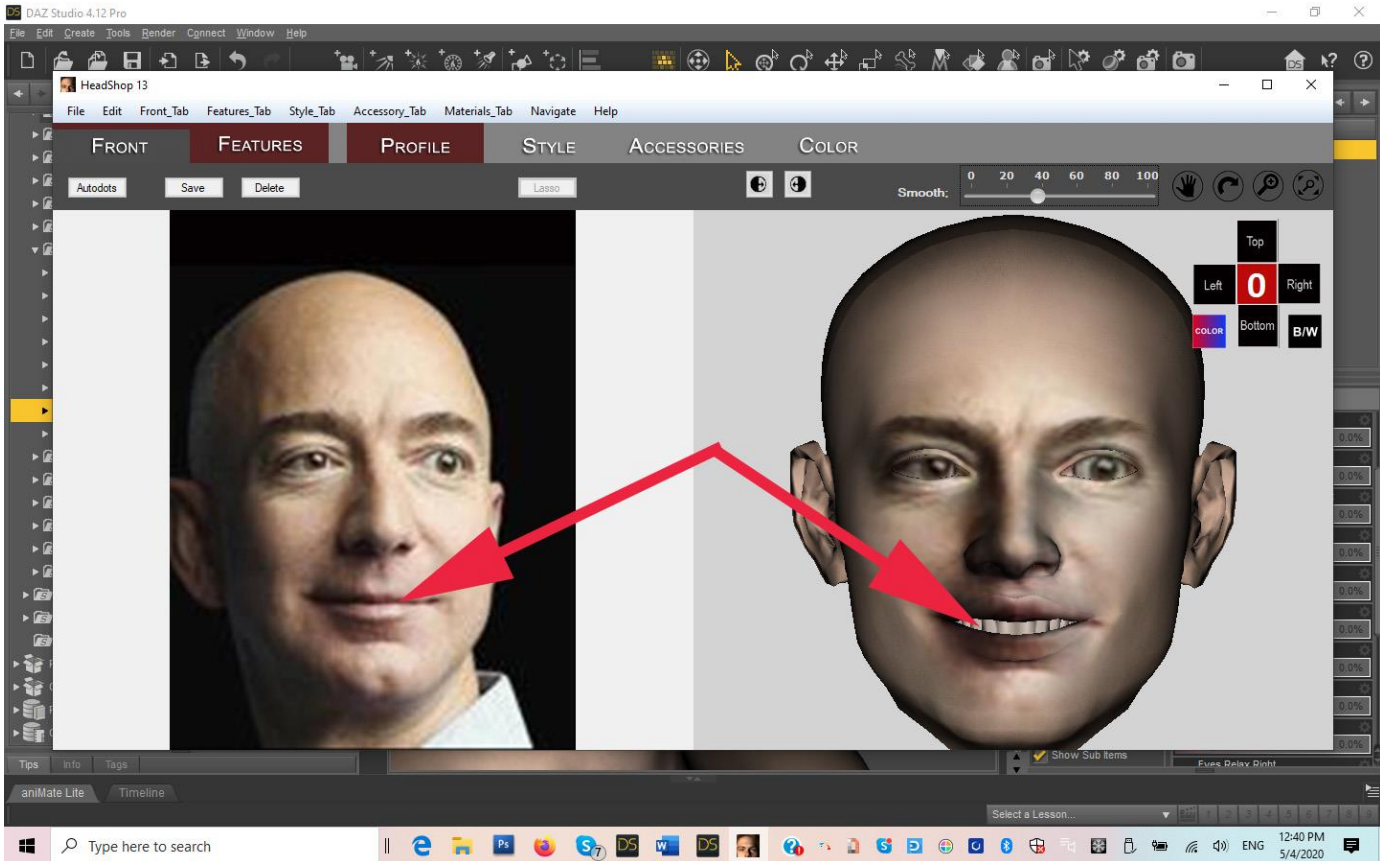


Another way to fix teeth is to just select „Mouth/Morphs” and dial back all mouth dial to „0” (see below).



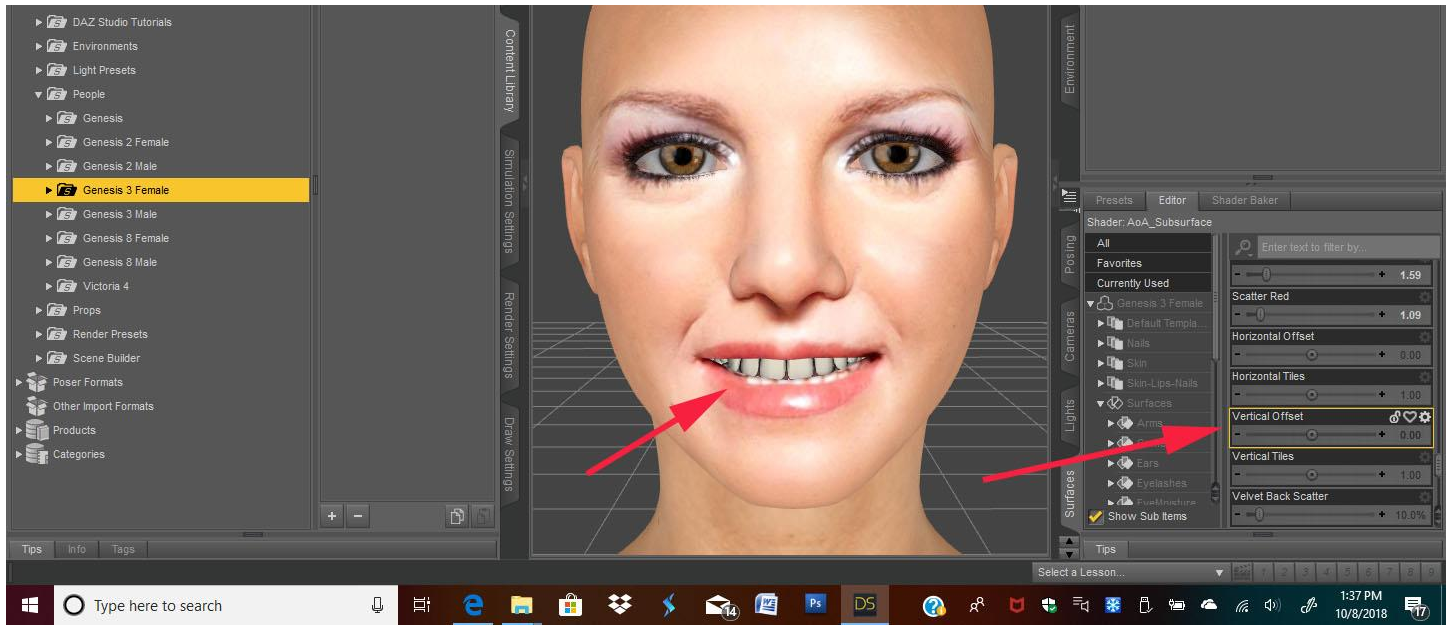
**HeadShop Autodots mistake shiny lower lip for teeth.**

In some photos Autodots may mistake highlights on the lower lip as teeth. Unfortunately, the only way to correct for this is to reduce the glare on the lip in Photoshop and try again.

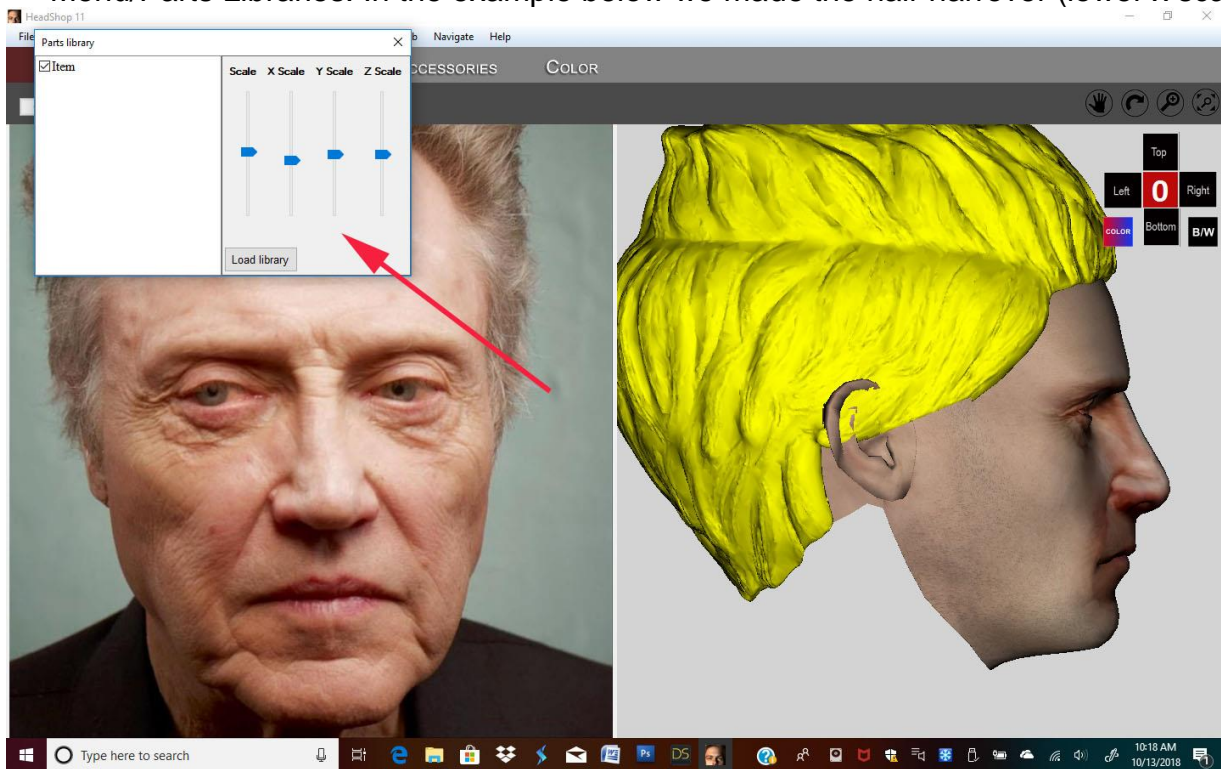


Here are some other tips if things go wrong:

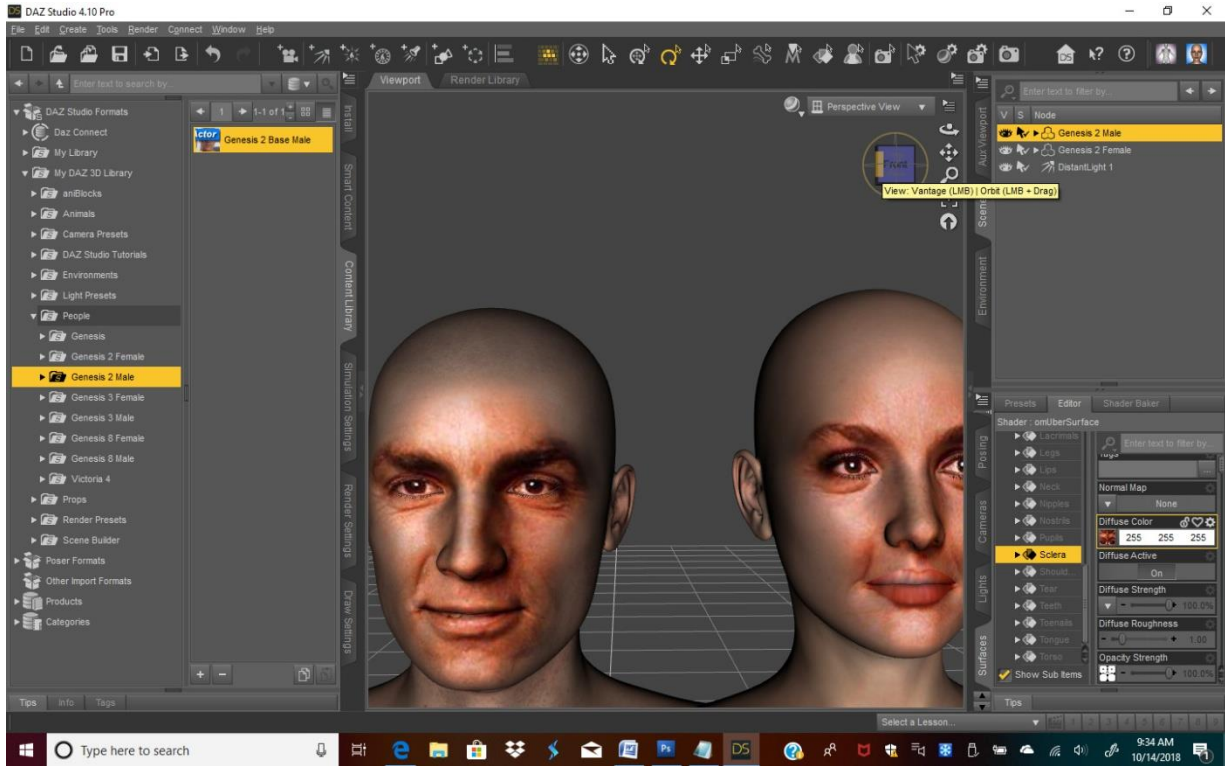
1. Can't install this 64-bit software on a 32-bit system.
2. Do not use „Pre-release” characters because their naming convention is different from release figures.
3. When finished in HeadShop, files don't load back to DAZ Studio. Cause: either character files are not installed or Genesis Starter Essentials need to be installed.
4. Try to avoid having multiple objects on stage. It may confuse HeadShop when loading. When you have multiple characters or items on stage, please pay attention on choosing/highlighting the right item in the selection box. Otherwise HeadShop may give you the wrong dialog.
5. Not perfect fit with Lip texture due to imperfect dot detection? Can be fixed using „Vertical Tiling” or „Vertical Offset” in Surfaces. In this case, Vertical tile can be slightly adjusted to make a better fit.



6. HeadShop loads the previous/wrong face texture. Very seldom, due to memory (with 4096x4096 textures) issues this can happen. Solution: reload Face texture from Users/Documents/My DAZ Library/Runtime/Faceshop/fs/SmoothedModelTextures.
7. Fine tuning Library items (hair, accessories). You can change the dimensions on the x, y, z axes under Menu/Parts Libraries. In the example below we made the hair narrower (lower x scale).



8. If you are using HeadShop on more than one figure on the same scene, HeadShop may load the wrong texture on the second figure. To avoid this, save the first figure as a Character (File/Save As/Character) and remove it from the scene, so that you have only one figure loaded. Once you perform the HeadShop transformation on the second figure, you can „Merge” (File/Merge) the previously saved character back into the scene.



## White Paper: Working with Difficult Photos in DAZ Studio

There are now at least three software applications that turn a portrait photo into a 3D character in DAZ Studio. What these software applications have in common is that they apply the shape changes that a custom character causes to the base Genesis figures (morphing) and also apply texture from the photo to the 3D head (texture mapping).

With that said, all three use different methods to achieve this goal and with various grades of success. This paper attempts to examine the challenges presented by “difficult” photos.

### What is a “Difficult Photo”?

All three can handle frontal and unsmiling photos relatively easily. Unfortunately, the majority of photos are not straight-on “mugshots” but photos where the face is partially rotated at least in one axis. The majority of photos also tend to have an “open smile” with teeth showing. (see Picture 1 below).





Here is a schematic of these challenges (Picture 2):



Any “Photo-to-3D Head” software thus needs to perform a few additional tasks if it wants to succeed:

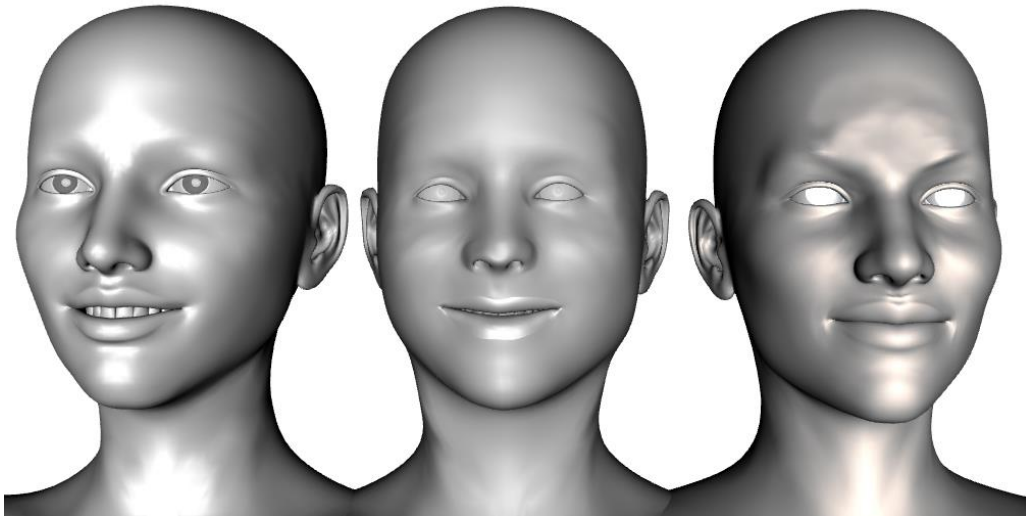
1. Establish rotation angle/degree and direction, create a new and uniform shape and then rotate the 3D mesh back to frontal.
2. Also detect if a photo represents close lips or an open smile. The method to do so is to deploy an automatic “facial feature detection” algorithm that find several dozen significant points in a photo that represent eyes, nose, mouth, etc. By comparing these point sets the software needs to “decide” if there is an open smile present or not.

Once the 3D head is rotated back to frontal with the corrected shape, the texture mapping can take place. This represents a further challenge; Since part of the texture is turned away and not visible, a method needs to be found to replace or repair missing texture.

## Compare Results of Shaping Heads based on a Difficult Photo.

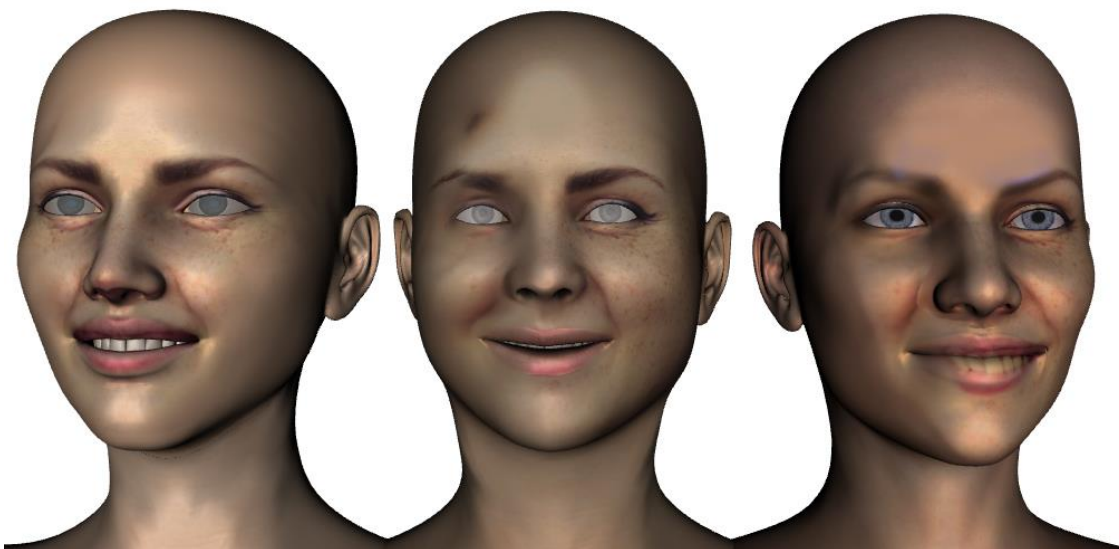
Below you can observe three samples on how the various software performed with the same photo. As is obvious, they achieved various degrees of success in capturing the shape of the head.

The first head on the left captured both the shape of the head and the open smile well. The head on the middle did a poor job in capturing the shape but recognized the open smile. The head on the right did a good job in re-creating the shape of the head but was not built to recognize or display an open smile with teeth showing (see Picture 3 below).



## What About Texture Mapping?

Here the three compared software applications also showed differences.



The head on the left captured and applied texture correctly. The middle head also did a decent job of applying the texture but missed on the overall hue. It also captured some artifacts like the remnant of the hair. The head on the left did poorly, since it “painted” teeth on the lower closed lip. Otherwise it did capture texture and hue nicely albeit did poorly in filling in missing texture to the left of the nose.

### **Overall Conclusion**

Our goal was not to judge performance, but rather to explain why different software processes produce different results. As we said above, with simple, straight and unsmiling photos at least two of the three software performed well, so anyone who can replace challenging (rotated+smiling) photos can do so and get good results.

Resource photo to run your own test:

