

# **Blockink**

## **TUTORIAL**

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**BlackInk Version: 0.357**

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## Introduction

This is a collection of tutorials on the program **BlackInk by Bleank**, a drawing program geared towards the production of generative art. Some of them were taken from the forum (<http://forum.bleank.com/>) And the program documentation (<http://blackink.bleank.com/>), While others are original.

The tutorials are not original have been expanded, modified and updated to the 0357 version of the program. This is a book constantly updated ... you can find the latest version of the web at:

<https://github.com/cameyo42/Black-Ink-Tutorial>

You will find that some information is repeated several times ... repetita iuvant. Any errors you encounter are due to my inexperience or my misunderstanding.

### NOTE:

Given the rapid evolution of the program, images and results of operations may differ. Another factor which differentiates the results is the input mode, that is, if we use a tablet or a mouse (each tablet also behaves in a different way against the pressure). The purpose of the tutorial is to explain the functionality of the system and allow users to experiment on their own.

### NOTE:

You will be able to exploit all the potential of BlackInk potential only with sensitive graphics tablets pressure and tilt (Tilt).

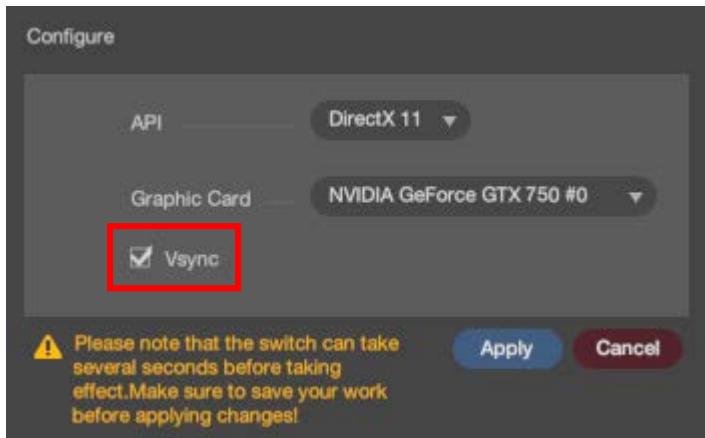
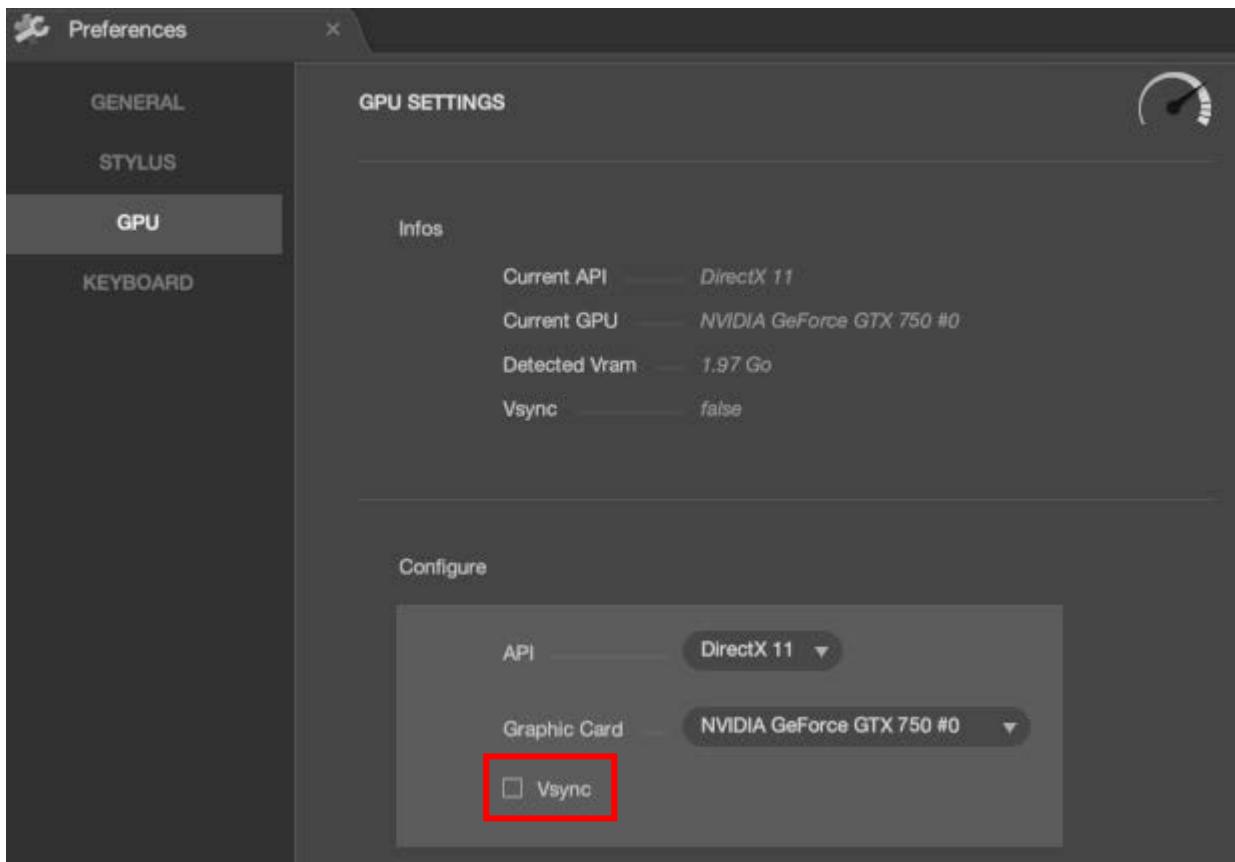
### NOTE:

BlackInk is a program that consumes a lot of computer resources (RAM, CPU and GPU above):

Name	CPU	Memory	Disk	Network	GPU
Apps (5)					
>  BlackInk.exe (32 bit)	31.3%	602.4 MB	0 MB/s	0 Mbps	98.6%

So I recommend that you close all other applications while drawing. You can try to decrease the consumption of GPU by enabling the parameter **VSync** which is located in the section

**Preferences -> GPU** the menu **Window-> Preferences**:



In addition, the graphics card should have a value of PassMark G3D at least 2000; you can find the value of your card to the following address: [https://www.videocardbenchmark.net/gpu\\_list.php](https://www.videocardbenchmark.net/gpu_list.php)

## Overview

This overview follows the documentation provided by the program (which is non-date) and is a presentation of the features and functionality of the application. It is not necessary to follow the next tutorial, but can quickly get an idea of the potential of the program and is strongly recommended.

### Perfectly responsive

BlackInk is a digital painting software that uses the hardware of your computer graphics to deliver an experience perfectly responsive regardless of the size of your drawing.



### Generative Art

BlackInk not copy other software solutions, creates new graphic tools.

It is presented as a "generative art" software because it does not attempt to imitate the watercolor or oil painting, exploiting the full potential of your computer to create new possibilities as a stroke gradients and color generation by user-provided images.



## Resolutions very high

The reactivity is its biggest asset. Painting is always immediate and responsive, without any delay computer generated even at very high resolutions.

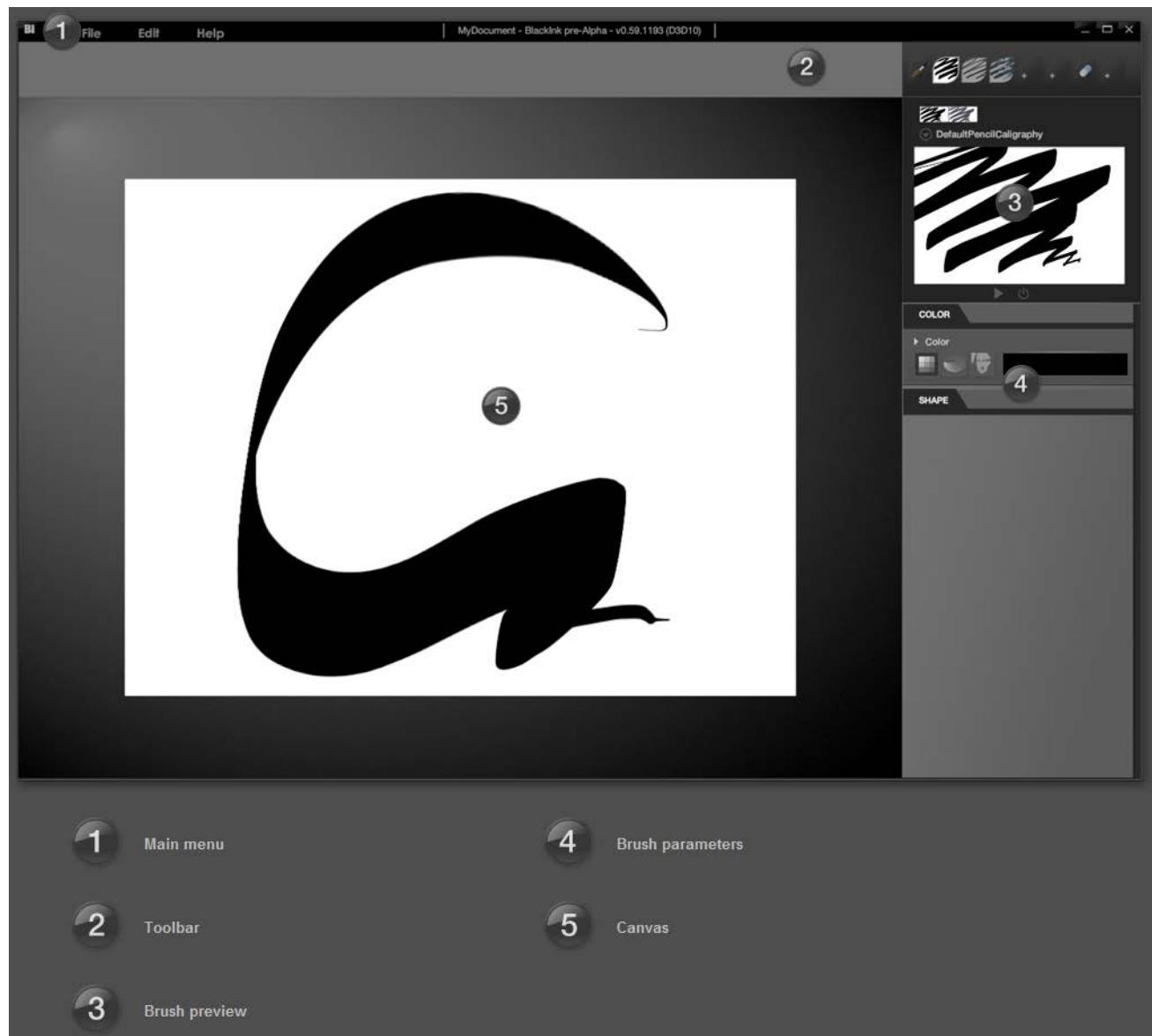


## User-friendly interface

BlackInk also has a different approach to the user experience: immediate access to the parameters of the brush with history and color settings, history, instant preview and customize brushes with windows of real-time settings and many other user-friendly innovations.

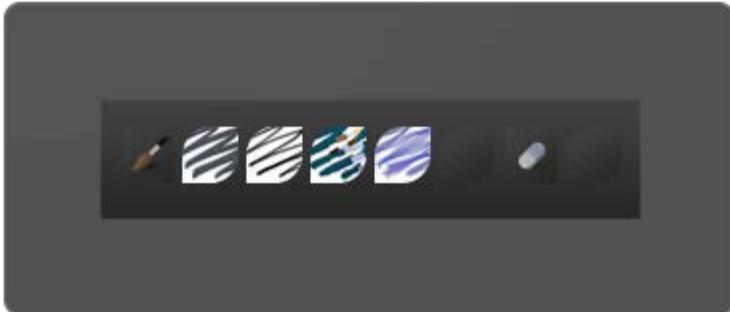


## Working area



## Brushes

These are the default brushes:



**Fountain Pen - Calligraphic Pencil (standard brush)**



L 'opacity increases with the pressure.

The thickness, the scale and rotation increase with the speed of the brush stroke.

**Marker - Felt Pen (standard brush)**



The thickness increases with the pressure

The brush blur increases with the speed of the stroke

**Crepe (dual color brush)**



Alterna colored rectangles.

The color taken from the gradient and the stretching of the rectangles changes with the stroke speed. The size and the opacity of the rectangles increases with the pressure.

The thickness and length of the rectangles are modified randomly based on random "parameter value" (random).

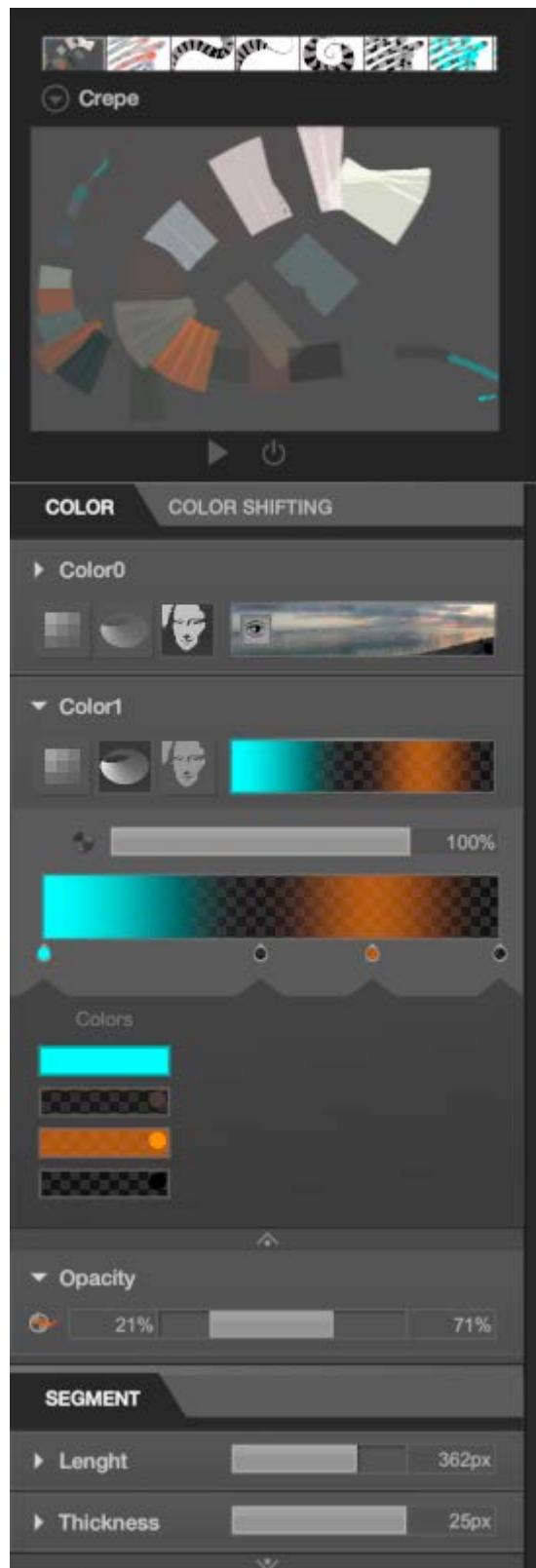
### Volute (brush with cavity)



The size and rotation of the shape change with the speed of the brush stroke. The color selected from the gradient, and the opacity of the sudden change with the stroke pressure.

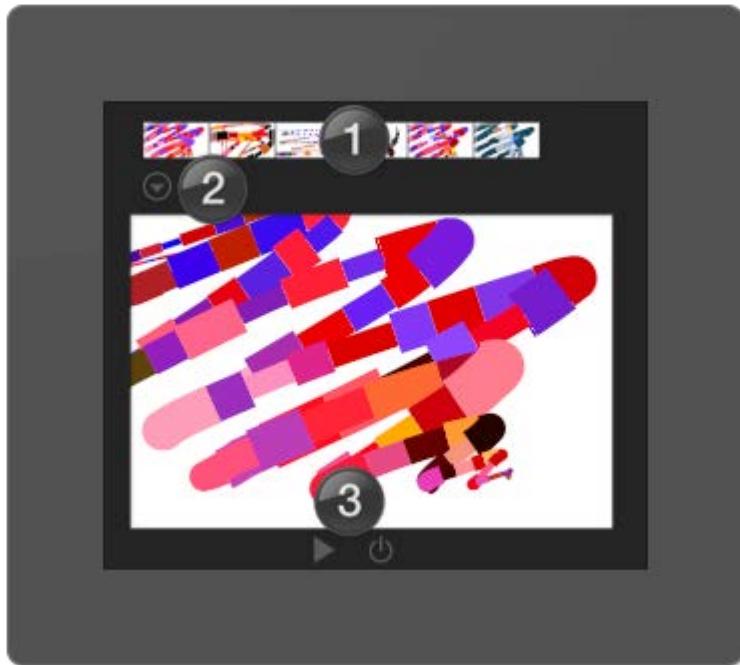
### SOME EXAMPLES OF PARAMETERS OF BRUSH





### **Brush Preview**

The windows brush preview reflect changes made to the brush parameters in real time. We also find a brush history to instantly recall the previous settings.



**1** History of the current brush settings

**2** Brush Menu

**3** interactive preview of the brush and its players

### History of the current brush settings



The actual history of the brush is always displayed above the preview of the brush

History empty: only the current brush with its default settings is shown.



Full History: all previous settings for the current brush are available.



To select a previous setting, simply click on it.



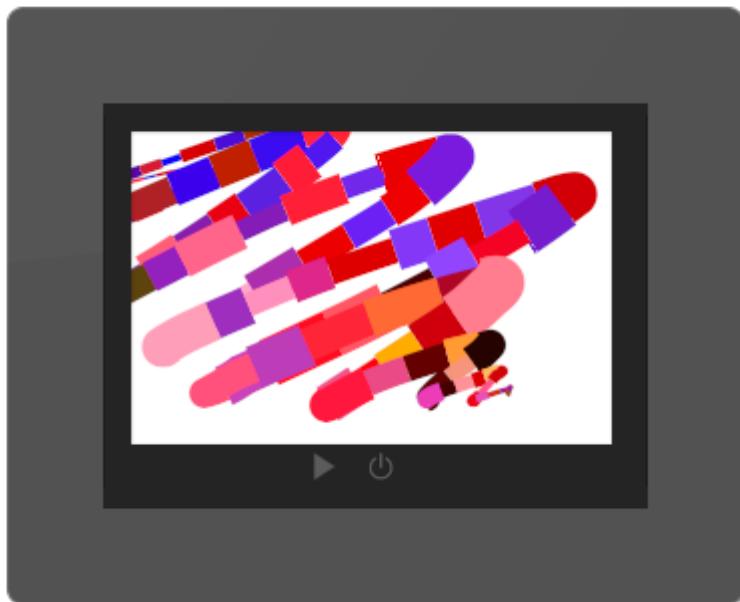
To view previous settings, simply slide the arrow to the right or click on it.



To view the new settings, just scroll down the left arrow or click on it.



### Interactive brush Preview



default design used to display the brushes.



If we move the mouse over the thumbnail, you see a (gradient from white to black) on the right side of the drawing area.



Changes made to the preview of the brush are reflected in the history of the brush: When choosing a value in the gradient bar, is affected the color of the preview background brush.



Icon brush on history



You can also replace the default preview stretch of drawing directly in the preview.

All previews will be updated with your last stretch.



Icon brush on history

### The preview player brush

This player is used to display the dynamic brushwork:



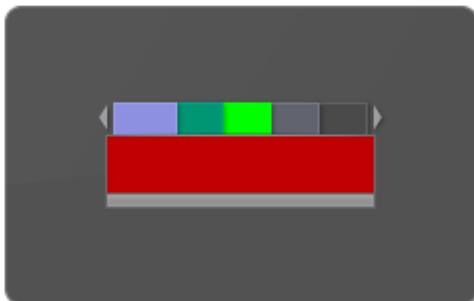
Plays the animation preview of the brush



Restore the preview drawing brush

## colors

*quick access to the colors*



### History of Colors

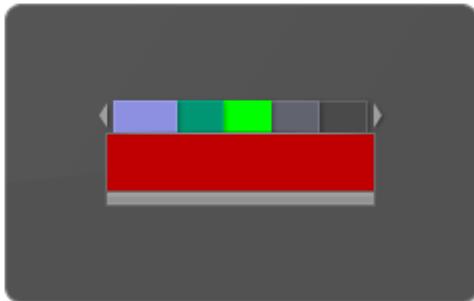
View previous color choices for quick access and allows you to change the opacity.



### favorite Colors

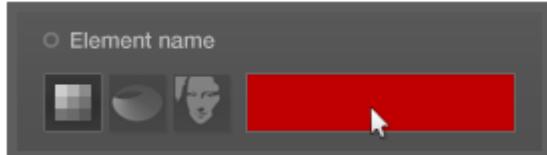
Here you can save and permanently recall your preferred color settings.

## History of colors (color History)



Each type of color has its own history for easy access to each setting.

To view the history of colors:



Stay with the mouse over the color preview.



Compare the color history over the color preview.

Details on the color story:

**TO) Colors List**

The upper part shows the chronology of the colors used previously.



The central part is a preview of the current color.

**B) Color Preview**

When you click on it you open the windows of color values.



At the bottom of the slider makes the color more or less transparent by adjusting the alpha value.

**C) Alpha Cursor****TO) Colors List ( for an easy choice of colors)**

If it passes over a color, this is highlighted.



One click to select the color. The selected color will be in the first position.



If you have the cursor on an arrow, the color list will move in the direction of the arrow.

The arrow on the left shows the latest colors and the right arrow shows the old colors.



If you scroll arrows click on the color icons one by one.



If the color is too transparent to be seen clearly in miniature, an indicator that displays full color.

**B) Preview Color ( An easy way to view and change the colors)**

If you click the color on the preview, you can change it.

Sometimes options can be displayed in superposition:



The color image-based, displays an eye. It allows you to show or hide the reference image on the canvas.



If the color is too transparent to be clearly visible in the preview of color, an indicator that displays full color.



In the color palette, the background is the new color and the circle represents the current color. To return to the current color you can click on the circle.

### C) Alpha Cursor

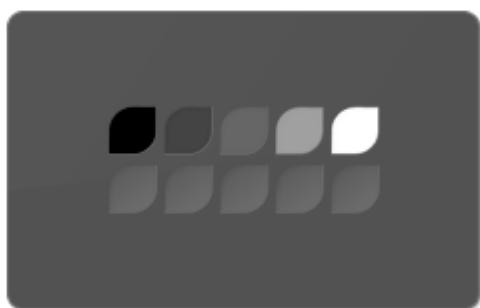


When you hold down the left mouse button and moving the cursor displays the alpha value.



Do not confuse "color alpha" with "brush opacity" which defines the behavior of the brush.

### favorite Colors



You can always have access to the colors you defined (solid colors, gradients (Gradient) and image-based).

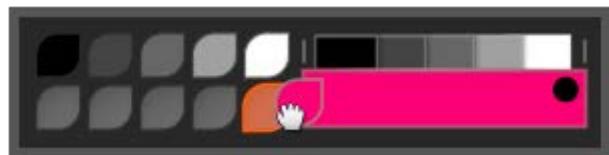
#### Start of BlackInk

The colors set as favorites are automatically loaded when you start.



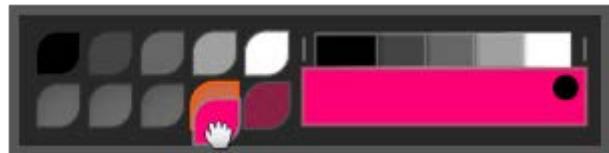
#### Saving

Drag and drop the desired color on an empty slot to save it.



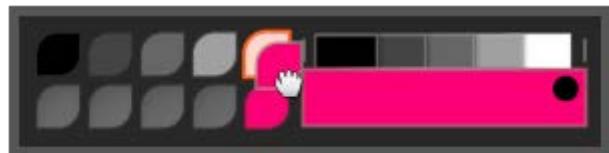
### **Copy**

To copy a color, drag and drop another slot.



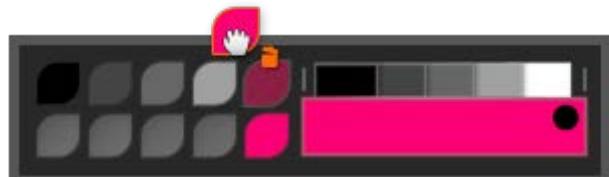
### **Replacement**

Drag and drop your color to an existing color.



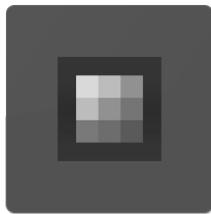
### **elimination**

To delete your color, take it out and drag it from the bookmarks window appears and when the trash icon, release it.



---

### *Types of Color*



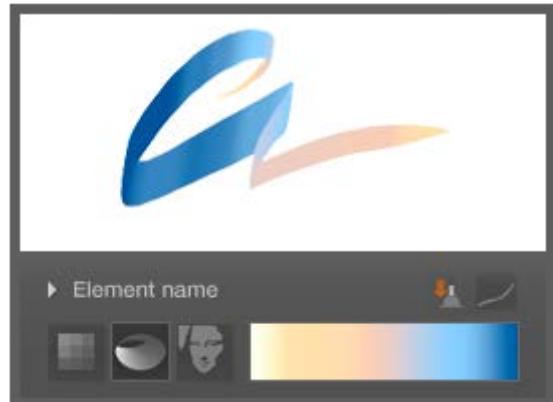
#### **Solid color**

classic simple uniform color.



#### **Gradient Color**

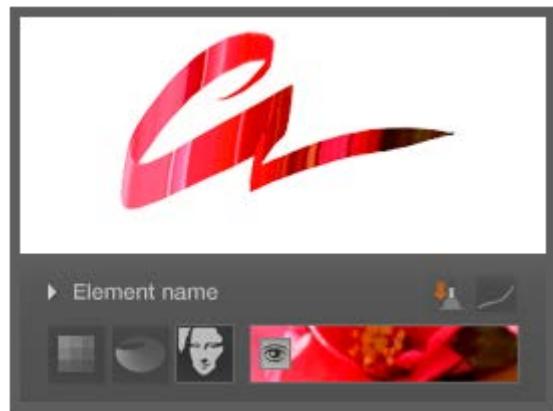
The brush has a behavior that follows the gradient setting.





#### color from image

The color is automatically selected from an image provided by the user.



#### Solid color

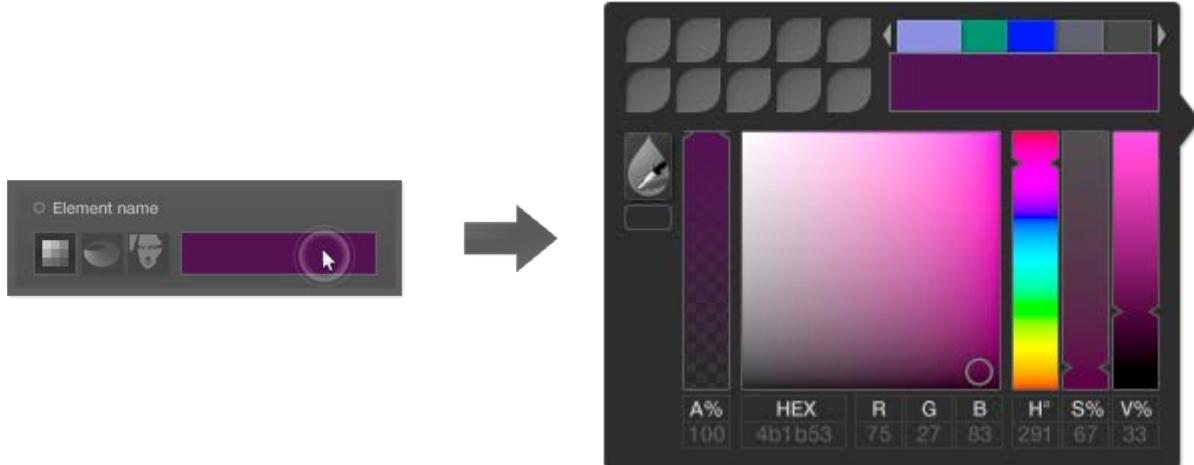


Classic solid color

#### Color Palette (Color palette)

##### Open the Palette

When you click on the preview of color, the color palette opens:



##### Close the palette

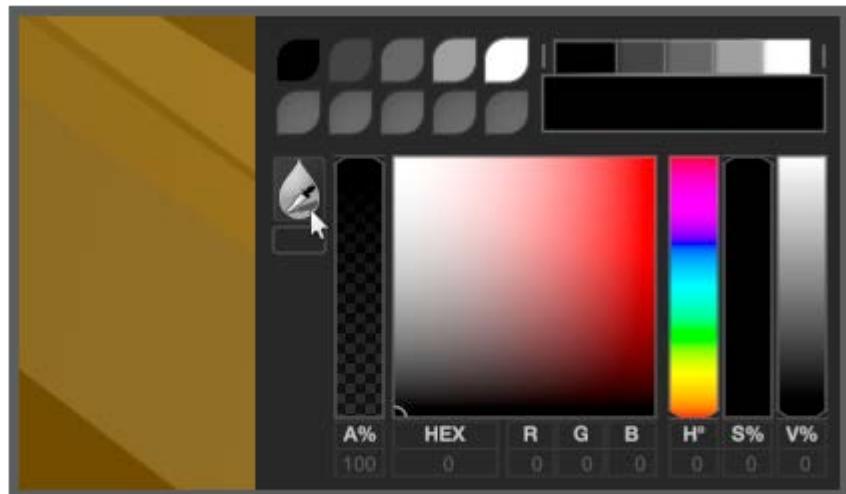
Once you have finished setting the color, simply click anywhere outside of the color parameter window to close the window and draw with that color.

## Capture Color (Eyedropper)

### Using the Capture Color (eyedropper)

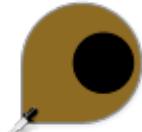
Click on the eyedropper.

His shining button and the device is enabled. If you click again, the instrument is disabled.

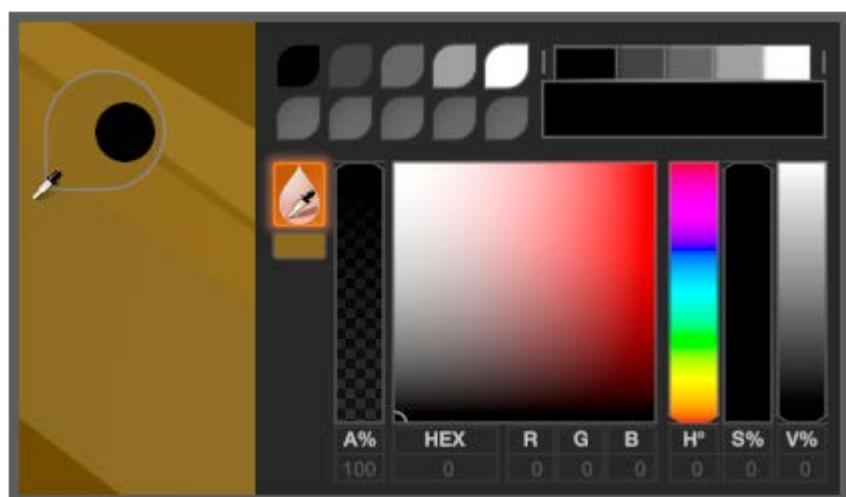


### Find your color

When the button is highlighted, if you go in the drawing area the cursor changes to an eyedropper.



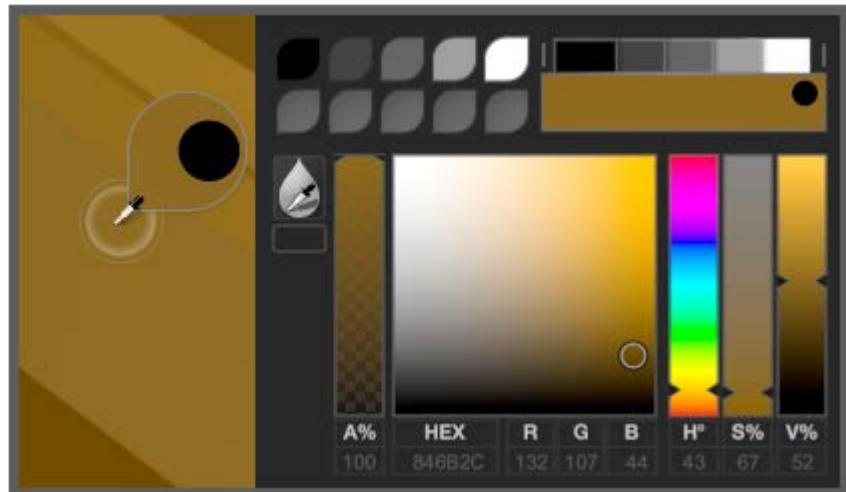
The teardrop shape is a preview of the new color. The inner circle is the current color.



### Select the color

Click the eyedropper to your design, color is selected. If you picked the wrong color, click the icon again to start the dropper.

Drawing in the cloth, the color of the palette closes and the new color is active.



The dropper takes only the colors of your design, and not the image-based color.

## **Alpha ( Sets the transparency of color)**

The slider on the left of the palette sets the alpha value:



The color is opaque Its  
alpha value is 100%



The color is transparent Its  
alpha value is at 27%



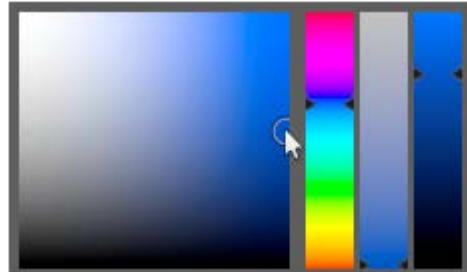
The color is invisible Its  
alpha value is 0%

## **color visual setting**

We can set a visually colored (instinctive) in several ways:

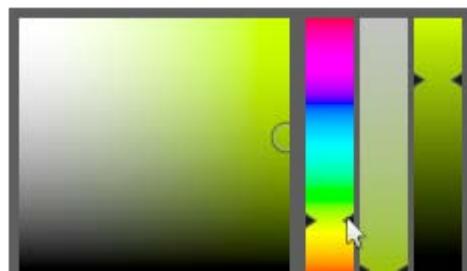
### **In the Color Palette**

Choose the color palette directly in its value and its saturation.



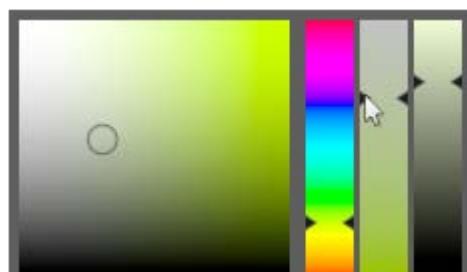
### **tint**

Change the color tint



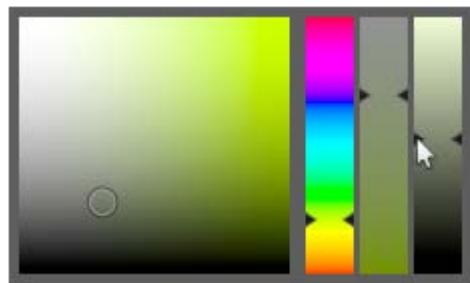
### **Saturation**

It makes the color gray or longer present.



### **Value**

It makes the color lighter or darker



### **Numerical Setting colors (precise)**

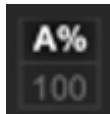
You can change your color with a numerical value.

To change the numeric values click on the desired value or use [tab] if you have already selected one.

Enter the desired value and confirm with [Enter].



A% (Alpha)



HEX (Hexadecimal)



RGB (Red, Green, Blue)



HSV (Hue, Saturation, Value)



### **Color shaded (gradient)**



The brush takes the colors and opacity defined in the gradient.

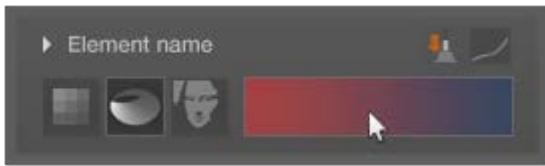
This type of color is useful for:

- painting feathers, hair, fabric, grass, fur ...
- create backgrounds for the sky, landscapes, ...
- bring a variety of colors in your section

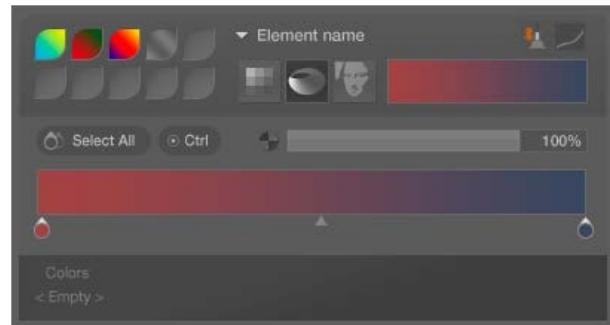
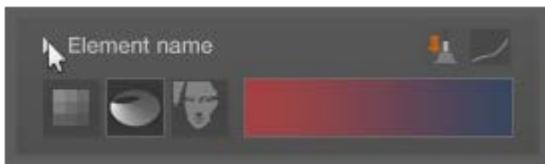
### **Gradients Editor**

[editor of the gradients Opening](#)

Click on preview of the gradient:



Or click on the arrow before the name:



When you get back to the design, the compact version shows only the essential settings.



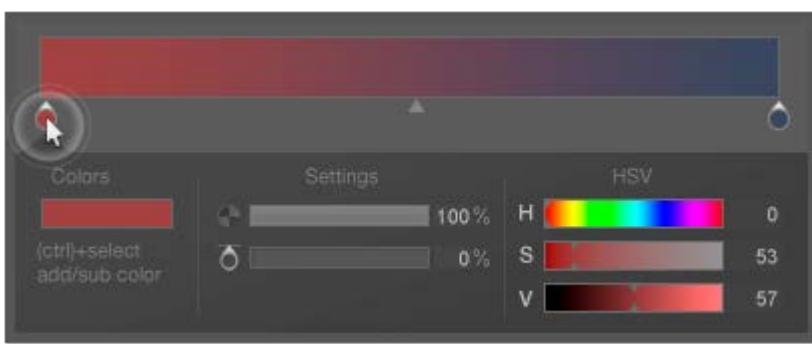
#### Closing the editor of the gradients

After setting the gradient, simply click anywhere outside of the color parameters window to close the window and use these settings.

#### **Creating and editing gradients**

##### *Samples*

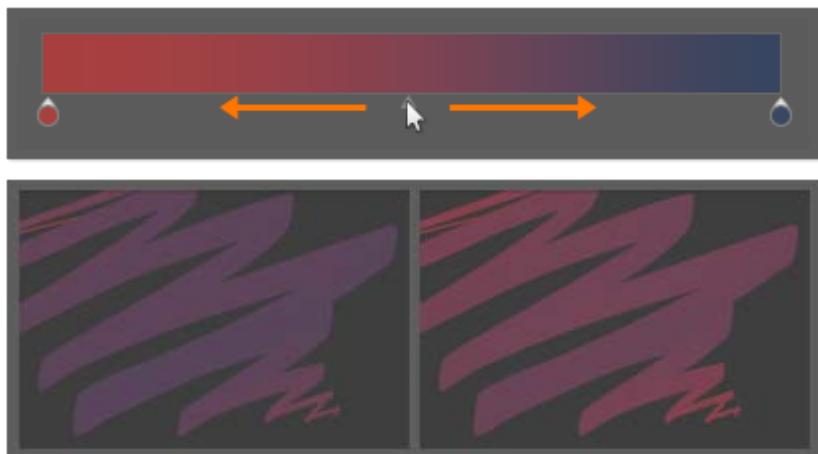
The gradients (shades) are defined as "samples" of color. The color is automatically interpolated between two samples.



##### **Open the selection editor**

Clicking on a sample of its parameters are displayed.

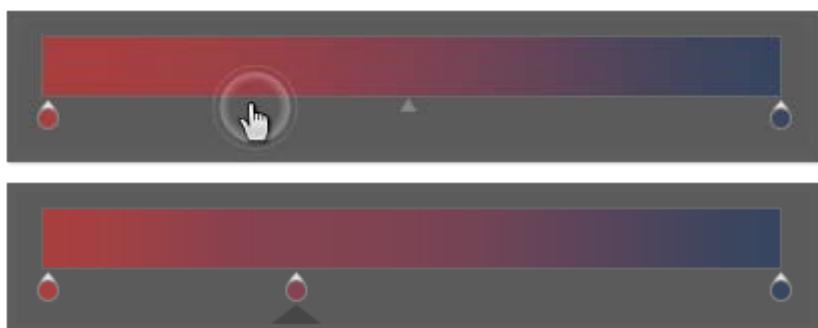
- Colors to view the selected color
- Settings to set its opacity and its position on the gradient
- HSV, to quickly adjust the color selected



Example on the brush preview window

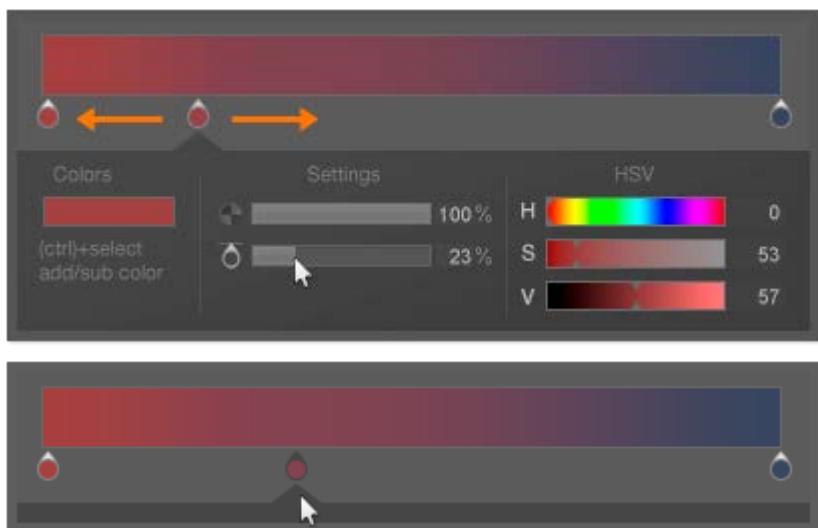
#### Change the behavior (linearity) of the gradient

When you put the cursor between two samples appears a triangle. If sliding it more or less, the gradient behavior changes.



#### Add a sample

By positioning the gradient near the editor displays the pointing cursor (hand). In this position you can add a color sample by clicking. NOTE: the added sample takes the visible intermediate color in the gradient



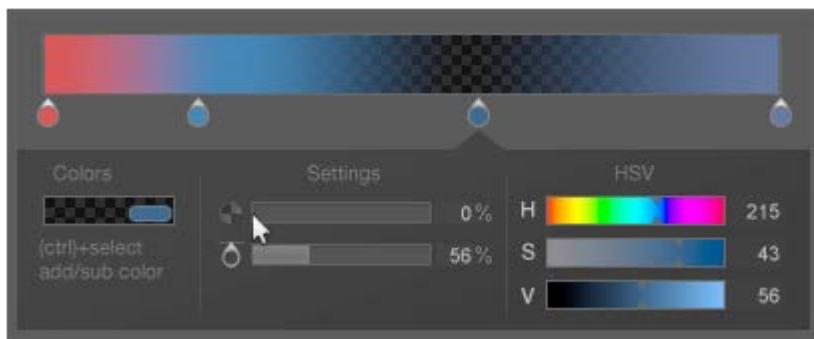
#### Move a sample

Get the sample and move it along the gradient. If you want an exact value, you can also click on it and change its value in Settings (Settings).

#### Deleting a sample

If you click and drag a sample outside the area, its appearance changes if you release it, it is deleted (drag & drop).

The Alpha value in the samples and in gradients



#### The Alpha value of a sample

In the selected sample settings if its alpha decreased, the gradient has a transparent part.



#### The Alpha value of a gradient

If you decrease the overall alpha of the gradient, then the final gradient becomes more transparent. It is a quick way to change the value of alpha (transparency) to the entire gradient.

### Modify a group of samples simultaneously

#### Multiple Selection of samples



#### Select all samples

To select all the samples simultaneously, click Select All. All samples are edited simultaneously when you change their parameters.



#### Select a group of samples

To select or deselect each sample:

- Hold down the CTRL key
- Activate the Ctrl button in

#### Edit all selected samples



#### List of sample colors

All colors of selected samples appear in succession. Each color preview offers access to the color history.

#### Settings

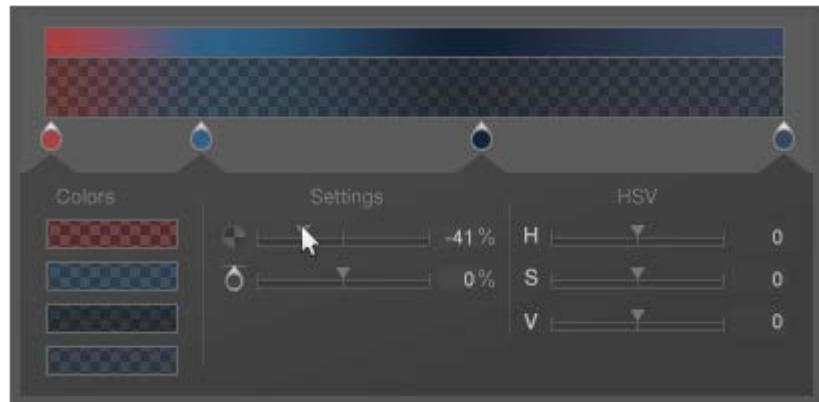
The selected samples are modified proportionally.



### Alpha

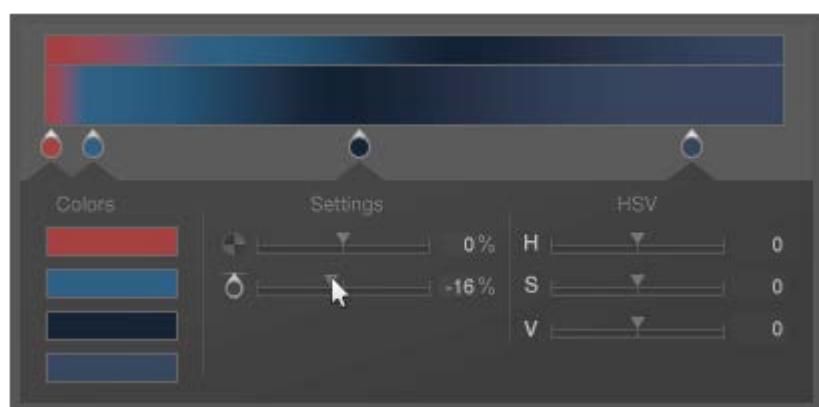
When using the alpha on selected samples, these are changed in a proportional way:

- If you decrease the alpha value, all become more transparent.
- If it increases, all become more opaque.



### Position

- When the value of your position is negative, all selected folders are located on the left of the gradient,
- If it is a positive value, go to the right of the gradient.

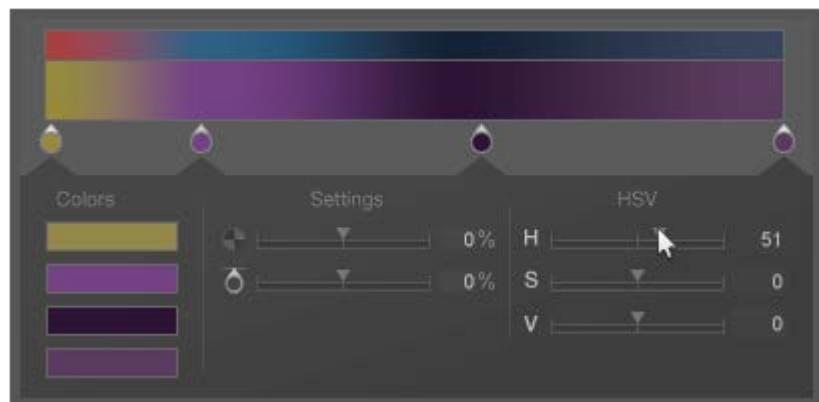


### HSV



### Hue (Hue)

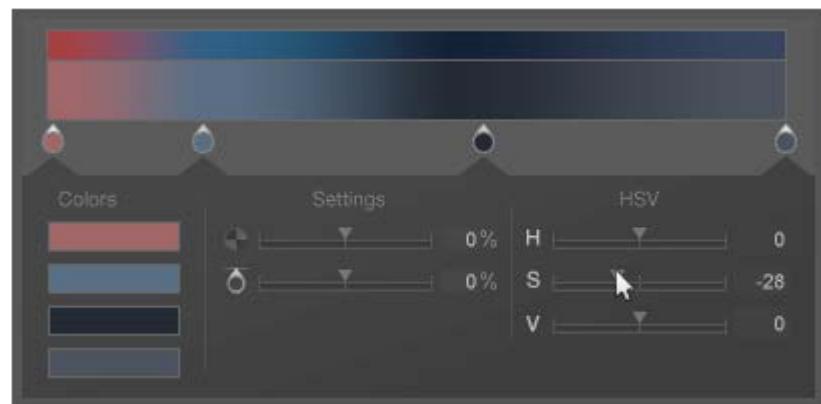
It allows you to change the colors of the samples selected according to their original color.



### **Value (Value)**

When the value of Saturation is:

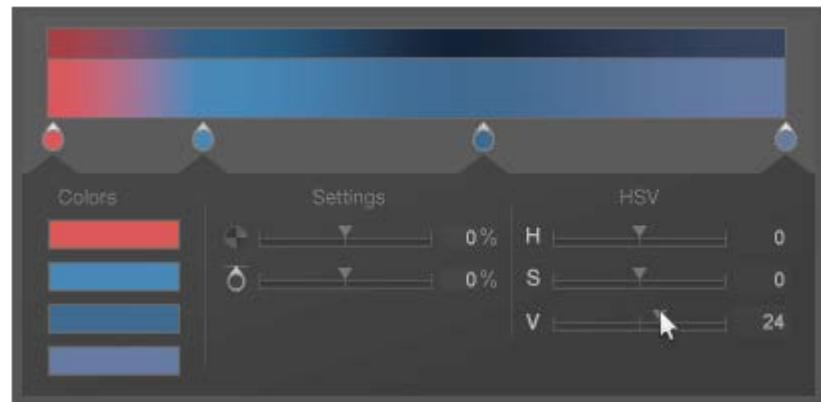
- Negative the color is gray.
- Positive color is more present.



### **Value (Value)**

When the V value is:

- Negative color is darker
- Positive color is lighter



### [color from image](#)



Automatically select colors from an image instead of choosing them manually.

This type of color is useful for:

- create nice designs even without great artistic skills
- build and design based on a reference image.
- easily create a set of realistic colors



Currently you can only use jpg and png images.

### **Loading image**

If there are no images uploaded, click the preview of the color.

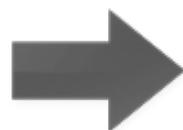
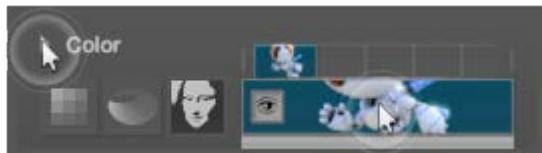
The Open File dialog box appears.  
Select a picture on your computer and  
click Open.



### Replacing existing image

If you already have a loaded image, you need to open the color editor based on images. Click again on the preview area of the color, or click the arrow to open the editor.

The Open Window File dialog box appears and you can change your image with another.



If the editor is open, click

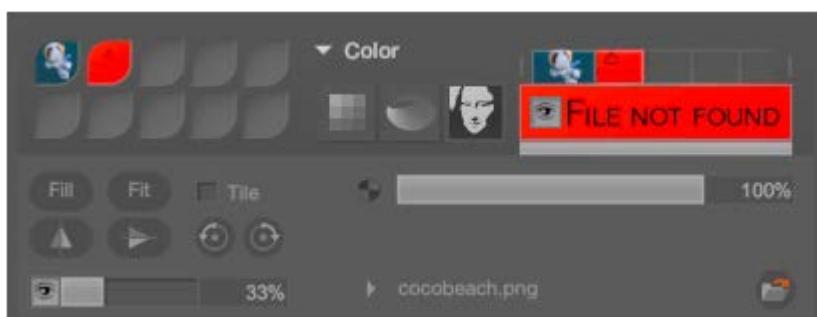


### Load a picture from favorite colors



#### *favorite Colors*

Place your mouse over the color preview and it will open the panel. Then click on favorite colors to select your image.



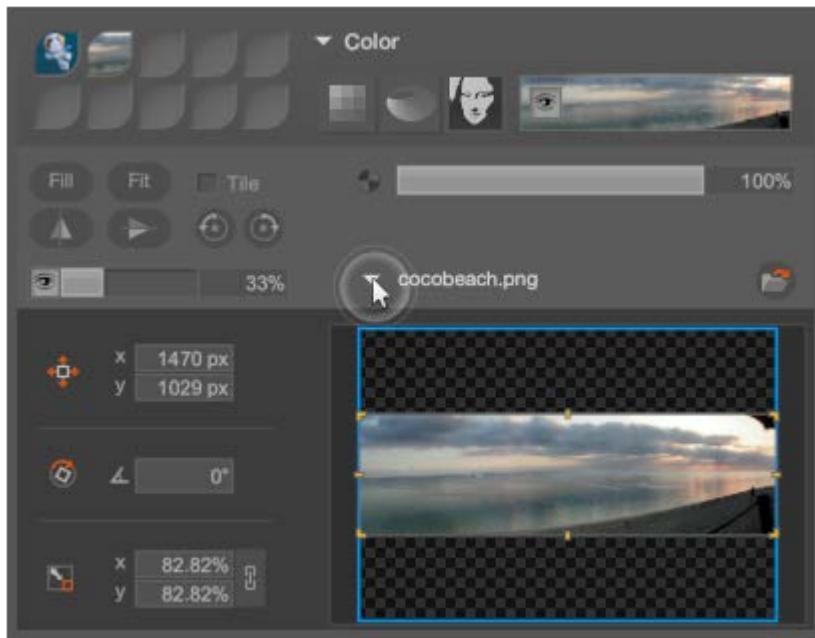
#### *L 'image was not found*

Sometimes your favorite picture was moved or deleted from the root directory. "File not found" (File not found) is shown in the preview. Click the open file to control the computer manually.

### Edit the uploaded image

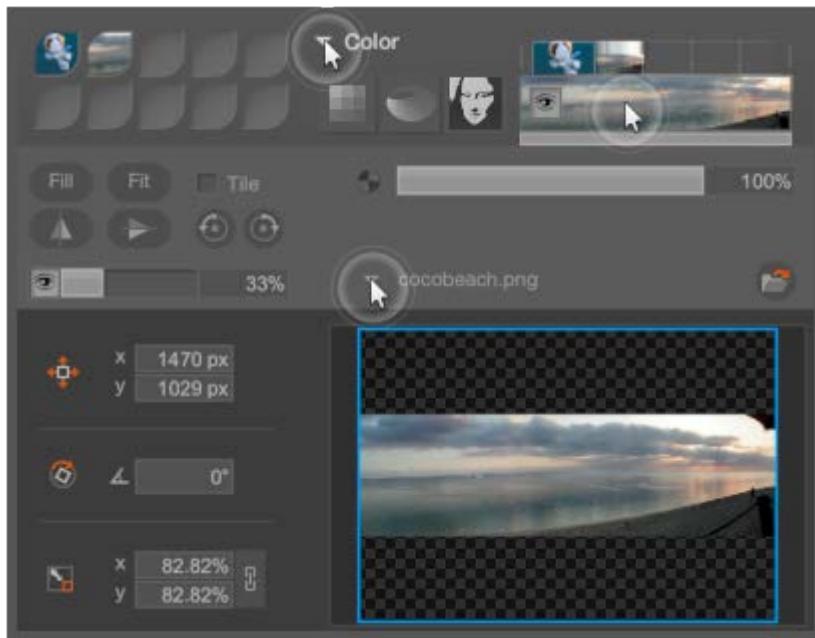
Click the arrow next to the name of the image to open the panel and transform the current image.

- The left part shows information about the position, rotation and scale (uniform or non-uniform). You can also enter values using the keyboard.



- On the right side we find the canvas is represented by a blue frame and inside the image. You can directly convert your image with the yellow anchors.

**Compact Image Editor**



Just click again on the elements used to compact the interface.

If you click again, the interface will open completely.

## Positioning and image display

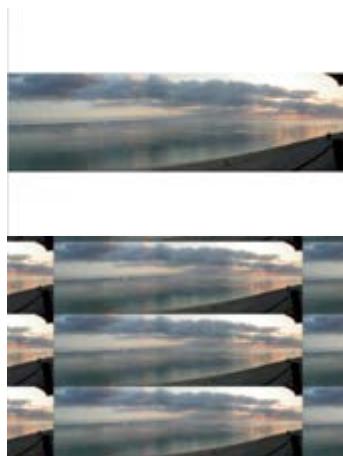
### Fill (Fills)

The image is scaled to enter entirely into the canvas both in height and in length.



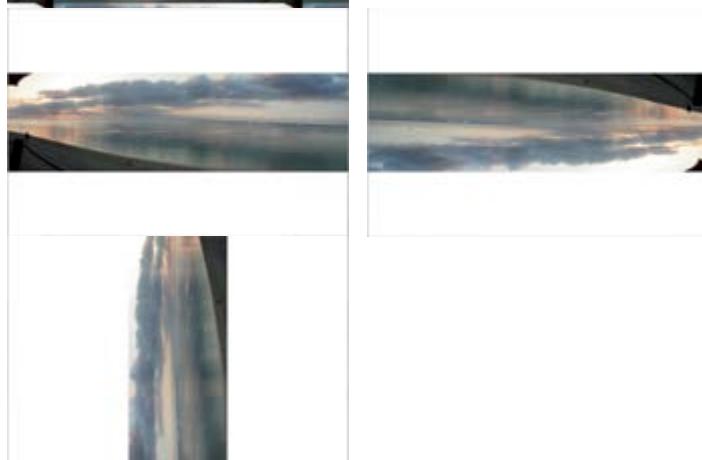
### Fit (fit)

The image is adjusted to enter entirely into the canvas or in height or in length.



### Tile (adjacent)

The same image is multiplied to cover the canvas.



### Flip (flips)



The image is flipped horizontally or vertically.



### Rotate 90 ° (wheel)



The image is rotated 90 ° left or right.



## image Display



This view is useful to see where the image details. It is not used by the brush or dropper.



Changing image display (more or less transparent)

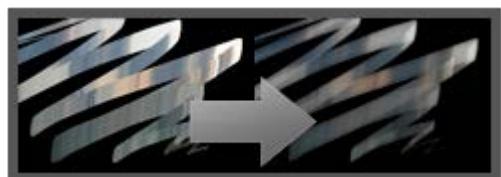


Click on this icon to show / hide the image.

## color Alfa



This slider sets the transparency of the color (that of pennelo, not the image).



## precise shifts

Use the numeric fields to enter exact values with the keyboard.



Move (move)

Rotate (wheel)



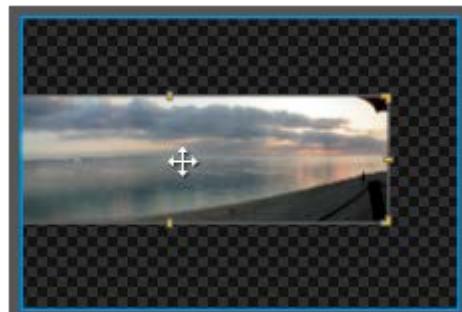
Uniform



Uneven Scale (scale)

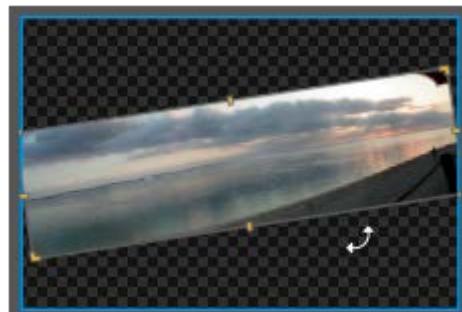
### **Shifts freehand**

Changing the image directly from the editor.



### **Move**

Get the picture and move it.



### **Rotate**

Positioning yourself externally can rotate the image.



### **Uniform Scale**

Dragging a corner you get a uniform scale.



### **Non-uniform Scale**

Dragging one hand get a nonuniform scaling.

## Sliders (Slider)

It is sliders that allow to modify the value of a parameter.

### Sliders simple

The simple cursor changes the maximum value that the parameter can be achieved during the brushstroke.



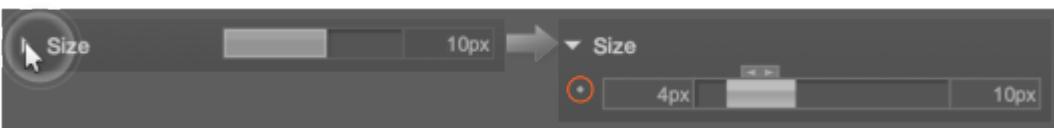
You can manually change the maximum value of the cursor by clicking on the value and typing a number or by dragging horizontally:



Note: the opacity can not be set to more than 100%

### Sliders Extended

Click the arrow next to the name of the parameter to open an expanded version of the slider:



In the extended version you can change the minimum and maximum:



The minimum value is the lowest value that the parameter can have during the brush stroke:



In this example, the shape will never be smaller than 7 pixels when the pressure is low and never larger than 23 pixels when you press harder on the stylus:



You can change both minimum and maximum values at the same time moving the small block above the cursor:



This will change the two values maintaining their relative difference.

By setting the same value of minimum and maximum disables the controller and the parameter will always have the same value (eg. The size does not change with respect to the stylus pressure):



### Segments (Segments)

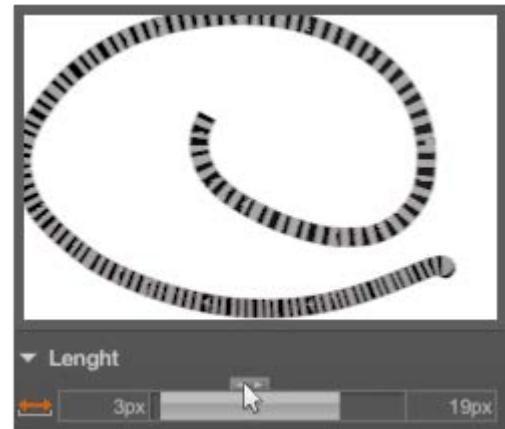
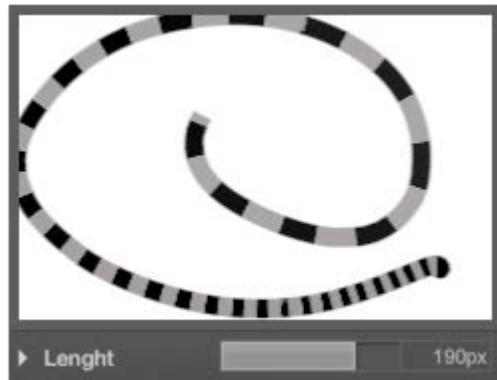
This panel is displayed only by the brush **Cracks default** ( and brushes that you can create starting from this):



Characteristic parameters:

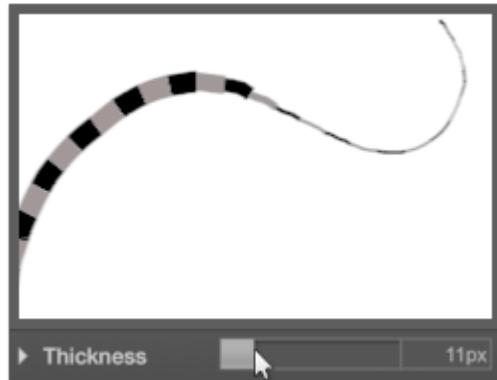
Length  
(Length)

Change the length of the segment.



Thickness  
(Thickness)

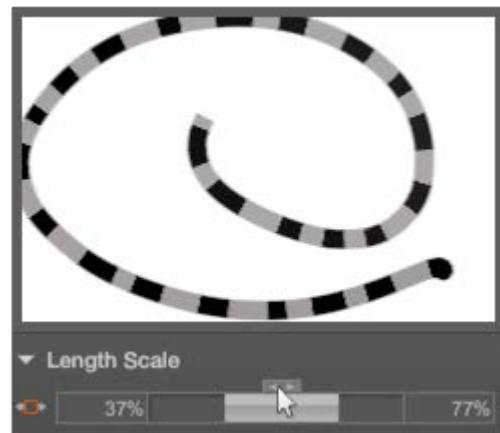
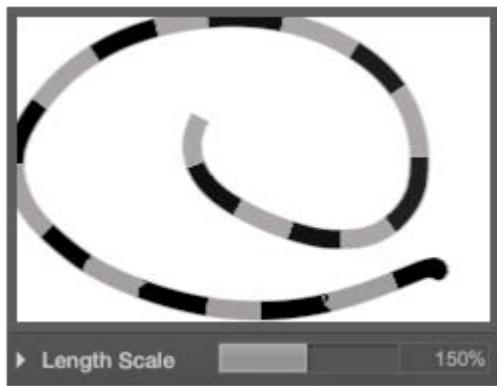
Change the width of the segment.



**Length Scale**  
(Scale  
Length)



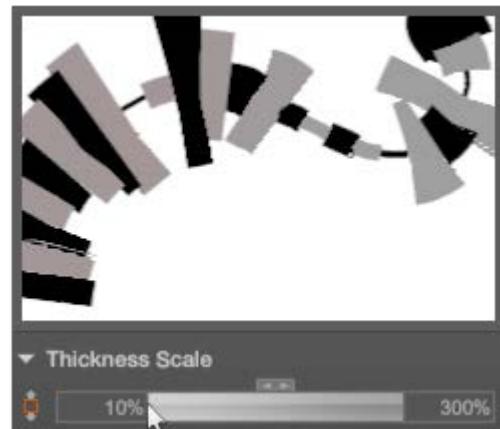
It adds a random factor to the length of the segment.



**Thickness**  
Scale (Scale  
Width)



It adds a random factor to the segment width.



## brush shape (Shapes)

In the panel **shapes** you can change the appearance and behavior of the brush. Many brushes share the same standard parameters as **Size (Size)**, **Opacity (Opacity)**, **Orientation (Orientation)** is **Stairs (Scale)**.

size  
(Dimension)



Change the  
stroke  
thickness.



Opacity  
(Opacity)



Change the opacity  
of the stroke.



Rotation  
(Rotation)



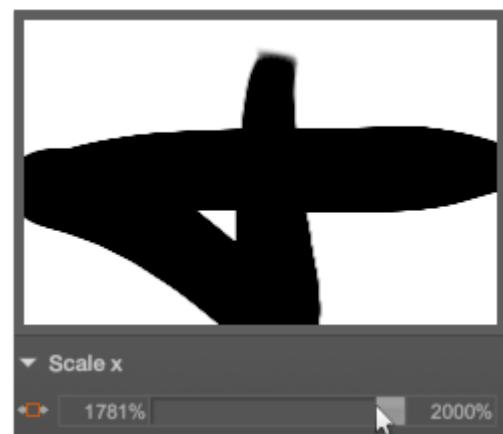
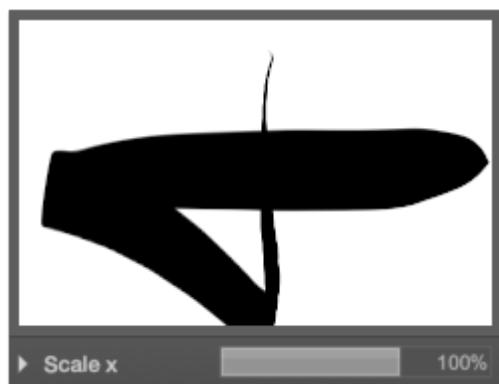
It defines what  
rotates the brush  
during the stroke.



**Scale X (X scale)**



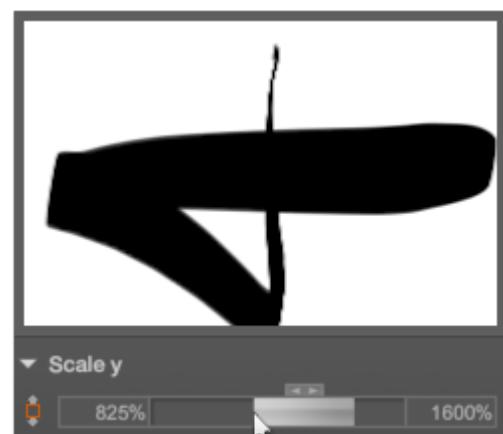
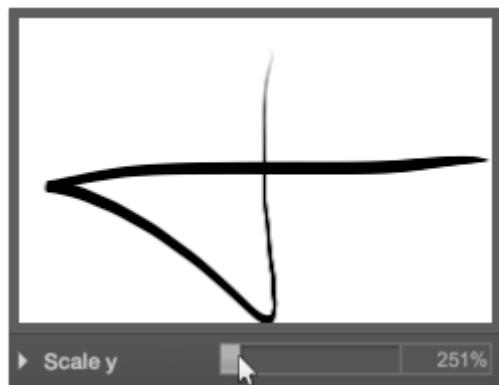
Change the horizontal scale of the shape.



**Scale Y (Y scale)**



Change the vertical scale of the shape.

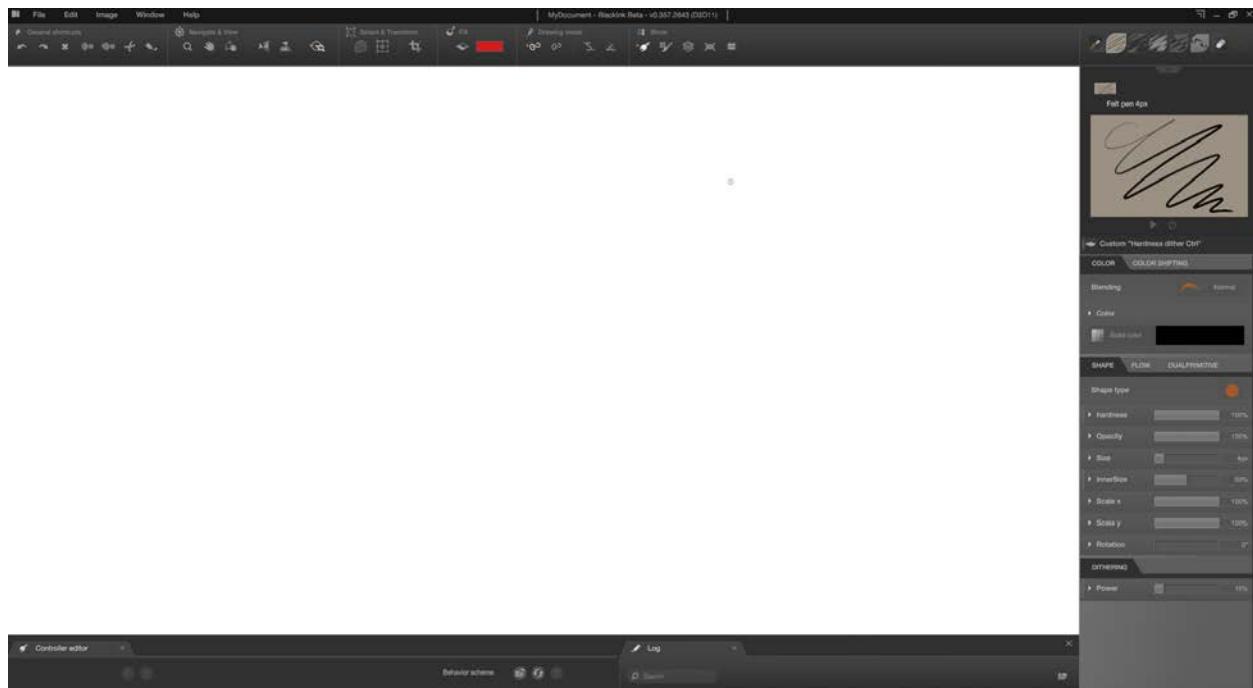


## Tutorial: Getting Started

Hello! If you are a new user BlackInk, you're in the right place!

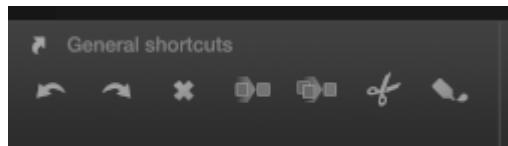
In this tutorial we are going to have our first look at the user interface and basic tools BlackInk that will allow us to start drawing right away!

When you first start BlackInk presents the following window:

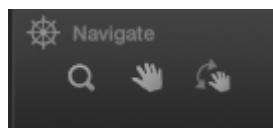


We begin the tour at the top left. Just below the standard menu you can see a series of panels:

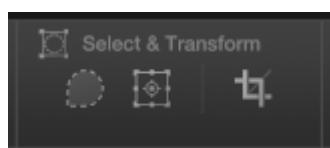
### General Shortcuts

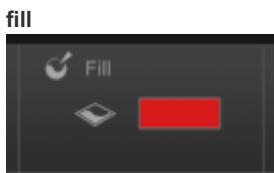


General Keyboard Commands ( **Undo**, **Redo**, **Clear**, **Copy**, **Copy Merged**, **Cut**, **Paste**) **Navigate & View**

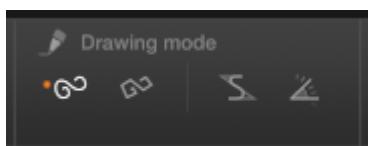


Navigation and Display Controls ( **Zoom**, **Move**, **Rotate**, **Flip H / V**, **Constant brush size**) **Select & Transform**

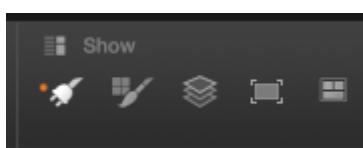




Filling level controls ( **Fill**, **Color**) **Drawing mode**



Commands for the design parameters ( **Freehand**, **Straightline**, **Smoothness**, **Angle snap**) **Show**

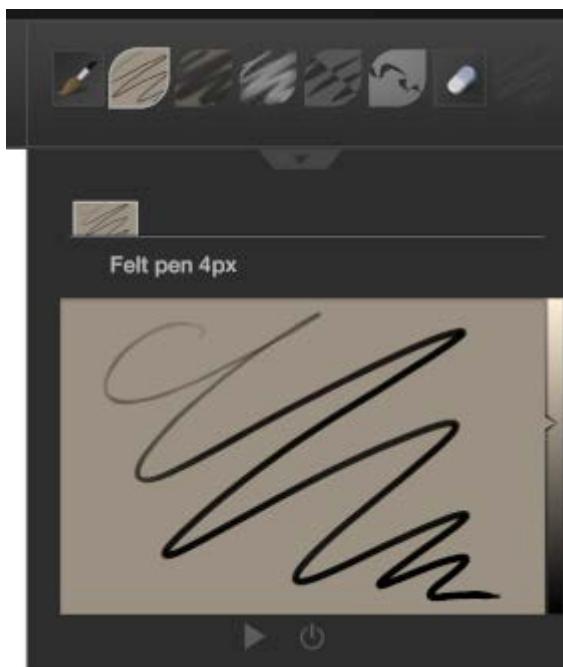


Commands for display windows ( **Controller editor**, **Brush Manager**, **Layer Manager**, **Secondary View**, **Docked panels**)

Some of these commands have options that open when the cursor hovers over them and show their keyboard shortcuts ( "Q" -> **Zoom**, "SPACE" -> **Move**, "R" -> **Rotate**, etc.) These work by holding down the button and moving the mouse. When you are done, simply release the button. Most commands have an intuitive meaning and just try to realize how they work.

### the Brushes panel

At the top right you can see a set of preset brushes:

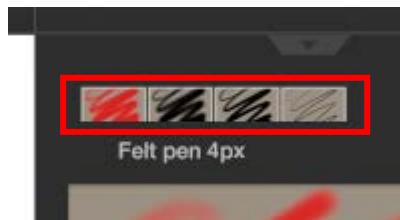


They are: **Felt pen 4px**, **12px Airbrush**, **Smudge colored**, **Free fill**, **Angle line fill** and **Eraser**.

Try them, each has a very different behavior.

The instrument **Rubber (Eraser)** you can activate it by pressing "IS" and then return to the previously selected brush with the button "B"( or "again "IS").

If you change one or more of the brush settings (eg size) creates a new brush next to the previous one with the new settings.



This is the "**History Brush**" and it is very useful. You just have to select one of the above settings to instantly call up the brush.

Beneath the story of brushes are the preview of the active brush window:



This window displays a preview of the default brush stroke that instantly reflects any changes made in the settings.

Try to change the size or opacity, you will see the real-time preview update. You can also draw your stroke on the preview window. The button



repeats the brushstroke.

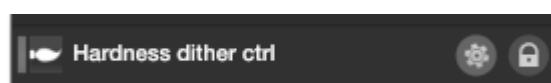


The button restores the default stroke.

The slide white arrow (slider) that is to the right of the preview window allows you to change the background color.

#### Brush Pixel shader editor

Just below the preview window we find a panel that allows us to load or define (program) him **Shader Brush**.



The button  It allows us to load an existing shader.

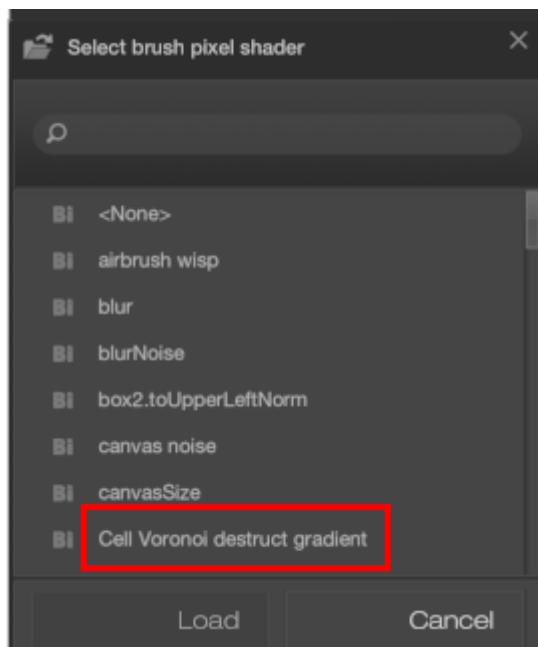
The button  He opens the shader editor with shader code active.

The button  block accidental modification

To schedule a shader need some experience, however, we can load an existing shader to see what happens to the brush. We select the brush **Felt pen 4px**. We see that the default shader for this brush is "**Hardness dither Ctrl**". Now press the button



and load the shader "**Cell Voronoi destruct gradient**":



Now, if we draw with this brush we get something like this:

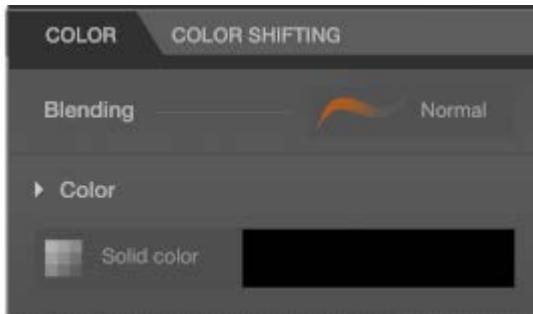


#### The parameters of panels

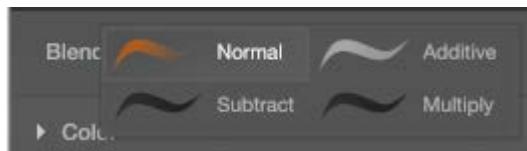
And then we have the brush parameters. There are three different panels that will be analyzed separately:

1. COLOR - COLOR SHIFTING
2. SHAPE - FLOW - DUAL PRIMITIVE
3. DITHERING

#### COLOR - Color



At the top we have the parameter **Blending** which allows us to select one of the following types:

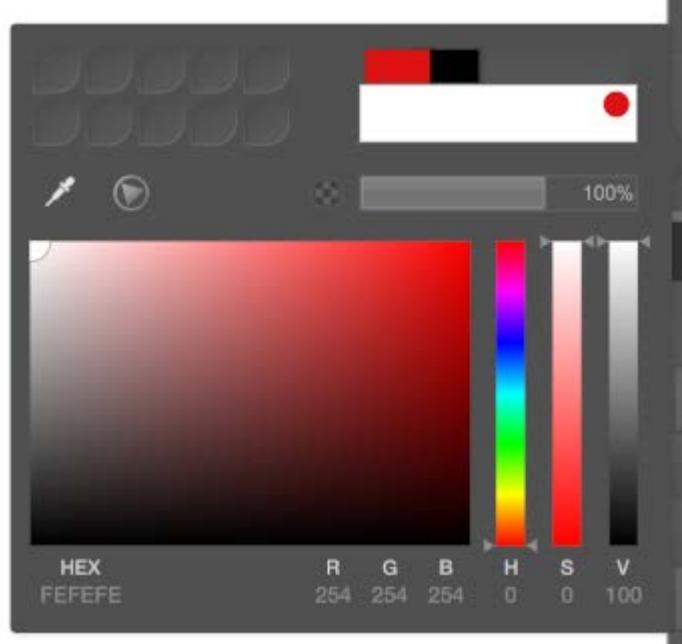


This parameter changes the way in which the color is applied when drawing (try).

For **select a color** Just click the big colored rectangle:

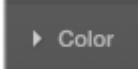


In this case the following window appears:

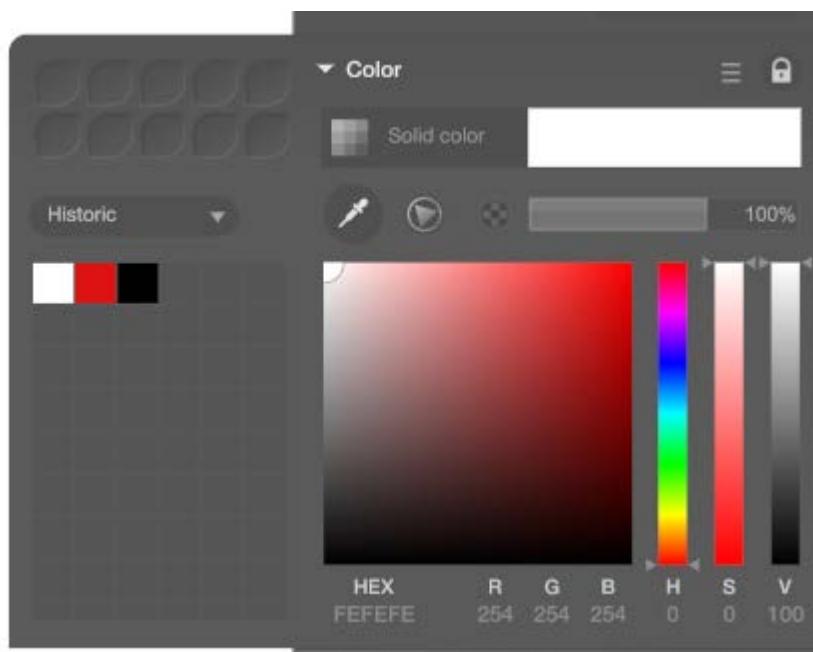


With which we can choose the color in different ways.

The complete color control is achieved by pressing the button



you get the following window:



In which we find **History of Color** (to the left).

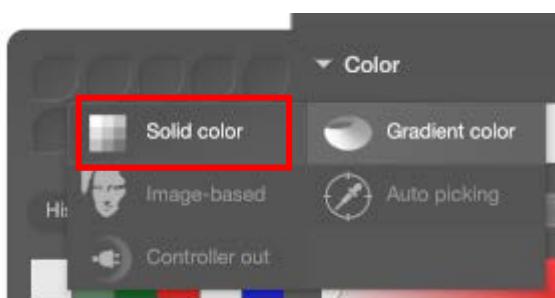
Note that the color story is also available from the main interface, simply by hovering over the large rectangle that represents the color:



### Color Mode

There are five color modes: **Solid color**, **Gradient color**, **Image-based**, **Auto-picking**, **Controller out**.

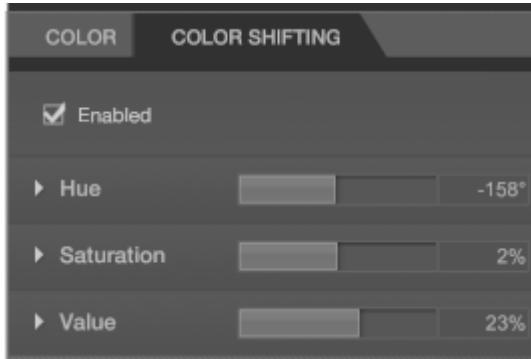
To access these parameters, press the button **Solid color**:



These modes are very interesting and powerful tools that will be analyzed in the next tutorial.

### COLOR-SHIFTING

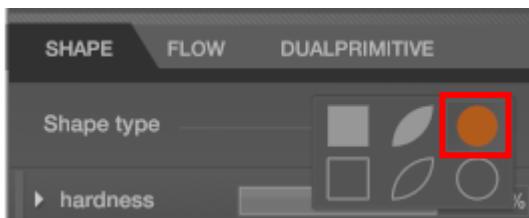
This panel allows you to edit (shiftare) the active color by using **Hue**, **Saturation**, and **Value**:



In practice it allows us to have two colors for the active color. Or it allows us to choose a color similar to the active relying on changes **Hue (Hue)** **Saturation (Saturation)** is **Brightness (Value)**.

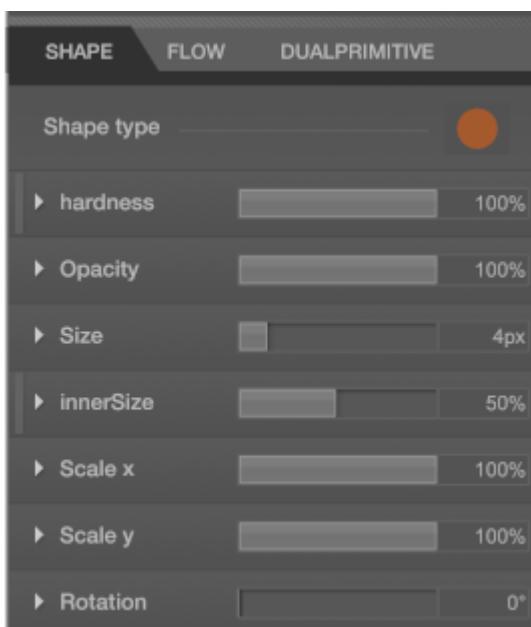
#### SHAPE - FLOW - DUAL PRIMITIVE SHAPE

In this section we find the typical brush settings. At the top we find the parameter **Type Form (Shape type)** which is accessed by pressing the button highlighted:



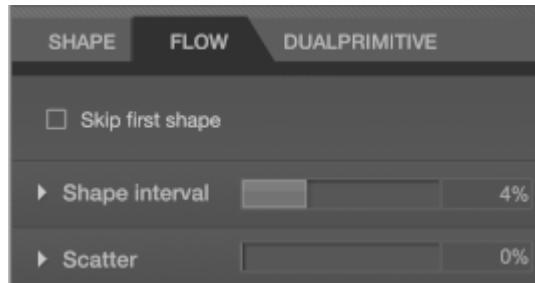
This parameter changes the shape used to create the brush stroke. This can completely change the look of our brush.

Then we find the parameters for **hardness (Hardness)**, **opacity (Opacity)** the **size (Size)**, the **internal dimension (innerSize)**, the **X scale (Scale x)**, the **Y-scale (Scale y)** and the **rotation (Rotation)**:



Try changing some values and see how changing the brush stroke (also notice that the changes are instantly reflected on the brush preview window).

#### FLOW

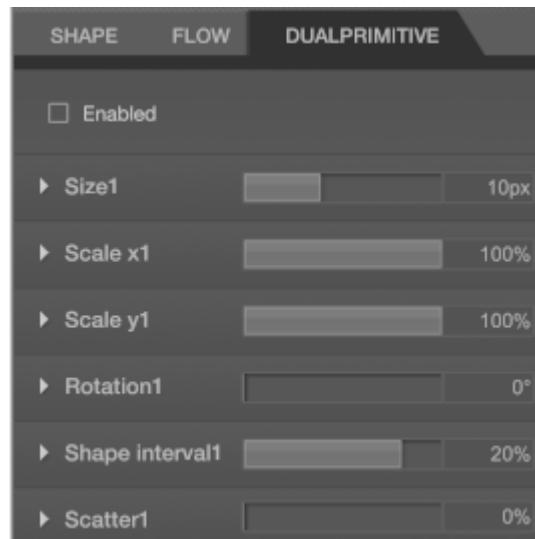


In this panel we find two parameters: **Shape interval** is **Scatter** "Shape interval" sets the distance between the forms that make up the brushstroke, in this way you can draw separate shapes rather than continuous.

"Scatter" (Scattering) controls how the color should follow the brushstroke. Here are some examples with the brush **Fet pen 4px** with different values for the two parameters:

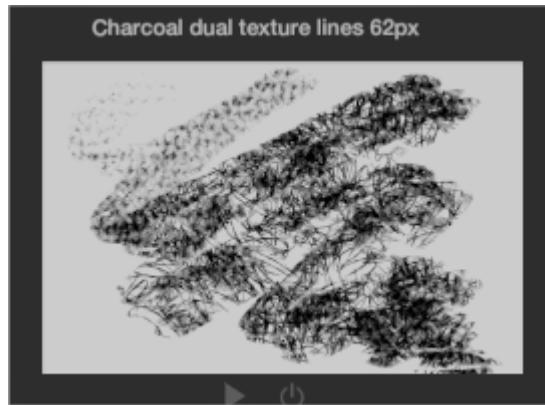


#### DUAL PRIMITIVE



Dual Primitive is a second set of primitives coordinates generated for each primitive displayed during the steps necessary for the creation of the form by the engine brush (brush motor). Generally the **Brush Shader Language** retrieves the second set of parameters to calculate the texture another position.

For example, the brush **Charcoal dual Texture lines 62px** uses this parameter:



#### DITHERING

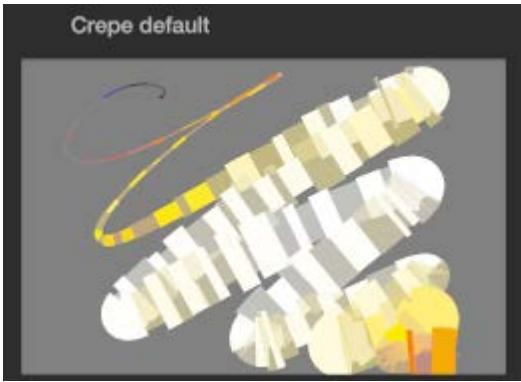


The parameter "**Power**" the panel **DITHERING** controls the "flicker" of the stroke. As usual in order to better understand what it is necessary to experiment.

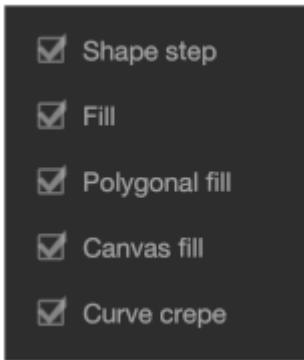
#### SEGMENT



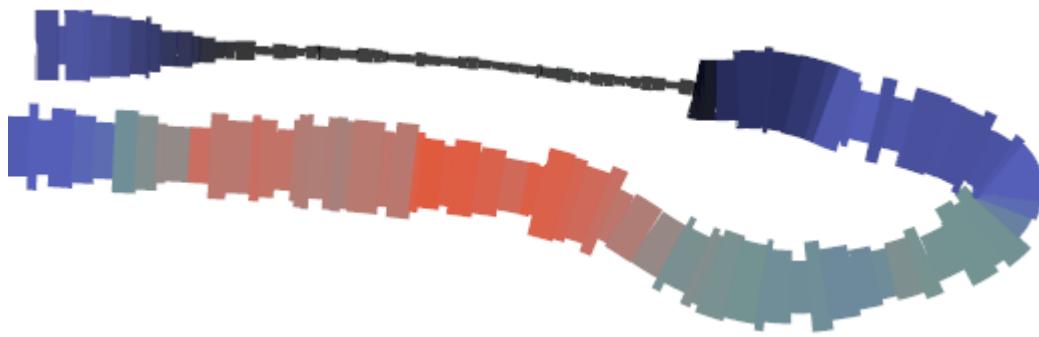
This panel is only available with the brush **Cracks default**:



In fact the BlackInk brushes have a different rendering engine, you can see them in the handler of brushes (M) where you can filter your brushes:



The segment brush parameters are only for the default Crepe brush. Of course you can create multiple brushes with Shader Brush language from Crepe. To understand the default Crepe brush parameters we see a stroke:



The parameters refer to the segments (rectangles) that make up the brushstroke:

**Opacity:** set the opacity of the segment

**Length:** sets the length of the segment

**Length Scale:** set the scale of the length of the segment

**Thickness:** sets the thickness (width) of the segment

**Thickness Scale:** sets the thickness (width) of the segment

#### CURSORS

Now that we have seen the main parts of our screen work, we talk about one last important thing: **the sliders**.

They are used to change the size and opacity, and all kinds of parameters and is very important

understand how they work.

The only thing to know is that they have two states: **basic** and **extended**. **simple Status**



extended state



To extend a slider, click on the small white arrow next to it.

So what's the difference between these two states?

In the extended version of a slider, you can set a minimum and a maximum value. This is because often you want a value to change according to certain rules. For example, when the size is set to follow the pressure of the tablet, the minimum would be the size when it is not pressed and the maximum would be the size when you press the maximum.

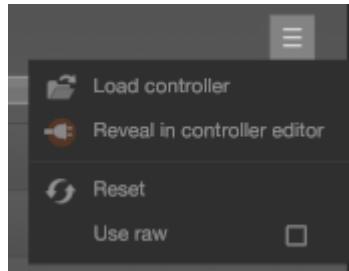
Now, when you compress the cursor to the simple version, the changes will keep the relative range and apply it to the highest values or smaller. So basically, the extended slider is used to set the amount of your value and simply is faster to adjust the final result.

The sliders have extended predefined maximum values, but it is not sufficient for the setting, you can drag the numbers and change their range.

Pressing



A window opens that lets you manage the parameter by the controller:



This will be covered in the next lessons.

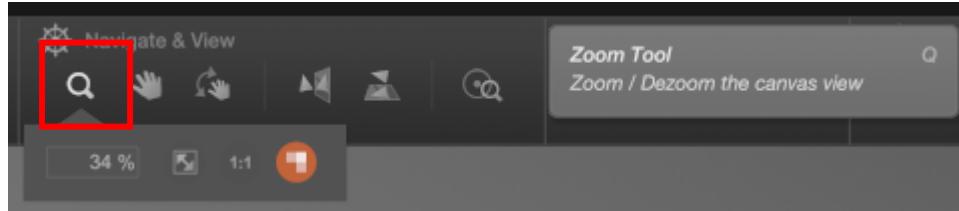
And that's it for our first look at BlackInk.

Try different brush presets, change the basic parameters and have fun drawing!

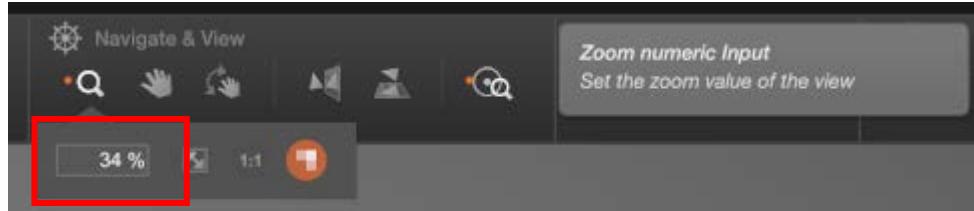
## Tutorial: Display and Navigation (Navigate & View)

### ZOOM

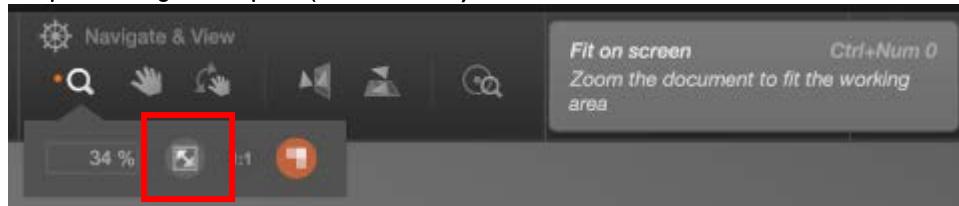
to press **Q** and move the mouse (to the right-> Ingrandisce toward left-> Reduces)



Enter a numeric value to zoom



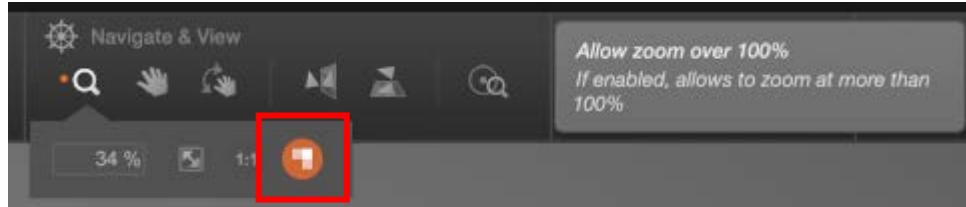
Adapt the design workspace ( **Ctrl + Num 0** )



Zoom to 100% centered on the cursor position (**Ctrl + Num 1**)



If enabled, it allows higher zoom 100%

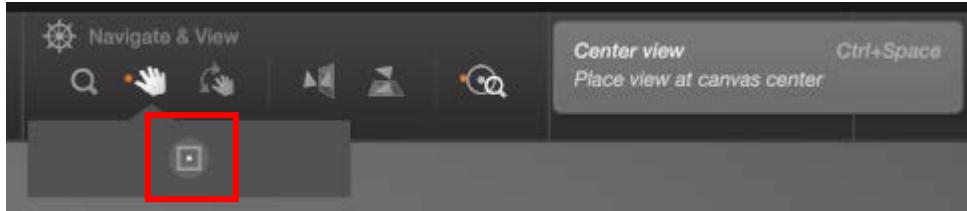


## SHIFT

to press **SPACE** and move the mouse to move the drawing

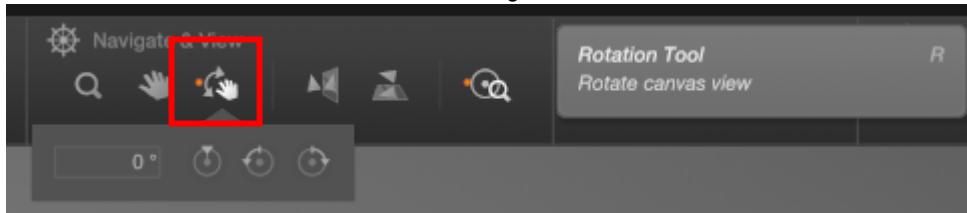


Center the picture in the work area ( **Ctrl + Space** )

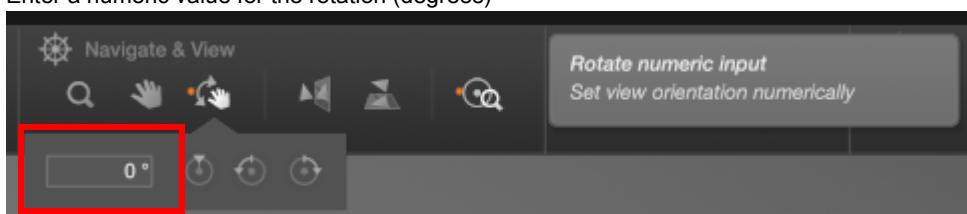


## ROTATION

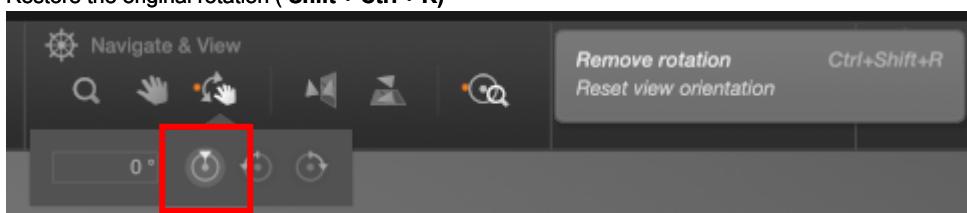
Press R and move the mouse to move the drawing



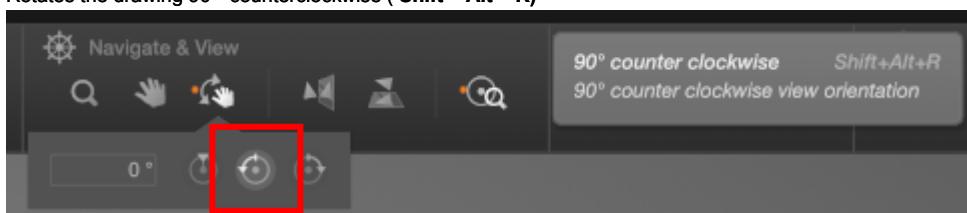
Enter a numeric value for the rotation (degrees)



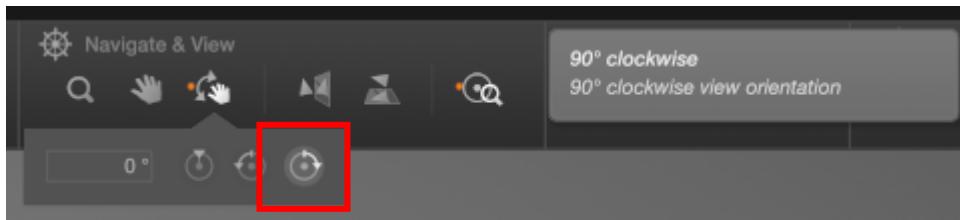
Restore the original rotation ( **Shift + Ctrl + R** )



Rotates the drawing 90 ° counterclockwise ( **Shift + Alt + R** )



Rotate 90 degrees clockwise design

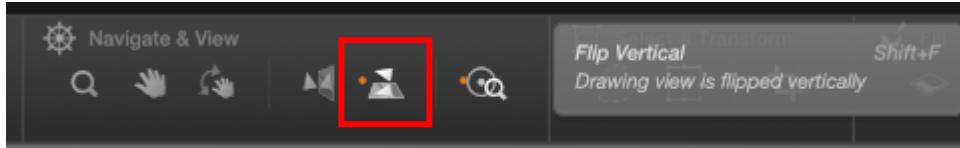


#### REFLECTION

Reflects the drawing horizontally ( **F** )

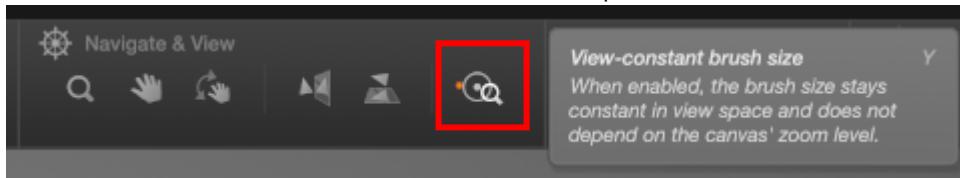


Reflected in the vertical drawing ( **Shift+F** )



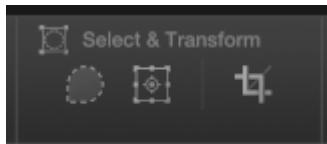
#### ZOOM and BRUSH SIZE

If enabled, the brush size remains constant and does not depend on the zoom level



## Tutorial: Selection and Transformation (Select & Transform)

This section controls the selection operations and related transformations:

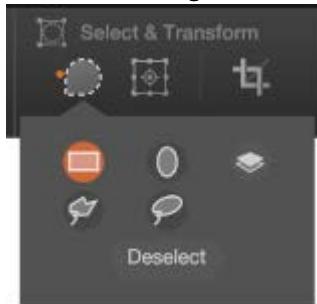


The Selection tool can be activated with the key "W".

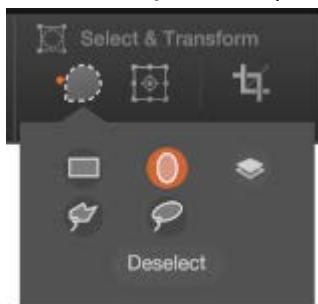
When the selection tool is active we can:

- 1) **Perform a normal selection** with the mouse
- 2) **Add to an existing selection holding the key "Shift"**
- 3) **Subtract from an existing selection holding the key "Alt"**
- 4) Intersecting with an existing selection
- 5) Modify an existing selection

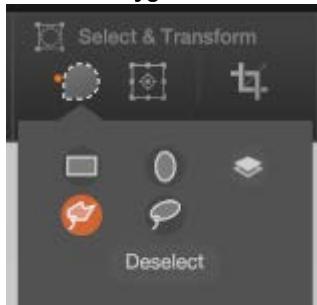
Selection Rectangle



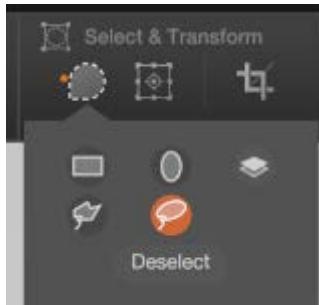
Selection of Ellipse / Circle (Shift)



Selection Polygonal

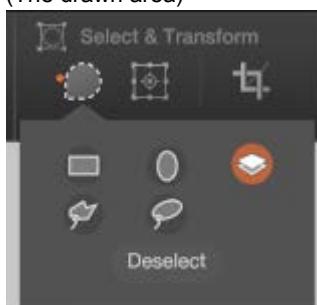


Selection Free hand



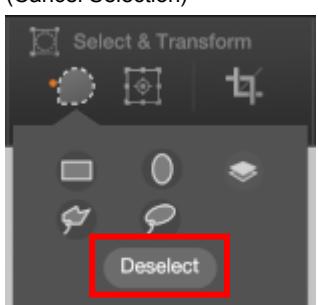
Select Alpha channel

(The drawn area)

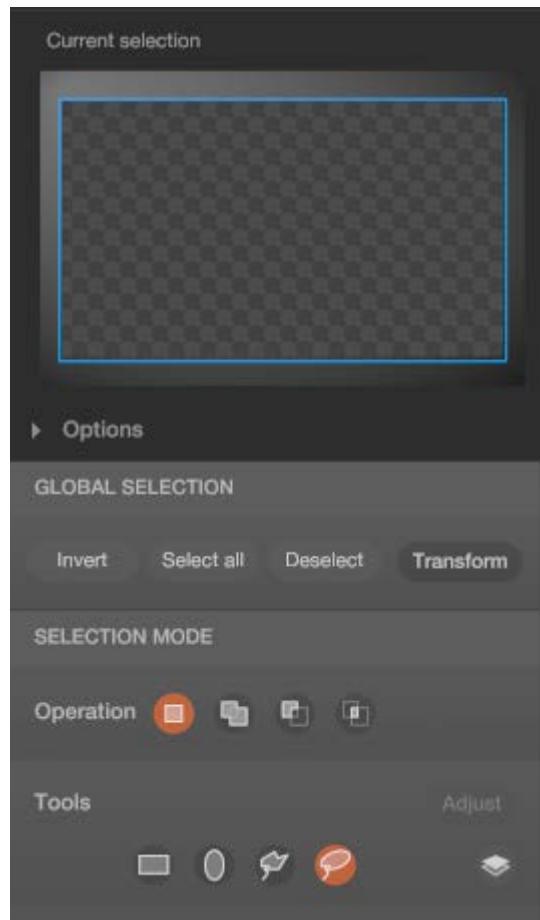


Select None

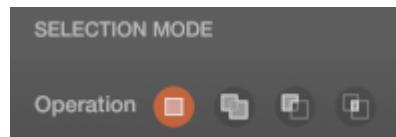
(Cancel Selection)



When we activate the Selection tool opens the associated panel (on the right of the workspace):



In this panel we see the options for the selection mode (MODE SELECTION):

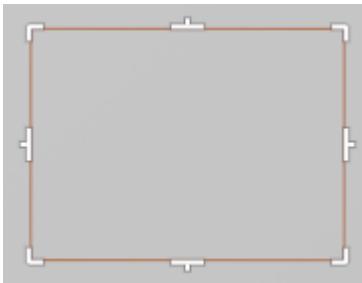


- BASE Selection
- Selection UNION / ADDITION mode (press Shift)
- Selection ABDUCTION (press Alt)
- Mode selection in INTERSECTION

This allows us to create a unique selection using multiple selections.

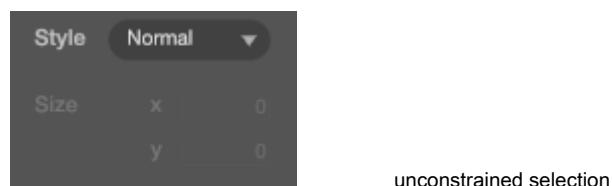
Once a selection created you can be changed by pressing the button





Now the selection can be resized and rotated using the white handles positioned around the selection (press "Enter" to accept or "Esc" to cancel).

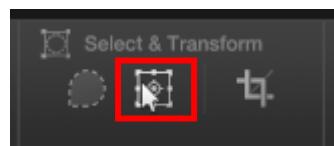
Finally we can "lock in" the way we draw a selection in the following section:



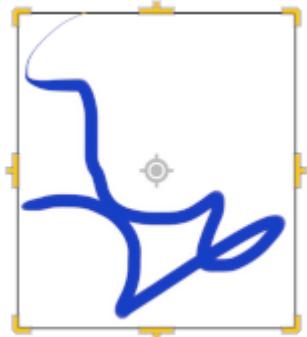
Shortcut keys (shortcuts) for selections are as follows:

<b>W</b>	Selection tool
<b>Shift / Alt</b>	Adds / subtracts the active selection
<b>Ctrl + A</b>	Select all
<b>Ctrl + D</b>	Select None (Cancel Selection)
<b>Ctrl + I</b>	Invert Selection
<b>Shift + Ctrl + A</b>	Select the alpha channel (the designed area)

Now let's see what you can do with **Transformations**. By pressing the highlighted button (or the button "T"):



This creates a rectangle around the selected area, or around the entire colored area of the design:



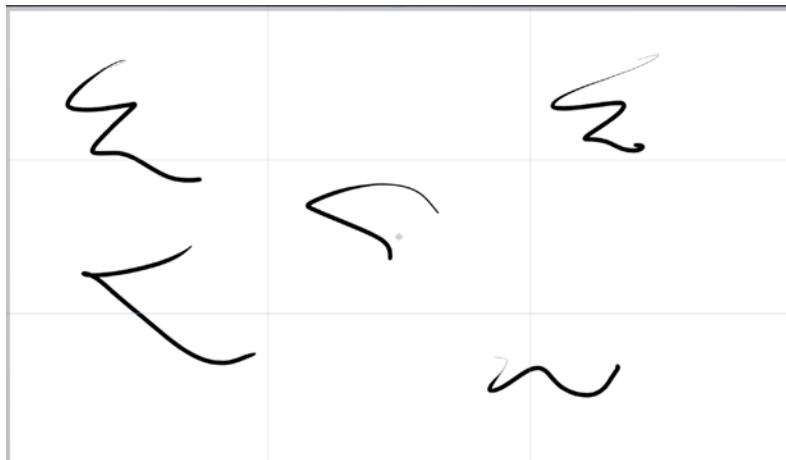
This area can be resized and rotated using the yellow anchors positioned around the same area and can be moved using the gray target in the center of the area. Try it yourself. While pressing the button "**Shift**" the rotation is carried out in steps.

When we are done with the changes we can press the button again to accept the changes (with the button "**Enter**") or press "**Esc**" to undo the changes.

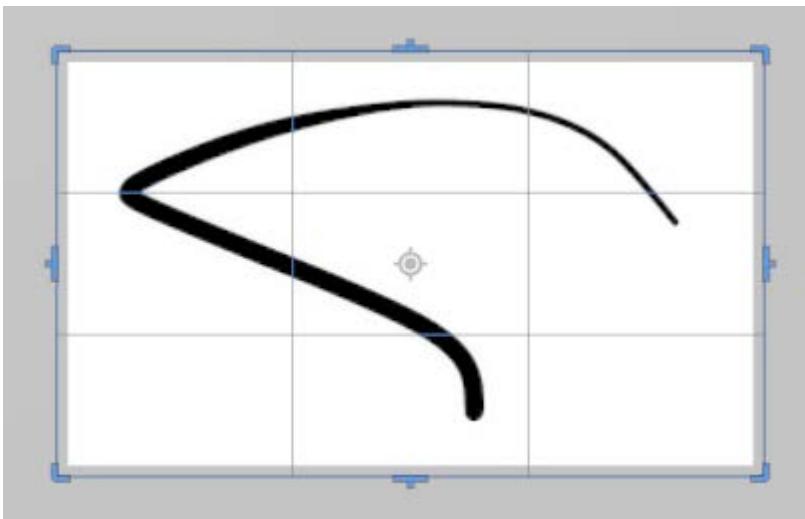
Finally we have the tool **Crop (Crop)** that allows us to cut the work area at will. By pressing the highlighted button or the key "**Shift + C**" (ensuring that there is an active selection):



We get the following picture (with a few strokes):

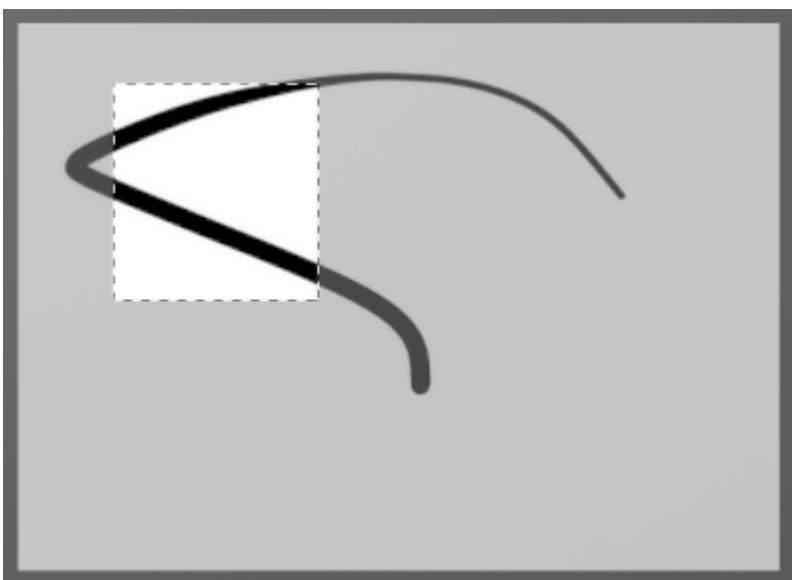


And we can define with the mouse to cut out the rectangle (blue):



Before confirming the cut can resize or rotate the design area defined by the rectangle. Try it yourself to see how it behaves the design.

**To accept the cut the defined press "Enter". To cancel the cut Press the button "Esc."** **NOTE:** If we have an active selection pressure of this button causes the immediate cut of all and one of the selection area:

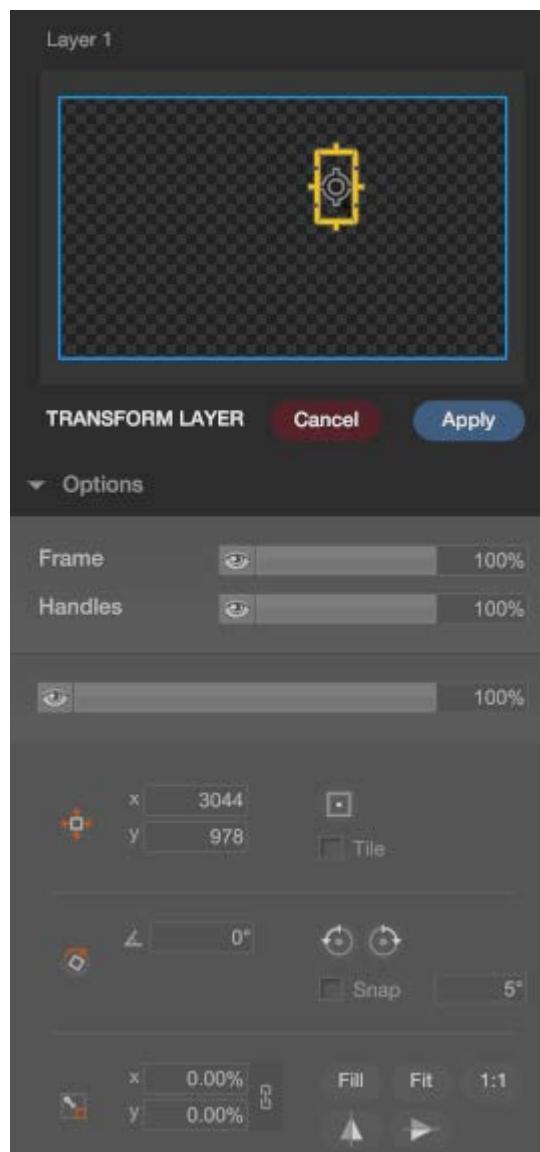


With an active selection we press the button **Crop / Crop ( "Shift + C") ...**



...and cropping the selected area.

When we activate the Transform tool ( "T") It opens the associated panel (on the right of the workspace):



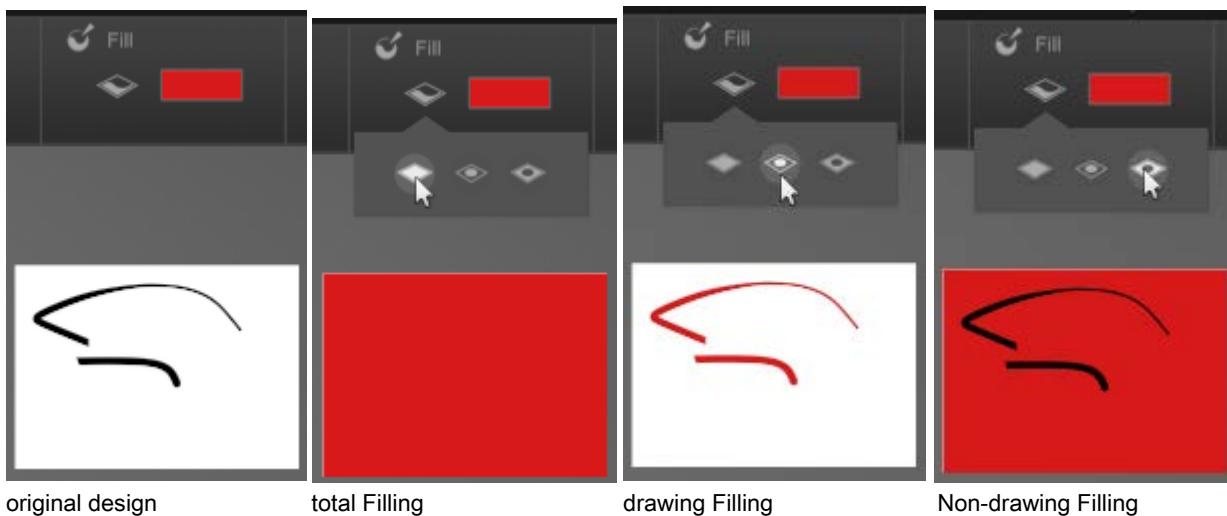
The parameters of this panel allow a more accurate creation of our transformation. Simply a few tries to figure out how they work.

## Tutorial: Fill (Fill)

This tool checks the fill mode of selection and the Workspace.



Let's see how the three buttons with an example:



**NOTE:** If we have an active selection is filled only in the selected area.

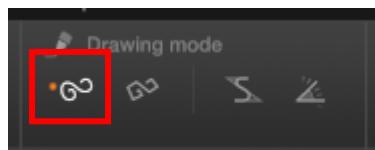
The **color rectangle** It has some features:



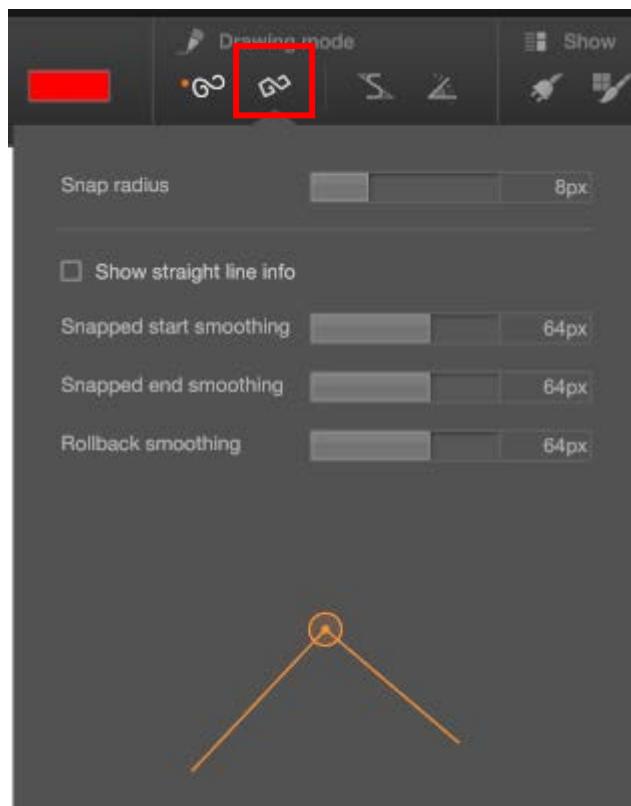
At the top we find the story of the colors and the bottom we find a slider (slider) that allows us to change the opacity of the selected color.

## Tutorial: Design Mode (Drawing Mode)

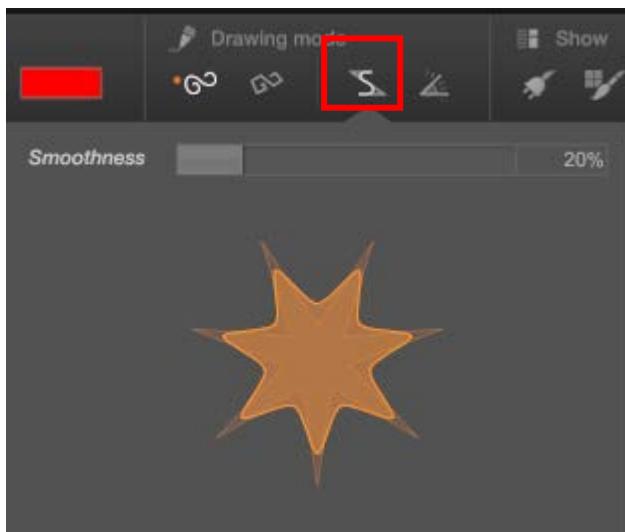
This panel contains some parameters for assisted design:



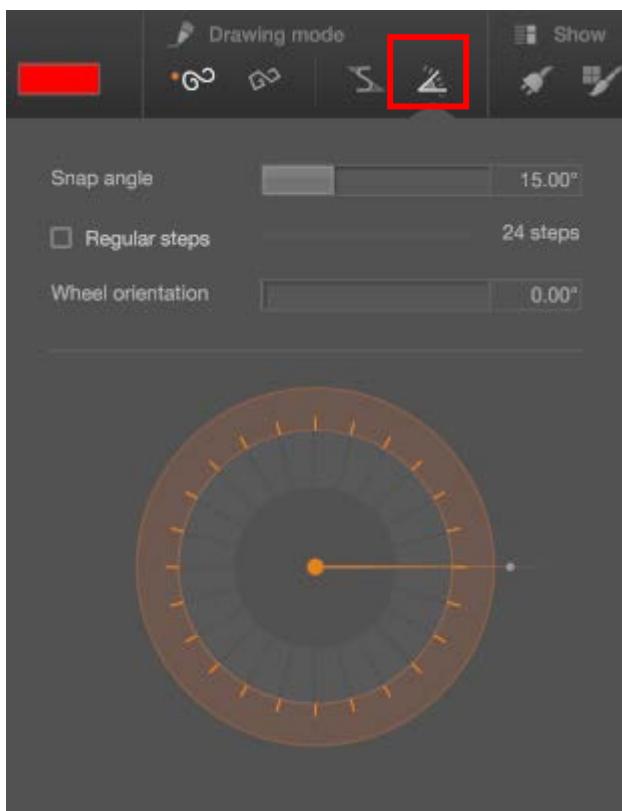
**Free-hand drawing:** free design (no strings attached).



**Drawing straight lines:** the design is constrained to draw straight lines. We can define the parameter **Hooking (Snap)** in pixels, and the methods of starting nodes and display the end of the straight.

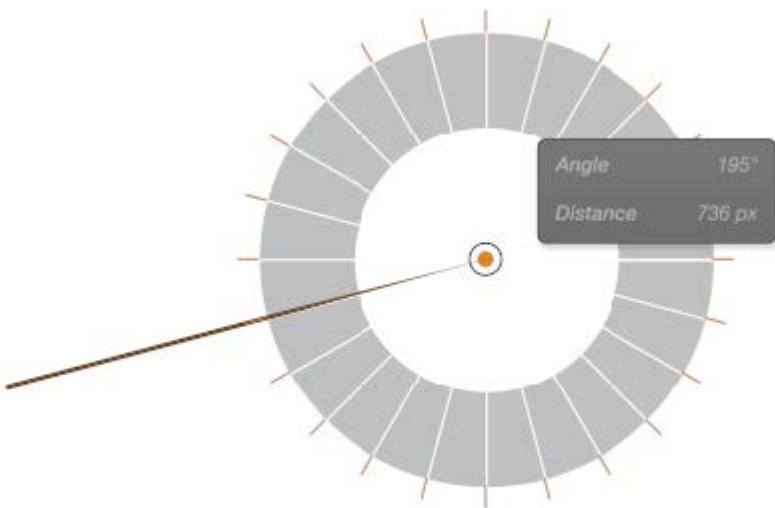


**Softness (Smoothness)** of the stroke (stroke).



Settings for the design with straight lines

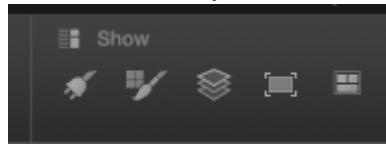
When we are free-form mode ( **Hand Free Mode** ) we can draw straight lines by pressing the key button "Shift":



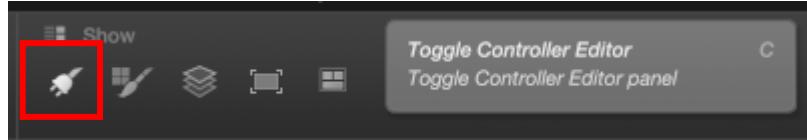
Try it yourself to find out all the possibilities.

## Tutorial: Windows / Panels Show (Show)

This section allows you to show / hide the graphical windows (UI - User Interface):



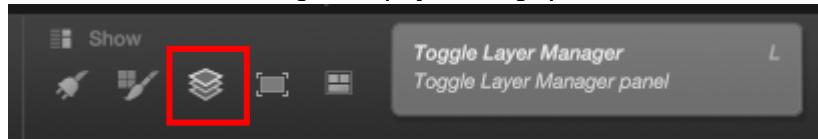
### Show / Hide the Editor Controller (Controller editor)



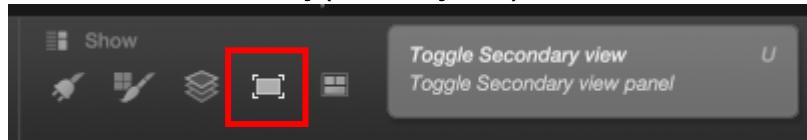
### Show / Hide the Brushes Management (Brush Manager) (floating)



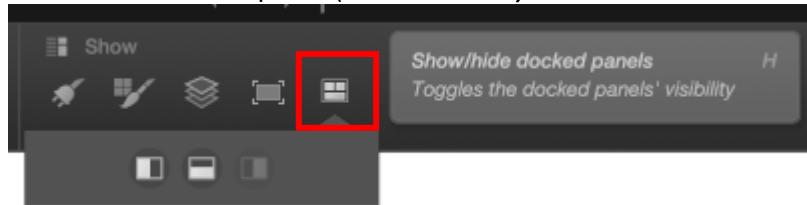
### Show / hide Levels of Management (Layer Manager)

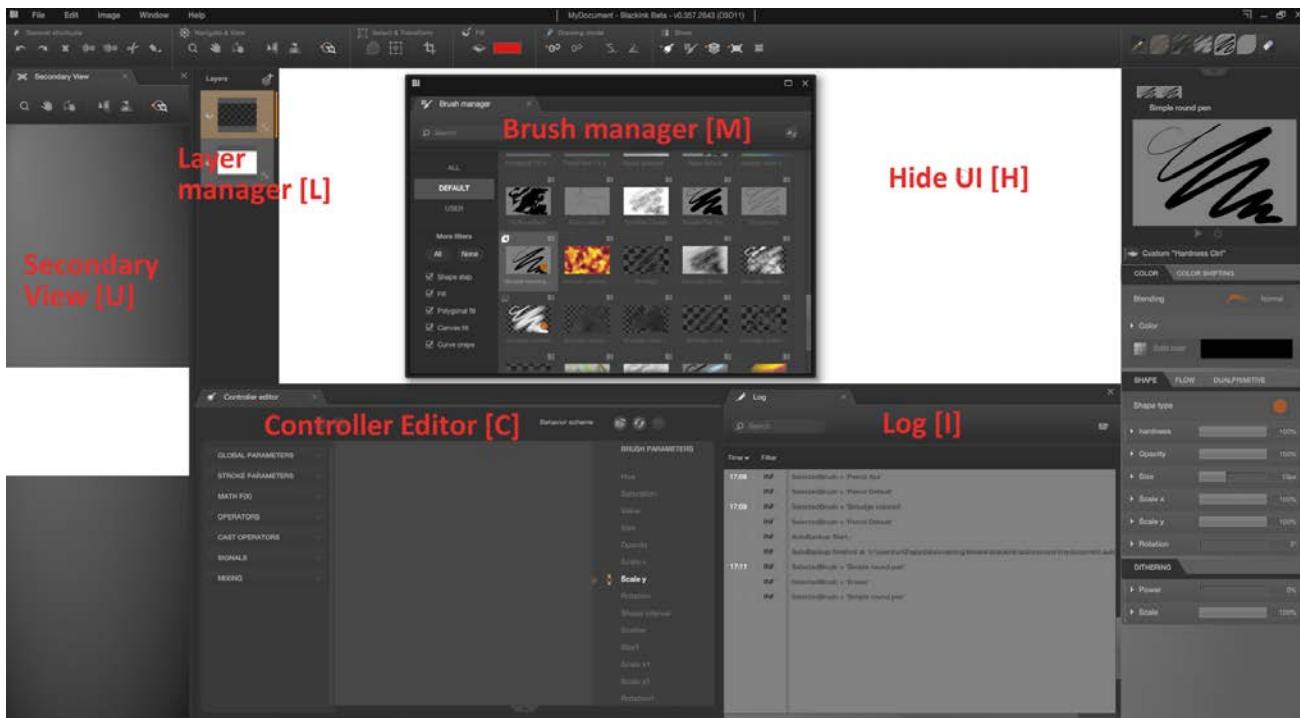


### Show / hide View Secondary (Secondary View)



### Show / hide the docked panels (Docked Panels)

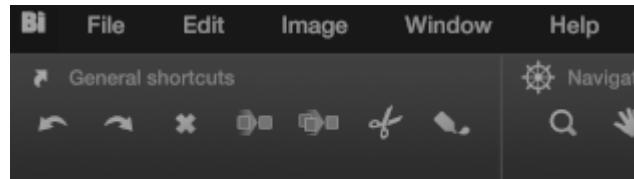




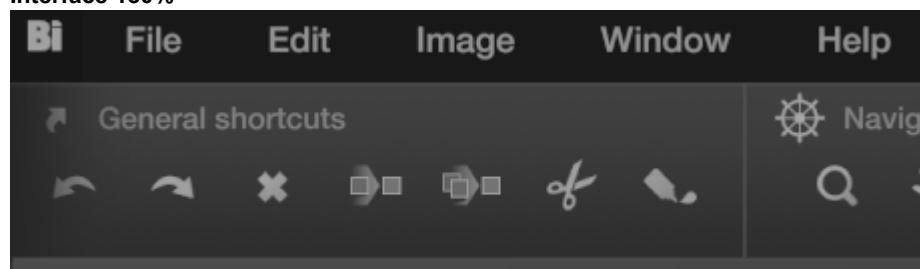
## Tutorial: Zoom Graphics Interface

We can enlarge or reduce the size of the interface instantly by using the shortcut key "Ctrl + Q" and moving the mouse.

Interface 100%



Interface 150%



Fantastic!!!

## Tutorial: Changing the default brushes

In this tutorial we will see how to change the default interface brushes. When you first start BlackInk brush presets are:

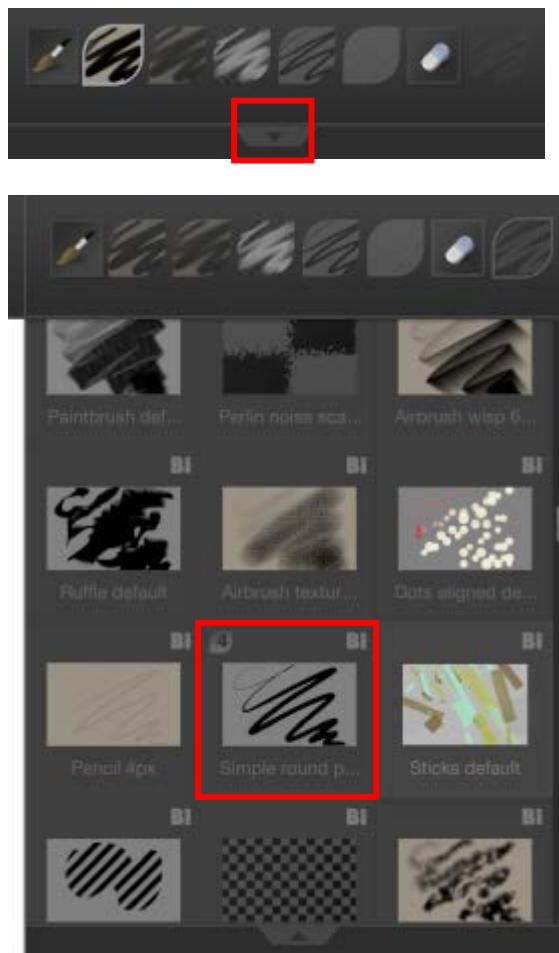
Felt pen 4px, 12px Airbrush, Smudge colored, Free fill, Angle line fill



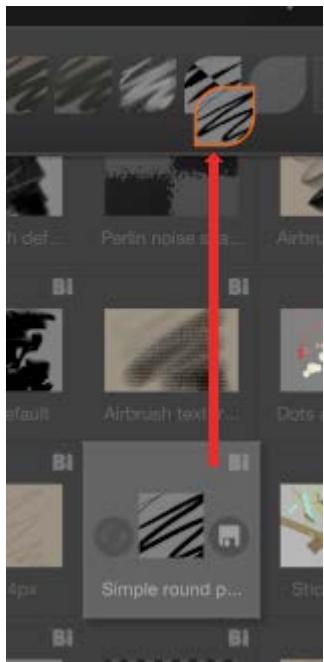
The brushes are five and can be selected using the 1..5 keys on the numeric keypad.

Suppose you want to change this setting and enter the brushes **Simple round pen** is **Pencil Default** instead of **Free fill** is **Angle line fill** (the last two).

To do this you need to open the window **Brush Manager**. Press the following key:



Now after identifying the brush (Simple round pen) must click and drag (drag & drop) over the brush that you want to replace:



That's it: the next time you open BlackInk will have the new setting of brushes.

## Tutorial: Fast Change the size, opacity and brush softness

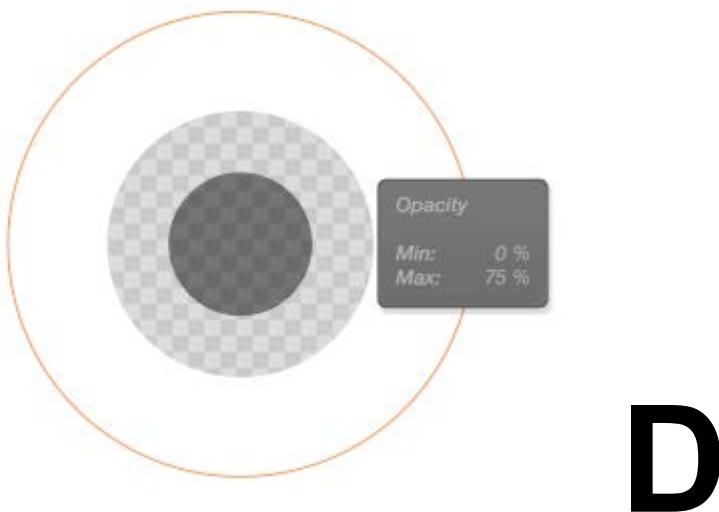
When we use a brush can vary its **Size (Size)** her **Opacity (Opacity)** and his **Softness (Smoothness)** without using its parameters panel, but with shortcut keys.

To change the **Size (Size)** press the button "S" to display the following picture:



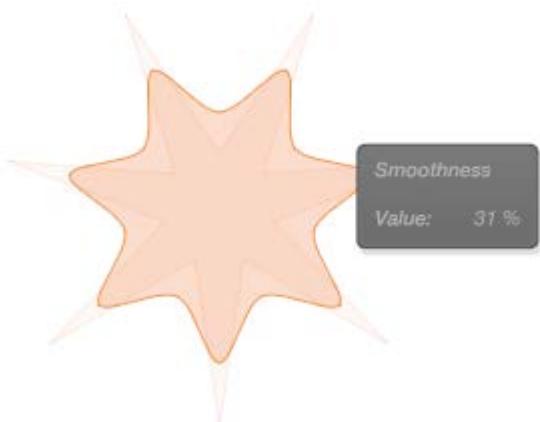
While pressing the button "S" and moving the mouse to the right the size increases, while moving the mouse to the left the size decreases. **NOTE:** If the minimum size is equal to 0 (zero), then increases / decreases only the maximum size. If the minimum size is different from 0 (zero), then increase / decrease both the minimum size that the maximum size (also their interval increases linearly).

To change ' Opacity (Opacity) press the button "D" to display the following picture:



While pressing the button "D" and moving the mouse to the right increases the opacity, while moving the mouse to the left the opacity decreases. **NOTE:** If the Opacity minimum is equal to 0 (zero), then increases / decreases only the maximum opacity. If the minimum Opacity is different from 0 (zero), then increase / decrease both the minimal Opacity Opacity that the maximum (also their interval increases / decreases linearly).

To change the **Softness (Smoothness)** press the button "Z" to display the following picture:



Z

While pressing the button "Z" and moving the mouse to the right increases the softness, while moving the mouse to the left the softness decreases.

### Tutorial: fast switching between Brush and Eraser (Eraser)

You can quickly switch from the active to the Rubber Brush (and vice versa) by using keyboard shortcuts.

To do this we must use some shortcut keys:

- 1) **Pressing and releasing the "E" key** we pass to the rubber (that which is present in the menu of brushes) and we can erase what we want and then return to the active brush by pressing the button "**B**" or the button again "**IS**".
- 2) **By pressing the "E" key (without releasing it)** We can erase parts of the drawing using as rubber the active brush. At the end of the canceled operations we release the "**E**" key and automatically return to have the brush active as a drawing tool.

In this way, the drawing and erasing operations are much more fluid.

### Tutorial: Capture color from drawing

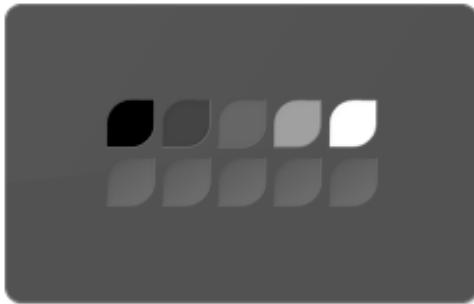
We can select a color of the design taking into pressing the key "**Alt**" and clicking on the drawing:



This is the image of the cursor when the tool is active **Capture Color (Pick Color)**.

The colored circle represents the active color (red), while the outer zone represents the color that is actually being captured at that position (white).

## Tutorial: Favorite Colors



You can always have access to the colors you defined (solid colors, gradients (Gradient) and image-based).

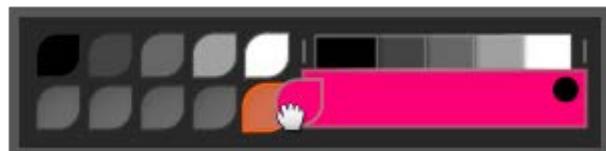
### Start of BlackLink

The colors set as favorites are automatically loaded when you start.



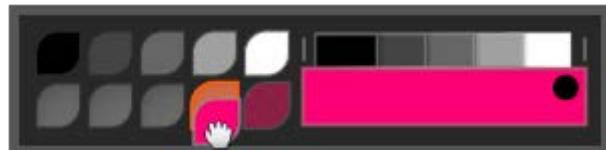
### Saving

Drag and drop the desired color on an empty slot to save it.



### Copy

To copy a color, drag and drop another slot.



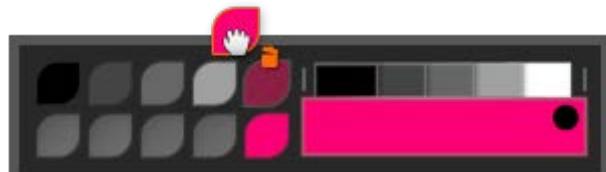
### Replacement

Drag and drop your color to an existing color.



### elimination

To delete your color, take it out and drag it from the bookmarks window appears and when the trash icon, release it.

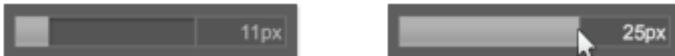


## Tutorial: The Sliders (Slider)

They are sliding devices which allow to modify the value of a parameter (pressure, Opacity).

### Sliders simple

The simple slider **change the maximum target** that the parameter can be achieved during the brushstroke.



It's possible **manually change the upper limit of the cursor by clicking on the value and typing a number or dragging horizontally**:



**Note:** Opacity can not be set to more than 100%

### Sliders Extended

Click the arrow next to the name of the parameter to open an expanded version of the slider:



In the extended version you can **modify the minimum and maximum values**:



The minimum value is the lowest value that the parameter can have during the brush stroke:



In this example, the shape will never be smaller than 7 pixels when the pressure is low and never larger than 23 pixels when you press harder on the stylus:

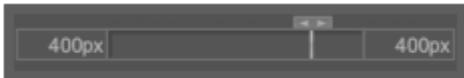


can **modify both the minimum and maximum values at the same time** moving the small block above the cursor:



This **modify the two values maintaining their relative difference**.

By setting the same value of minimum and maximum disables the controller and the parameter will always have the same value (eg. The size does not change with respect to the stylus pressure):

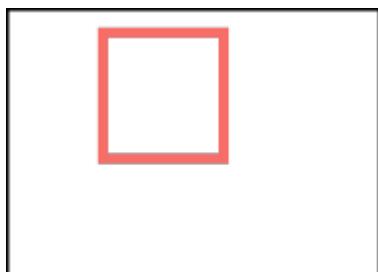


## Tutorial: Levels

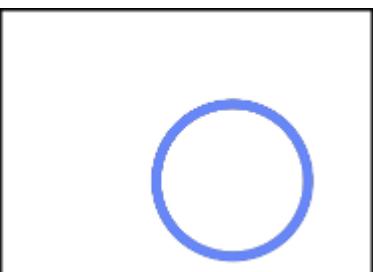


### What are the levels

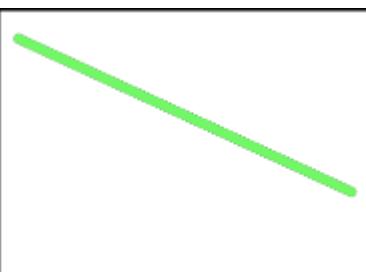
Imagine having the printed sheets, such as those that are used to project the slides) On each sheet can draw something: draw a square on the first, the second circle and the third line:



Sheet 1 (Level 1)

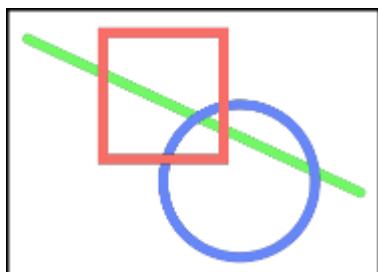


Sheet 2 (Level 2)



Sheet 3 (Level 3)

What if we overlap the three shiny? We will have a single image, given by the sum of the three superimposed sheets:



overlapping sheets

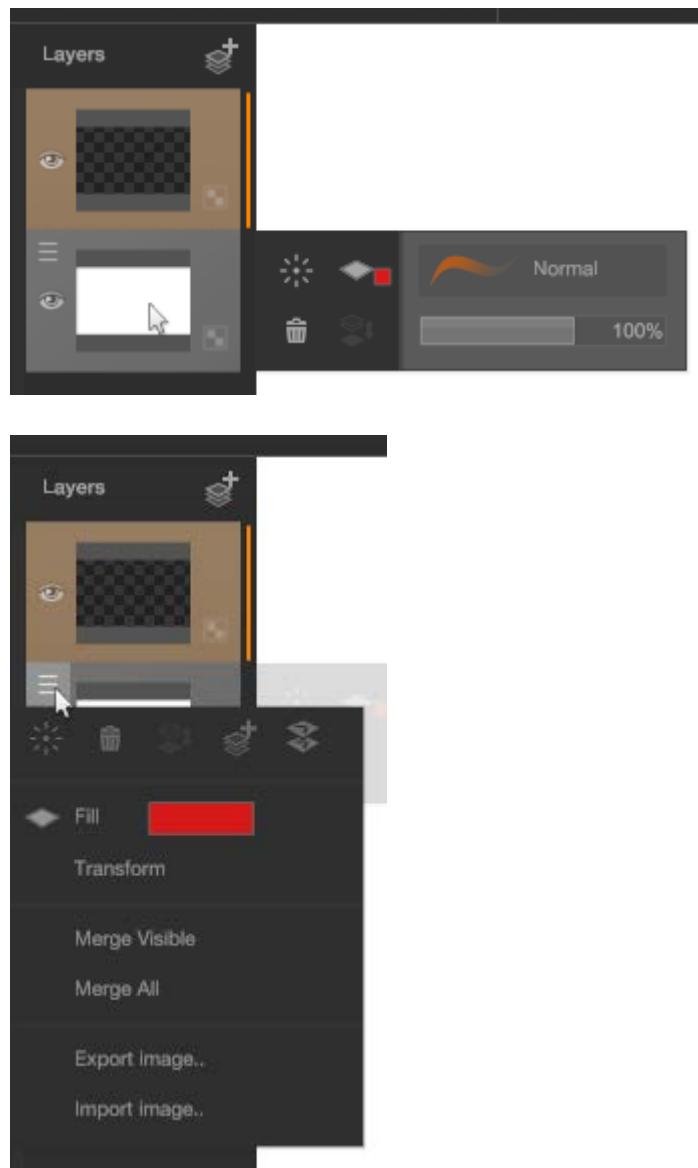
Levels allow you to do the same (and more) with our drawing. Some considerations and layer operations:

- When a layer is drawn completely undetectable by the layers below it (unless this level a certain transparency is not applied).
- When we draw, we can only change the active layer (the other levels are not changed).
- We can apply a transparency value at any level.

- We can re-order levels at will.
- We can make a totally invisible level.
- We can totally erase everything that we have drawn up a level.
- We can duplicate a layer
- We can combine (merge) two layers into one.

With BlackInk we can have **eight levels** different.

We can show / hide the Layers dialog with the key "**THE**".



The buttons have the following features:

	Create a new layer ( <b>Create new layer</b> )
	Show / Hide levels ( <b>Show / Hide Layer</b> )
	Preserves transparency ( <b>Preserve transparency</b> ). You can only draw in the colored areas. Cleans the level ( <b>Clear layer</b> )
	Transform



Fills the layer with the default Fill color ( **Fill with color default**)



Delete Level ( **Delete Layer**)



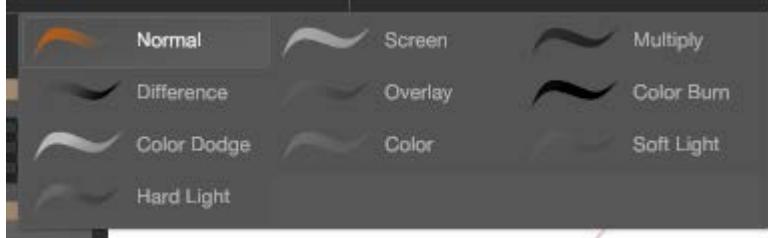
It combines the layer with the underlying layer ( **Merge Down**)



Duplicate the layer ( **Duplicate layer**)



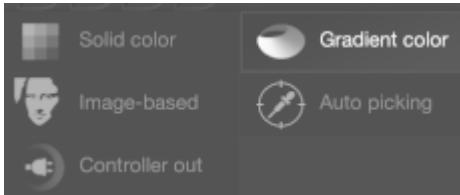
**Layer Blend Mode ( Layer blending)**



opacity / transparency level of value ( **Layer opacity**)

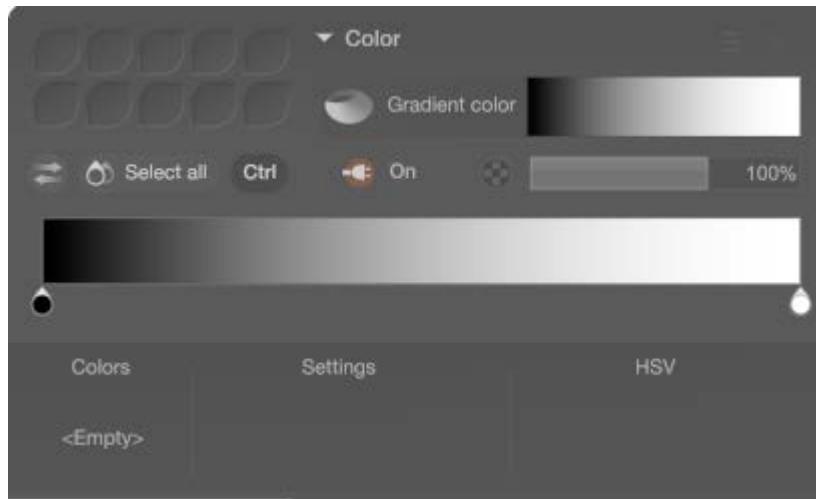
## Tutorial: Gradients

As already noticed the color card offers BlackInk five color modes: **Solid color**, **Gradient color**, **Image-based**, **Auto-picking**, **Controller out**. This tutorial will cover the **Gradient color**.

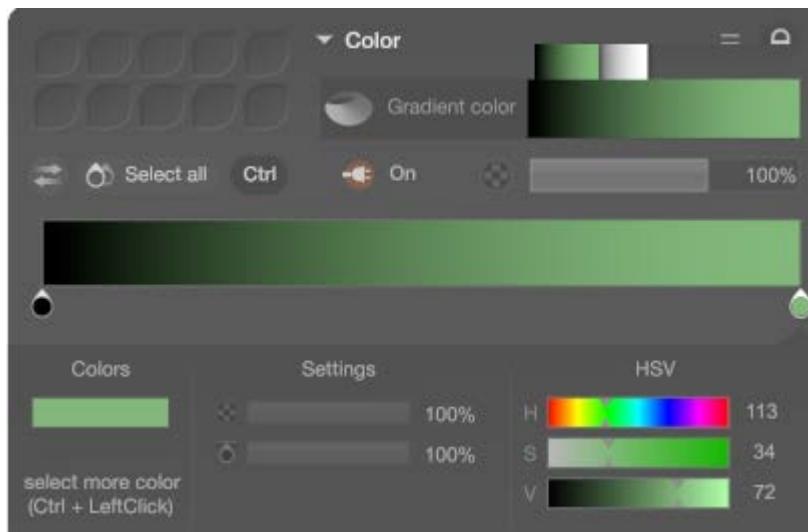


The default brushes BlackInk can use gradients. By default, the color will follow the slope as a function of stylus pressure, with the exception of brushes linked to the stroke speed. This, of course, can be changed with the controller, but we will in another tutorial. For now we see how to define a gradient.

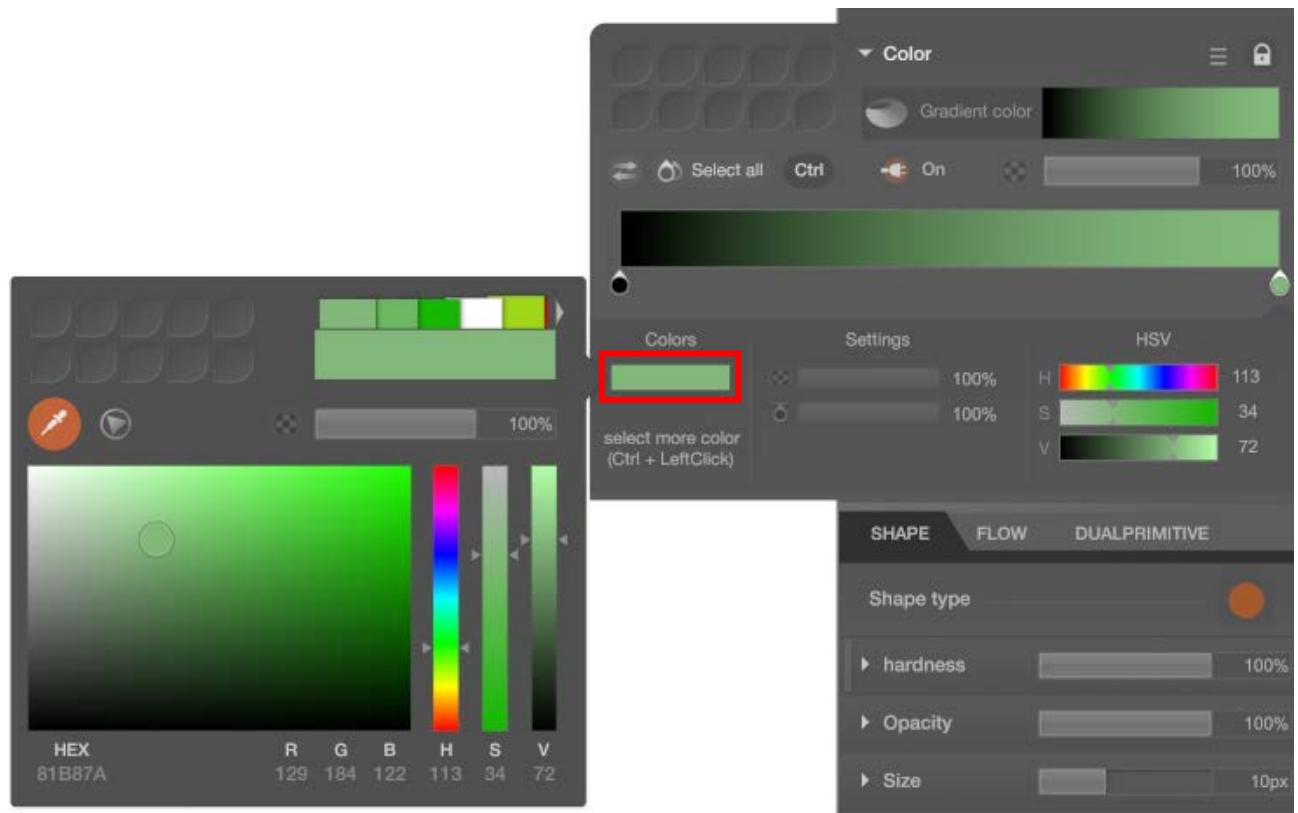
When you select the **Color Gradient**, you will see the change in color preview from a solid to a gradient. And when you click on this little preview display, the gradient editor.



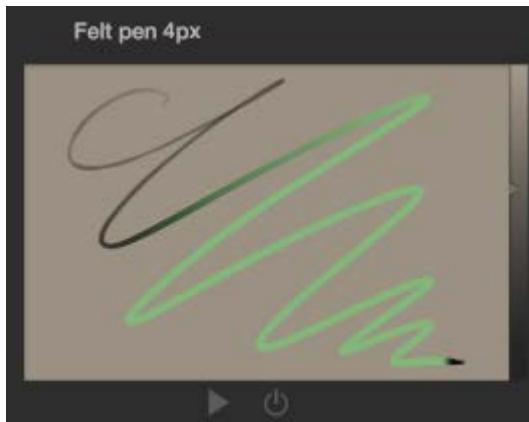
Gradients are defined by "Samples. These are similar to small drops below the gradient ramp. Each of these samples defines a color. By selecting one, you'll see a few options:



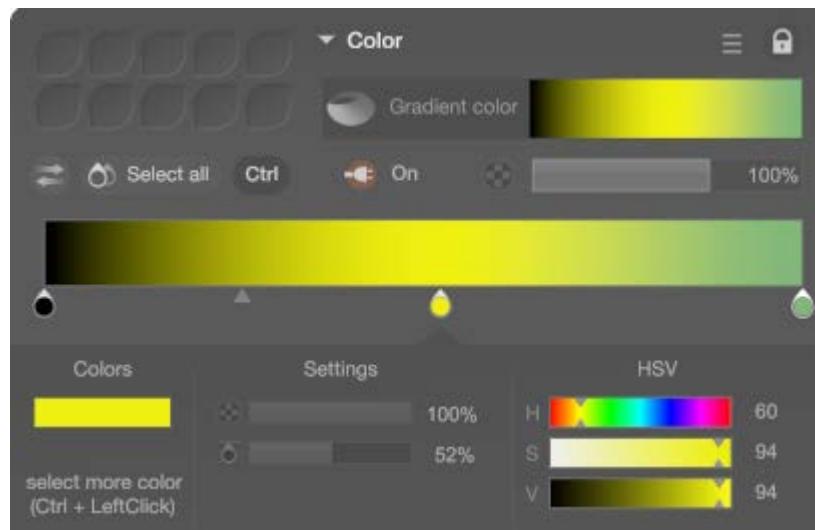
When you click on the small color preview on the left, it will open the standard color editor. It is the same simple plain with its favorites, history and colors of the eyedropper (Pick color). This is the main tool for defining the colors in the gradient.



And, of course, the brush preview will show how the color is applied to the final brush:

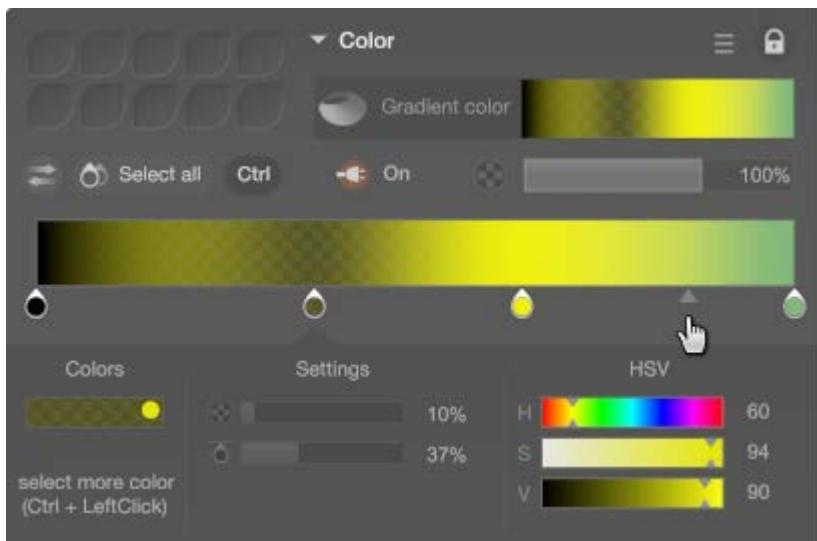


Let's go back to the samples. You can move them as you wish and add more by clicking just below the main slope ramp. To delete a sample, simply drag it out of the sample area (top or bottom).

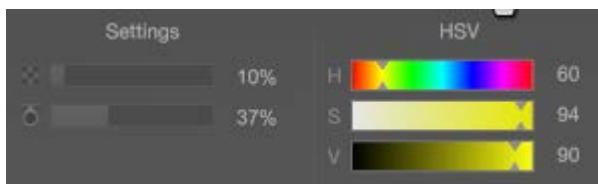


It should be noted that also the value of **Alpha** the color of the sample will be reflected in the gradient. You can have transparent and opaque parts in the same gradient.

In addition it is possible to modify the gradient linearity between two samples by moving the gray arrow indicated by the cursor:



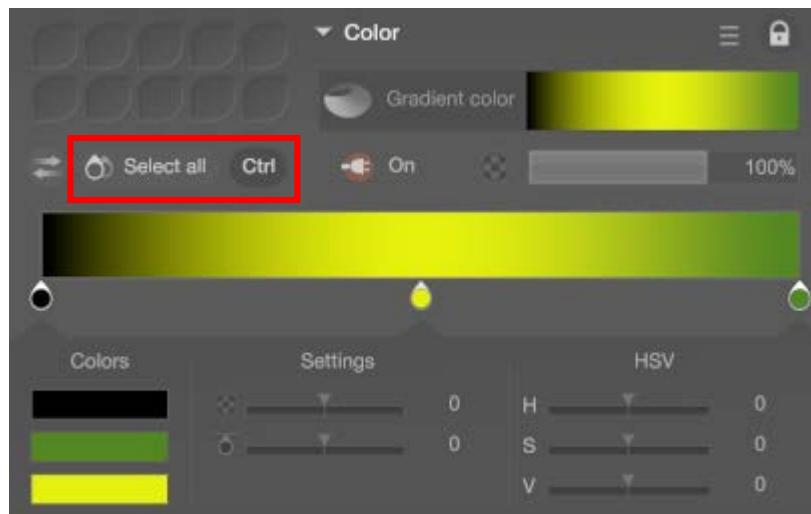
Now we see the other options at the bottom (which are related to the active sample):



First, we have a field " **Settings** "(Settings). The first slider changes the alpha of your color (equal to open the editor of the colors and change the value of Alpha).

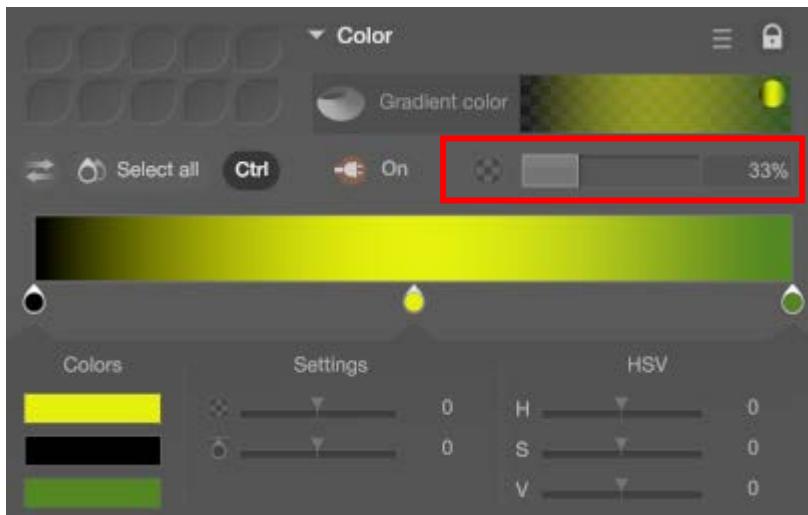
The bottom slider changes the position of the sample, just like when you move with your mouse, but here you can also enter an exact number. Then in the area " **HSV** " it is possible to change the hue, saturation, and the color value (equal to open the color editor and change the color).

Also we note that you can select multiple samples! To choose the samples one by one, turn on the button " **ctrl** " above the gradient or hold the button " **Ctrl**" on the keyboard. To select all the samples, use the "Select All" ( " **Select All** "):



You can see the bottom left a list of all selected colors. And now, using the "Settings" (Settings) and sliders "HSV," you can edit them at the same time! You can change the values of all alpha, move all left or right, saturate every color, and so on. These changes are added to the initial setting of the colors.

Above the main gradient ramp is another slider largest alpha:



This will change the opacity of the final shade, but does not change the selected colors. If you only want a constant slope transparent, you can use this slider instead of individually modify each color.

But most of the time you can decide to leave the opacity of the brush to 100%.

Finally we see the last two buttons of the gradient window:



Reverses the location of the samples of the active gradient



allows to manage the gradient with a controller (we will see better in another tutorial)

And that's it, you can use gradients whenever you want.

They are a great tool for the design of volumes, never changing color, just press more or less on the tablet:



They can add pleasant variations and a variable volume:



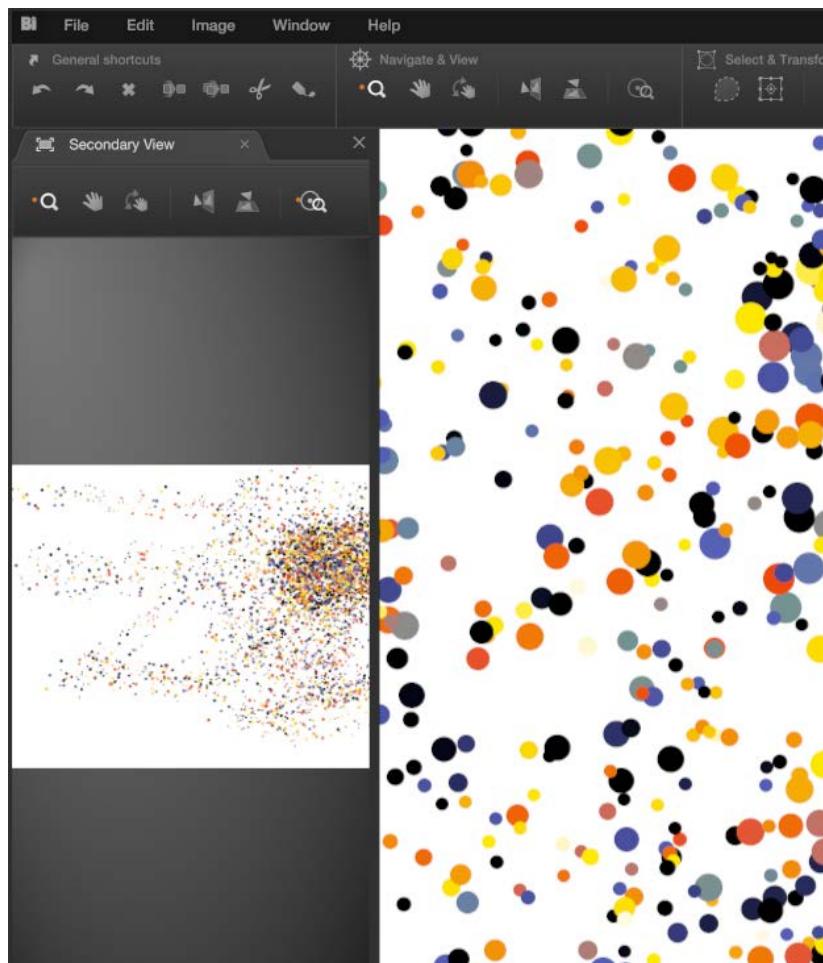
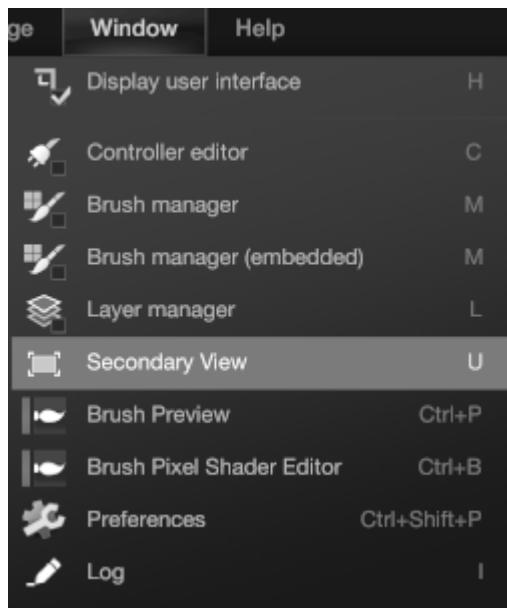
And, of course, create crazy psychedelic effects:



Have a good time!

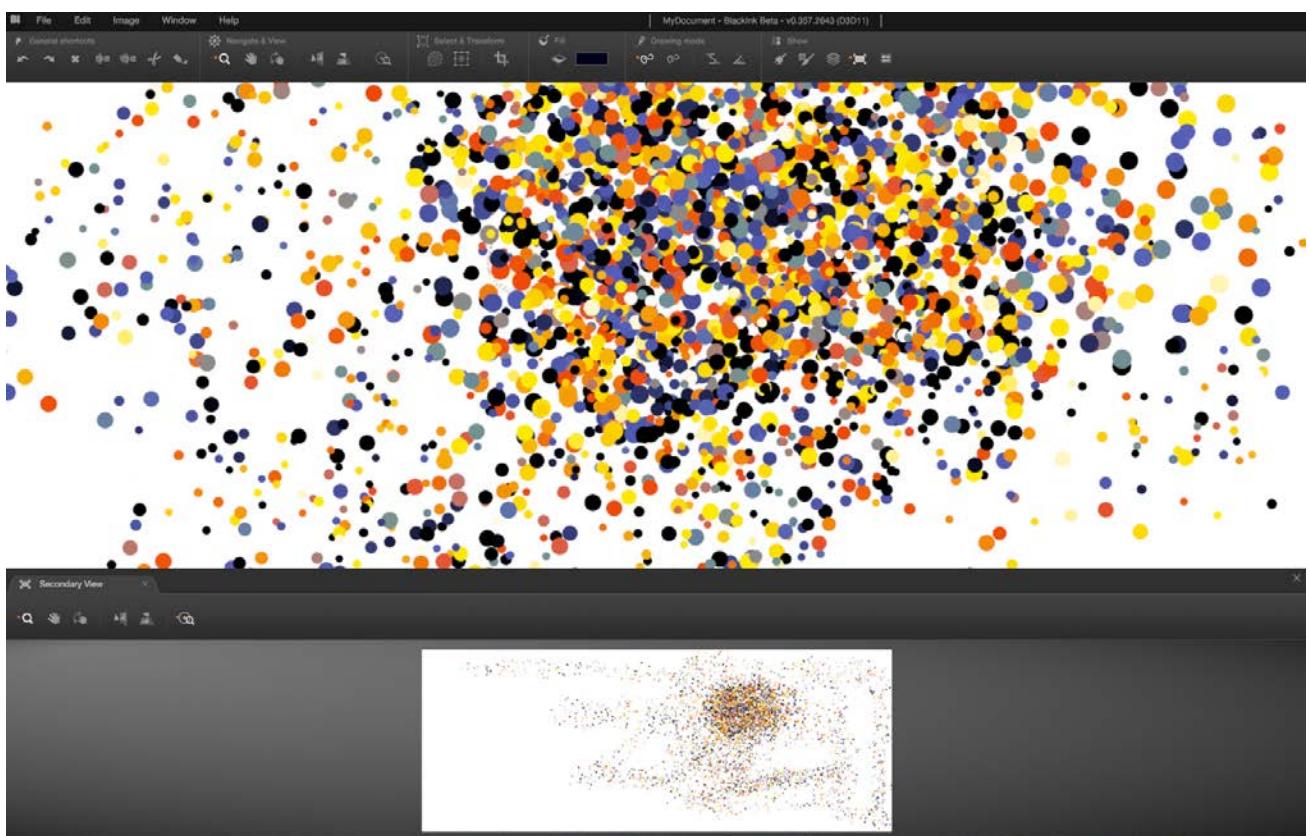
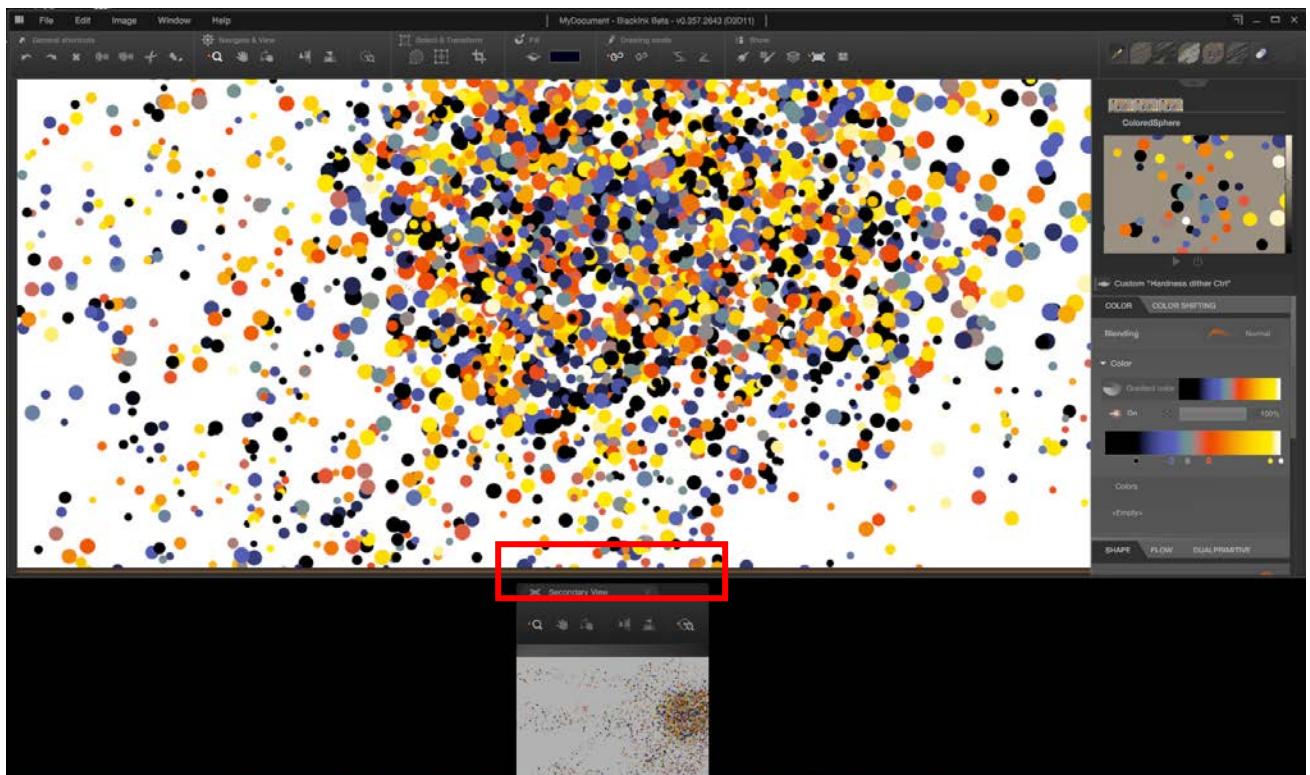
## Tutorial: The secondary window (Secondary View)

The window **Secondary Vista** It opens with the menu **Windows-> View Secondary** or the key "U":

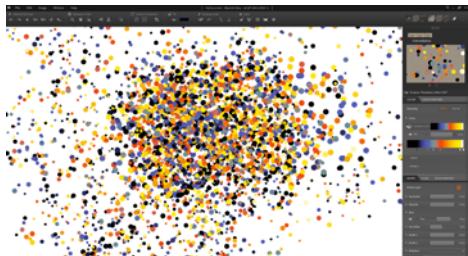


This view is very convenient because it allows us to visualize our design to another scale as we work main area. At first it is located to the left of the interface, but you can place it anywhere you want.

To hook it down, clicciamo and drag the window until it appears a orange line and at that point we release window:



If we have a second monitor, we can move this window and open it in full screen:

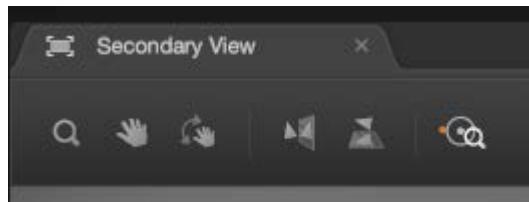


Main Display: Interface BlackLink



Secondary Monitor: Secondary View

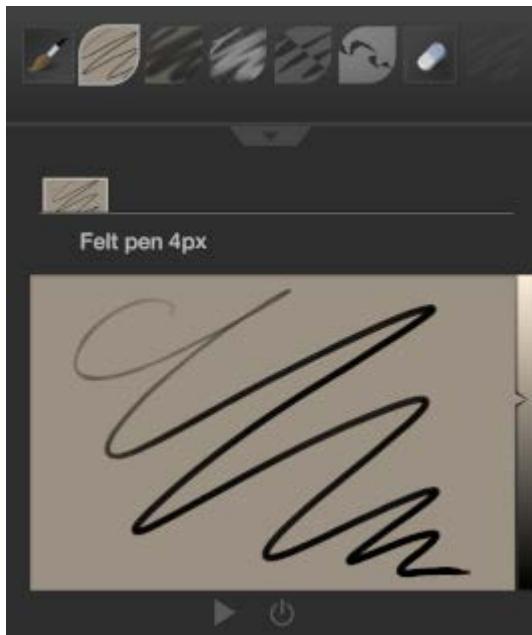
The Secondary View can be managed with standard commands (Zoom, Move, Rotate, Flip) from the menu:



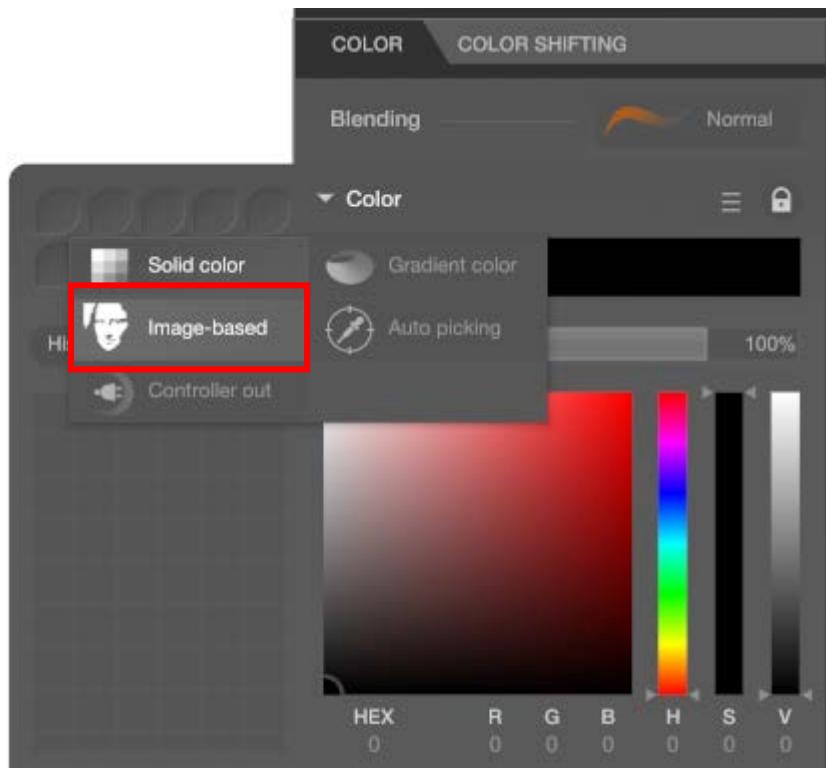
**NOTE:** The active brush works even if we draw directly on Secondary Vista.

## Tutorial: Create a drawing from an image (color ImageBased)

We select the pennello (brush) **Felt pen 4px**:

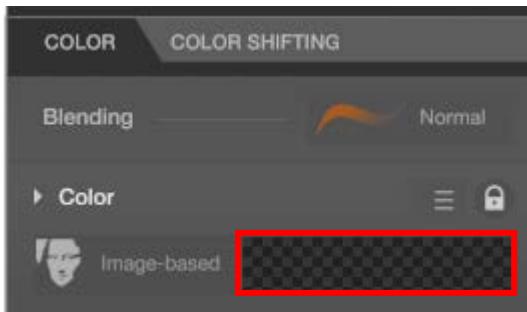


Now select **Color-> Image-Based**:

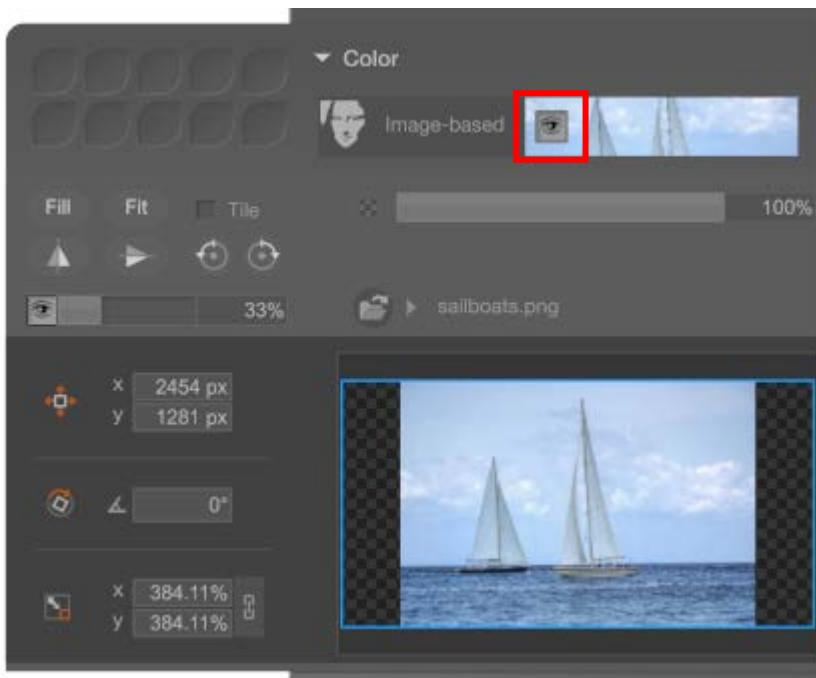


In this way the color used to draw will be taken from the reference image.

To load our image we need to click on the area transparent:

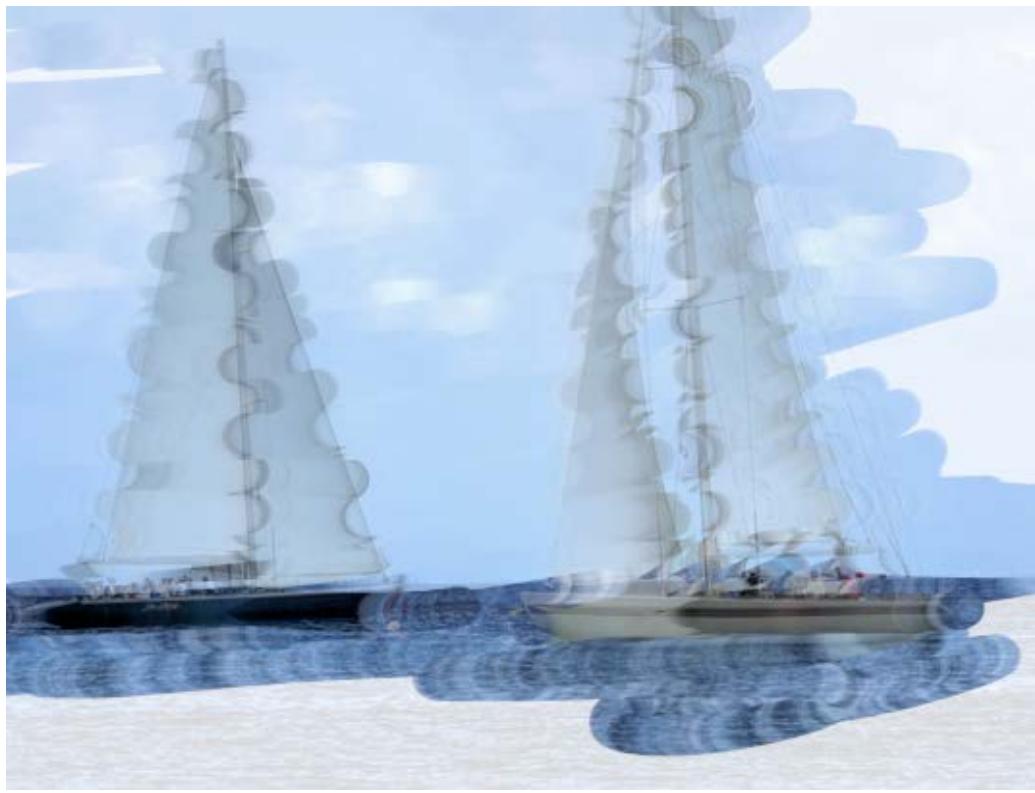


After choosing the image to load we have the following situation:



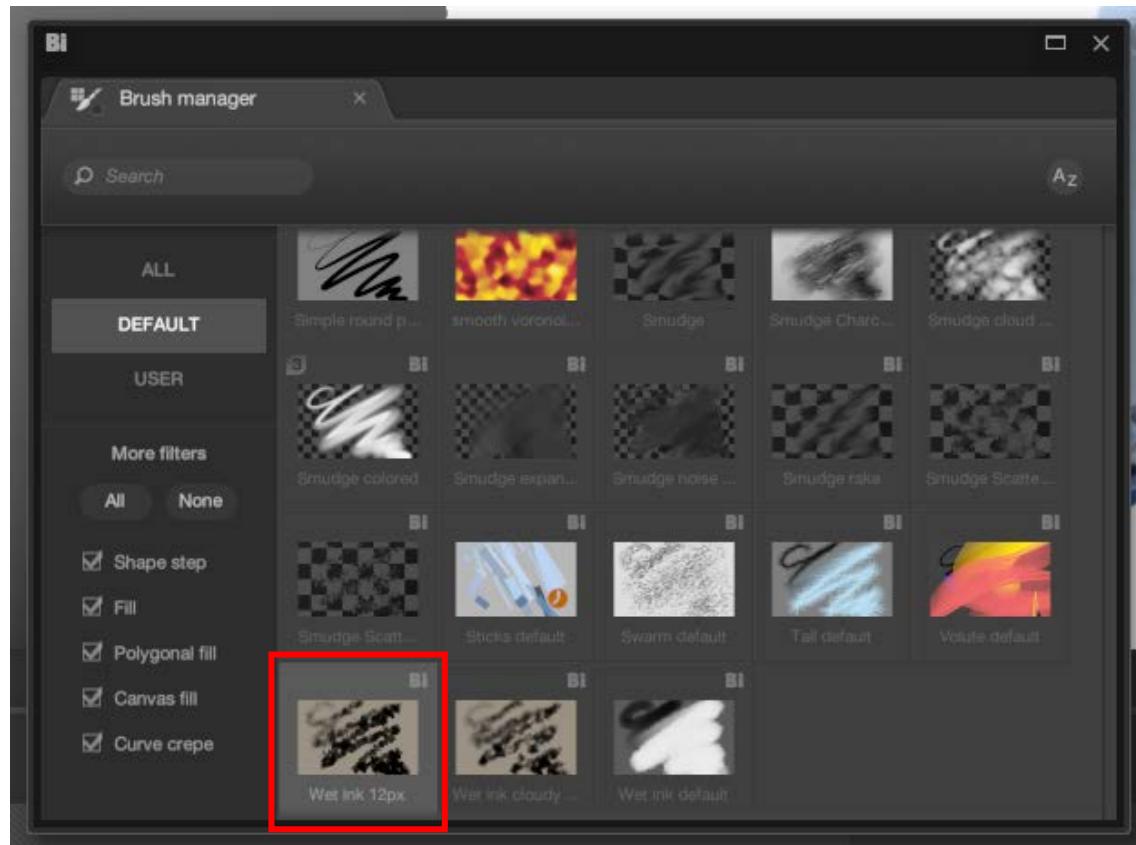
This window allows us to scale and position the image in the design at will (try on their own to change various parameters). We can also change the transparency of the image. The icon of the eye to allow you to enable / disable the image display

We're ready if we draw over the image we get a result like this:

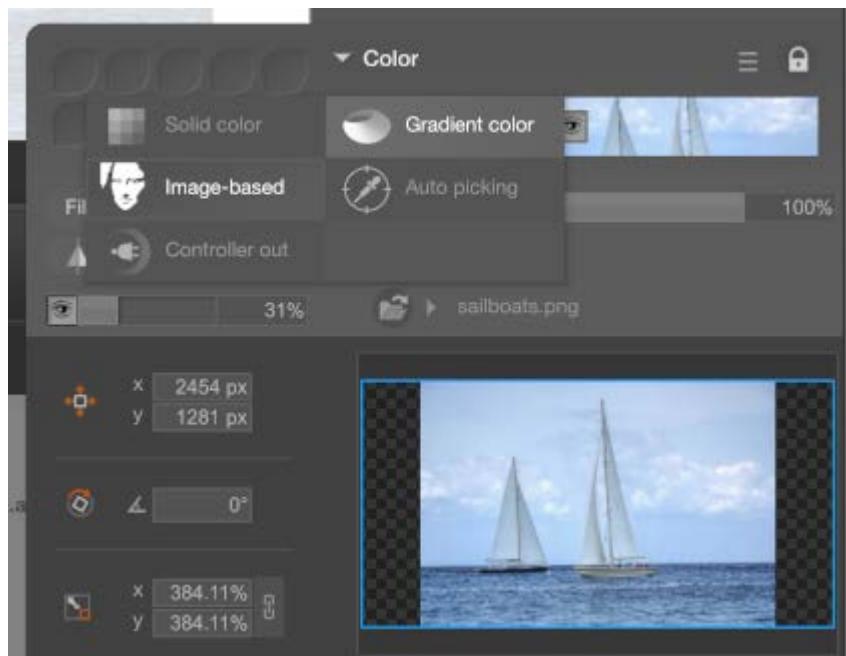


To draw we can use any type of brush (just make sure it has no controller applied to the color).

Take for example the brush Wet ink 12px. By pressing the "M" the Brushes Management window appears (Brush Manager):



We change the color (COLOR) to Imagebased:



We design and we get:



Surely you will do better.

## Brush workshop 0: Introduction to the controller

This is an introduction to one of the most powerful tools the BlackInk: Controllers.

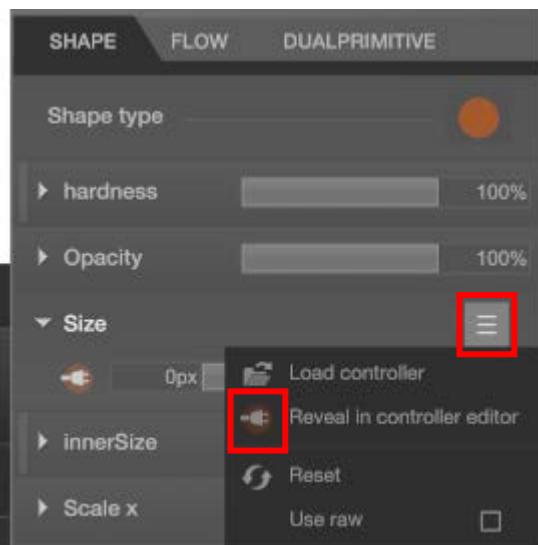
What exactly is a controller?

The controllers have a simple visual language used to customize your brushes. They are used to assign to the parameters of the brush behaviors such as, for example, bind to the size of a brush to the tablet pressure. You can use them for simple tweaks, to develop the perfect brush design or go further and create a wide variety of unique effects.

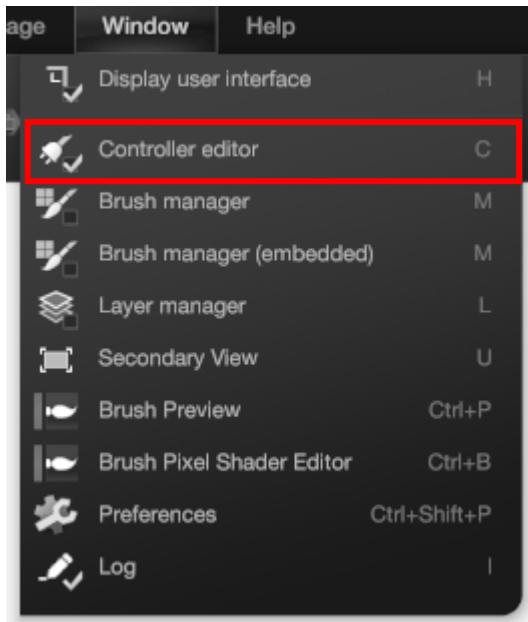
To begin to see how they work, let's look at a preset brush to see how it was produced. Select the brush **Felt standard pen** favorite brushes in default:



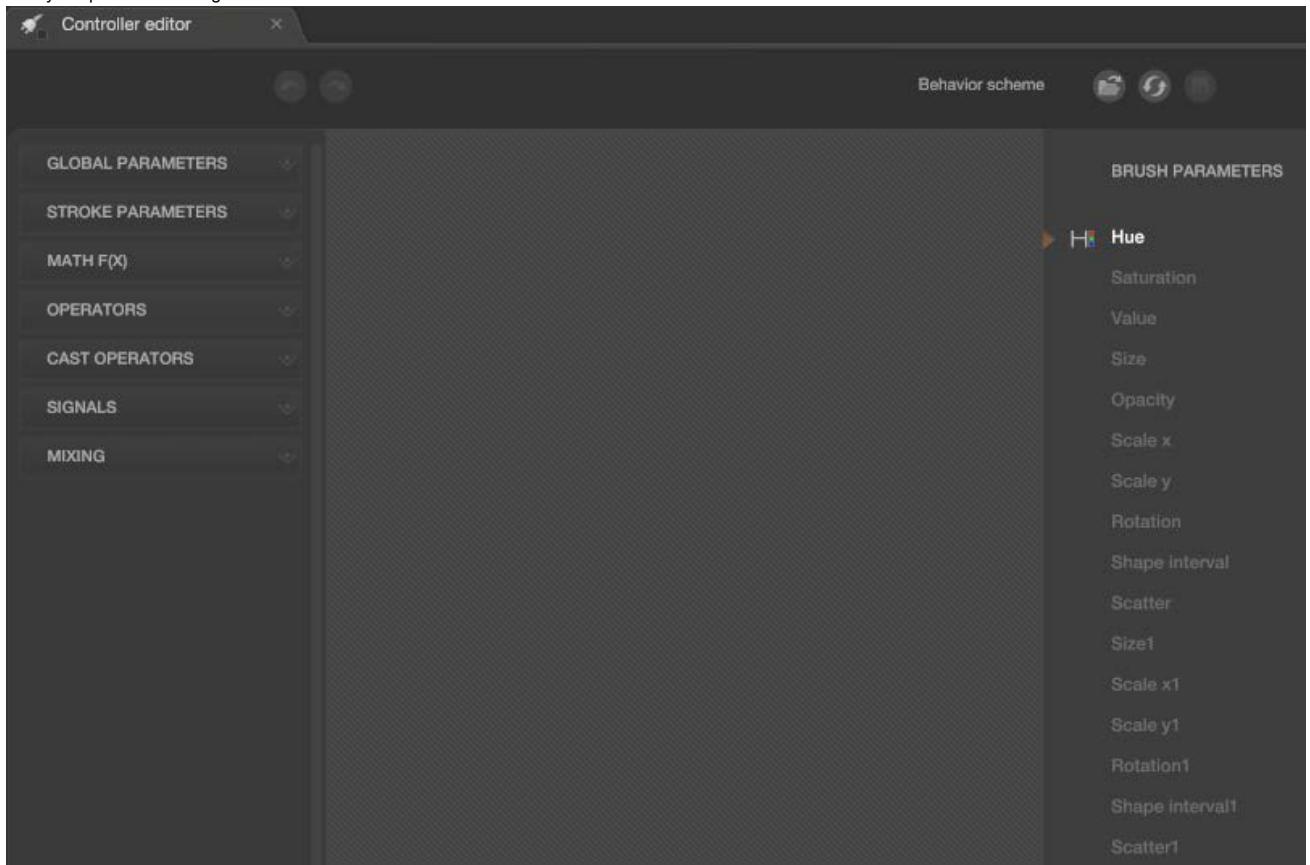
Now you have to open the controller editor. There are several ways to do this, one of these to do is click on '**controller icon**' which is located in the menu of the extended slider **size** ( red box).



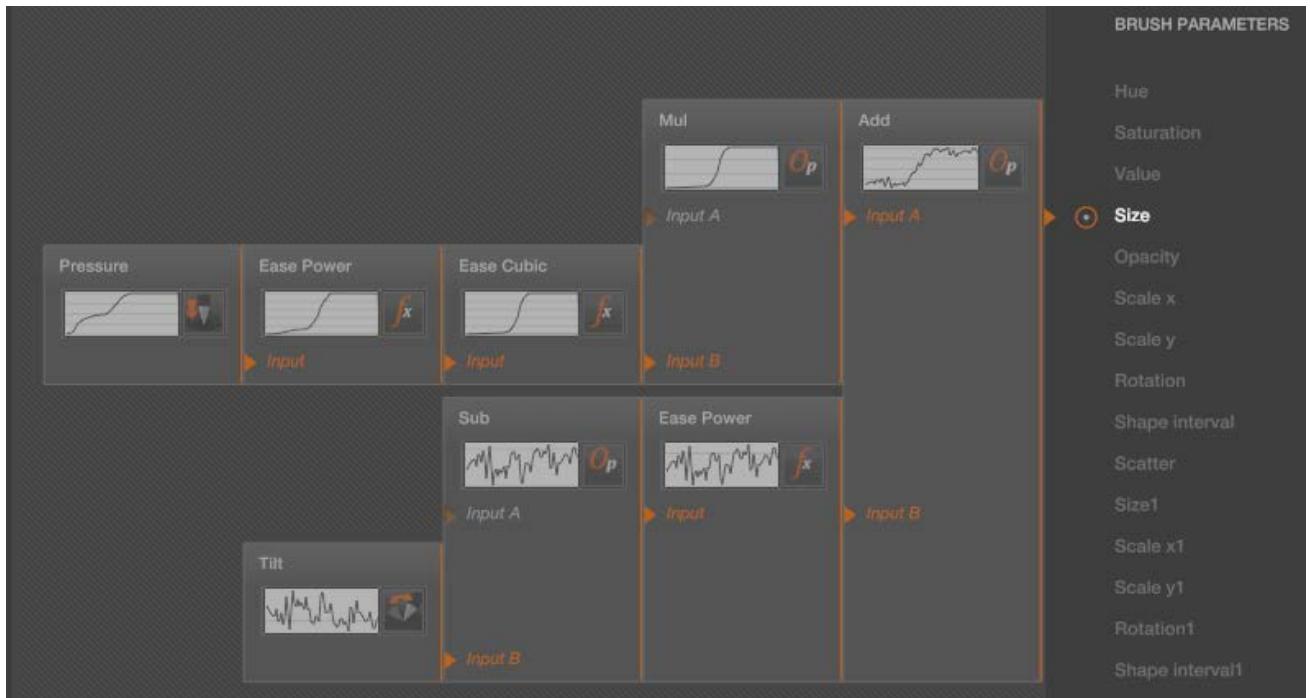
You can also use the menu **Windows-> Controller Editor**. The default shortcut key is " **C** ".



YES you open the following window:



On the left side we find the slot containing the nodes with which we can build a controller. At the center we find the area of development, the place in which we visualize and connect the nodes. On the right we have all of the brush parameters that can be driven by a controller. Let's start by clicking on **size (Dimension)** of **BRUSH PARAMETERS** (to the right):



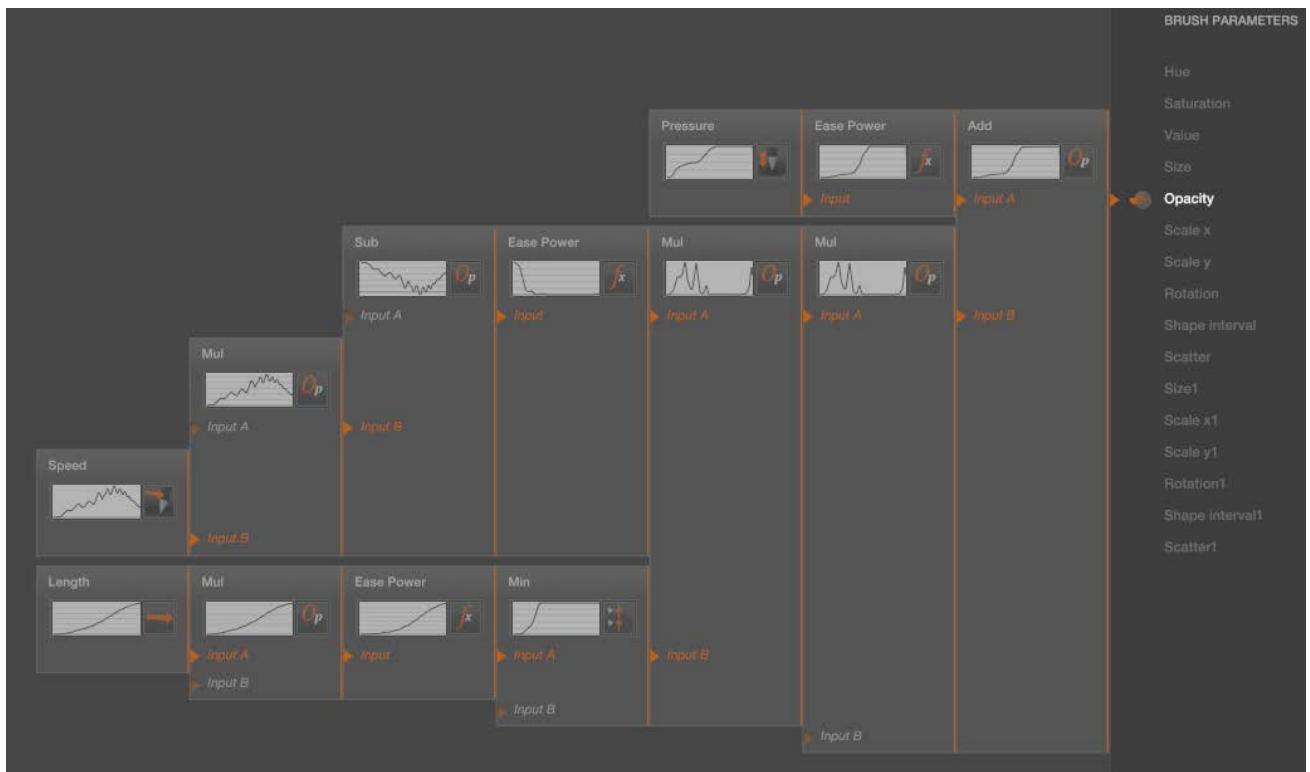
As you can see there is already a controller consists of several nodes. The first is the most important: it is the pressure applied to the pen of your tablet. The other two are used to make more dynamic and fluid input (we will talk about these nodes in the next tutorial).

**Note:**

Versions prior to 0357 had the following controller for Size (Size):



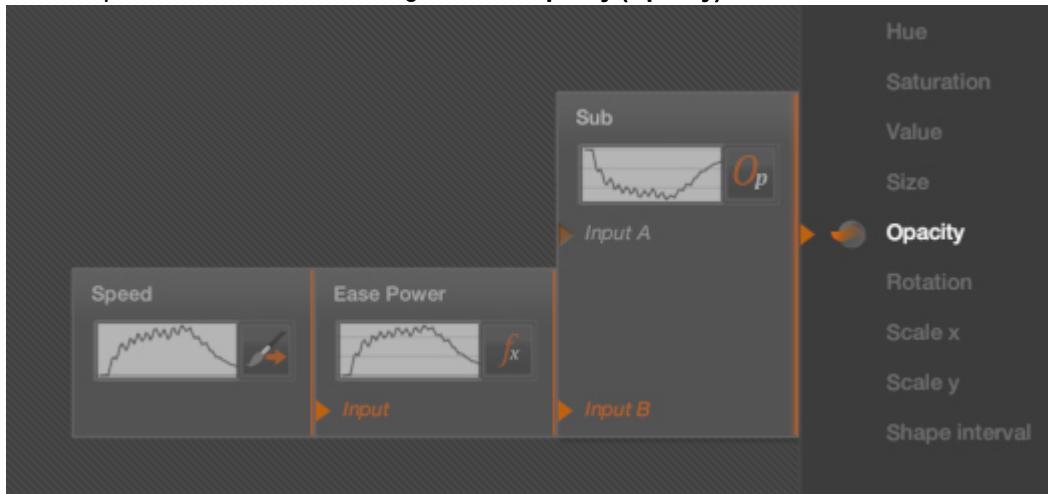
We leave unchanged the controller **Size (Size)** and click on the parameter **Opacity (Opacity)**:



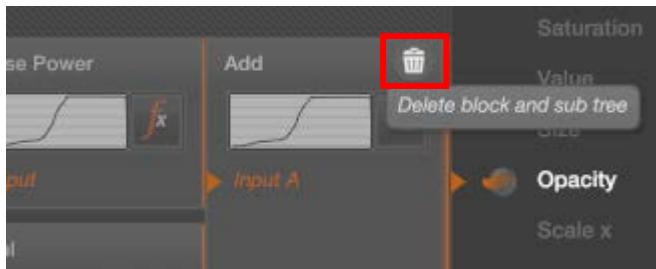
In this case the controller is a little trickier: basically this reverses the speed controller (**Speed**) of the stroke input. This makes the brush more transparent when you draw faster, as a marker.

#### Note:

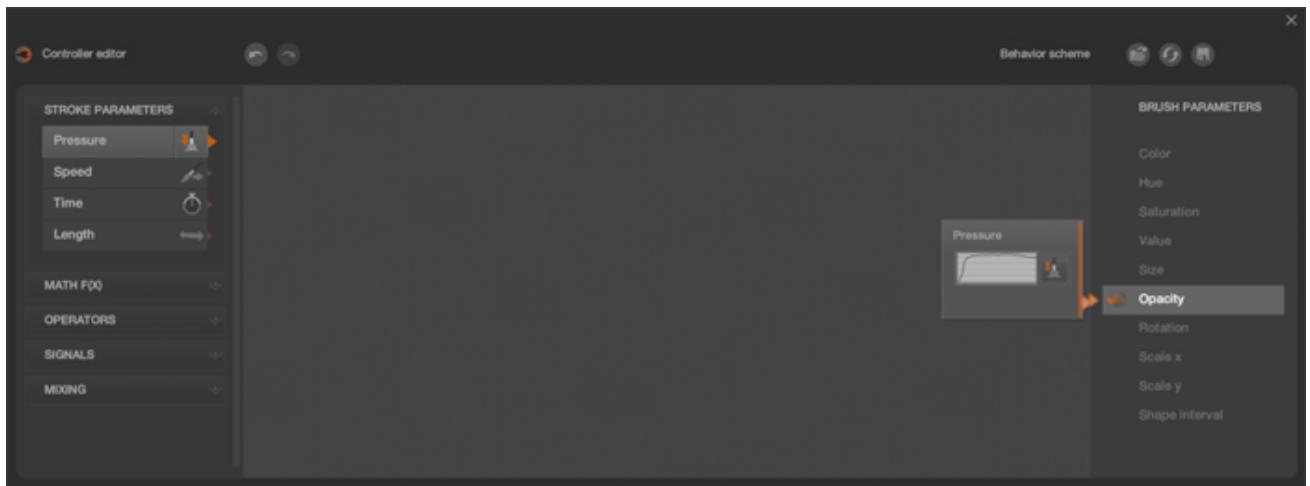
Versions prior to 0357 had the following controller **Opacity (Opacity)**:



Now we erase everything and create our controller! Click the Trash icon that is located in the node **Add** (which is positioned rightmost node). This will remove the node **Add** and all the nodes connected to it which are located to its left (cancellation cascade). Do not worry: you can not overwrite the default brushes, then you can safely experiment. You can return to the original brush by selecting it from the history of brushes or restarting BlackInk.



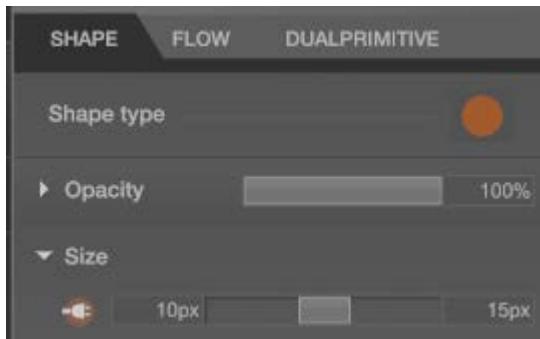
Now that you have a clean workspace, go to the left side of the window and open the slot " **STROKE PARAMETERS** ". Then, drag and drop (drag & drop) the knot **Pressure (Pressure)** in the work area.



The controller becomes active when it is connected, through the orange arrow, to one of the brush parameters ( **BRUSH PARAMETERS** ). In controller it is not active when, despite being within the work area, it is not related to any parameter of the brush.

When the two orange arrows are close are highlighted, then you can release the mouse and the node will be connected.

This simple controller combines the opacity of the brush to the pressure of the stroke. To better see the result we modify the parameter **Size (Size)** using the extended slider and setting the minimum value and the maximum value to 10px 15px (when 10 is not pressed, and 15 when longer applies to the stylus pressure):



Let's try to draw some brushstroke:



So our brush becomes more opaque when we press on the stylus!

This is basically everything you need to know to begin customizing the brush: it is sufficient that a parameter of the brush (Size, Opacity, etc.), Is associated (through one or more nodes) to a variable of the brushstroke (eg . Pressure of the pen, the pen speed) to obtain variations of the stretch drawing. Experiment with different parameters!

#### How does it work

As we saw in the tutorial of the first steps, the brush parameters have a minimum value and a maximum value that you can set in the extended cursor.

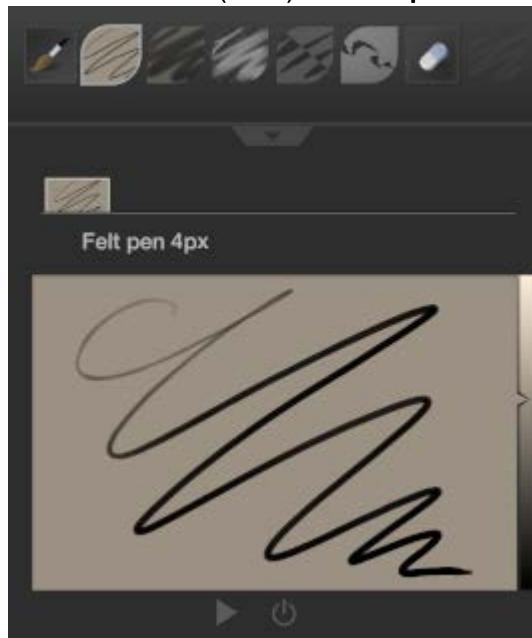
What they do the controller is powering the parameter with a value between 0 and 1. Zero (0) will be the minimum value of the cursor and One (1) the maximum.

Each value between 0 and 1 will be interpolated to obtain a value in the range set.

Now you can experiment with the controller and have fun with brushes!

## Brush workshop 1: Square brush

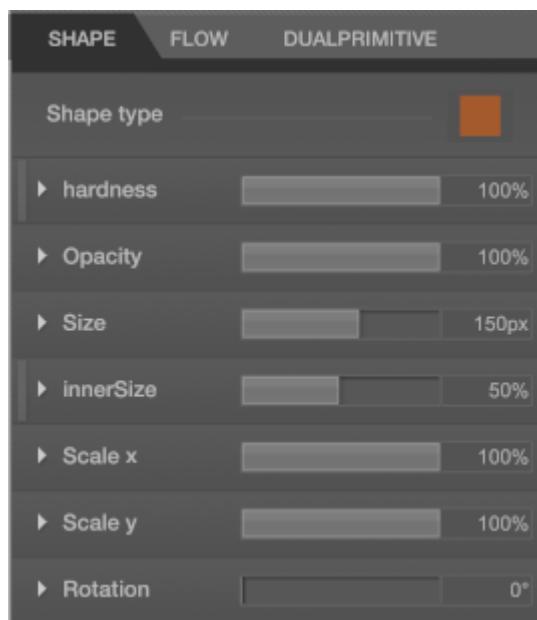
We select the brush (Brush) **Felt Pen 4px**:



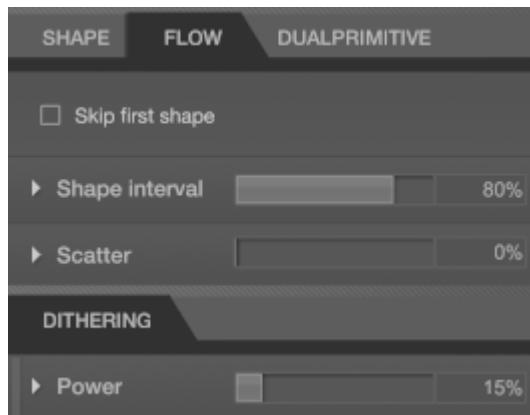
We select the type of shape ( **Shape**) square for the brush:



We select the following parameters for the form ( **Shape**):

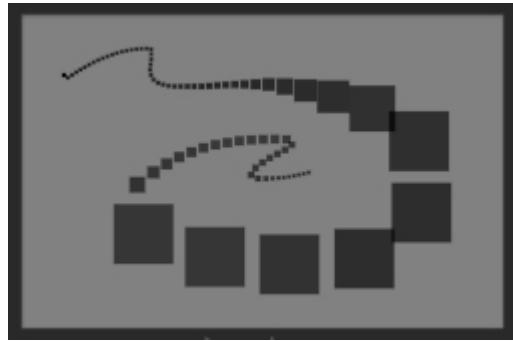


We select the following parameters for the flow (**Flow**):

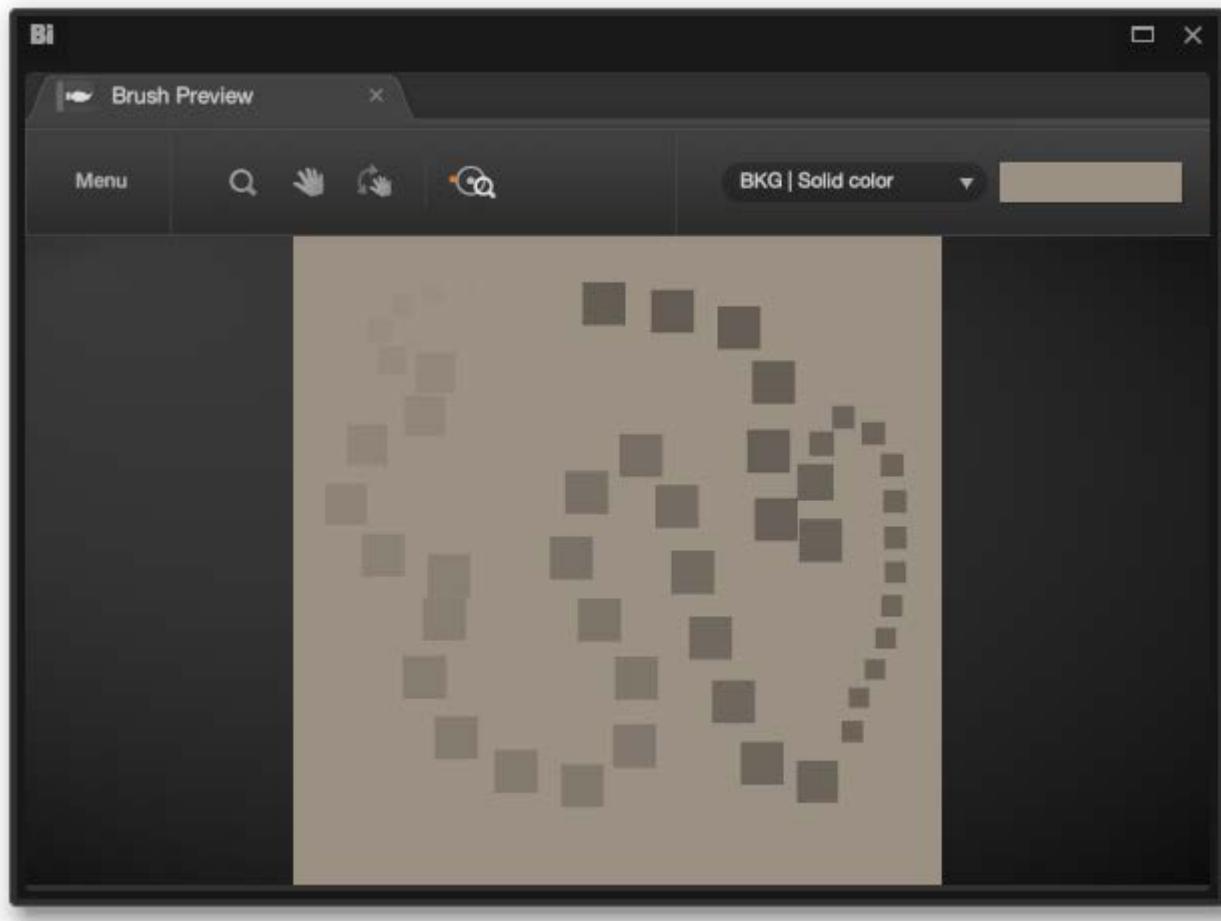


This parameter allows to draw with a sequence of separate shapes (not a brushstroke with a continuous flow).

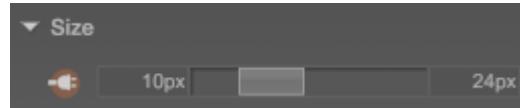
The brush should look like this:



Open the window Preview Brush (Brush Preview) from the menu Window-> Brush Preview (Ctrl + P) and draw a stroke:



Now change the minimum and maximum values for the size (**size**) Brush:

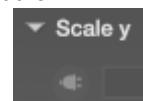


**NOTE:** Any change of brush parameters change in real time the Brush Preview window.

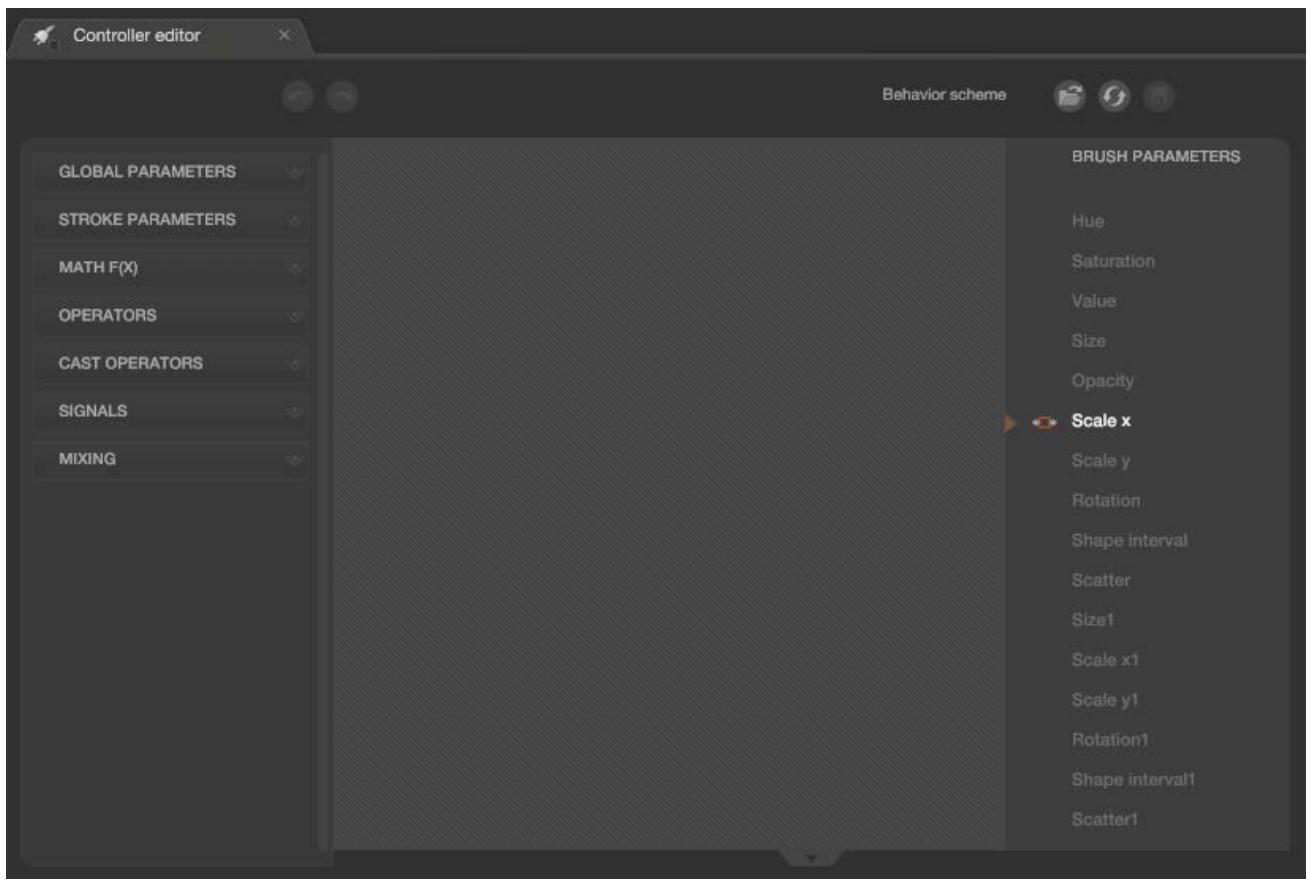
Now consider the parameters **Size Size X** and **Y**:



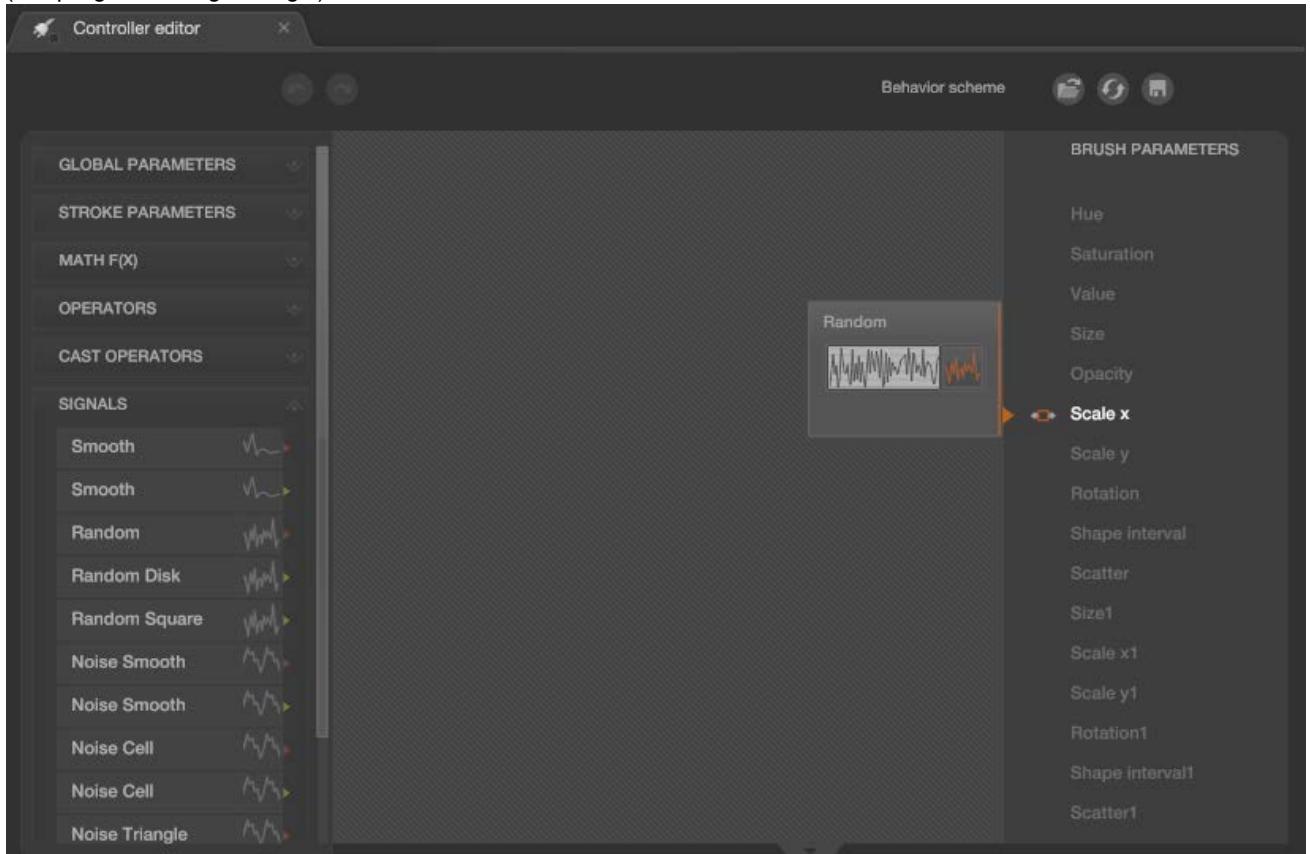
These range from 0% to 100%, but have no control (controller) that can manage and edit them.



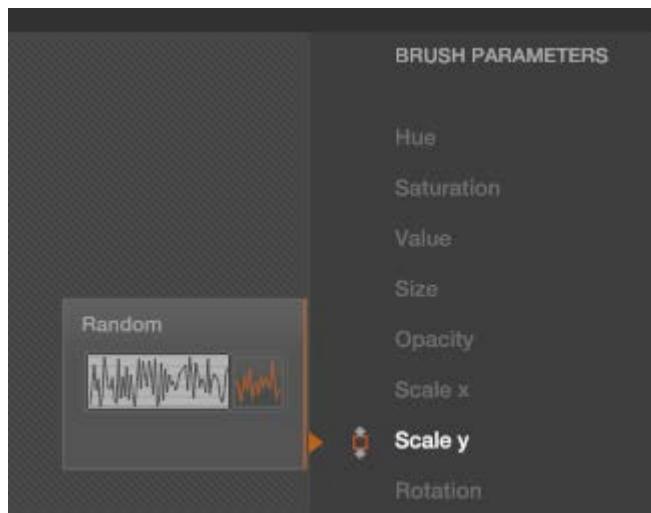
You can load an existing control by clicking on the symbol of the controller or we can open the control window (Controller Editor) pressing "C":



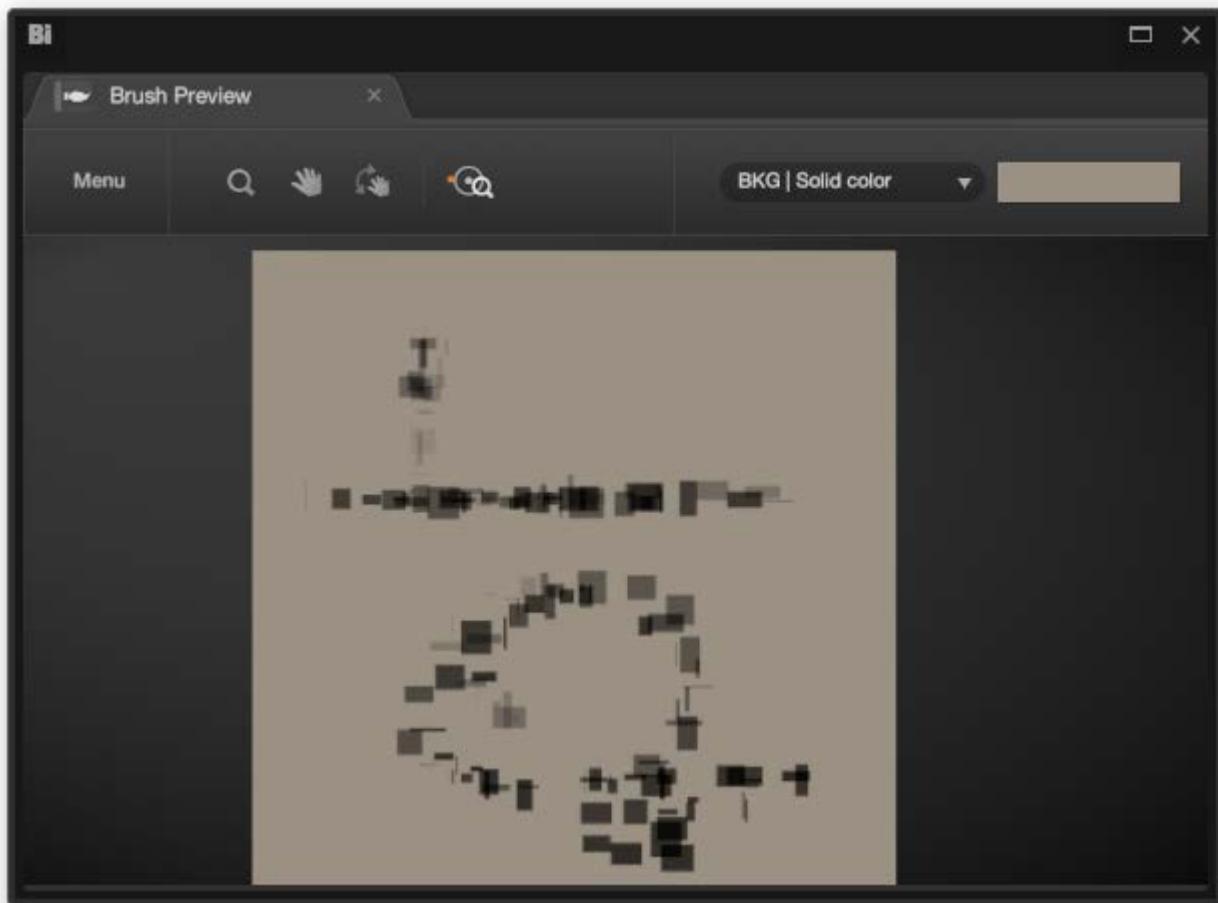
Take the block **Signal-> Random** and attack (drag and drop) to the brush parameter **Scale X** (Coupling with orange triangle):



Then we do the same with the scale parameter Y:

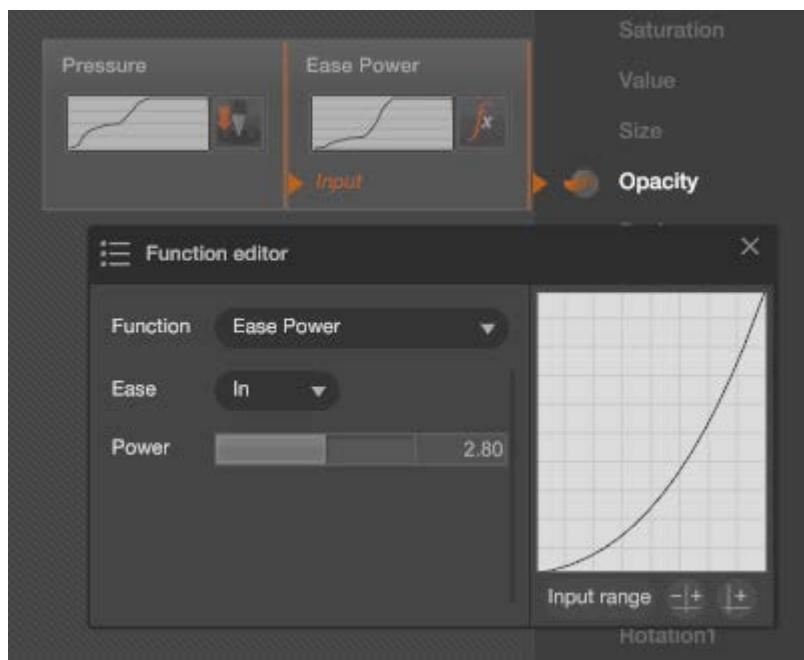


Draw something on the window **Preview Brush (Brush Preview)**: NOTE: we can erase the contents of this window by his **Menu-> Clear**.



Now we want to change the Opacity of the brush stroke behavior. We select the parameter **Opacity** from **Controller Editor**, delete the existing controller and insert the node **Pressure** the parameter **Opacity**.

drawing Now we notice something that is very difficult to control the opacity with pen pressure: this is normal, so we have to modify the signal that adjusts the opacity. Take the node **Math-> Easy Power** and collegiamolo to the parameter **Opacity** and then we modify the Easy Power function (clicking the symbol  ) in the following way :

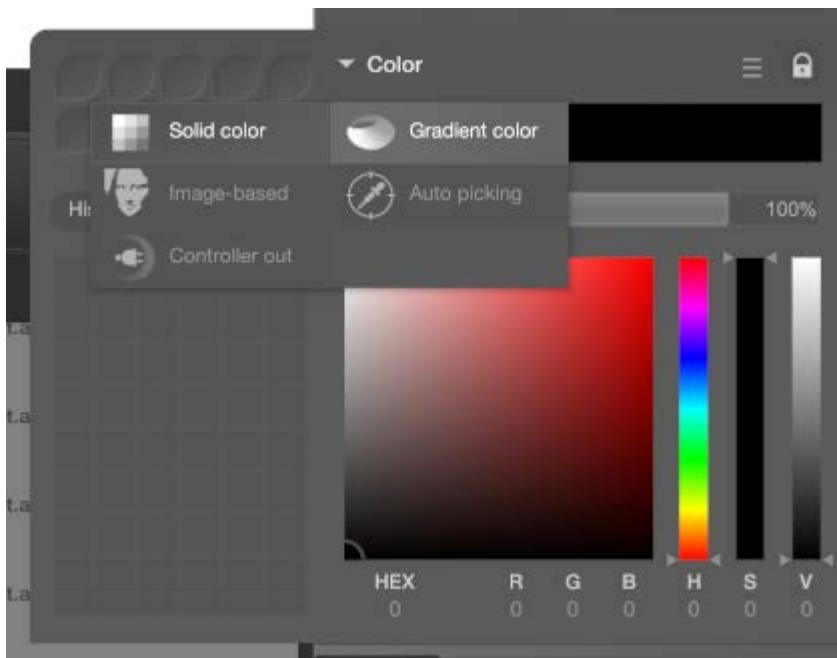


In this way, the opacity of the stroke is much more gradual.

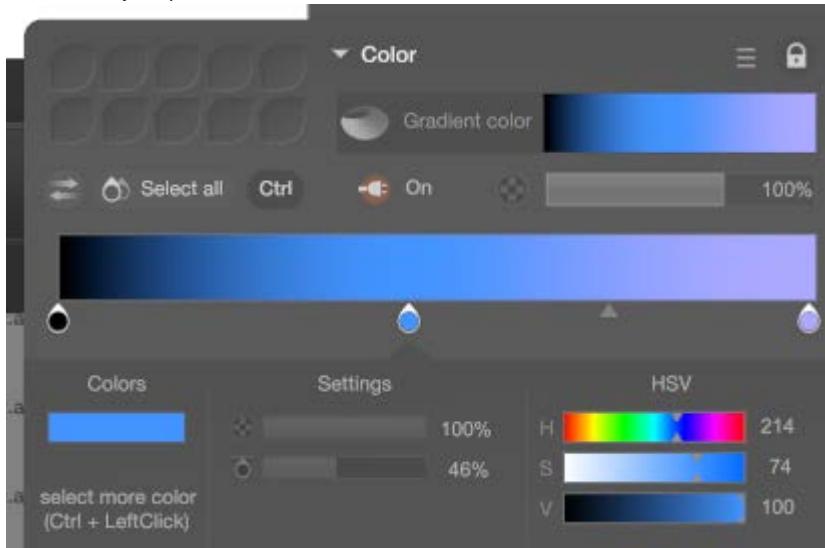
**NOTE:**

This node is a power function, multiply a value itself a certain number of times. The effect on the curve is this: the lowest values are even lower while the highest values go up again to 1. This is why a medium pressure have lower opacity, but we still get a full opacity with all the pressure.

Now we assign the color of the stroke according to the tracking speed. We select **Gradient Color**:



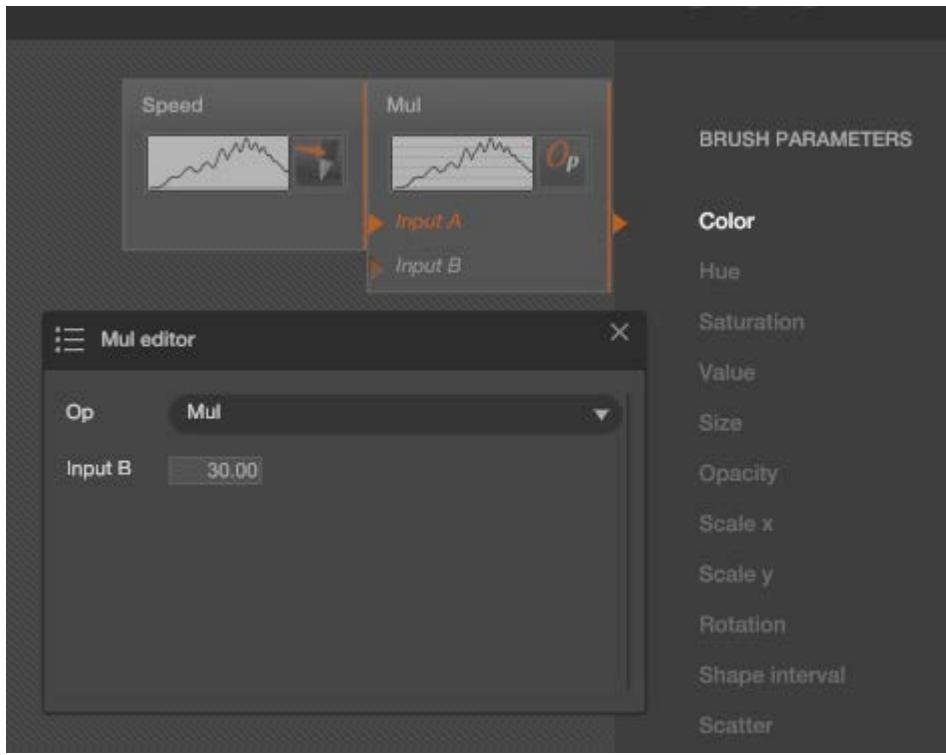
And we modify the parameters:



Then we modify the parameter controller Color passing from the existing controller:

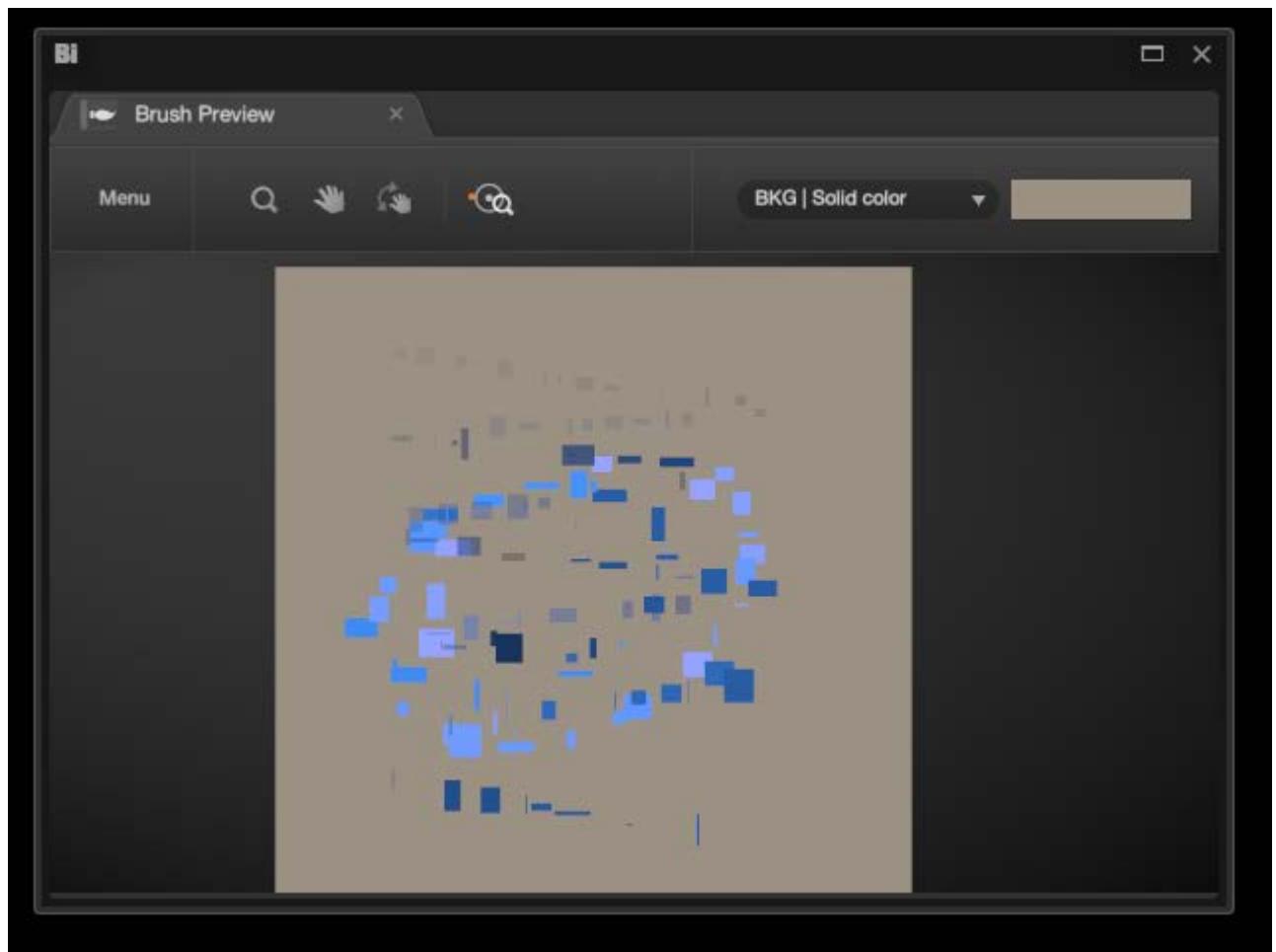


At the following controllers:



**NOTE:** If a node (eg. Mul) has two Input (Input A and Input B) the offline node has at its input a constant value.

We should have the following brush:



Let's try to draw something:



Now we can experiment with different brushes.

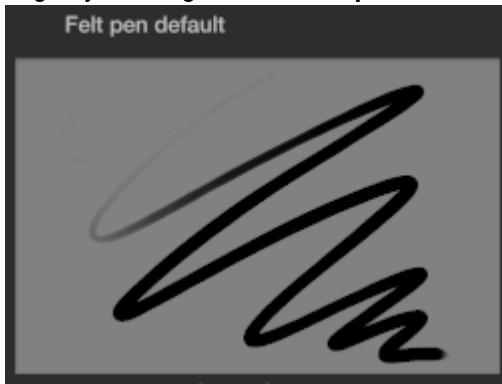
## Brush Workshop 2: The Breast function

The controllers are able to create brushes that behave in a more or less predictable. We're talking about Generative Art and in this tutorial comincieremo using a simple mathematical function:

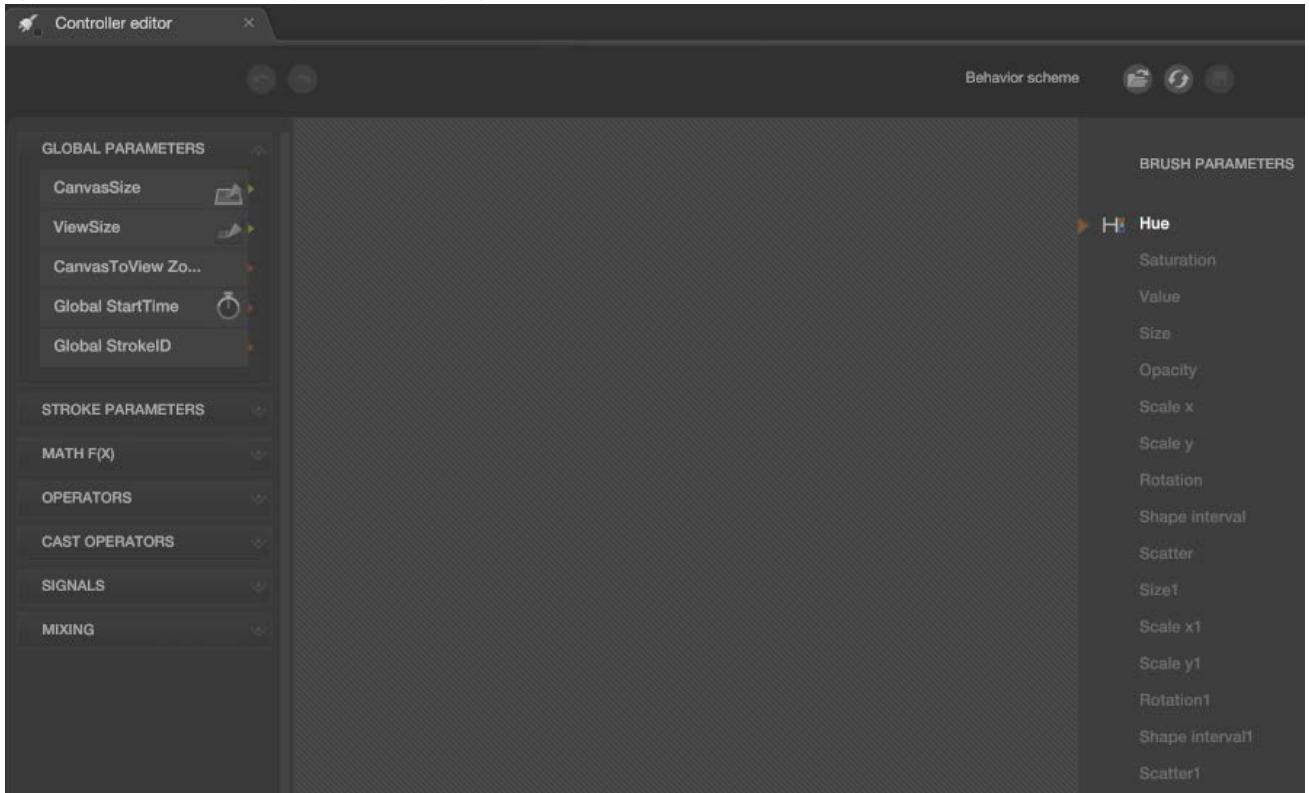
### Breast.

Our brush will be simple, but suitable to begin training with the controller.

Begin by selecting the brush **Felt pen Default**:

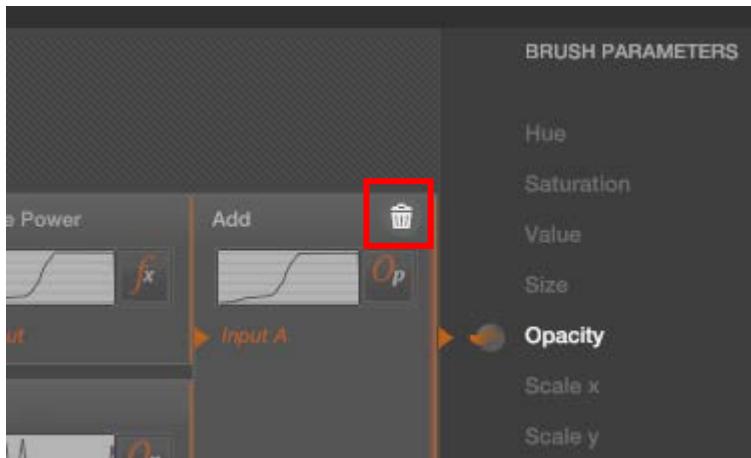


Open the editor of the controller (Controller Editor) by pressing the button "C":



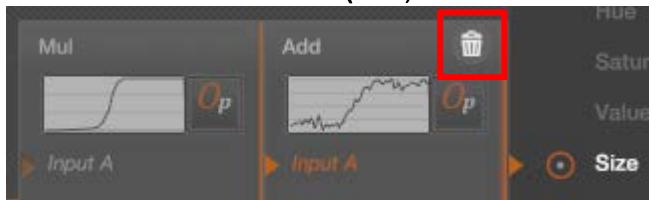
Now we eliminate some default controller in order to understand what we will do next.

We select the node "**Opacity**" ( **Opacity**) and eliminate all nodes (to do this just click the "Trash" button on the right of the first node):

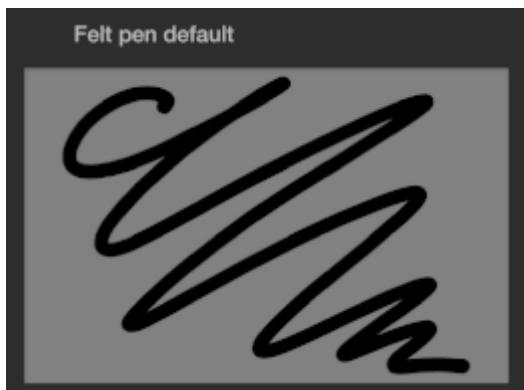


**NOTE:** When we delete a node also we eliminate all the nodes on the left that are connected to it (cancellation cascade).

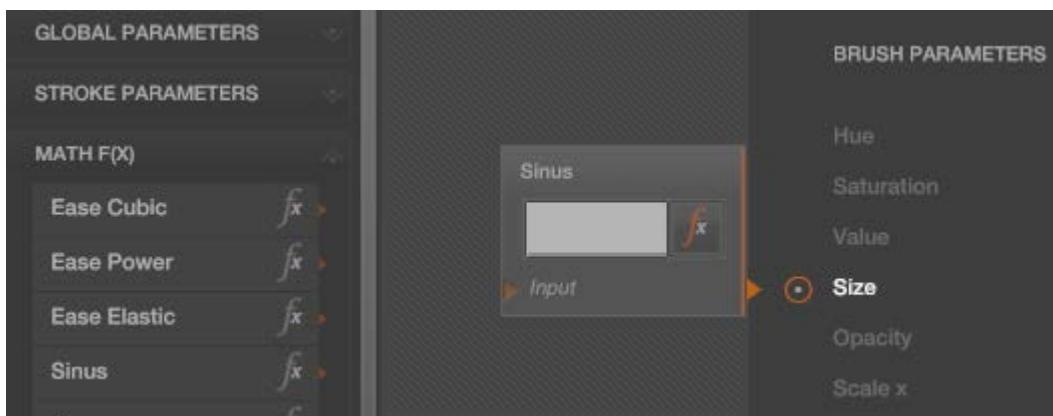
Then we select the node "**Size**" ( Size) and eliminate all nodes:



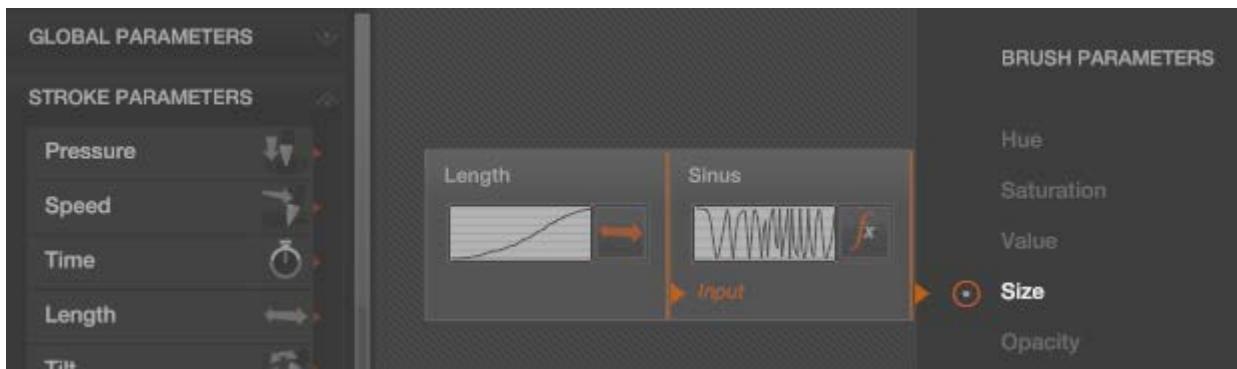
Now we have a brush that does not change the size (Size), and Opacity (Opacity) during the stroke:



Now insert a node, the slot MATH F (X) we take the "**Sinus**" (**Breast**) and cling to **Size** (**Size**):



Still nothing happens, because the breast needs an input value (Input) that always grows. Let's try to attack the node "Length" (Length) from the slot **STROKE PARAMETERS**:

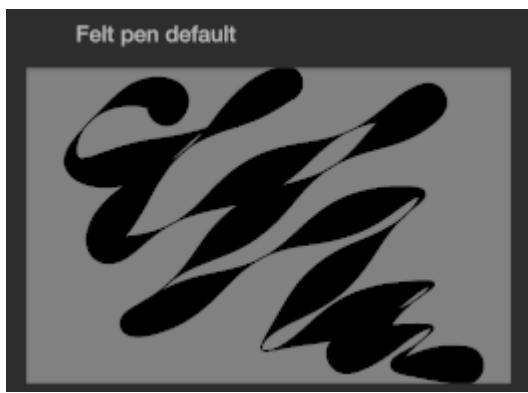


We see that the preview of the brush is changed:

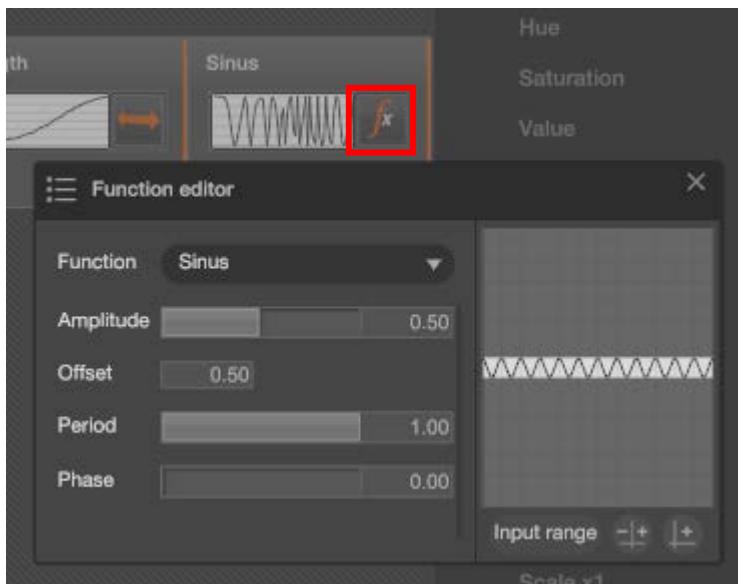


So now the brush size changes with the distance traveled by the brush following the sine function.

We change the brush size (Size) to 10 px brush and get the following:



Now we open the options of Sinus node by clicking on the "fx" button:



The Breast function returns values from -1 to +1, but in this case it returns values from -0.5 to +0.5 because we fixed "Amplitude" (Amplitude) to 0.5. We try to vary the **Period** (Period) and see what happens to the brush:

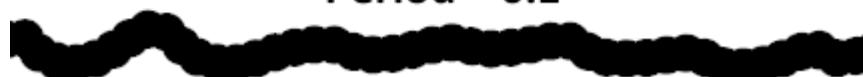
**Period = 1**



**Period = 0.5**

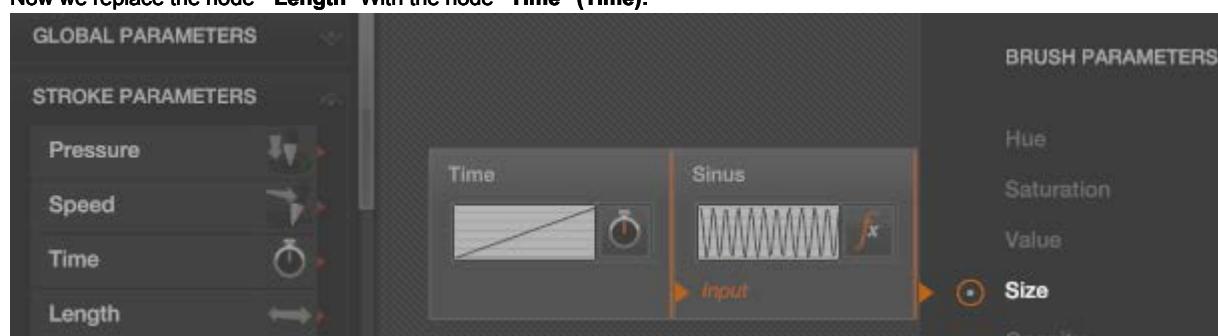


**Period = 0.1**



The brush waves always have the same amplitude because they are calculated using the length ("Length") of the brushstroke.

Now we replace the node "Length" "With the node "Time" (Time):



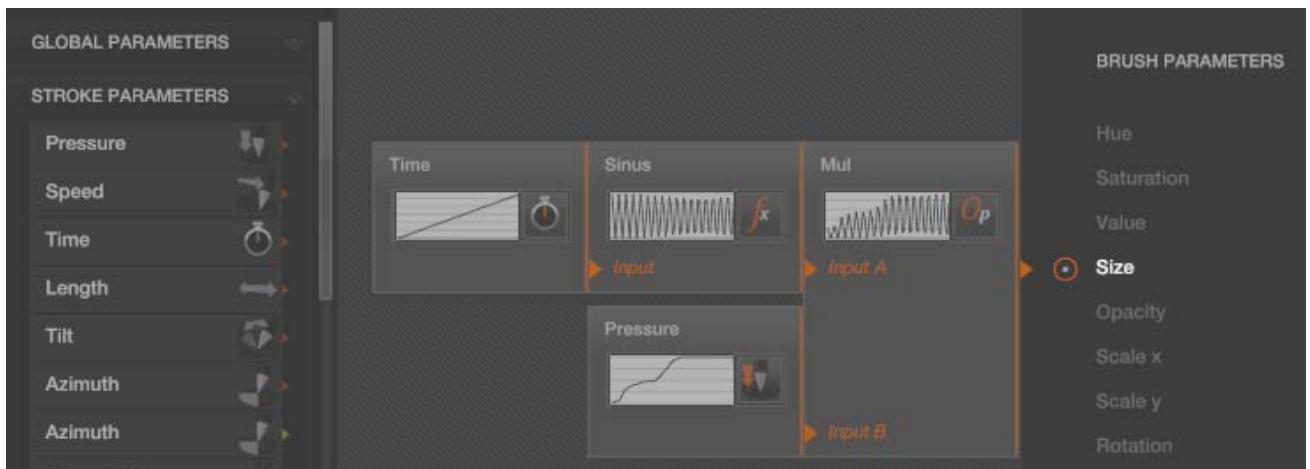
We get the following brush:



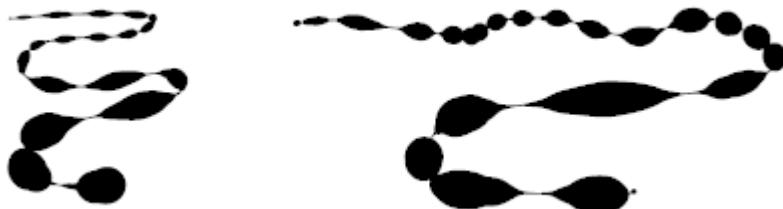
Now consider the brush pressure using the node "**Pressure**" (**Pressure**) taken from the slot

**STROKE PARAMETERS** and the node "**Mul**" (**Multiply**) taken from the slot **OPERATORS**.

Unlink node "**Sinus**" and attach to the input A (Input A) of the node "**Mul**" then we attach the node "**Pressure**" (**Pressure**) input B (Input B) of the node "**Mul**" and finally we reconnect all the parameter "**Size**" (**Size**):



This is the type of stroke that we get from this brush (when the pressure is low, then it is reduced by the value of the Breast):



As a finishing touch we add the node "**Easy Power**" ( from the slot to have a greater control of the low values of the pressure and set "**Size**" between 0 1 15:

The screenshot shows a brush configuration interface with the following sections:

- GLOBAL PARAMETERS**
- STROKE PARAMETERS**
- MATH F(X)**
  - Ease Cubic
  - Ease Power
  - Ease Elastic
  - Sinus
  - Abs
  - Abs
- BRUSH PARAMETERS**
  - Hue
  - Saturation
  - Value
  - Size** (selected)
  - Opacity
  - Scale x
  - Scale y
  - Rotation

The main panel displays a complex mathematical expression for the **Size** parameter:

$$\text{Time} \rightarrow \text{Sinus} \rightarrow \text{Mul} \rightarrow \text{Size}$$

Where **Time** is connected to **Sinus**, which is connected to **Mul**. **Mul** has two inputs: **input A** (from **Sinus**) and **input B** (from **Ease Power**). **Pressure** is also connected to **Ease Power**.

Below this, a **Size** slider is shown with values 0px and 15px.

It's time to draw!

This brush is capable of generating fancy organic forms:



Or fake a pen with ink feather:

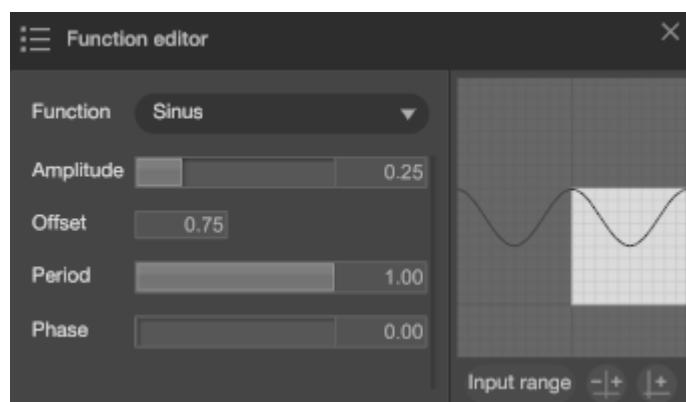


Black Ink



#### NOTES AND RECOMMENDATIONS

This brush varies from the minimum dimension to the maximum following the Breast function values, to obtain a greater control can change the parameters of the Breast with a **"Amplitude" (Width)** a minor and **"Offset"** (**Compensation**) greater:



This allows to increase the brush size with even pressure with low values for the Breast:



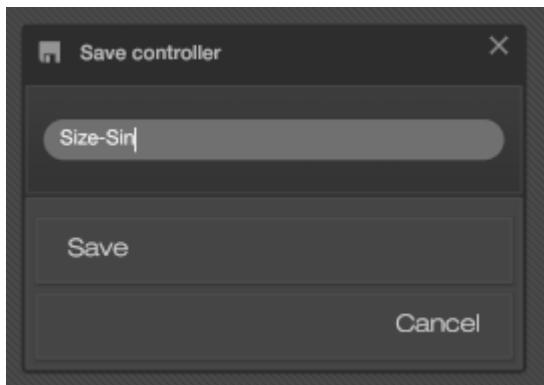
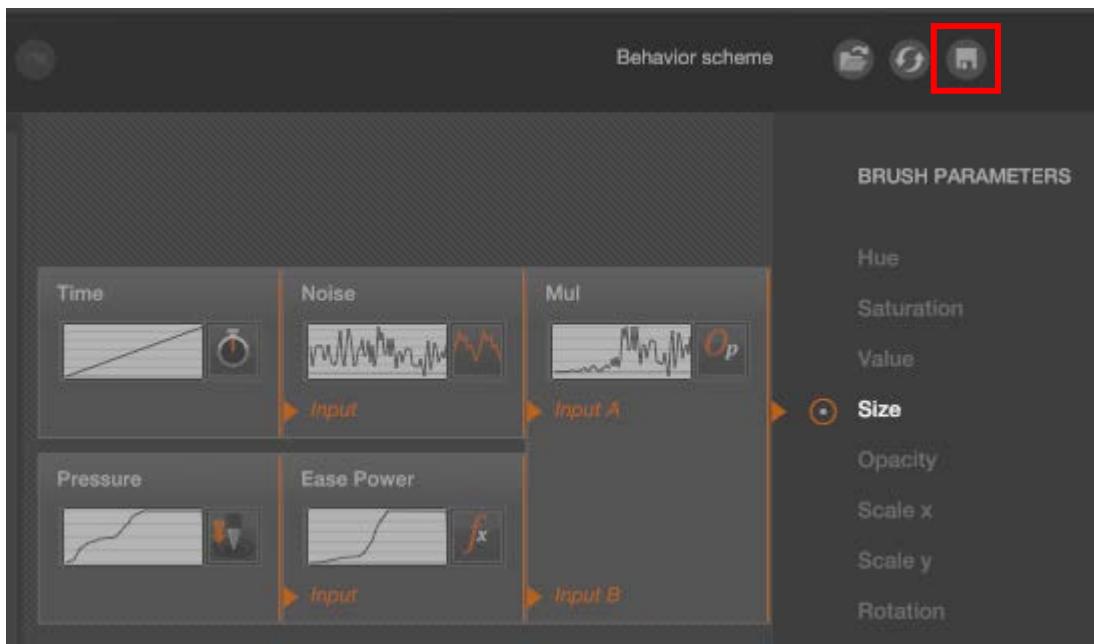
Also you can try and replace the node "Sinus" with a knot "Noise" (Noise) that is in slot "Signals". This will give more random results:



And, of course, try to connect the breast with other parameters and add some controllers to Opacity (Opacity) to develop the brush!

#### **SAVING CONTROLLER**

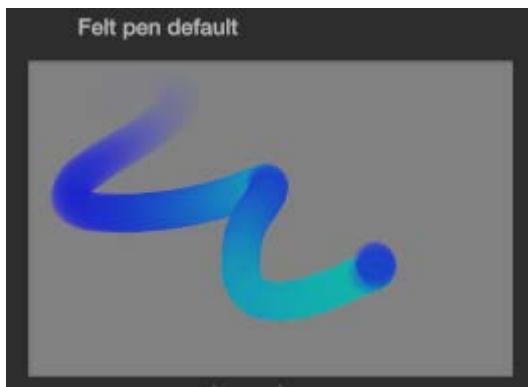
We can save the controller just defined by pressing the button highlighted:



In this way the saved controller can be reused at will.

### Brush Workshop 3: Gradients and controller

In the previous tutorial we used the controller to manage the size and scale of the brush, but we can also control the color by using gradients. We select the brush **Felt pen default**, choose **Gradient Color** (with blue and blue colors), we set the **Dimension** (Size) to 10 px, and finally we draw a brush directly on the preview of the brush:



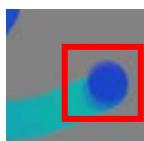
Now we open the **Controller Editor** select the output **Color** and verify that it is configured as follows:



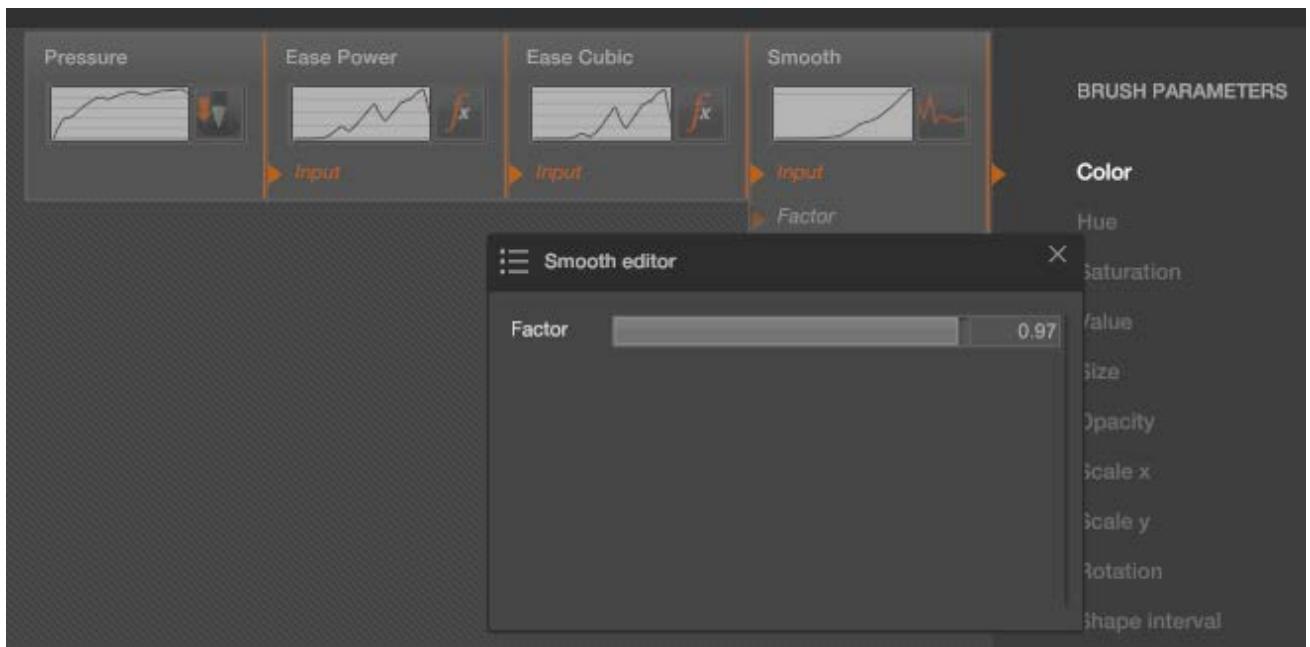
This is the standard configuration for the use of a color gradient as: is used as an input pressure followed by a pair of functions (**Ease Power** is **Ease Cubic**) to make it easier to control. How does it work ?

When the pressure is zero, then the color of the leftmost gradient is selected; When the pressure is at 1, then the color of the rightmost gradient is selected; When the pressure is between 0 and 1 is interpolated from the gradient corresponding color.

As you can see from the preview of the brush, at the end of the stroke are the color leftmost gradient (blue) because in that position we have lessened the pen pressure (at the end of the stroke the pressure decreases):



To solve this problem we need to change the color of the controller by adding a new node: take from the slot **SIGNALS** the knot **"Smooth"** ( Softens) and insert it right at the end of the chain by placing its parameter **Factor** equal to 0.97:

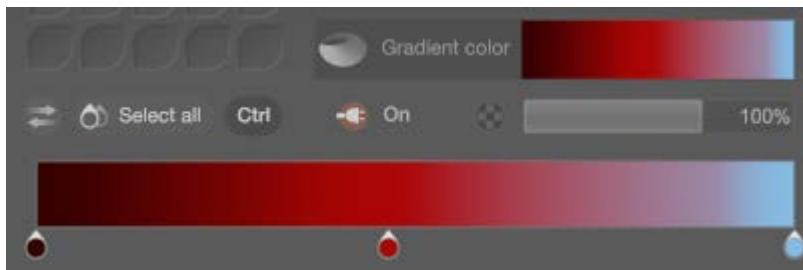


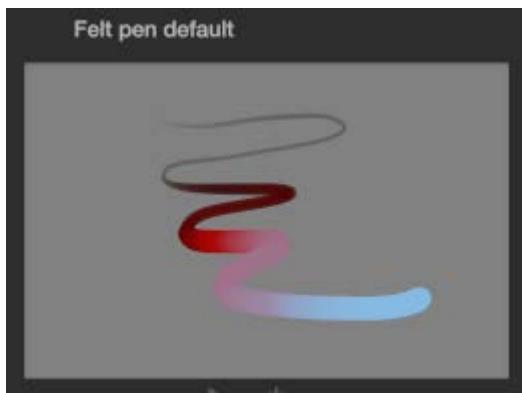
Now, during the stroke, the color is more linear and we have eliminated our problem:



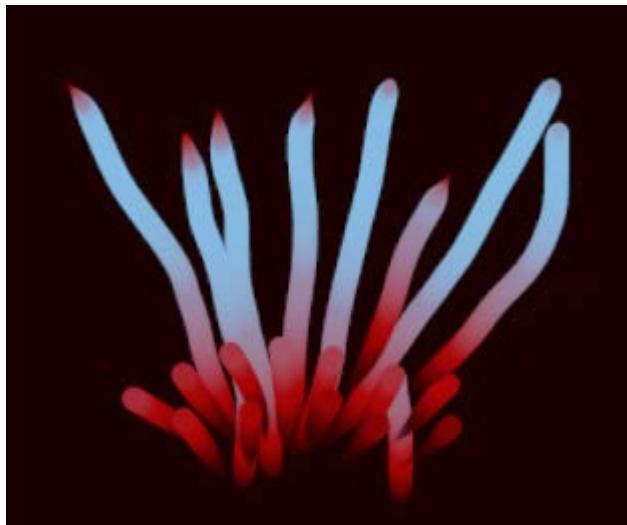
**NOTE:** This method (the Smooth node) to smooth the transitions can also be used to adjust the size (Size) in the final phase of the stroke (ie, avoiding that the size decreases quickly).

Now we change the colors of the gradient as follows:

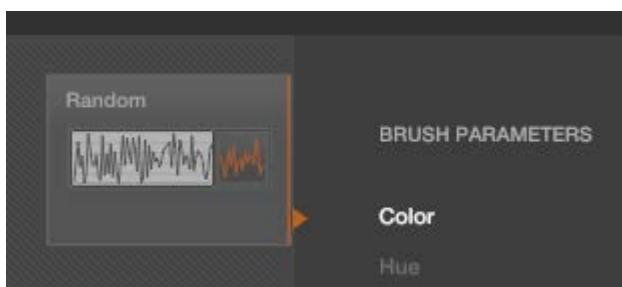




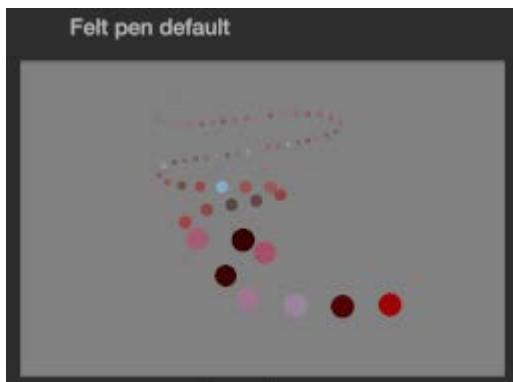
And here some brushstrokes with this brush:



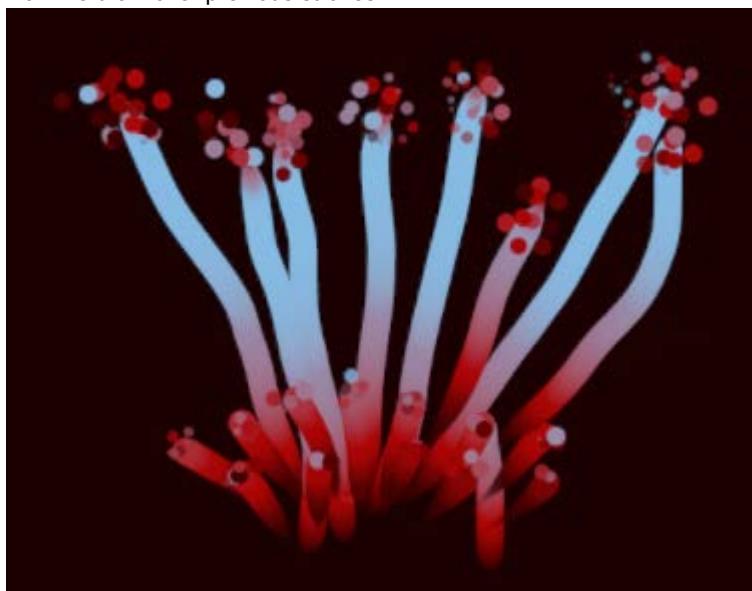
Now we remove all nodes from the parameter "Color" and insert the node "Random" that is in slot SIGNALS:



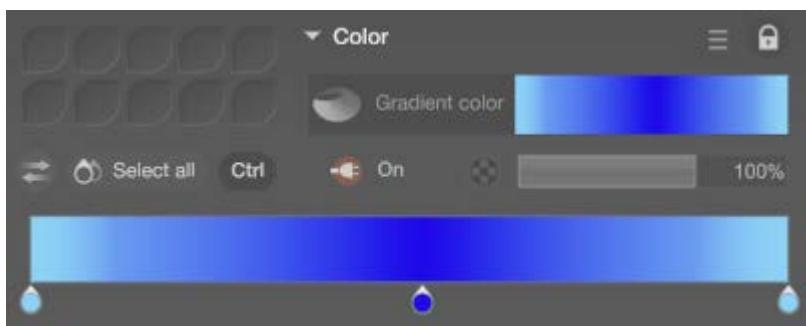
In this way every (Shape) of my tract has a different color taken from the gradient. To improve the brush open the panel "Flow" and modify the parameter "**Shape Interval**" at will:

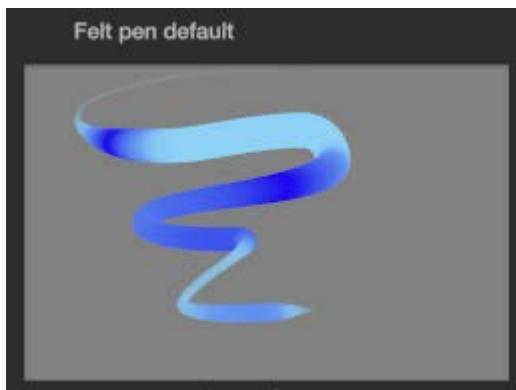


Now we draw over previous strokes:

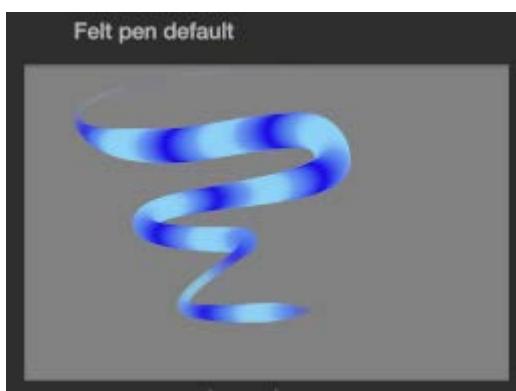
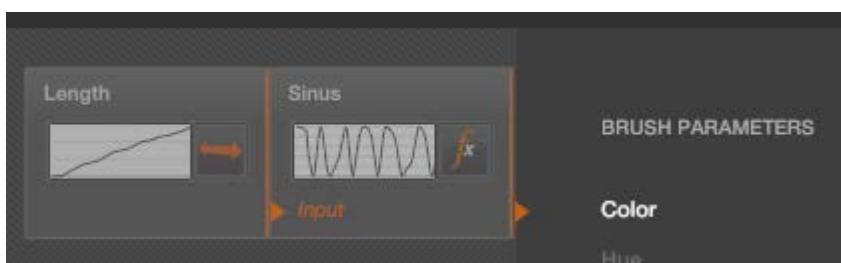


Now we can erase everything and try something different (you can also close and reopen BlackInk if the interface has become too chaotic). We select the brush **Felt pen default**, choose **Gradient Color** (with light blue colors, blue and light blue), we set the **Dimension** (Size) to 15 px, and finally we draw a brush directly on the preview of the brush:



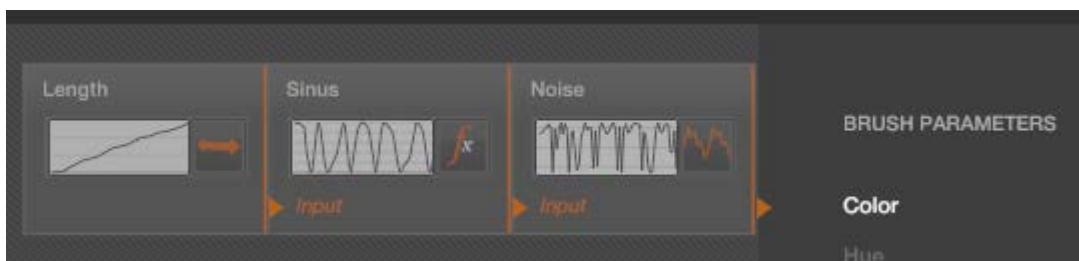


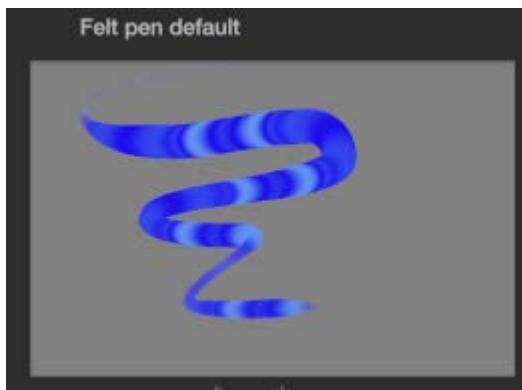
Now Open the **Controller Editor** and attack the nodes **Sinus** ( slot **MATH F (X)**) is **Length** ( slot **STROKE PARAMETERS**) to the parameter **Color** in the following way:



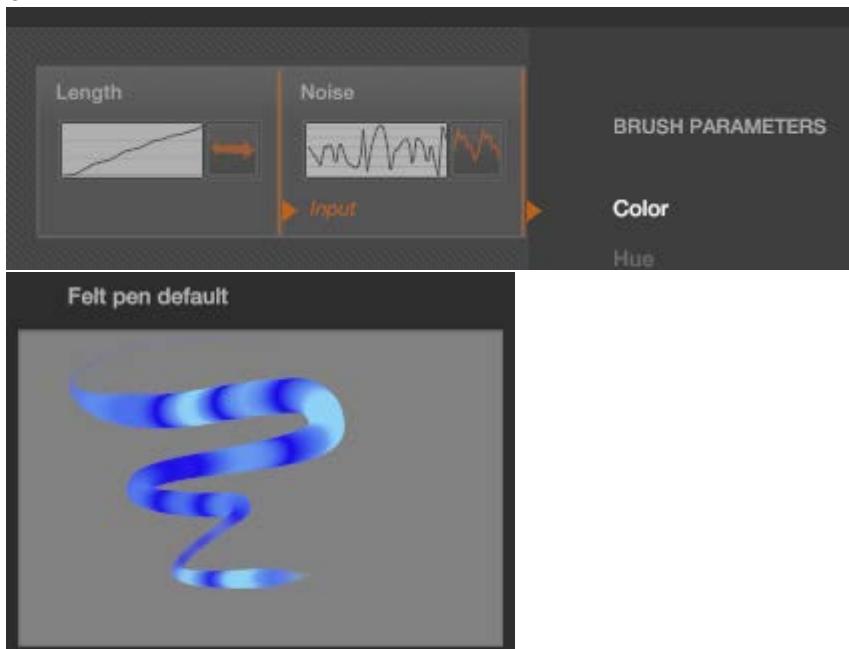
As you can see, the color varies continuously from one extreme to the other color of the gradient (thanks to the Breast function).

To obtain a less regular effect, we add the node **Smooth Noise** ( slot **SIGNALS**); We can do this in two different ways (getting different results):

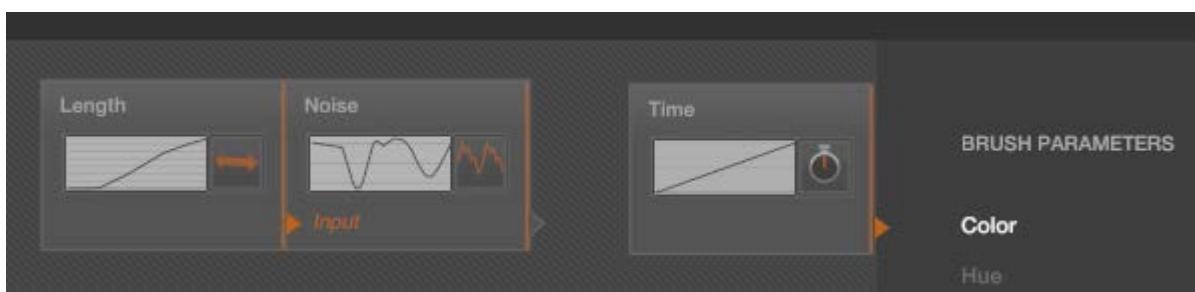




Or:



Let's try something else. Detach the node **Noise** and attach the node **Time** ( slot **STROKE PARAMETERS**) to the parameter **Color**:

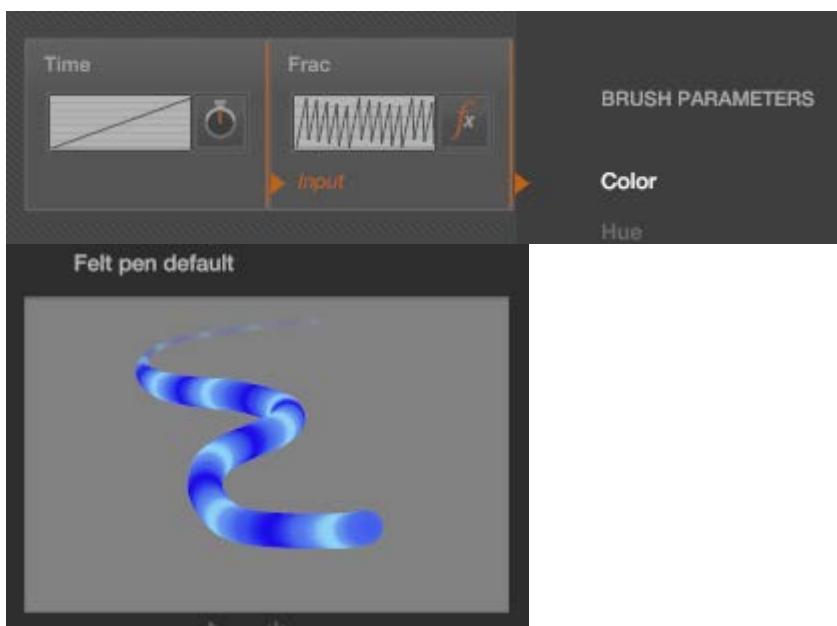


The preview of the brush does not seem to show variations in color (except at the beginning of the section):



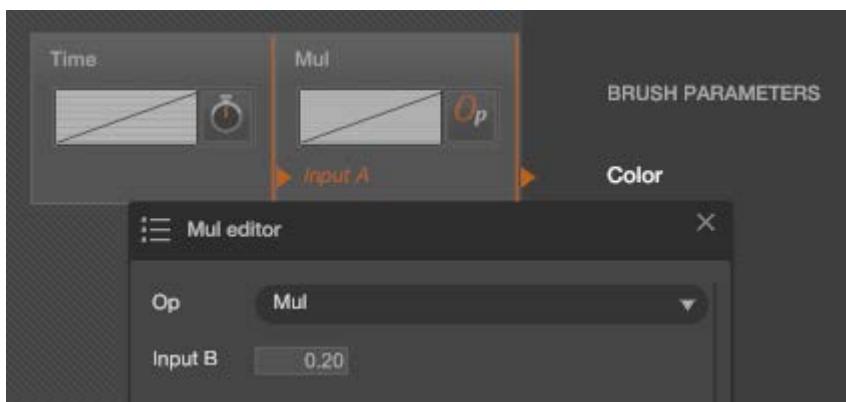
This is due to the fact that the Time node reaches the value 1 (one) very quickly and, as each value greater than 1 produces the color on the right of the gradient, our brushstroke shows a single color. To limit the value of the Time node in the range [0..1] we add the node **Frac** ( by slot **MATH F (X)**).

The Frac function takes as input a decimal number and returns the fractional part, in other words, this function always returns values between [0,1].



Now we want the gradient is repeated only once during our brushstroke. To do this we replace the knot **Frac** with the node **Mul** ( slot **MATH F (X)**) and we set her **Input B** to

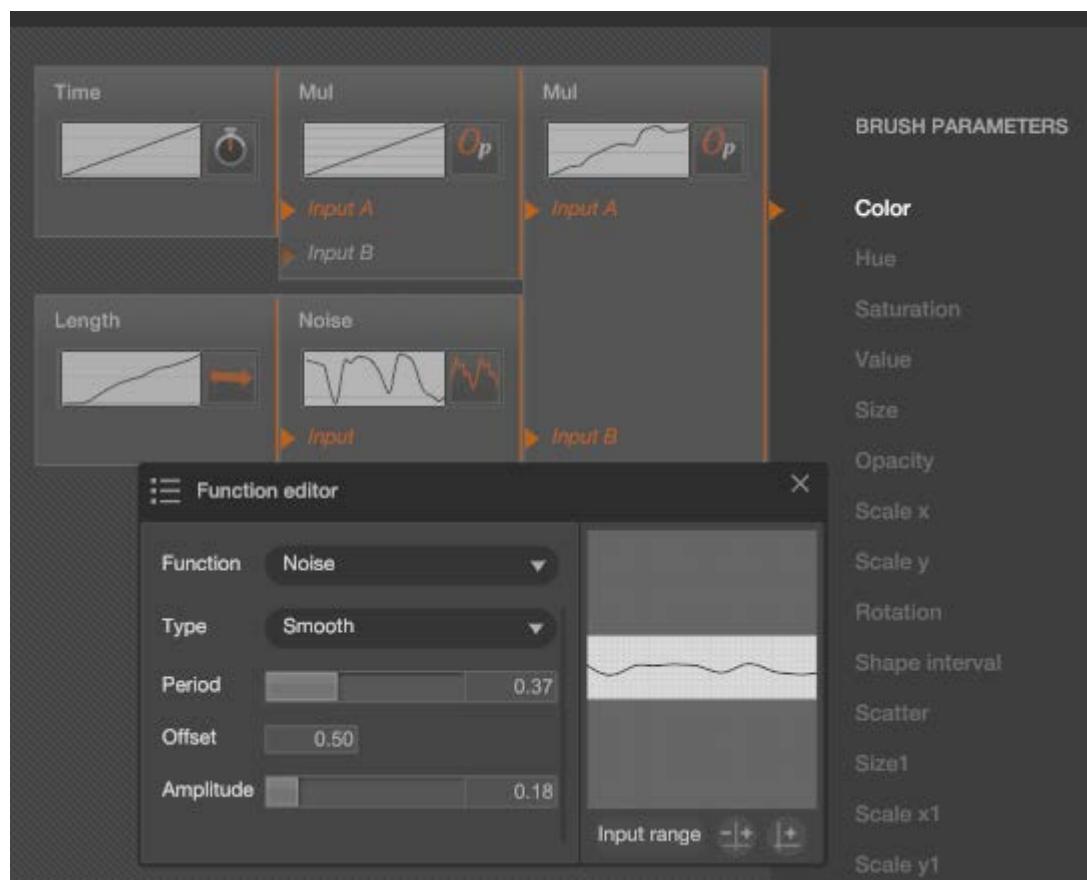
0.2:





Now the gradient is repeated along the brushstroke only once (then the brush always assumes the color to the right of the gradient).

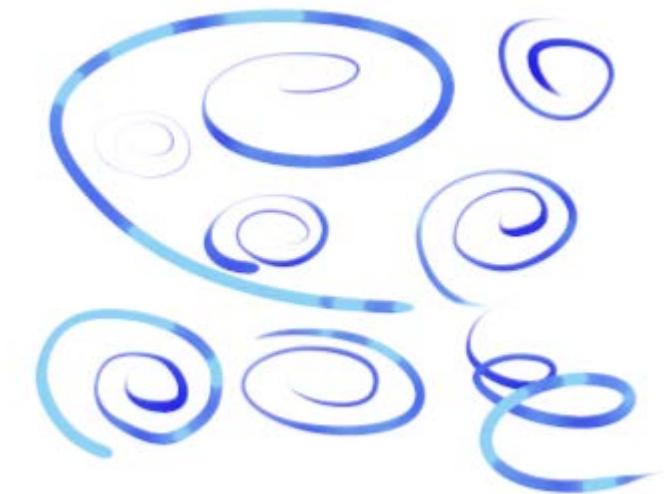
We complete this controller by inserting the nodes **Length (STROKE PARAMETERS)**, **Noise (SIGNALS)** and another node **Mul (MATH F (X))**. In addition, we set the parameter **Amplitude** node **Noise** the value 0.2:





In this case our value grows with the passage of time, but not in a straight line as the value is changed (more or less) from the Noise function. The dell 'Width reduction (Amplitude) avoids null values (0), so that the Mul function does not give a null result, but returns the same color.

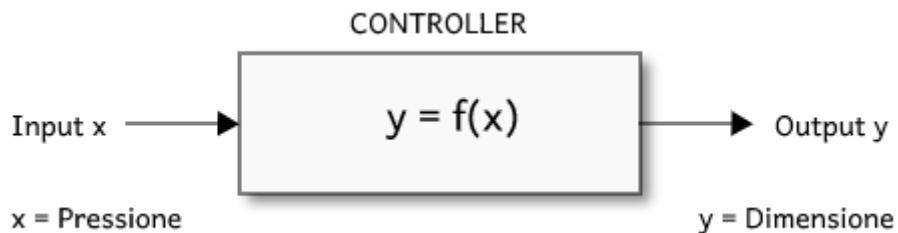
And here is the result of several strokes:



#### Brush Workshop 4: Mathematics and controller

Basically a controller correlates an input parameter of the brushstroke (eg. Pressure) with an output parameter of pennellatta (eg. Size).

This report is a mathematical function and we can outline a controller as follows:



In practice, the controller represents the  $f(x)$  function, then the nodes of the controller representing the mathematical operations that we can use to modify the input signal (Input) to get the output (Output) desired.

#### EXAMPLE

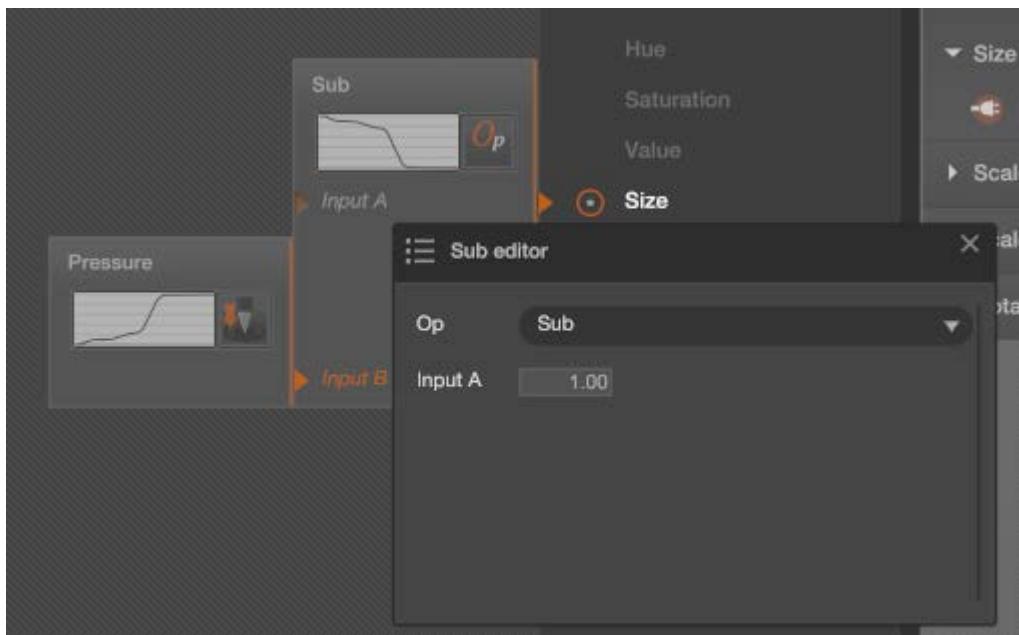
Suppose you want to associate the pen pressure with the stroke size in inversely proportional manner (a low pressure implies a greater size and vice versa): in practice, we need to invert the input signal range.

The controllers have an input signal that varies in the range [0..1].

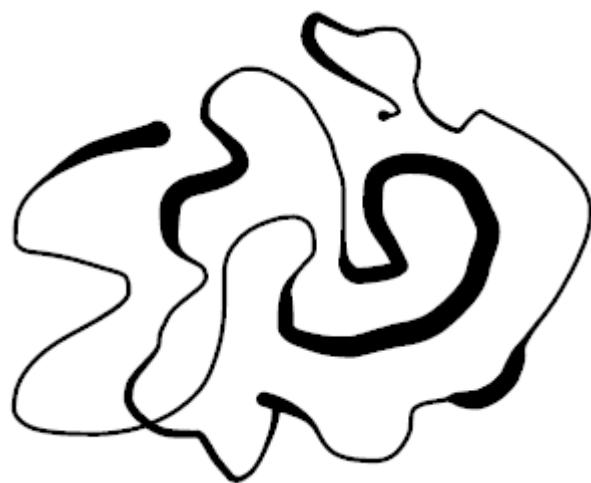
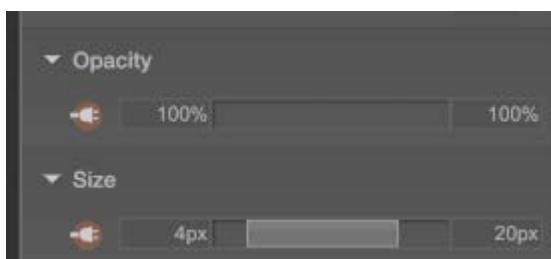
If you simply reverse the pressure multiplying by -1 we get the [-1..0] range that does not generate any output (The valid range for the output value is [0..1]). So banker should add 1 to the previous result to reset the value of the output signal in the range [0..1]. However, the easiest way to reverse a value:

#### Output Value = 1 - Value input, that is Size = 1 - Pressure

So to achieve the controller use the Sub node where B connect the Input Pressure Input A and assign the value 1:

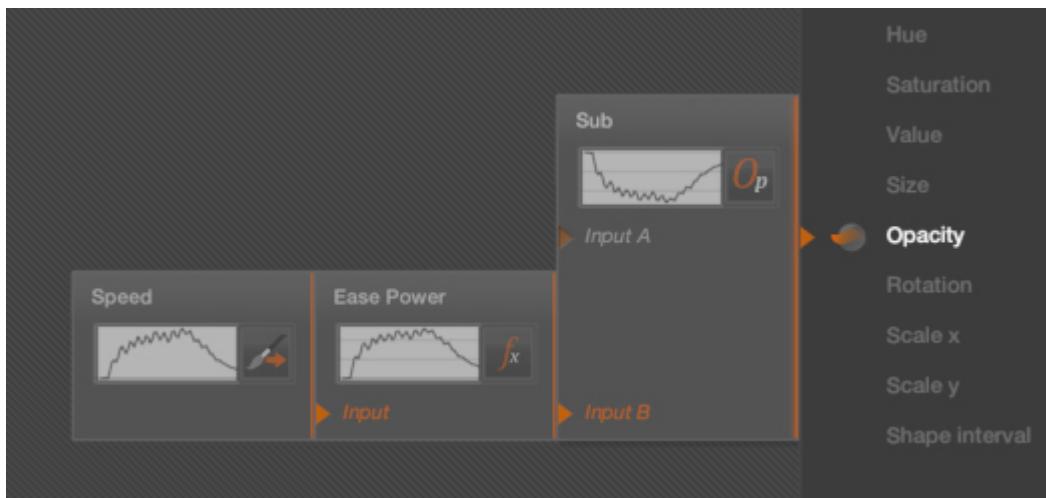


This is the result when the controller is applied to the brush **Felt pen default** with the following parameters:



The portion size decreases with increasing pressure.

Also try the next controller (which is very similar to the above):

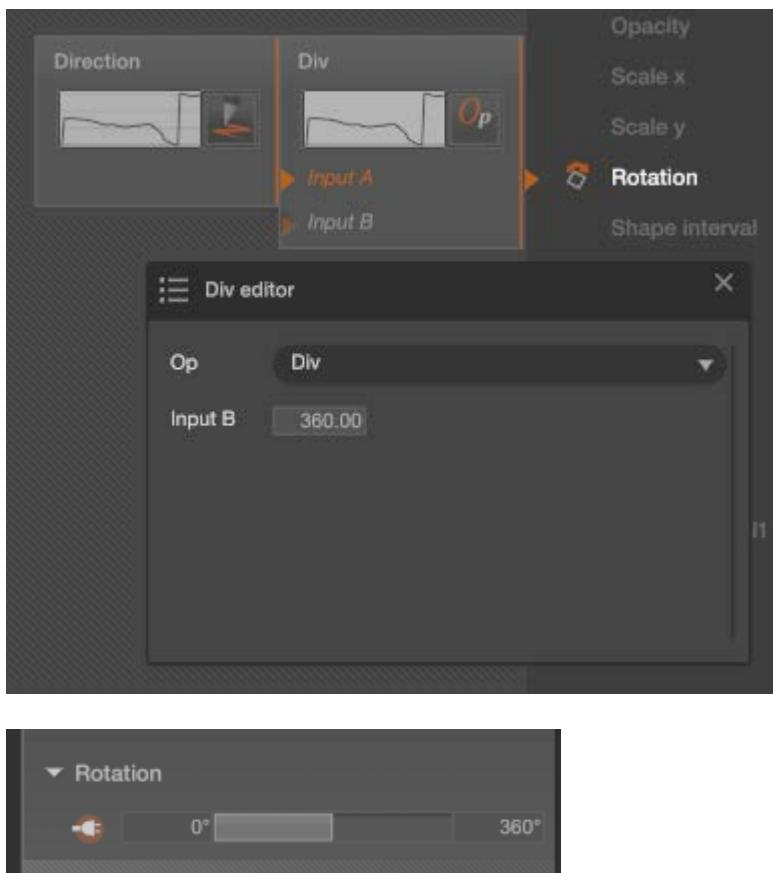


#### EXAMPLE

We want that the brush is rotated in the direction of the stroke.

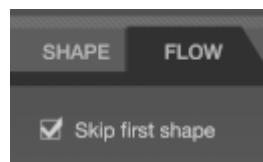
In input (input) we have the brushstroke Direction (Direction) and output (output) we Rotation (Rotation) of the brush. Quinai, take the node **Direction (Direction)** which returns the direction of the stroke from 0 to  $2\pi$ . We divide by  $2\pi$  ( 6.283185307179586 ) with a knot **Div (Division)** to create a value from 0 to 1 to be connected to the parameter **rotation (Rotation)**.

Then simply we set the parameter **Rotation (Rotation)** from  $0^\circ$  to  $360^\circ$  and the brush will rotate with the direction of stretch.

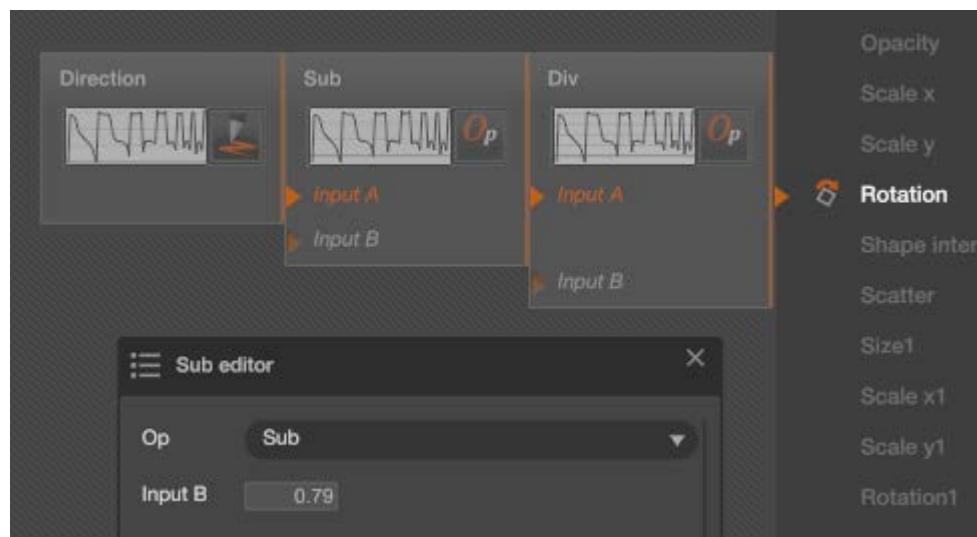




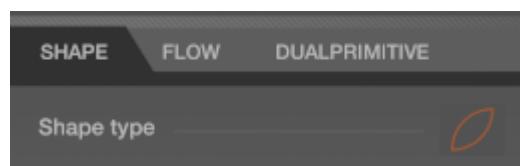
A tip: you may notice that the first form of your tract always points in the same direction (this is normal since there is no direction before the second form is designed). For risolovere the problem there is the option " Skip first shape "Panel Flow (Flow):



We can improve the section as follows:



Subtract  $\pi\pi / 4$  (0.79) to the initial value of the direction to position 90 ° before the shape of the brush:





## Brush Workshop 5: Experiments with a basic brush

We begin this tutorial with the realization of a basic brush that will serve as a starting point for the construction of new brushes.

We select the brush **Felt pen 4px**:

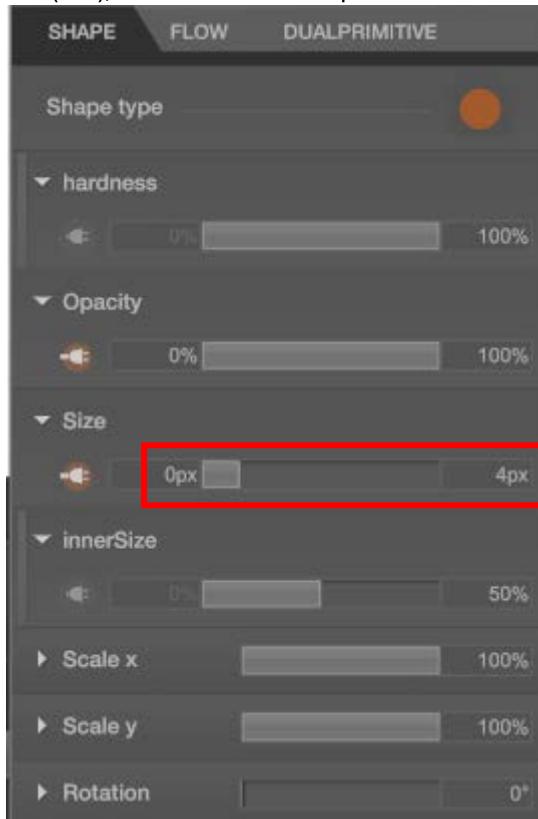


Here's a sample stroke:



You can see that changes the brush size and opacity depending on the pen pressure.

The name comes from the fact that simulates a marker (**Felt pen**) is **4px**. They are the pixel interval between the maximum and the minimum Size (Size), as can be seen from the panel **SHAPE**:

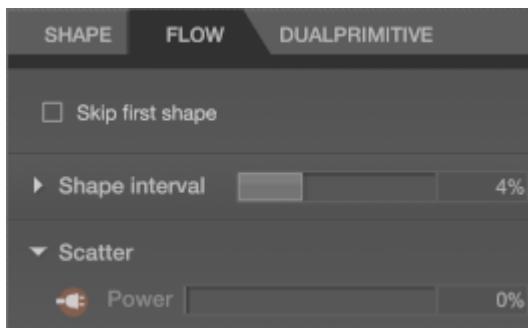


**NOTE:** My tablet will work much better with this brush imposed if the size (Size) Minimum equal to 2 and the maximum size equal to 6 (or 1 and 5, respectively):

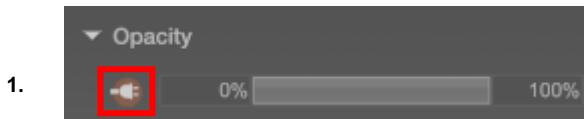


I also recommend you to change the size using the slider that changes the min-max range: 

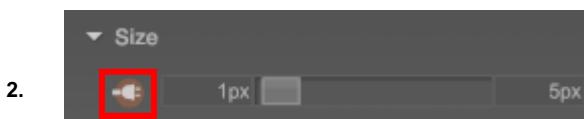
We see the panel **FLOW**:



Analyzing panels **SHAPE** is **FLOW** we note that there are three attivi controller (active controller are those with the icon " Plug / Socket "Highlighted":



The controller dell' **Opacity (Opacity)**

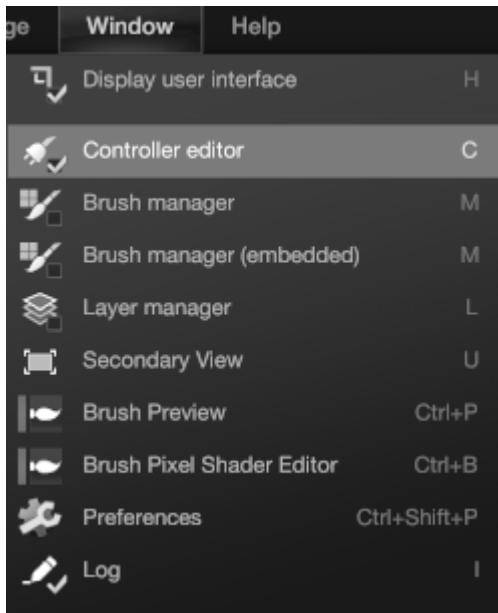


The controller **Size (Size)**

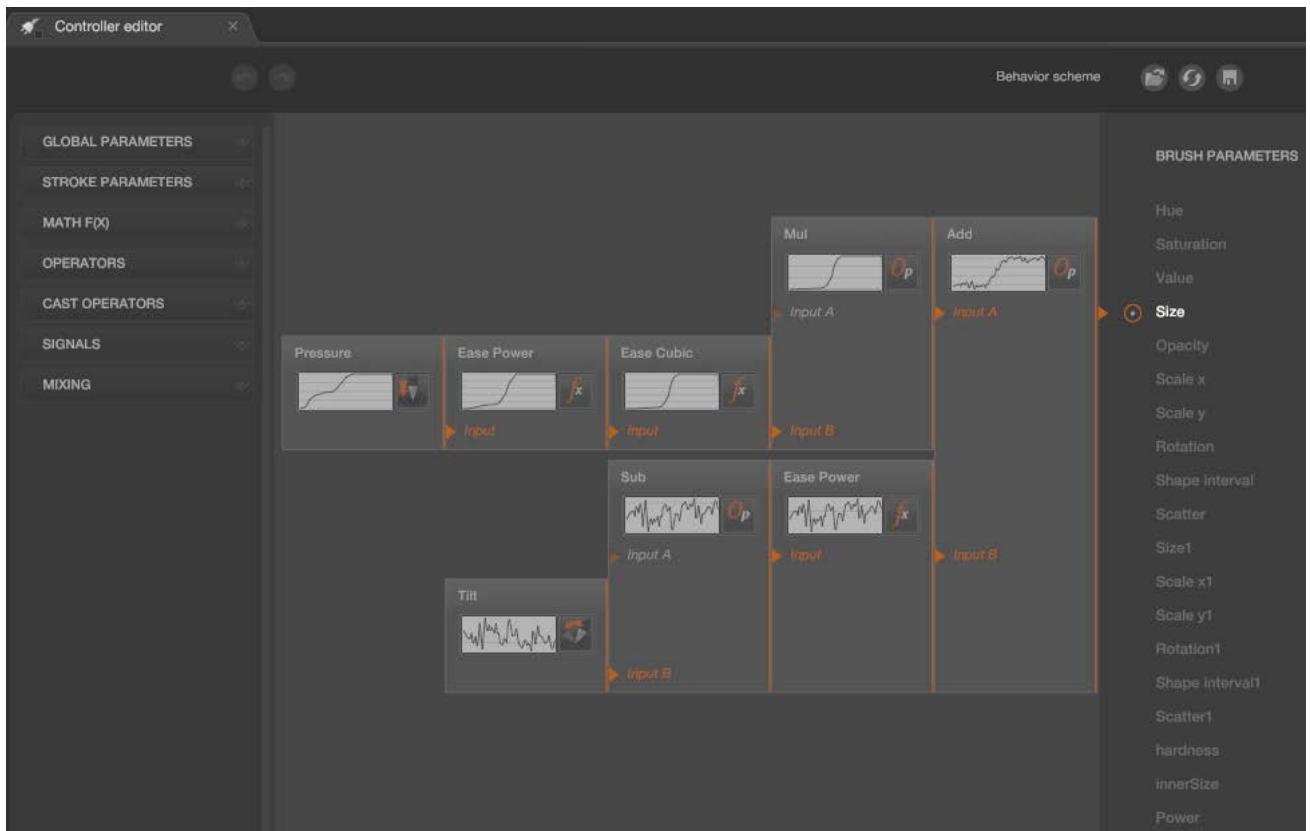


The controller of the **Scatter (scatter)**

Now we open the ' Editor Controller (Controller Editor) the menu Windows-> Controller Editor ( or by pressing the button "C"):

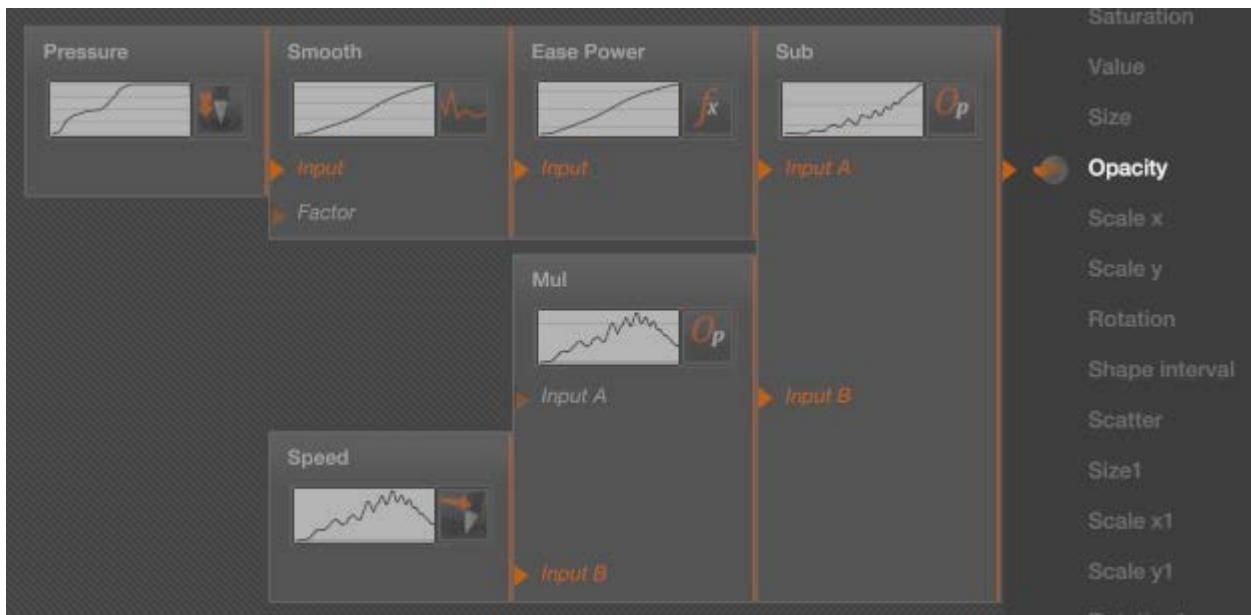


Then click on the parameter **size** (which is located right in the Editor section **BRUSH PARAMETERS**) to display the controller:

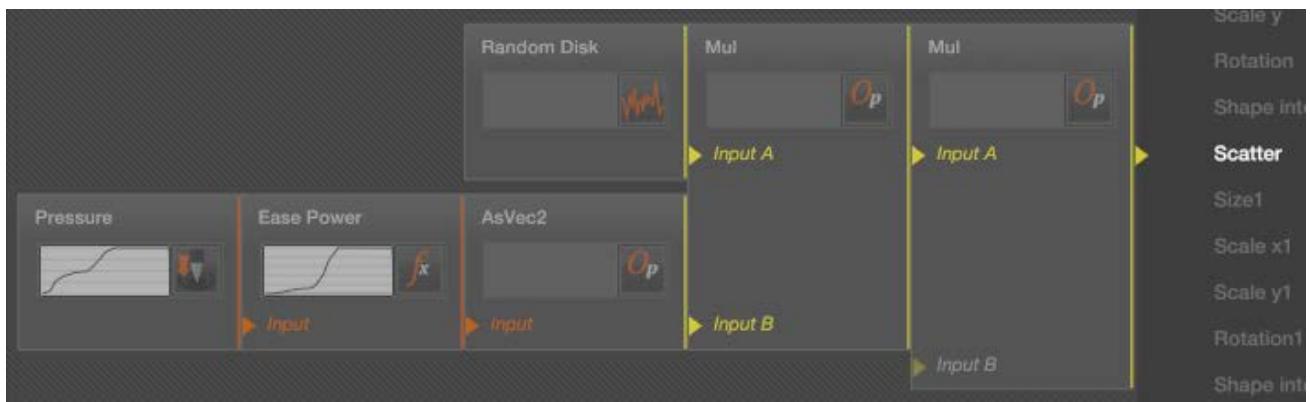


We note that the size depends on the **Pressure (Pressure)** and from **Tilt (Tilt)** pen, so if your tablet does not have the Tilt parameter, you will not be able to vary the size with the inclination (though the brush will operate just fine).

Now click on the parameter **Opacity (Opacity)** and visualize its controller:

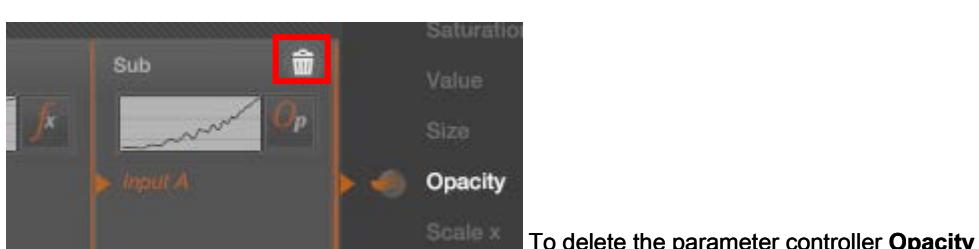
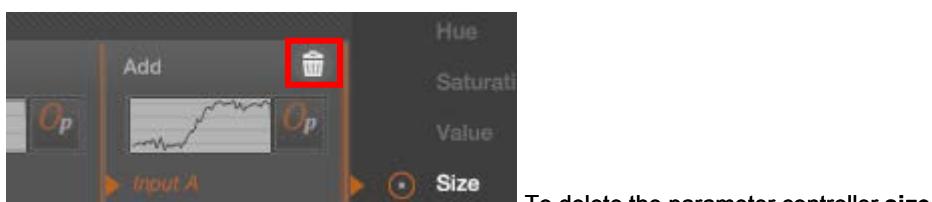


Similarly for the parameter **Scatter (scatter)**:



Now we create a **Brush Base** without any controller.

Click on the highlighted buttons to delete all of the related controller nodes (deletion in cascade of all previous nodes):





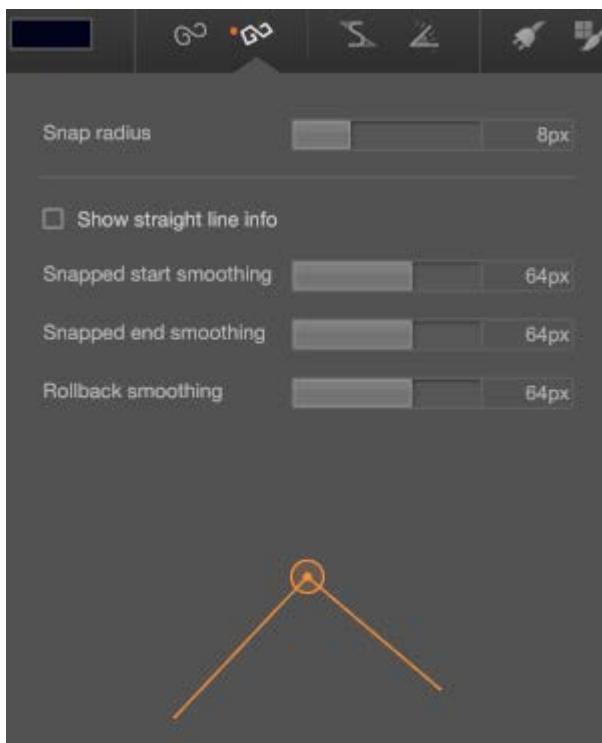
This is a stroke of example of this new brush:



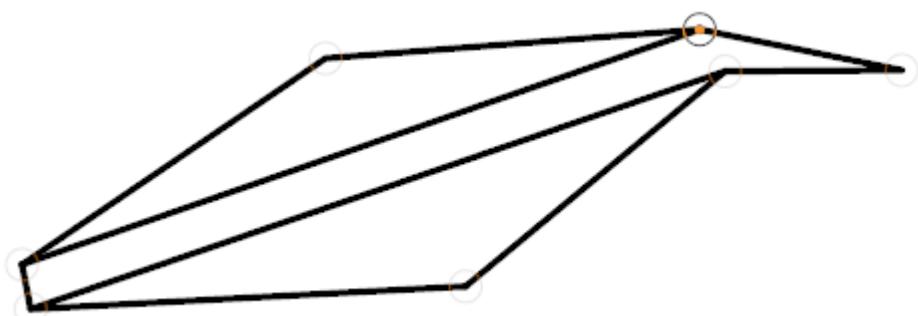
It is a brush that does not change size or opacity during the stroke.

What is the use a brush like this?

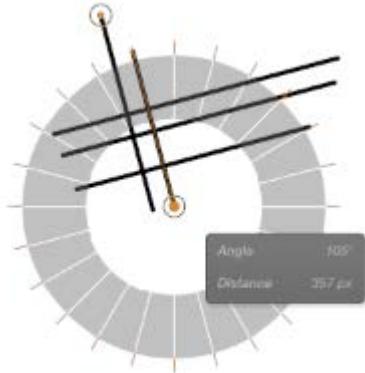
First, it can be used to draw lines with constant stroke by using the Straight Line Draw Mode:



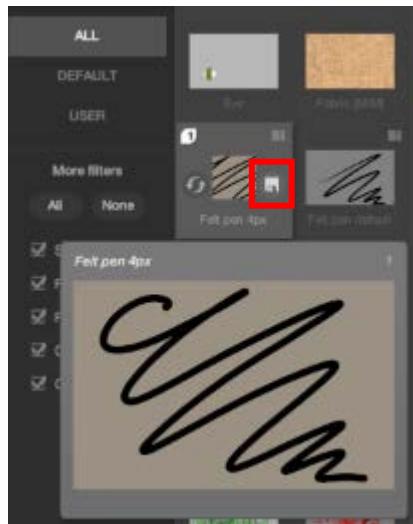
To obtain these results:



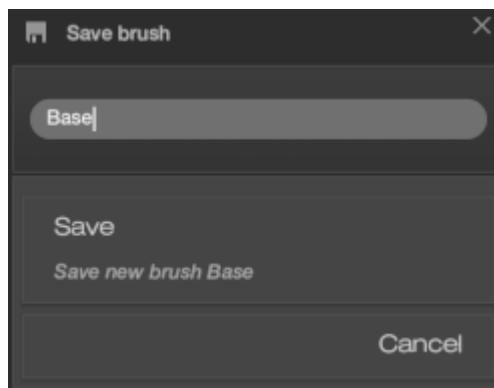
Or, when we are free-form mode (**Hand Free Mode**) we can draw straight lines by pressing the key button "**Shift**":



To save our base we have to open the brush **Manager of brushes (Brush Manager)** the menu **Windows-> Brush Manager** ( or pressing the tato "**M**") and click on highlighted:



Write the new name and press the button "**Save**":

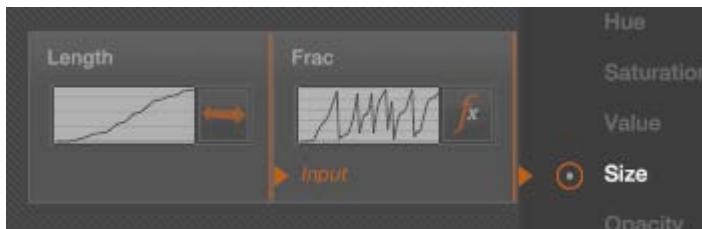


**NOTE:** You can not overwrite the default brushes (default), so you can modify any parameter and see its effects without worrying about overwriting something.

We begin to do some experiments with controllers:

## Brush amending Size (Size) randomly during stroke

Take the node **Stroke Parameters-> Length** and attach to the node **Math> Frac**, then connect all the parameter size:



Then we place **Size (Size)** to 1..20:

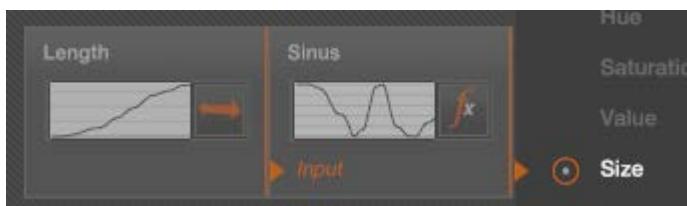


We draw some strokes:



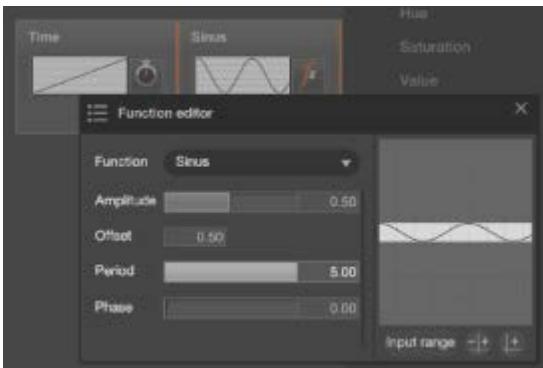
The stretch is not quite "random," but the result is interesting. There **Distance (Length)** always increases and the node **Frac** It takes the fractional part, so its output is always a number between 0 and 1 that grows linearly.

Now we replace the knot **Frac** with the node **Math-> Sinus** and draw a stroke:



A little more casual, but periodic (because the **Breast** periodic returns values between 0 and 1).

Let's try to replace the node **Length** with the node **Stroke Parameters-> Length** and set the node period **Sinus 5.0**:



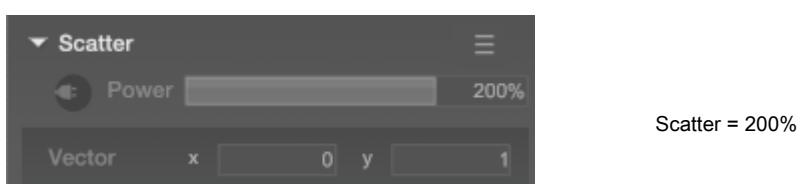
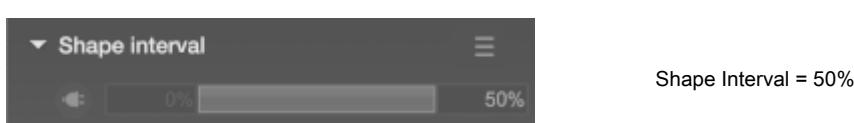
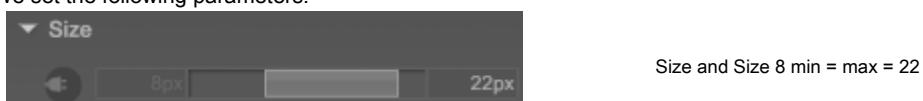
Here we are ! The knot **Time** It increases as the node **Length**, but, because the strokes are made with different times, we get a more random pattern.

#### Brush that draws groups of dots scattered randomly size



Starting from the brush base we have to change the parameter **Interval Shape** the panel **Flow** and create a controller for the parameter **Scatter (scatter)**.

We set the following parameters:

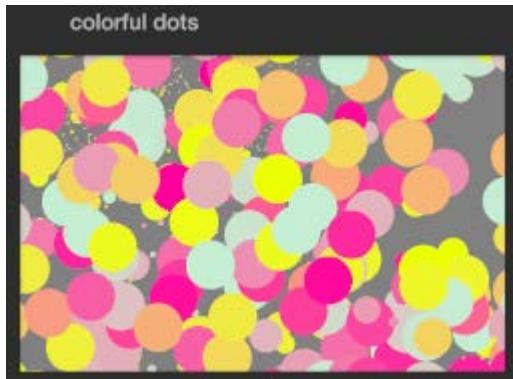




current Brush

Since we have no idea how to create a controller for the Scatter ... we copy it from a brush that implements it •.

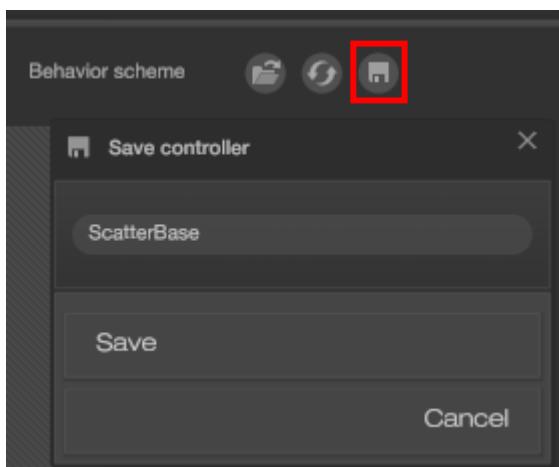
We select the brush **colorful dots**:



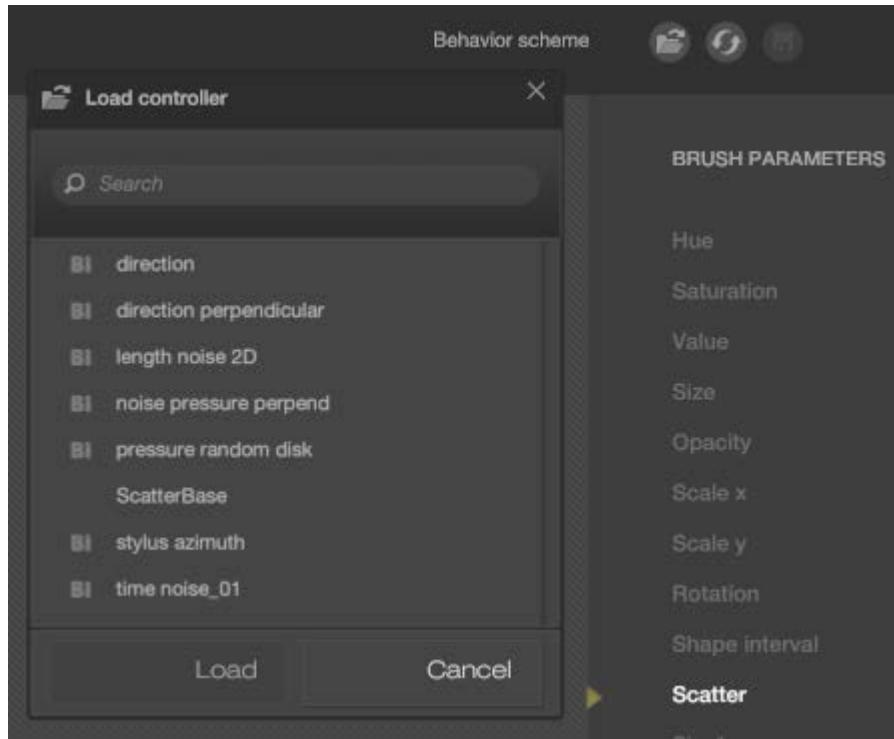
open the **Brush Manager** and select the parameter **Scatter**:



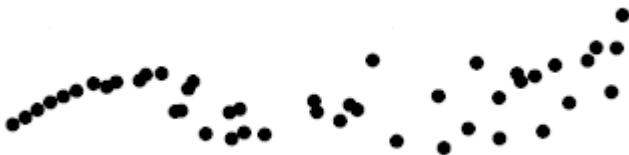
Let's save this controller as **ScatterBase**:



We select our brush again **base** and load on the parameter **Scatter** the newly saved controller (**ScatterBase**):

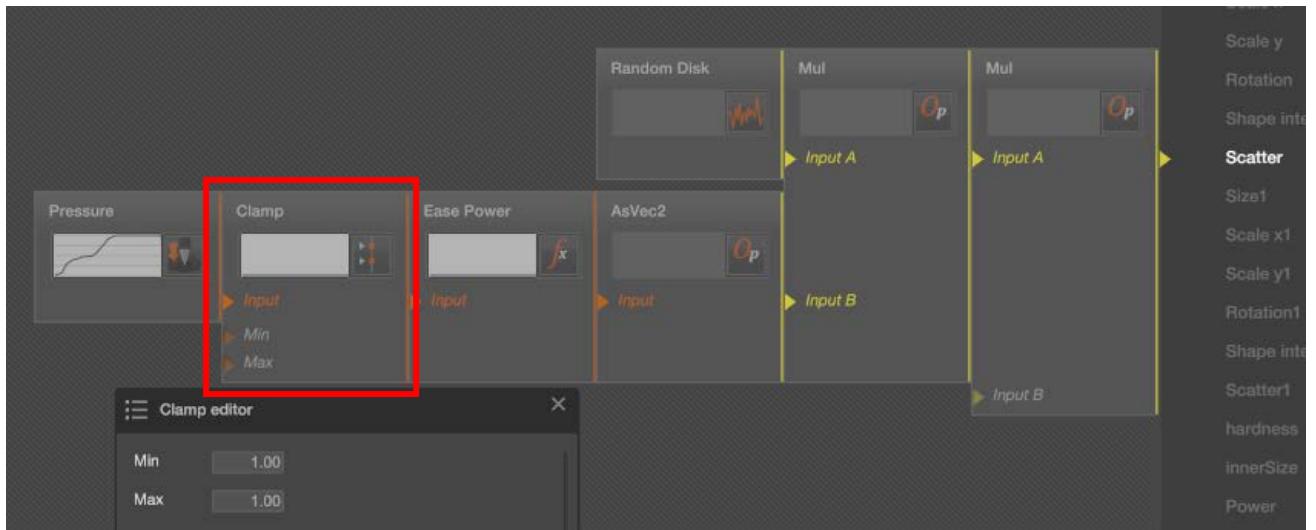


Our brush should have the following behavior:



Since the value of the Scatter is proportional to the pressure, at the beginning of the stroke (at low pressure) we have an almost null value for the Scatter (almost no scattering of data points).

To make constant the value of the pressure we use the node **Mixing-> Clamp** with values Min = 1 and Max = 1:



In this way the value of the output of the node **Clamp** that is always 1 and we get the following section:



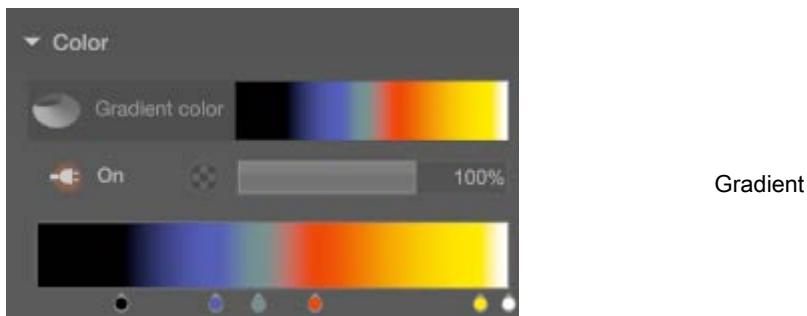
We're almost there: now we have to change the size of points. To do this we create the following controller for the parameter **Size (Size)**:



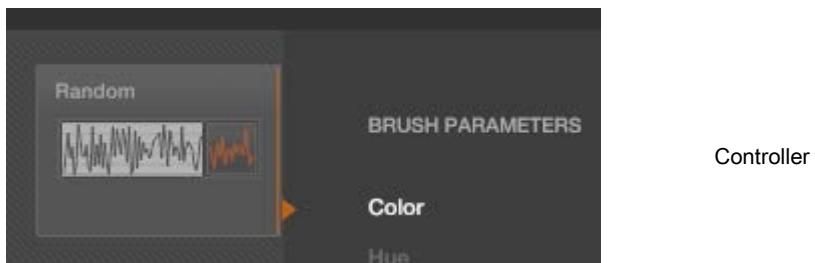
To get the final result of our brush:



To get the randomly colored dots can set the color **Color Gradient**, create a gradient and use a controller for the parameter **Color**:



Gradient



Controller



#### Brush that creates dashed brushstrokes

Our brush base has this trait:



To get a dotted line is necessary to act on the opacity of the brush.

We need to create a controller which has at its output a signal of the following type:



The nodes that are used are as follows:

#### Mod (Float)

Module. Rest of the division between the input A and input B.

In practical terms, it allows you to repeat a value from zero to a defined limit. For example, the length of a module with a 0.5 increase as usual, but when it reaches 0.5, will be restarted by 0.

#### Sub (Float)

Subtract the input B to input A.

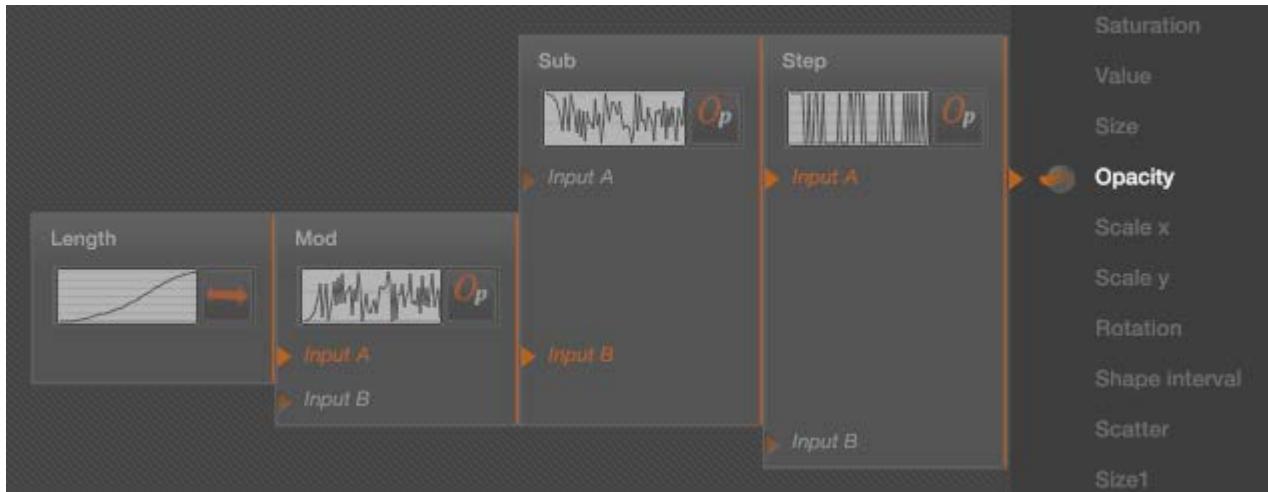
Useful to invert the values: connect the input value in B and A set to 1. For example, if the pressure controls the Opacity, then you will get a more opaque stretch when you press harder and 1-Pressure will do the opposite, making it more opaque when you press less.

### Step (Step)

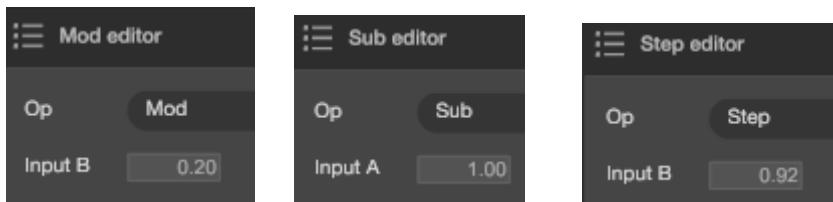
Returns 0 if the input A is less than B, 1 whichever is higher.

In other words, the B value is used to choose whether the input A is converted into 0 or in1. For example: If B is set to 0.5, then 0.1 returns 0, 0.4 returns 0, 0.6 returns 1, 0.9 returns 1.

We build the following controller and colleghiamolo to parameterN **Opacity**:



The parameters are the following nodes:



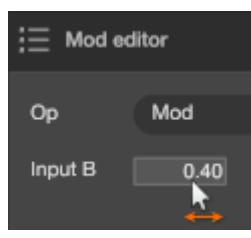
How does it work ?

The signal coming out of the Mod node determines the length of the blank line (opacity to 0%), but varies from 0 to the B input value, and then is inverted by the Sub node. The node Step sets the output to 0 or 1 by comparing the value Input A Input B with the value (threshold value), in other words this node controls the length of the empty line (Opacity 100%).

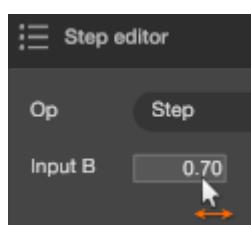
To confirm this behavior, open the window **Brush Preview** (**Windows-> Brush Preview** or with "Ctrl-P") and draw some features:



Try to modify the following parameters:



Varies the length of the blank line  
(Opacity 0%)

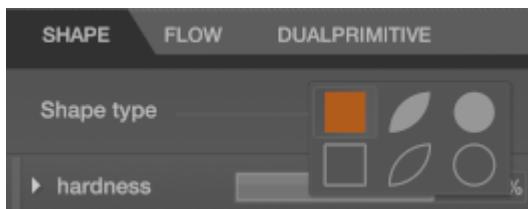


It varies the full length of the line  
(Opacity 100%)

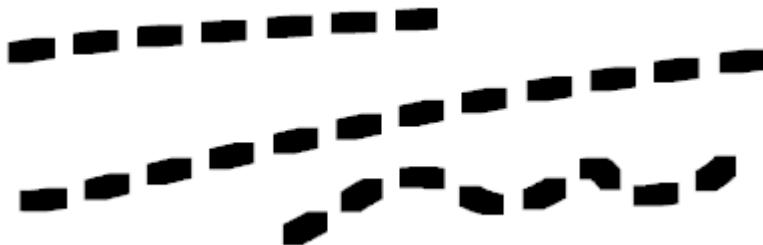
Our brush looks like this:



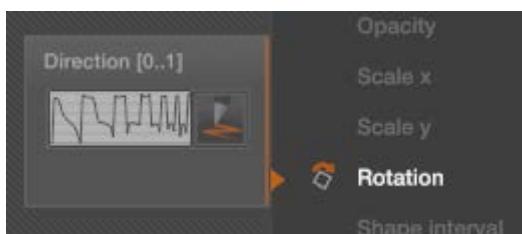
If we want a non-rounded dotted line we can change the shape (Shape) of the brush, choosing the square full:



Let the brush:



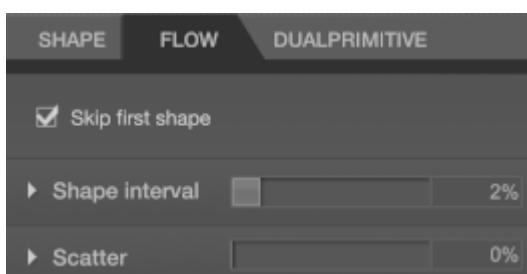
We note that in the curved sections the brush does not behave properly, to solve this problem we need to rotate the tip of the brush with the direction of the pen. We create the following controllers:



And we modify the range of the parameter **Rotation** (Rotation) from 0 to 360 degrees.



Since the first shape (first shape) does not have a direction we enable **Skip first shape** that allows us not to draw it:



And here's the final result:



## Brush Workshop 6: The Brush Tube

In this tutorial we realize a brush that allows you to draw shapes similar to the corrugated pipes (Pipes Ripples):



Set the following parameters:

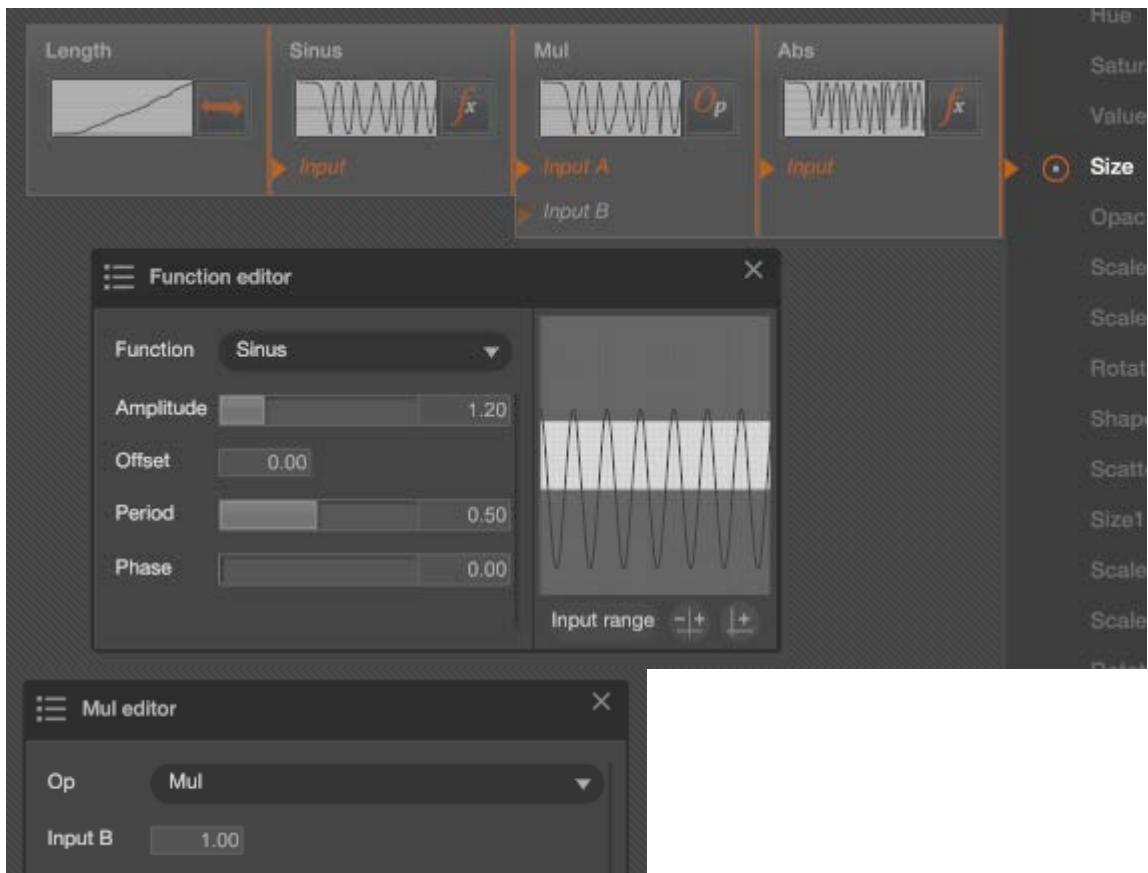
### CONTROLLER

#### Color (Color)

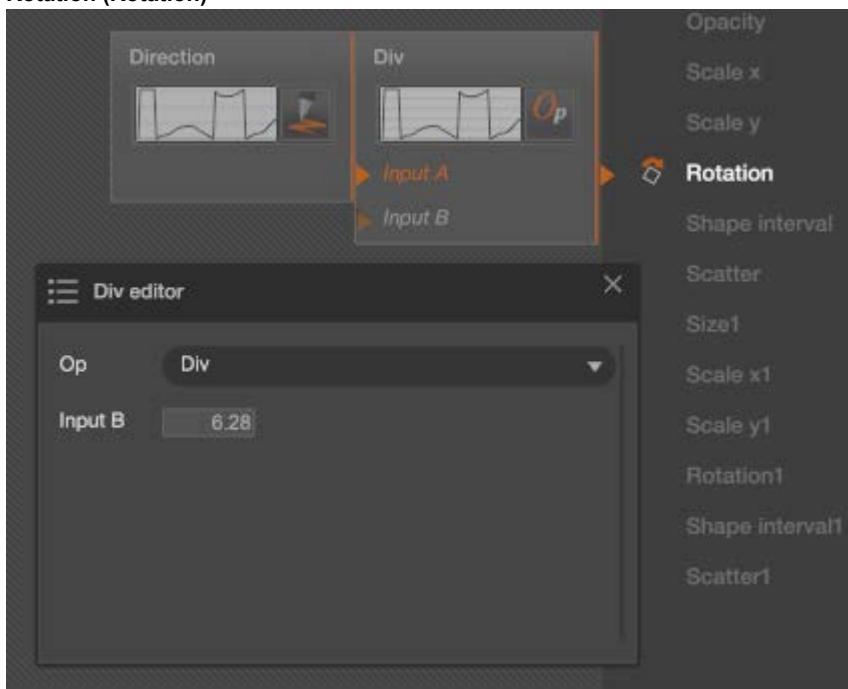
The screenshot shows the brush controller interface with the following settings:

- Length:** Sinus function editor with Amplitude 1.00, Offset 0.00, Period 0.50, Phase 0.00.
- Sinus:** Function editor with Amplitude 1.00, Offset 0.00, Period 0.50, Phase 0.00.
- Abs:** Function editor with Amplitude 1.00, Offset 0.00, Period 0.50, Phase 0.00.
- BRUSH PARAMETERS:**
  - Color: Hue, Saturation, Value.
  - Size: Opacity, Scale x, Scale y, Rotation, Shape interval.

#### Size (Size)

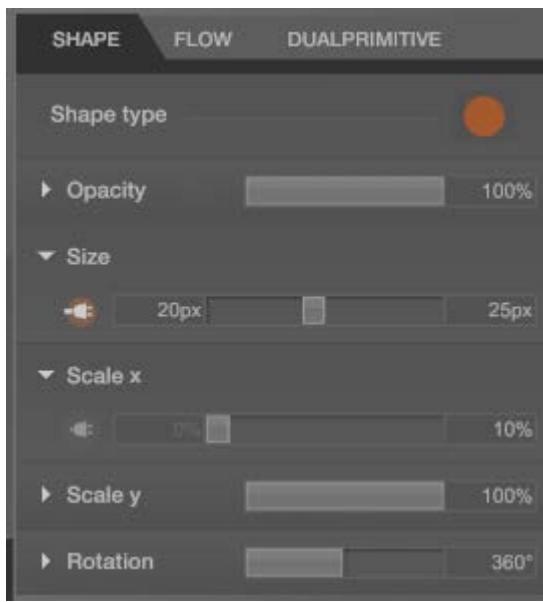


### Rotation (Rotation)



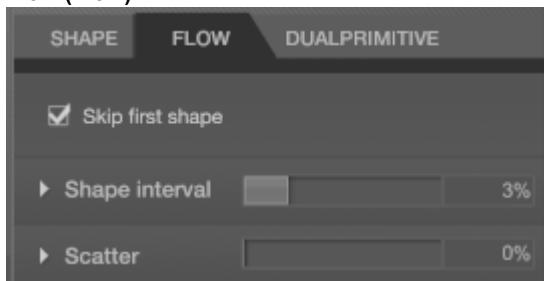
### PARAMETERS of the Brush Shape

(Shape)

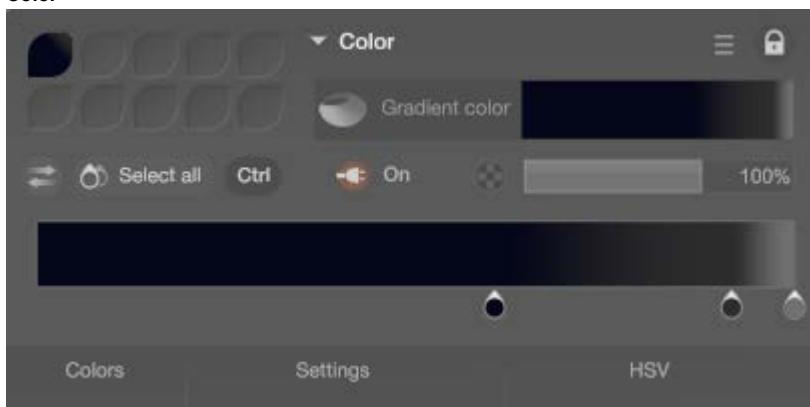


There **Size (Size)** minimum and maximum, and their range greatly change the brush.

#### Flow (Flow)



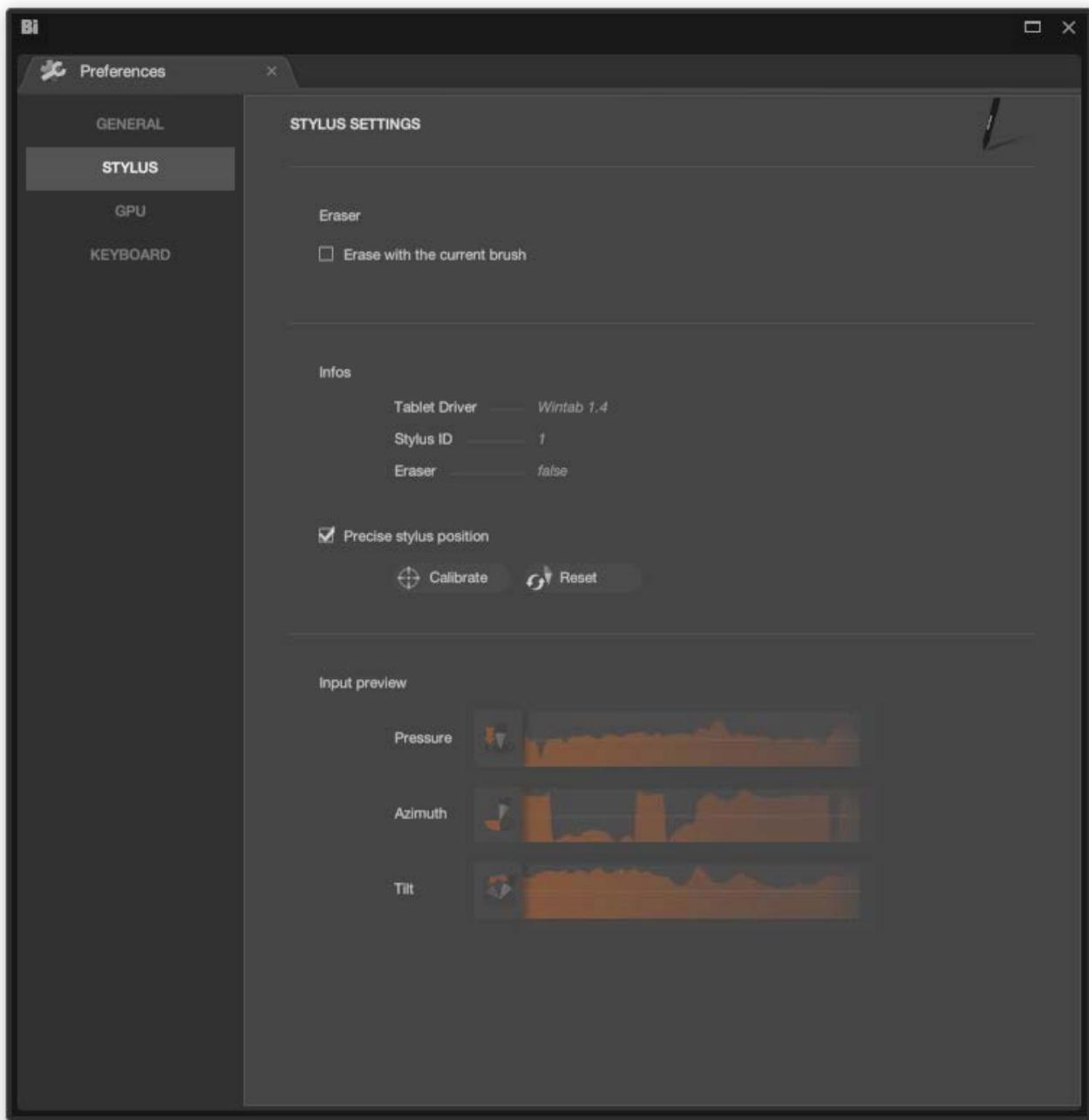
#### Color



Now to understand how each part are trying to change the various parameters and see the effects on the brush. If you followed the previous tutorial should not be too difficult •.

## Tutorial: Setting the tablet with Wacom BlackLink

To see how reacts your tablet while using BlackLink must be selected from the main menu **Windows -> Preferences** and then click **STYLUS**:



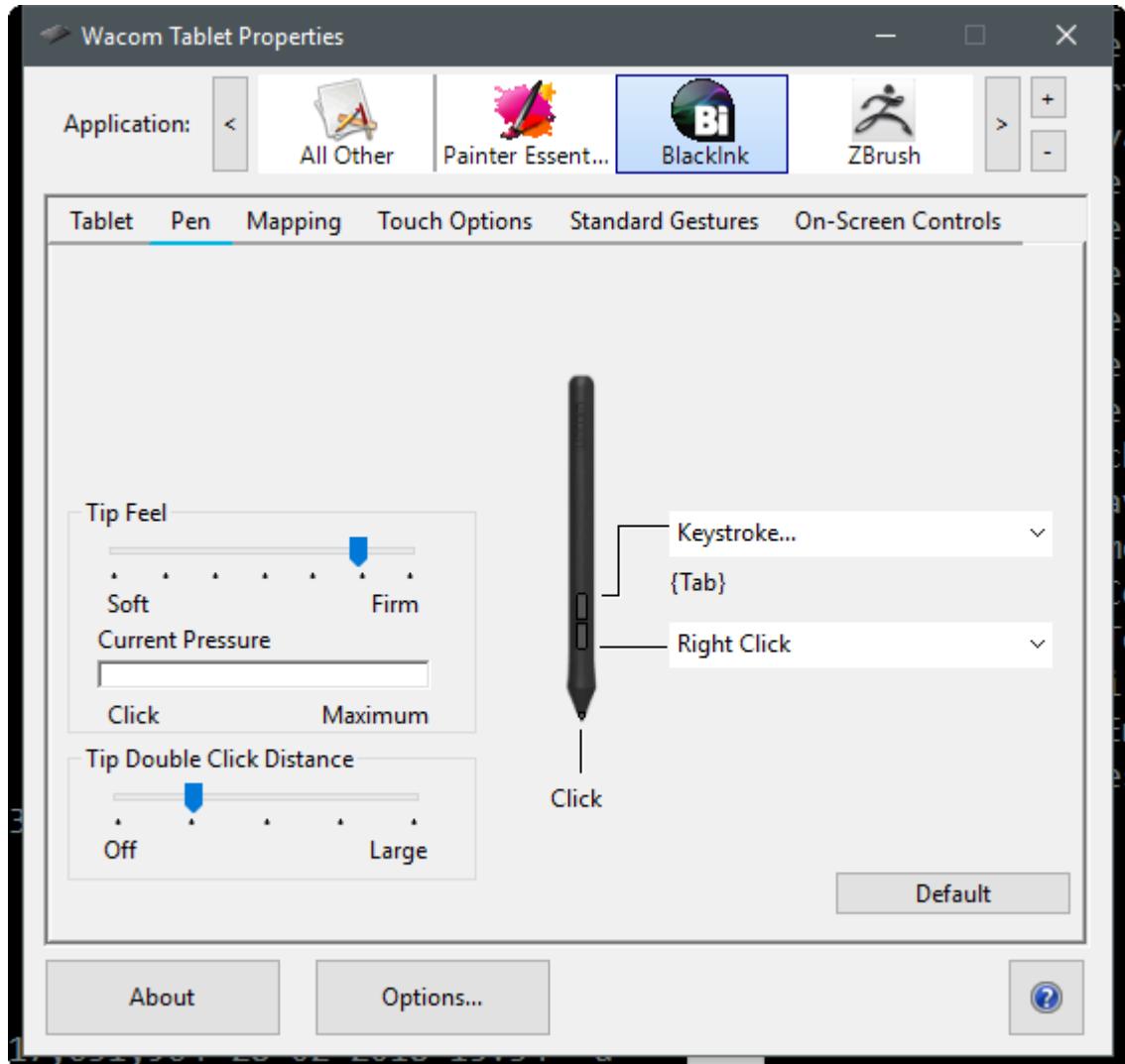
In addition to information on the type of driver used, there is also a graphic display of how to vary the parameters of the tablet when we use it: **Pressure (Pressure)**, **Azimuth is Tilt (Tilt)**. **Caution:** the cheaper tablets do not have the tilt and / or Azimuth.

If we want to set the opacity of the section depending on the tablet's pressure we need to do two things:

- 1) Adjusting the pressure using the tablet driver

2) Opacity setting using the controller BlackLink

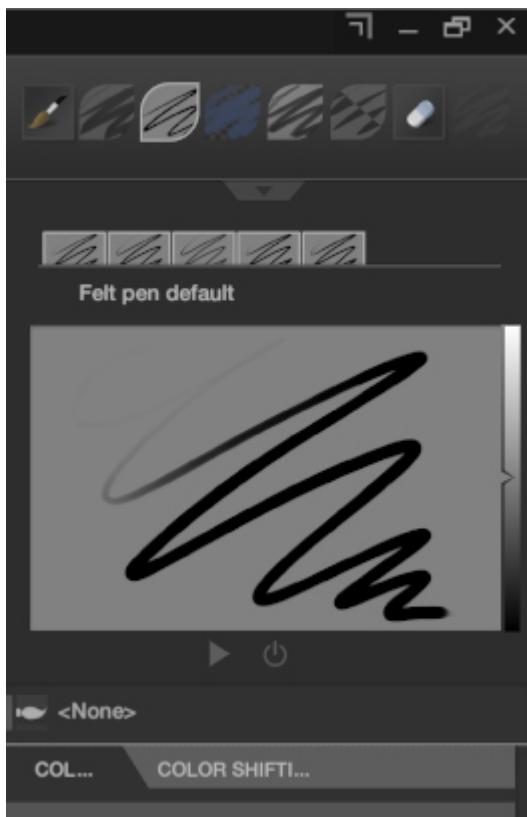
### 1) Adjusting the pressure using the Wacom tablet driver



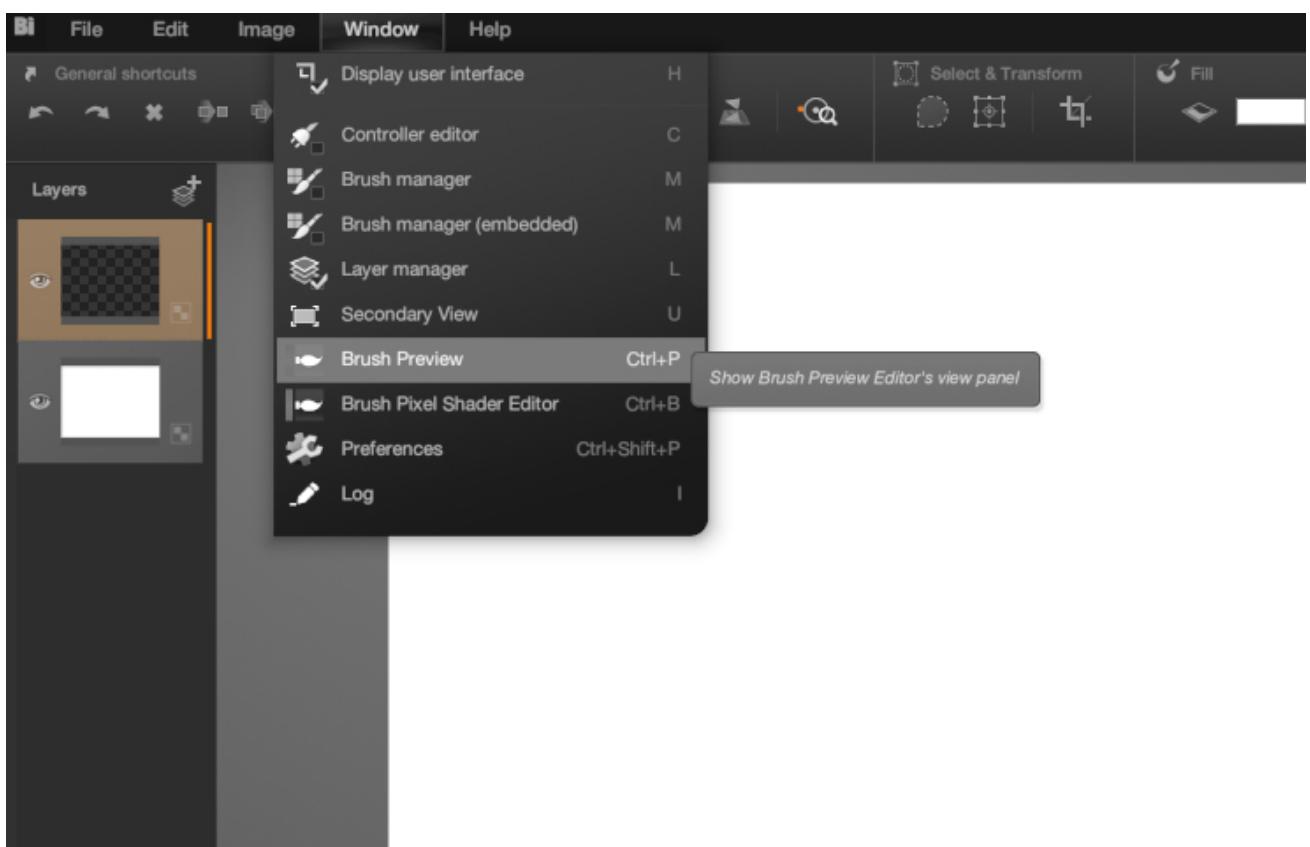
From this window you can set all the parameters of your pen.

### 2) Adjusting Opacity using the controller BlackLink

Now let's adjust the pressure with the controller. Start BlackLink and choose the brush **Felt pen Default**:



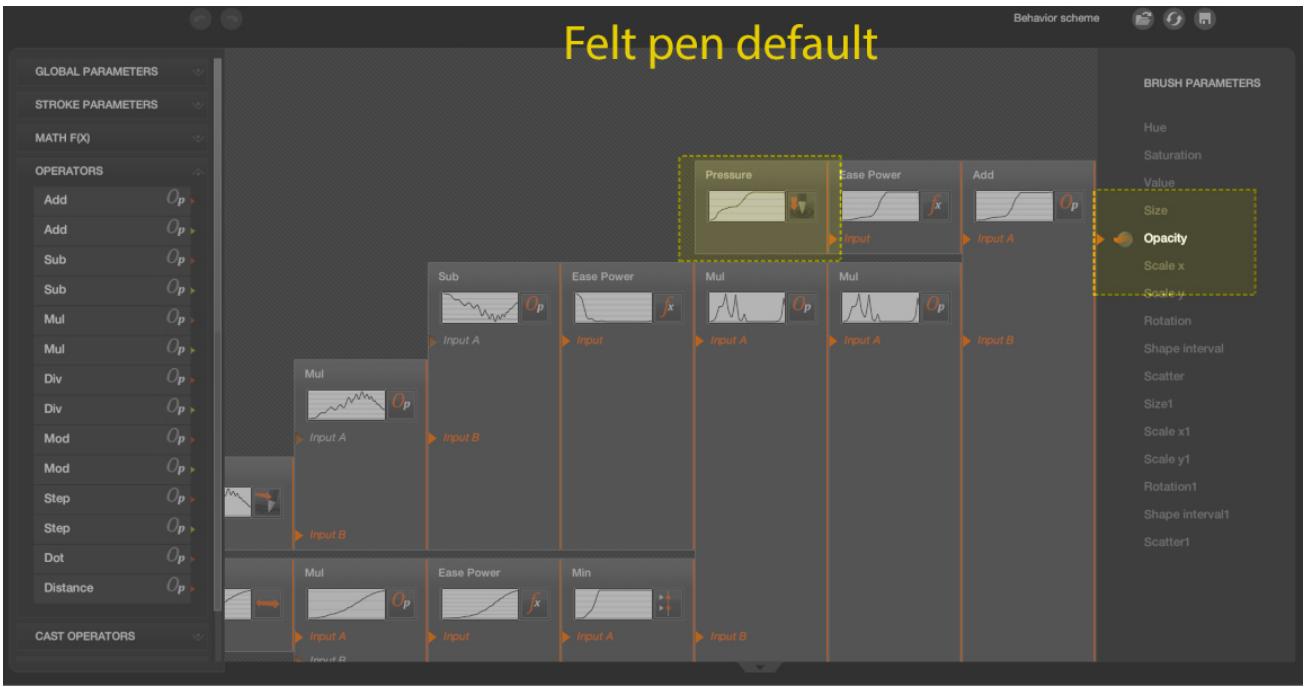
Then open the window **Brush Preview (Preview Brush) (Ctrl + P)**:



We design something as a reference:

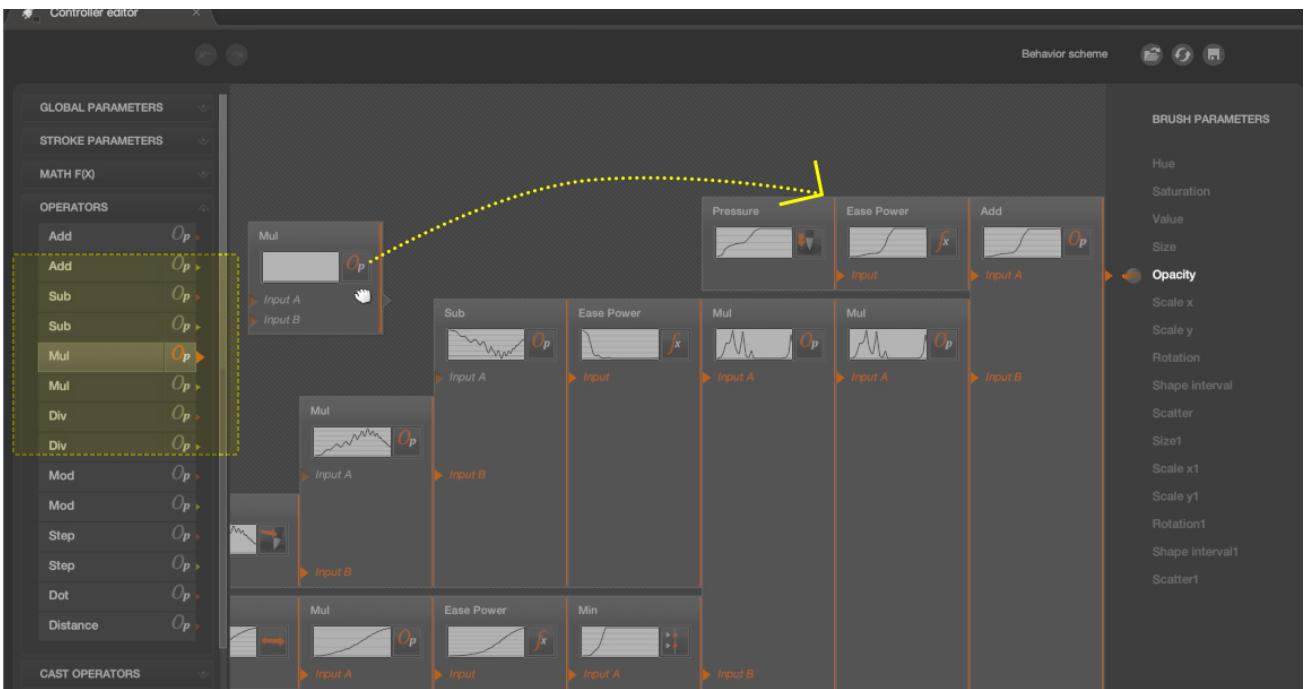


Now we open the panel of **Controller Editor (C)** and choose the parameter **Opacity (Opacity)**:

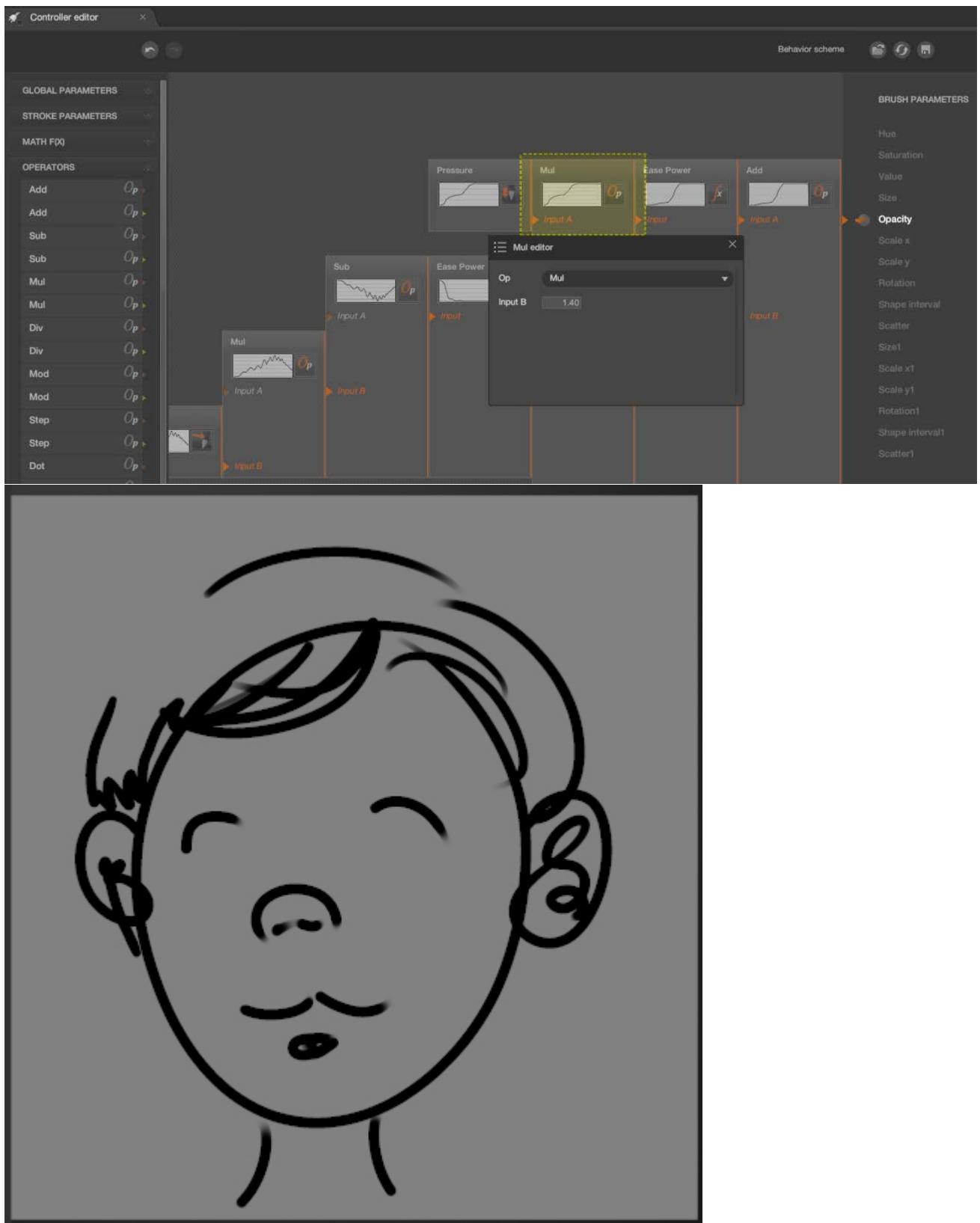


We apply a multiplier to change its intensity. Get the node **Mul** slot **OPERATORS** and enter between the node **Pressure** (**Pressure**) and the node **Ease Power**.

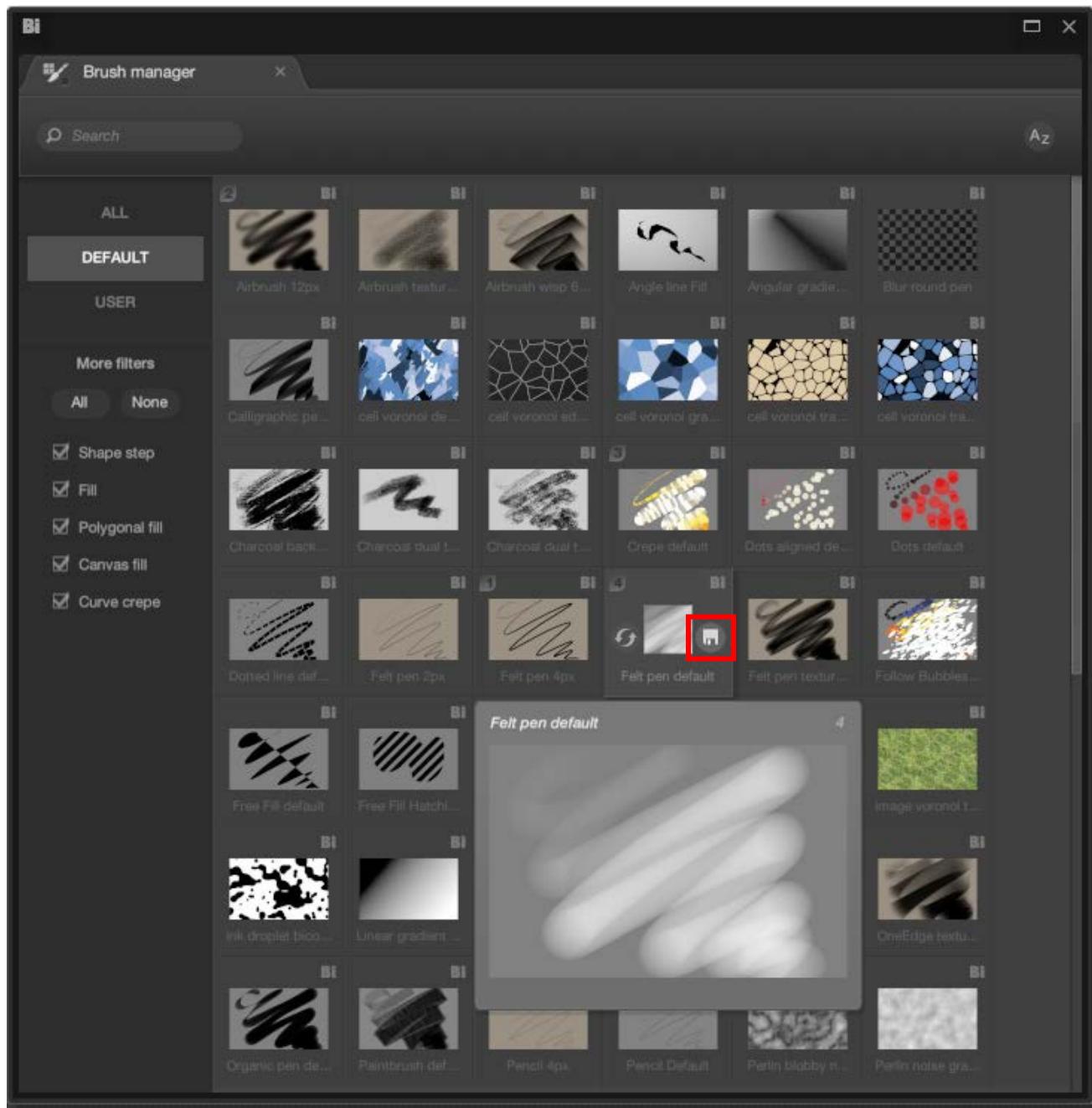
To do this you must first disconnect the knot **Pressure**, connect the node **Mul** to the node **Ease Power** and then connect the node **Pressure** Input A of the input node **Mul**:



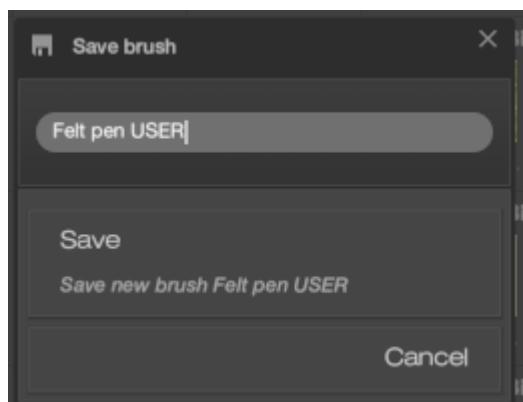
To adjust in a precise way the opacity of the stroke varies the value of **Input B** node **Mul**. During this adjustment observed how they change the lines of the drawing in the window **Brush Preview** (**Preview Brush**)  
(Do some tests to find the value that satisfies you):



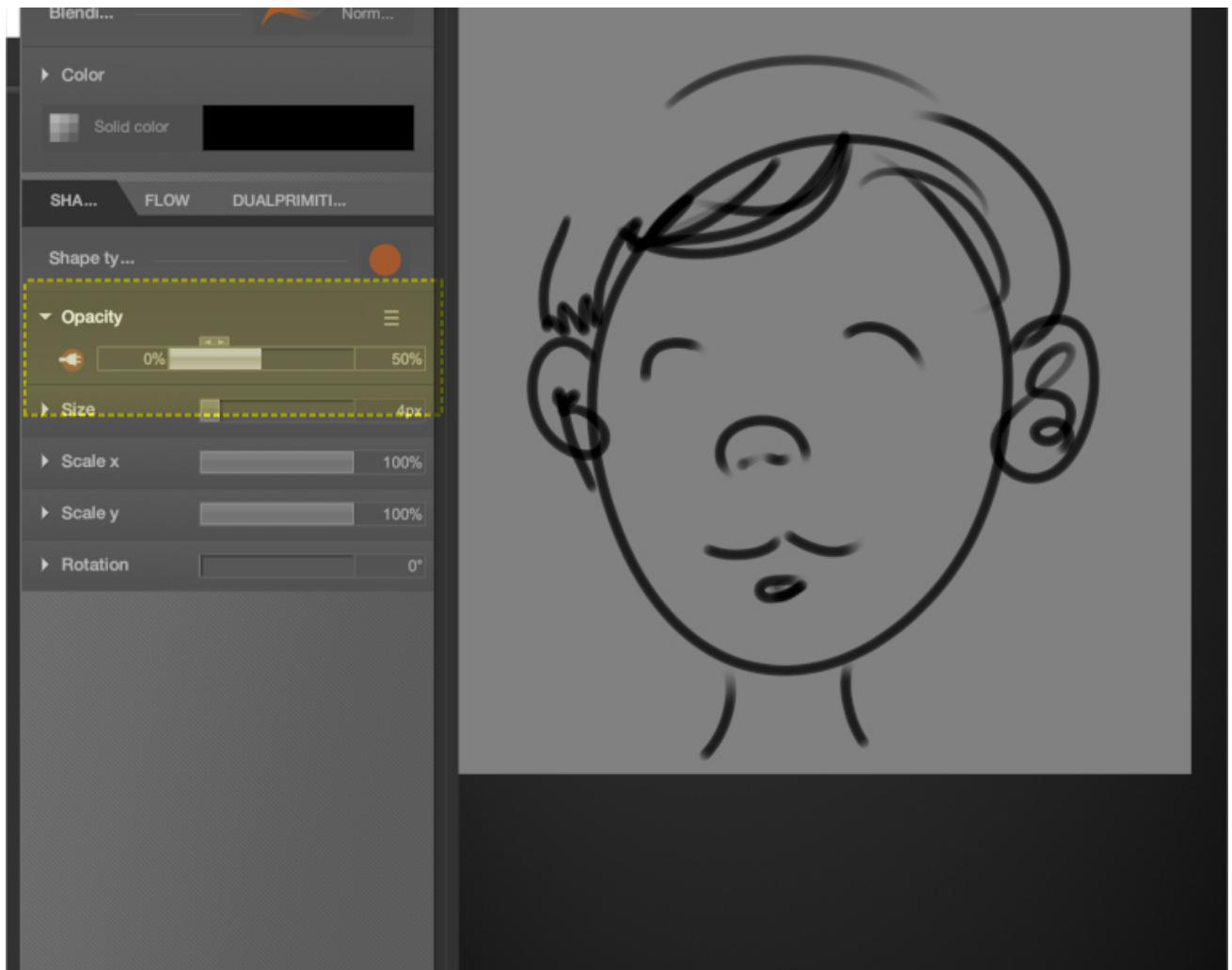
When finished you can save the new brush opening **Brush Manager (M)** and then pressing the button indicated by the red box:



Enter a new name and press the button **Save**:



Of course you can set other parameters as a function of pressure, but you can also change the range of values as in this example:



That's all.

**NOTE:**

If your tablet is not sensitive to the inclination (tilt), then you will have the ability to manage the corresponding node (Tilt).

## Controller Reference

### Global Parameters

#### **Canvas Size (vec2)**

Canvas size in pixels

#### **ViewSize (vec2)**

Current viewport size in pixels

#### **CanvasToView Zoom (Float)**

Size difference between canvas and view. Returns the current zoom value.

#### **Global StartTime (Float)**

Time in BlackInk's second since launch

#### **Global StrokeID (Float)**

The time in seconds since the launch of a specific brush BlackInk

## Stroke Parameters

### Pressure (Float)

Returns the tablet's pen pressure.

Nears 0 When no pressure is applied and goes to 1 at full pressure.

### Speed (Float)

Returns the stroke's speed.

The speed is in pixels / second and then is normalized to [0, 1] from the range [0, 800 px / s] Attaining a speed of 1 requires a very fast movement so you may want to multiply it by for example 5 to get an easier effect.

### Time (Float)

Time elapsed since the start of the stroke.

It goes above 1 very quickly so you might need to divide it by 10 or 20 for direct use time driven. Is a good input for sinus or noise.

### Length (Float)

Length of the stroke. Just like the first time it attains very quickly. Also a good input for sinus or noise.

### Tilt (Float)

The altitude of the tablet's pen inclination.

Returns 1 When the pen is perpendicular from the tablet's surface and nears 0 When it is tilted very close to the surface.

### Azimuth (Float)

The direction in cui the tablet's pen is tilted, in degrees.

When 0 is the pen is oriented towards the top of the tablet. Most common use is to divide it by 360 to Obtain to 0 to 1 value.

### Azimuth (Float)

Returns the azimuth angle (orientation stylus on the tablet) in radians.

### Azimuth [0..1] (Float)

Returns the azimuth angle (orientation stylus on the tablet) as a unit vector.

### Direction (Float)

The direction of the stroke in radians (not degrees).

0 is going towards the left of the document. Like the azimuth, you will most of the time want to divide it by  $2\pi$ . For example, to make shape to follow the direction of the stroke, divide by 2 direction  $\pi$ , plug it in the rotation parameter and Set the brush rotation from 0 to 360.

### Direction (vec2)

Stroke direction as a vector in space canvas

### Direction [0..1] (Float)

Normalized stroke direction in space canvas

### View Direction (Float)

Stroke direction in plan view

**View Direction (vec2)**

Stroke direction in plan view

**View Direction [0..1] (Float)**

Normalized stroke direction in plan view

**Direction Perpendicular (vec2)**

Unit vector perpendicular to the stroke direction in space canvas

**Pos (Float)**

Current position (X and Y) on the document, in pixels, from the top left corner.

**Pos [0..1] (Float)**

Current position on the document, normalized, from the top left corner. X returns 0 on the left of the document and one on the right, Y 0 at the top and one at the bottom.

**View Item (Float)**

Current position (X and Y) in BlackInk's drawing viewport, in pixels, from the top left corner.

**View Pos [0..1] (Float)**

Current position (X and Y) in BlackInk's drawing viewport, normalized, from the top left corner.

**Primitive ID (Float)**

The number of the current primitive since the beginning of the stroke.

## **Math F (X)**

### **Ease Cubic (Float)**

Simple ease function to smooth the ends of a value.

### **Ease Power (Float)**

Power function.

The value is Multiplied by itself a number of times defined in the block's parameters. The result is a fair staying closer to zero Unless it nears 1. Useful with pressure to Gain More Control over low pressures and keep the highest values for intentionally When really pressing on the tablet.

### **Easy Elastic (Float)**

### **Sinus (Float)**

Returns a wave effect from an input: Regularly the value goes up and down between -1 and 1. The block's parameters are predefined to return a result between 0 and 1, for easier use. Time or Length inputs are good Because They Both have Constantly Increasing values.

### **Abs (float)**

Returns the absolute value of the input. -0.5 returns 0.5, 0.5 returns 0.5.

### **Abs (vec2)**

Returns the absolute value of the input. -0.5 will return 0.5, 0.5 will return 0.5.

### **Floor (Float)**

Returns the nearest integer lower. 0.5 returns 0, returns 1.5 1 2.5 2 returns.

### **Floor (vec2)**

Returns the nearest integer lower. 0.5 returns 0, returns 1.5 1 2.5 2 returns.

### **Ceil (float)**

Returns the nearest higher integer. -1.1 will return -1, 0, 0 will return, will return 1.2 2 2.8 3 will return, and so on.

### **Ceil (vec2)**

Returns the nearest higher integer. -1.1 will return -1, 0, 0 will return, will return 1.2 2 2.8 3 will return, and so on.

### **Frac (float)**

Returns the fractional value of the input. 0.5 returns 0.5, 1.5, 0.5 returns, returns 2.5 0.5.

### **Frac (vec2)**

Returns the fractional value of the input. 0.5 returns 0.5, 1.5, 0.5 returns, returns 2.5 0.5.

### **Exp (Float)**

Exponential function.

### **Log (Float)**

Logarithmic function.

**Perpendicular (vec2)**

Returns a vector perpendicular to the vector input.

**Swap (vec2)**

Swaps the X and Y values of a vector.

**Normalize (vec2)**

Normalizes a vector.

## operators

### Add (Float)

Adds input A and input B.

### Add (vec2)

Adds input A and input B.

### Sub (Float)

Subtracts input B to input A.

Useful to invert values: Plug the input value in set A and B to 1. For example a pressure in opacity will make the shape more opaque When you press harder and 1-Presure will do the opposite, making it more opaque When you press less .

### Sub (vec2)

Subtracts input B to input A.

This can be easily used an invert value. Plug the value input into sets A and B to 1. For example a pressure in opacity will make the shape more opaque When you press harder and 1 - Pressure will do the opposite, making it more opaque When you press less.

### Mul (Float)

Multiplies input A and input B.

Very easy to use operation: for example, multiplying in value by the pressure will (at low pressure) multiply by a number closer to 0, making it smaller. At full pressure, it will multiply by 1, not changing it.

### Mul (vec2)

Multiples input A and input B.

### Div (Float)

Divides input A by input B.

### Div (vec2)

Divides input A by input B.

### Mod (Float)

Module. Remainder of the division of input A by input B.

In practical terms, it Allows to repeat in value from zero to a defined limit. For example with a module length at 0.5 will go up as usual but When it attains 0.5, will restart from 0.

### Mod (vec2)

operator module. The remainder of the division of input A by input B. Allows a value to increment from 0 to a defined limit, and then restart from 0 When It Reaches the limit

### Step

Returns 0 if input A is inferior to B, if one superior.

In other terms, the B value is used to choose Whether the A input is converted to a 0 or a 1. For example: If B is Set to 0.5, 0.1 returns 0, 0.4 returns 0, 0.6 returns 1, 0.9 returns 1.

### Step (vec2)

Returns 0 if input A to B is lower, 1 if greater. It is a bit like a boolean check. If B is Set to 0.5 A at 0.1 will return 0 as it's lower. If A is 0.6, it will return 1 as it's greater.

#### **Dot (Float)**

Dot product operation between two vectors. Returns 1 When vectors are pointing in the same direction, 0 and -1 When They are perpendicular When pointing in the opposite direction.

#### **Distance (Float)**

Returns the distance between two vectors.

## Cast Operators

### **AsVec2 (vec2)**

Creates a vector2 with the input value as X and Y.

### **ToVec2 (vec2)**

Combines inputs A and B into a vector2.

### **ToVec2Normalize (vec2)**

Combines inputs A and B into a normalized vector2.

### **GetX (Float)**

Returns the X value of a vector.

### **GetY (Float)**

Returns the Y value of a vector.

### **GetAngle (Float)**

Returns a vector's angle in radians.

### **GetAngle [0..1] (Float)**

Returns the normalized angle (between 0 and 1) of a vector in radians.

### **GetLength (Float)**

Returns the length of a vector.

### **FromSpherical (vec2)**

Creates a vector from an angle (float) and a length (float).

## Signals

### Smooth (Float)

Smooth the input value by factor.

### Smooth (vec2)

Smooths the input value by a factor.

### Random (Float)

Generate a random value between 0 and 1. It has no input. Fun for creating a brush with unpredictable features.

### Random Disk (vec2)

Generates a uniform random value within a circle with a radius of 1 as a vector2.

### Random Square (vec2)

Generates a uniform random value from -1 to 1 on Both X and Y as a vector2.

### Smooth Noise (Float)

Generate a smooth noise from the input value. Time or length are Often used for most common regular results.

### Smooth Noise (vec2)

Generates a smooth noise from the input value. Time or length are Often used with this for regular results.

### Noise Cell (Float)

Generate a square noise from the input value. The value jumps from one result to another without interpolation.

### Noise Cell (vec2)

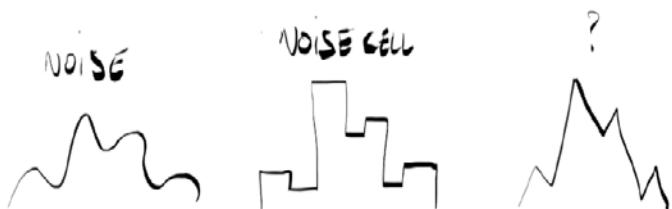
Generates a square noise from the input value. This causes the value to jump from one result to other, with no interpolation (smoothing).

### Noise Triangle (Float)

Generates an angular noise.

### Noise Triangle (vec2)

Generates an angular noise.



## MIXING Mix

### (Float)

Blends input A and input B by the factor inputs.

When the factor value goes towards 0 the result Tends to be the value given in A and when going towards one, the one in B. A factor of 0.5 is the average of the two inputs.

### Mix (vec2)

Blends input A and input B by the factor inputs.

### Min (Float)

Returns the lowest value between input A and input B.

### Min (vec2)

Returns the lowest value between input A and input B.

### Max (Float)

Returns the highest value between input A and input B.

### Max (vec2)

Returns the highest value between input A and input B.

### Clamp (Float)

Limits input value to min and max.

Every value below min becomes the min and every value above the max. Notes that once plugged in the final output, the parameters only consider values between 0 and 1 so there's no need to clamp before use.

### Clamp (vec2)

Limits input value between a min and a max.

Every value below min will become the min, and every value above will become the max. Once plugged into the final output parameters only consider the values between 0 and 1.

## Shortcuts

COMMON	
Ctrl + N	New
Ctrl + Shift + N	New ... (Creates pop-up and gives you control over canvas size and resolution)
Ctrl + O	Open
Ctrl + S	Save (Save the current document)
Ctrl + Shift + S	Save As
Ctrl + F4	Quit
Ctrl + Z	Undo
Ctrl + Y	Redo
Ctrl + C	Copy
Ctrl + Shift + C	Copy Merged
Ctrl + X	Cut
Of the	Delete the active layer content
Ctrl + V	Paste
Esc	Exit
NAVIGATE	

To get back to a default view, hover the navigation icons in the main toolbar to reveal Their options.

Hold Space	Pan / Move around the canvas
Hold R	Rotate the canvas
Shift + R	Snap rotation
Ctrl + R	Remove Rotation
Hold Q	Zoom in and out
Ctrl + 1	Zoom to 100%
Ctrl + 0	Fit to screen canvas
+	Zoom in (Step Zoom in)
-	Zoom out (Step Zoom Out)
VIEW	
F	Flip Horizontal (Drawing view is flipped horizontally)
Shift + F	Flip Vertical (Drawing view is flipped vertically)
Y	<u>Constant screen brush size (Brush size depends on zoom level view, it's constant with it)</u>
PAINT	
General	
Hold S	Change the size of your brush moving the mouse or stylus
Hold Z	Set the drawing smoothness
Hold D	Change the color of your brush opacity moving the mouse or stylus
Brush	
Number 1-5	Switch between your favorite brushes
B	Come back to your previous brush
Hold Shift	Constrain your brush as straight line drawing When You Are
K	Toggle Straight line mode
Y	Toggle viewconstant brush size
Eraser	
hit It	Switch between the eraser / brush

Hold It	Erase with the current brush.
<b><u>That means That You can now with an erase any brush you like!</u></b>	
Color Picker	
Hold Alt	Quickly pick a color (This works Only When using the solid color mode)
FILL	
hit G	Fill layer / selection
Ctrl + G	Fill layer alpha
Ctrl + Alt + G	fill transparency
fill eyedropper	
Alt + G	Quickly pick a fill color
SELECTION	
General	
W	Start selection
Ctrl + Shift + A	Select Current Layer Opacity
Ctrl + A	select All
Ctrl + I	Invert selection
Ctrl + D	Deselect
Shift + Draw	Preserve Ratio 1: 1 (Rectangle and Ellipse selection only)
Operations	
Shift + Draw	September Add operation
Alt + Draw	September Sub operation
Shift + Alt + Draw	September Intersection Operation
Adjustment	
Shift + Click	Add a point to the line (polygonal lasso only)
Shift + Click	Delete a point (polygonal lasso only)
Ctrl + T	Transform latest selection
TRANSFORMATION	
T	Transform gizmo
Hold Shift	Constrain axis displacement angle and snap
Shift + C	Crop Tool
SHOW	
H	Toggle user interface
Ctrl + ←	Left panel layout
Ctrl + ↓	Bottom panel layout
Ctrl + →	Right panel layout
Panel	
C	Toggle brush control editor
THE	Toggle layer manager
M	Toggle Brush Manager panel
U	Show secondary view panel
THE	Show log view panel

## Shortcuts Blacklink

Command Name	Shortcut
New	Ctrl+N
New..	Ctrl+Shift+N
Open..	Ctrl+O
Save	Ctrl+S
Save as..	Ctrl+Shift+S
Exit	Ctrl+F4
Undo	Ctrl+Z
Redo	Ctrl+Y
Toggle controller editor	C
Toggle layer manager	L
Toggle secondary view panel	U
Toggle log view panel	I
Toggle brush manager panel	M
Preferences	Ctrl+Shift+P
Brush Preview	Ctrl+P
Brush Pixel Shader Editor	Ctrl+B

Toggle Black Ink User Interface	H
Toggle left panel layout	Ctrl+Left Arrow
Toggle bottom panel layout	Ctrl+Down Arrow
Toggle right panel layout	Ctrl+Right Arrow
UI Scaling	 Ctrl+Q
Cut	Ctrl+X
Copy	Ctrl+C
Copy merged	Ctrl+Shift+C
Paste	Ctrl+V
Clear	Del
Resize..	Ctrl+R
Crop Tool	Shift+C
 Enable snapping	 Shift
Fit on screen	Ctrl+Num 0
100% zoom	Ctrl+Num 1
Zoom In	Num +
Zoom Out	Num -

Canvas view move		Space
Center view		Ctrl+Space
Zoom in and out		Q
Rotation Tool		R
Remove rotation		Ctrl+Shift+R
90° counter clockwise		Shift+Alt+R
90° clockwise		
Toggle flip horizontal		F
Toggle flip Vertical		Shift+F
Toggle Constant screen brush size		Y
Brush Favorite 1		Num 1
Brush Favorite 2		Num 2
Brush Favorite 3		Num 3
Brush Favorite 4		Num 4
Brush Favorite 5		Num 5
Select Previous Brush		B
Toggle the eraser		E

Toggle the eraser	E
Erase with the current brush.	 E
Fill all	G
Fill Alpha	Ctrl+G
Fill invert Alpha	Ctrl+Alt+G
Fill eye dropper	Alt+G
Smoothness	 Z
Set Brush Size	 S
Set Brush Opacity	 D
Straight line draw mode	K
Transform Tool	T
Transform selection	Ctrl+T
Selection tool	W
Select All	Ctrl+A
Select alpha	Ctrl+Shift+A
Invert selection	Ctrl+I
Deselect	Ctrl+D
Color eye dropper	 Alt