

Liquid rescale in gimp

“there is always room for improvement”



Interaction design for the real world

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1. introduction

Main focus of the project was a layer function called liquid rescale for gimp version 2.6. Since it is a plugin it's not supported natively.

The liquid rescale tool surely has lots of potential and can be used in a time-saving way for creative professionals. But it also showed weaknesses.

2. functionality

The name of this plugin more or less says what it was made for. The rescaling of images with a different approach. It has the ability, if used in the right way, to shrink or grow images while adding or deleting pixels, keeping the original aspect ratios and even removing certain objects.

description of the functions:

- box to set the width
- box to set the height
- box where users can choose the according units
- an autosize function for width and height
- reset button
- last used values button
- interactive button - preview on canvas
- feature preservation mask: users can mask areas that will not be affected
- feature discard mask: users can mask areas that they want to be removed

sub-functions for masking:

- new layer buttons for each mask
- checkboxes to activate or deactivate masks
- sliders to set strength of the mask-application

output:

- checkbox where users can choose to render the result into a new layer
- checkbox to resize the canvas according to the output
- checkbox to resize the mask with the result
- checkbox to create a new layer that shows the pixel-seams
- colour-indicators for first and last seam
- checkbox to scale the image back to its original size
(dropdown-menu with different modes)

advanced:

- slider for maximum displacement (seam carving)
- slider for overall rigidity of the seams
- same mask functions as before but for a rigidity mask
- gradient functions - affect the way pixels are blended into each other
- rescale order - horizontal or vertical first
- checkbox for ignoring the discard mask while enlarging

basic buttons:

- help button that links to the documentation webpage
- reset button switches back to initial values
- refresh button - needed to see the masking that was applied on the canvas
- cancel button
- apply button

3. user scenarios

According to the variety of parameters the possibilities for working with liquid rescaling also spread into various directions:

3.1. grow and/or shrink an image:

Basic and quick way of scaling. Valuable if users want to rescale an image without losing the resolution-quality.

3.2. grow/shrink with masks:

Users mark an area with the specific tools that later will either be removed or especially protected in the scaling process.

3.2.1 masking to preserve:

Users create a new layer that defines parts to protect. This adds a certain precision to the scaling process. Depending on the actual image, some objects might be affected in a negative way if not protected by a mask.

3.2.2 masking to discard/remove

The precise way of removing unwanted image sections that have to be in a reasonable size according to the total size of the picture without leaving a trace. Users create a new layer that masks the parts to eliminate.

3.3. creative usage:

Professional users and creative minds will use it for artistic results, it works as an arsenal of effects that encourage experimentation.

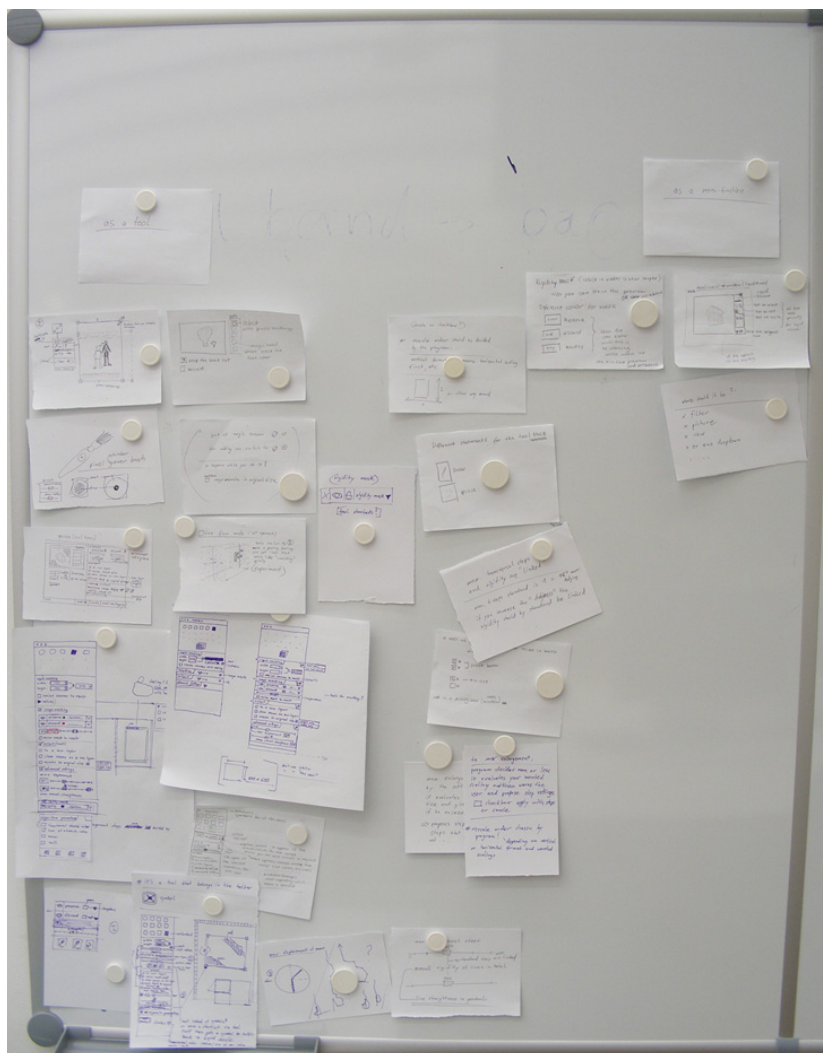
4. evaluation

While evaluating liquid rescaling in its current state we quickly came to the main fields for improvement:

The placement of the tool as a layer-function is certainly not appropriate. Some labels or their naming is simply too complicated and not really explaining what they actually do. A hierarchy for the different steps of working is missing and not having it in the toolbox leads to, it overlapping the canvas while masking.

5. brainstorming

The team basically began with two main ideas - keeping the liquid rescaling plugin as a menu window or implementing it into the toolbox. From there we started sketching and collecting different aspects of the tool and its usage.

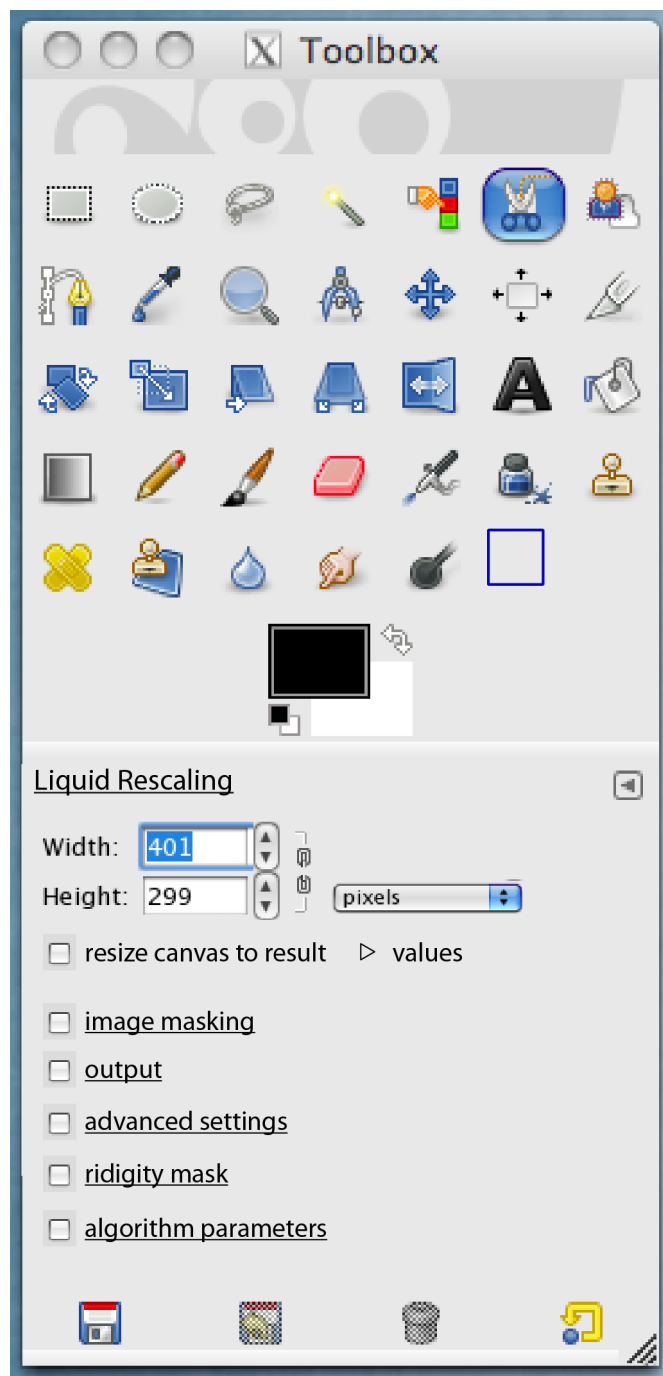


6. concept

Users tend to work with a tool with as little setting manipulation as possible and with further experience on it they progress to the advanced application.

A reduction of visible functions for example by drop-down menus or checkboxes that then reveal new ways of working is a good option.

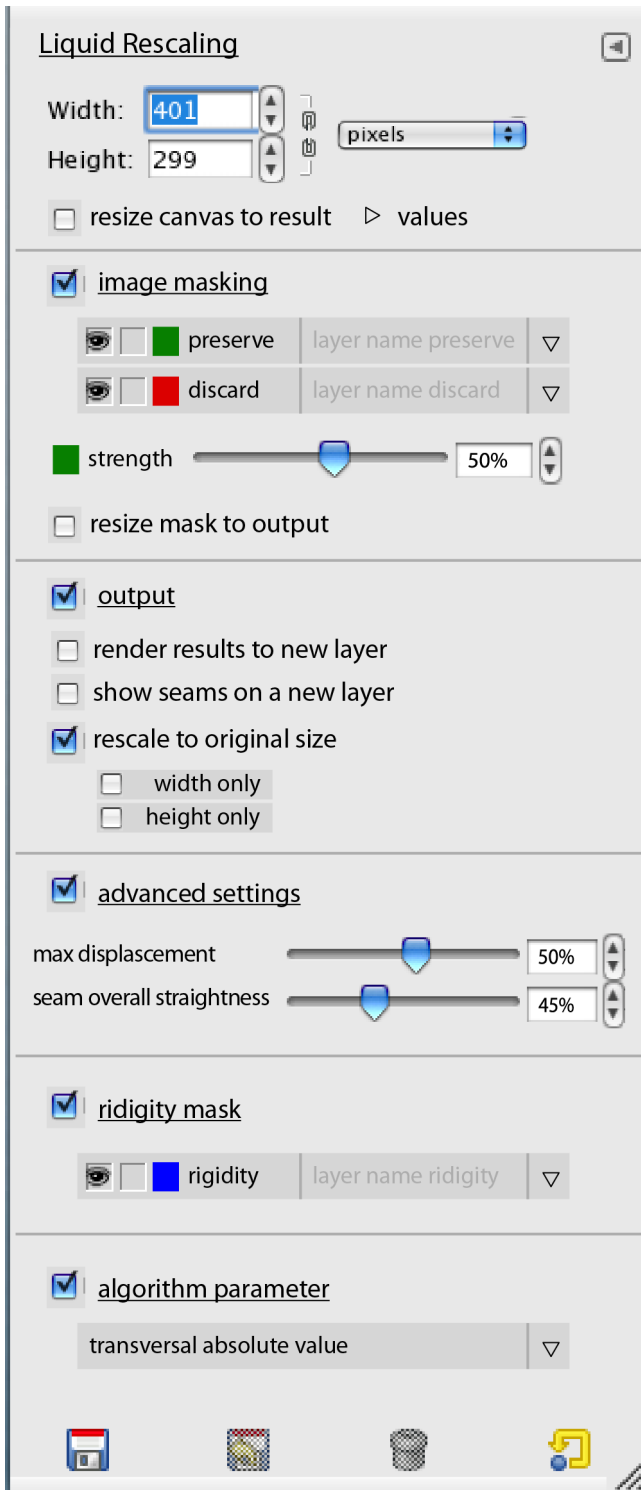
Implementing it to the toolbox has the advantage that the main workspace will always be visible to users. It also allows scaling by dragging handles, an improved workflow while masking and a direct preview of the actual output.



initial state:

Only the basic parameters are available. Setting the width and height. Changing the according units. checkbox for resizing the canvas to the result size > the values switch gives the users the option to reset the values or work with the last used values.

If imagemasking gets selected it reveals the masking system (described on the next page). Same effect for output, the advanced settings the rigidity mask and the algorithm parameters.



the whole thing:

Basic parameters as on initial state.

Imagemasking is selected and users see its own masking layer system.

Red represents the preserve mask.

Green stands for the discard mask.

Depending on the mask you selected the coloured box set before the strength indicates what users change.

The value was changed to percent to give a clearer indication of the actual impact.

Another checkbox is used to resize the mask related to the image.

Output options:

We made small reductions on the naming - they mainly do what they say.

The advanced settings:

Maximum displacement means the limitation of the angle that the seams can take to avoid pixels that are high in contrast.

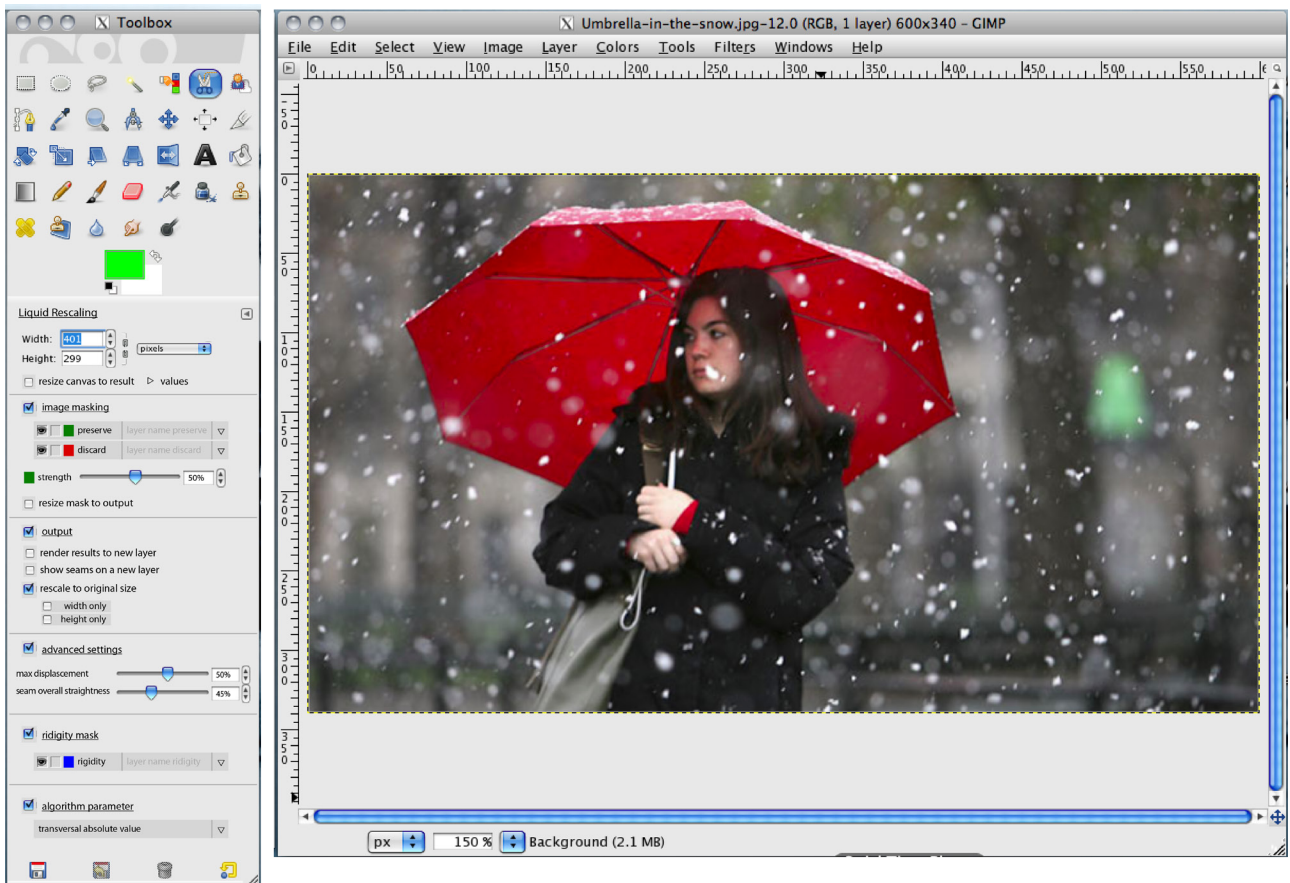
(value is set in degrees - by standard 45° maximum).

The seam overall straightness (before called rigidity) compensates high values in the maximum displacement parameter. By standard they should be linked or if users turn them to an extreme value an additional warning would hint on their relation (see also pencil version).

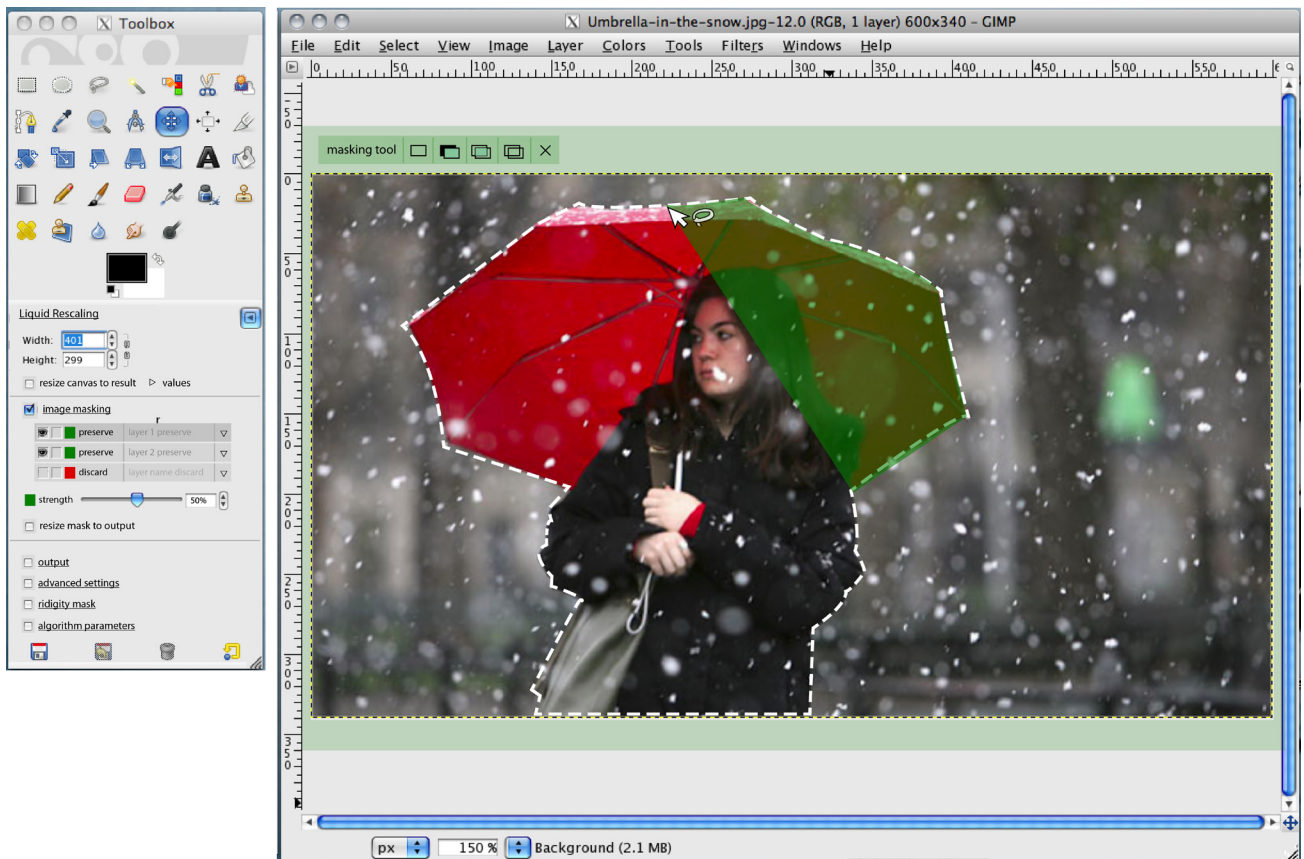
The rigidity mask works like the other image masking elements and is visualized in Blue.

The algorithm parameters were kept the same as before.

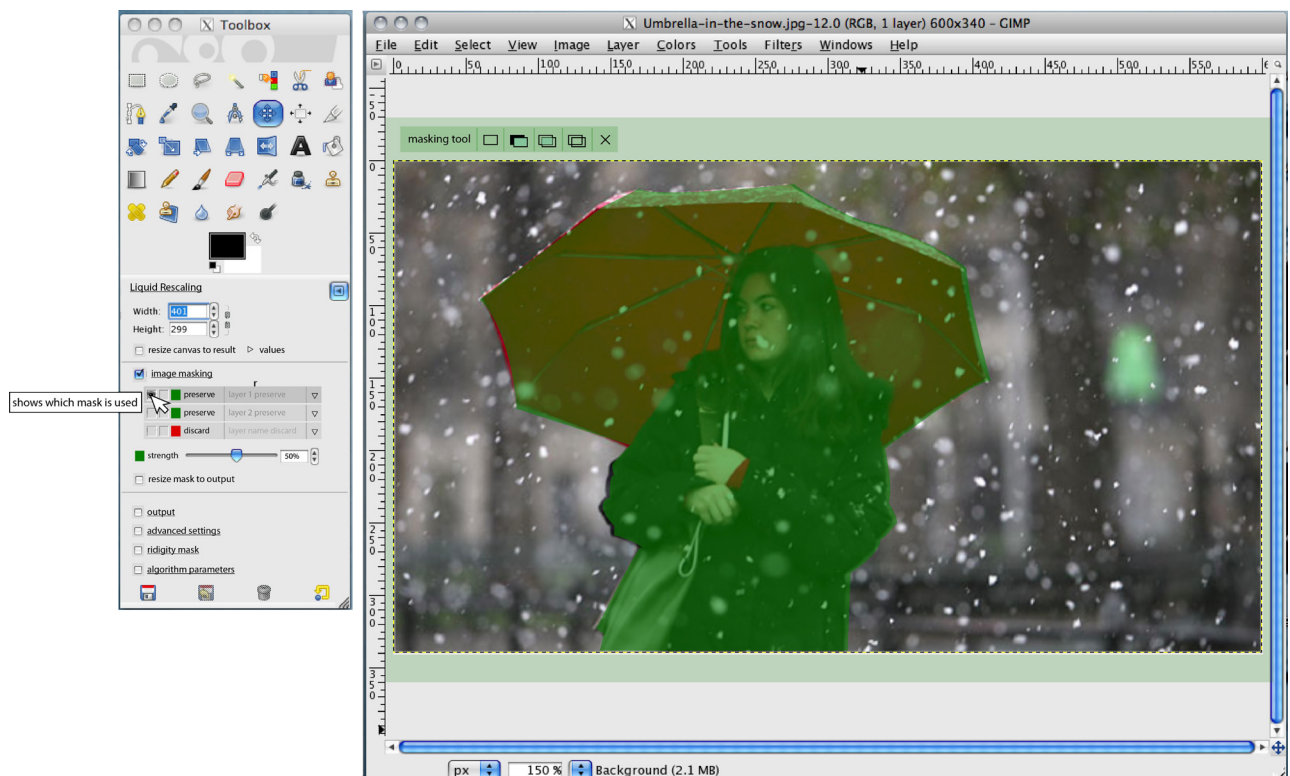
In the picture beneath the look and feel of the tool as a total is illustrated. Especially the toolbox set in relation to the canvas.

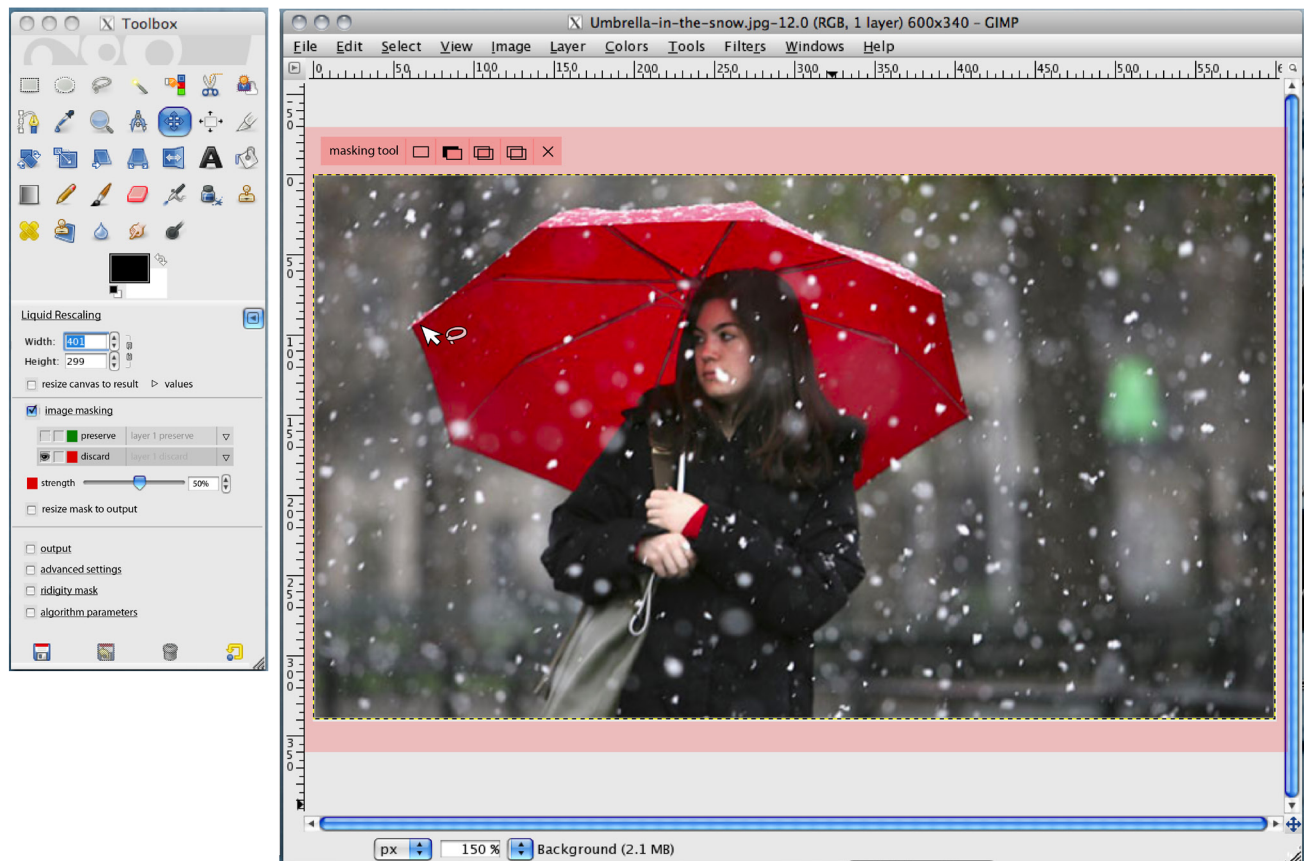


Working with the masks is a big issue. Users in general should feel when they switched to the masking mode so we also visualized this aspect.



Masking comes with its own custom tool that works like the free select tool. It combines straight and free drawn masking possibilities. Depending on the mask-type it changes its colour and initially gives a feedback by framing the picture and filling the selection in the according colour.





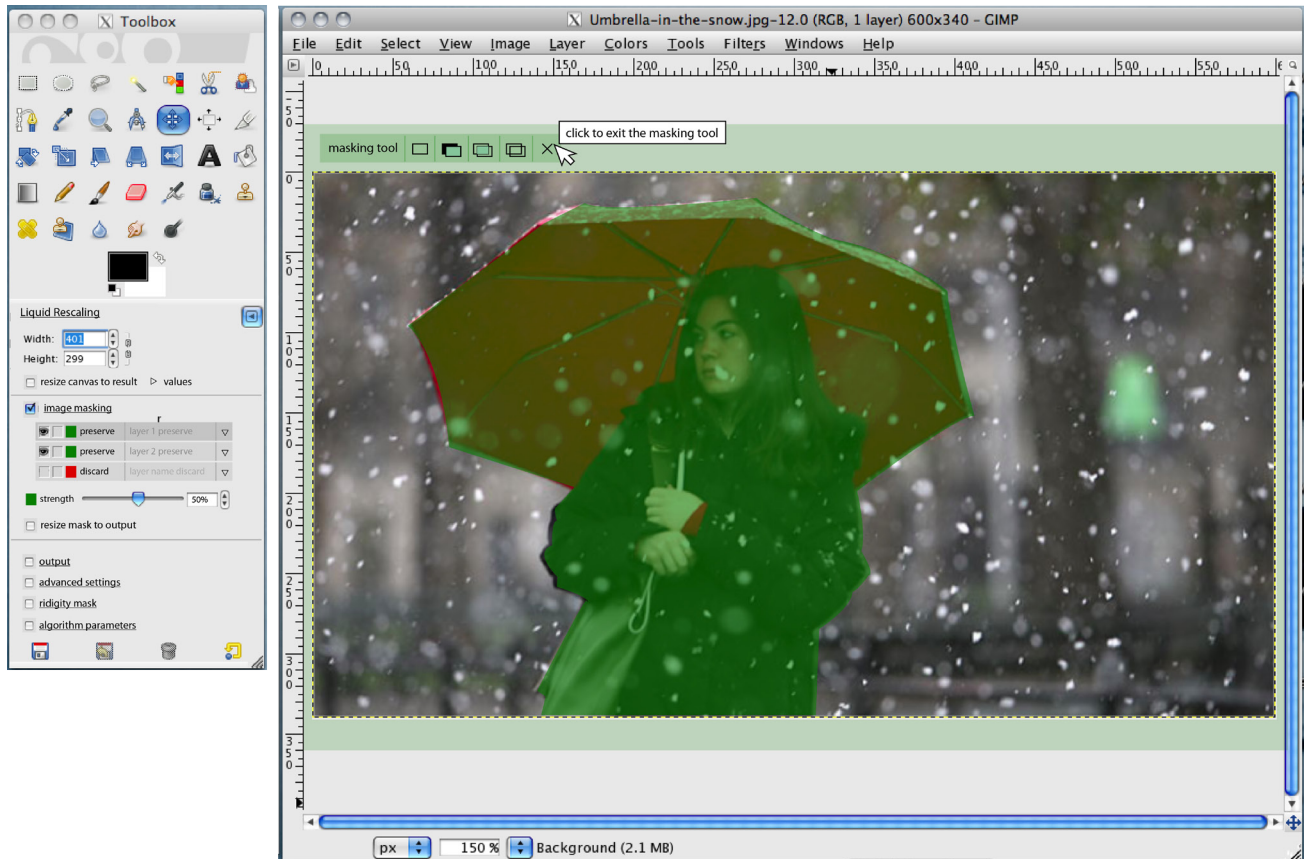
In this case the discard mask has been selected - so the framing was changed to red. The mouse-pointer was changed to a symbol similar to the free selection tool. It actually has the capability of combining curve and linear operations without the need of switching by clicking around.

In the top left part of the framing users can change the way the masking tool works. By standard it works normal which means it just creates a selection from the users path. Next to that it adds the selection to the previous one. Users can also subtract selections or use the intersection of multiple selections.

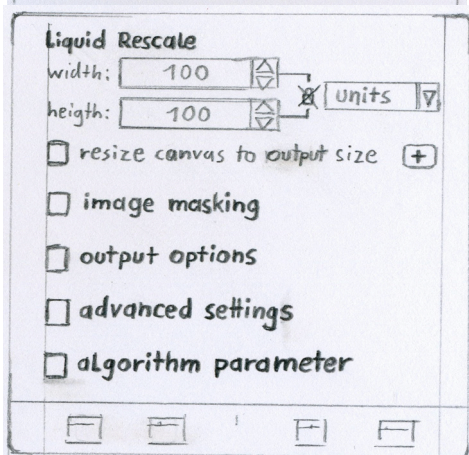
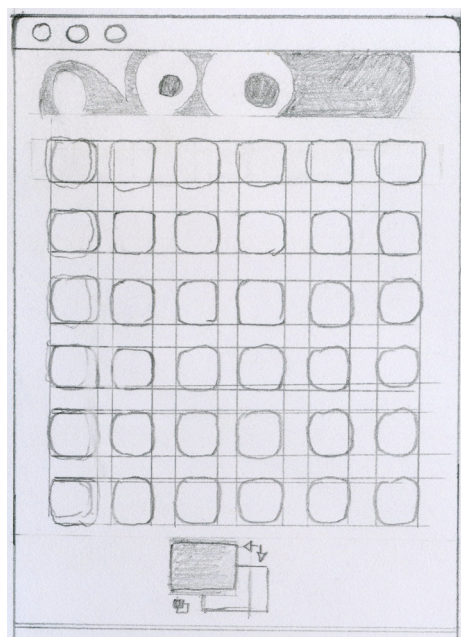


By that we eliminated the need to implement a brush, a pen and an eraser. In our opinion the way of working with flexible paths is much more precise and practically faster to be executed.

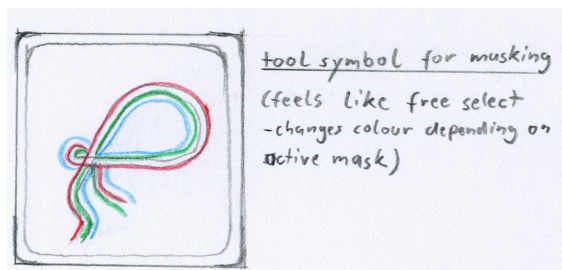
Exiting the masking-mode by clicking the x-button.
The tool switches back to the normal mouse-pointer and the mask-layer is no longer selected. The visibility is toggled separately.



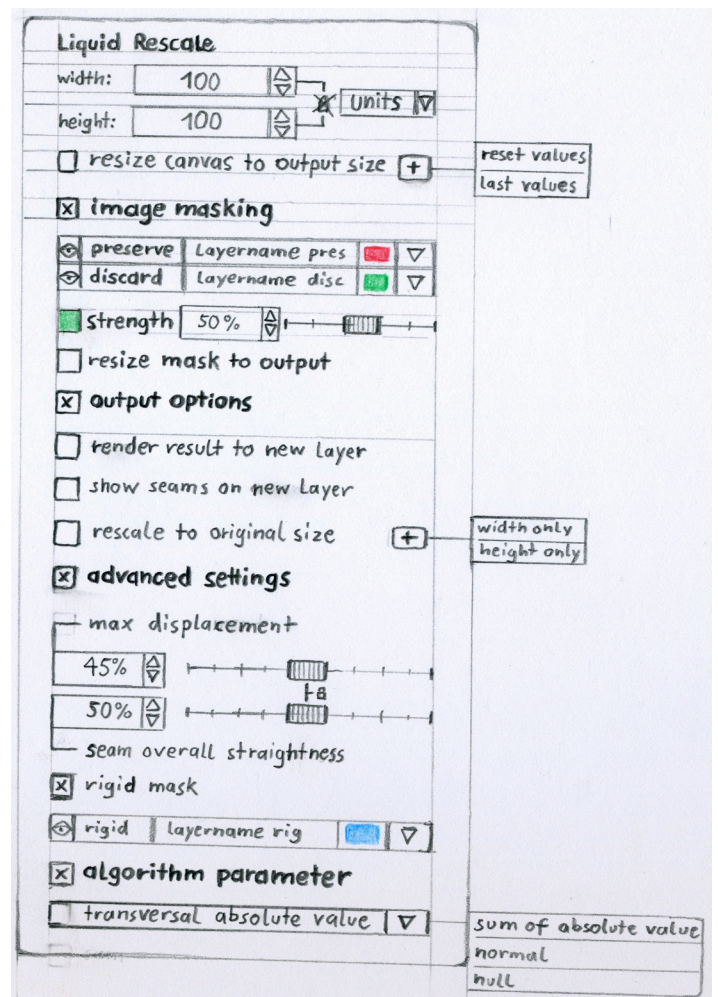
We additionally wanted to show you the hand drawn version.
Thank you for your attention.



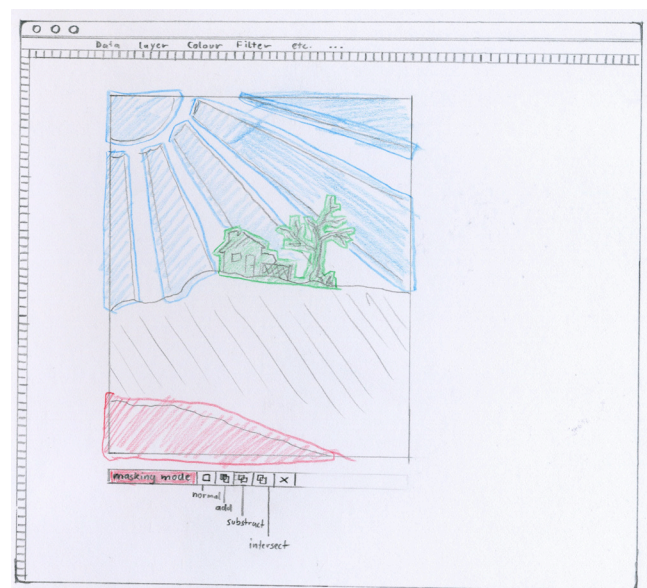
initial state
the pencil version



the tool icon
(concept)



the whole thing



canvas with masks