

# A NEW PATH TOOL FOR GIMP

DOCUMENTATION

**INTERACTION DESIGN FOR THE REAL WORLD**

SARA GELLER,  
LAURA RAMIREZ,  
JAKOB TRIPOLT,  
& FLORIAN WENGER  
MDB 07  
SUMMER TERM 09  
TUTOR: PETER SIKKING



## DOCUMENTATION OF THE PROJECT "A NEW PATH TOOL FOR GIMP"

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## 1 Our task

Our general task in this course was to extend the current path tool with additional functions so it can create vector graphics, which can be resized in any direction without losing any quality. This advantage is based on mathematical equations. For this task we had three days time for getting to know GIMP, brainstorming about which functions the improved path tool needs and finally sorting all good ideas out, put them together and test the tool with different scenarios.

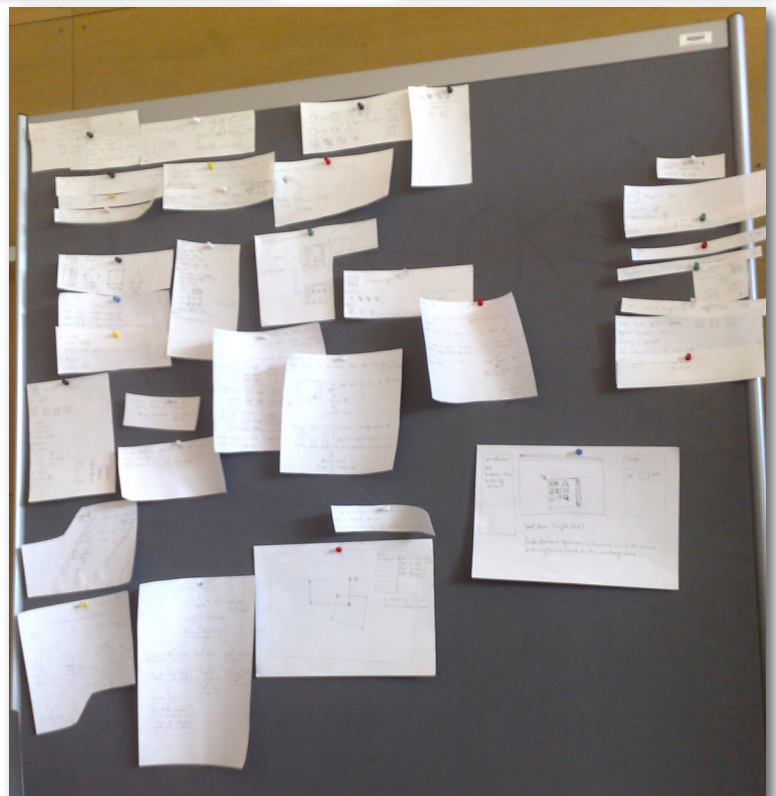
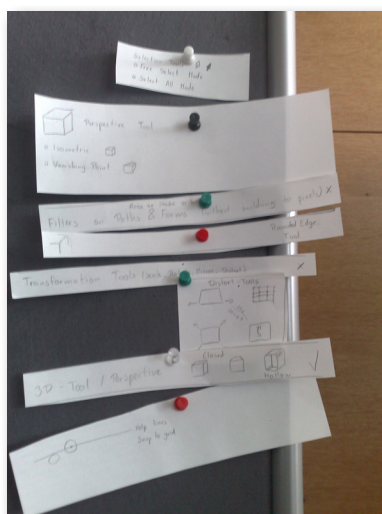
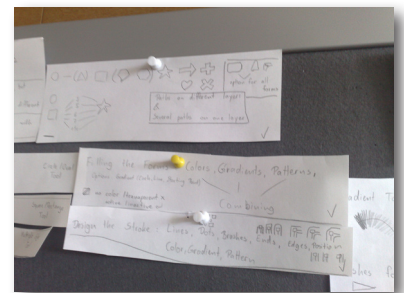
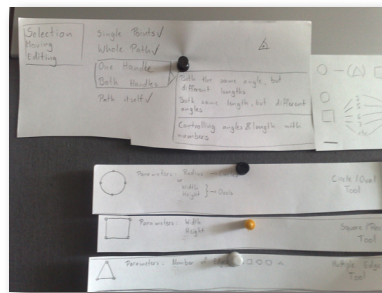
## 2 What is the current Path Tool?

"The Path tool (previously known as Bezier Selection) is a powerful tool in GIMP. The rectangle- and ellipse-selections are not very flexible if you happen to need something more special. And since many of us GIMPers don't have a graphics tablet, it's not so easy to make the mouse pointer move the way you want. The paths can solve the problem by using smooth mathematical curves instead your own shaky mouse trail."

([http://www.gimp.org/tutorials/Bezier\\_Selection/](http://www.gimp.org/tutorials/Bezier_Selection/) Gimp.org, 01.06.2009)

## 3 Brainstorming

It isn't possible to document the whole brainstorming process, especially not the part which is going on in your head, but when you take a look at the pictures, which contains our notes we put on paper, you will get an impression.





## 4 Narrowing down the ideas

### 4.1 Abandoned ideas

We collected a lot of ideas during our brainstorming and some more came up during the concept development. But not all of them made it into the final concept.

One of those ideas was the transformation respectively distort tool. We wanted a way to transform our paths and vectors, but we realized that creating new tools would make the toolbox even more overcrowded. Then we realized that we could simply use the existing transformations tools for this task.

Another one was the selection tool with two modes, the free Select mode and the select all mode. They would have been similar to the ones from Illustrator. We also decided against this tool, because of the confusing toolbox. Instead we integrated most of the functions in the path tool itself.

Adding filters to paths and vectors was abandoned due to the fact that it is not essential. If you really want to add filters, you can convert the form to pixels.

Help lines and the snap to grid function were already included.

We also thought about a 3D- respectively perspective tool. It would have been able to create an isometric or vanishing point perspective out of forms. First we moved it from being a tool to being a dockable dialogue, but then we decided completely against it. This would be a task for later implementations.

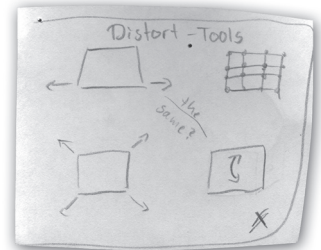
The rounded edge tool or function was left out, because we couldn't find a good place for it. But it is necessary to include it soon, because with our concept it is not possible to create forms with round edges without using the free path tool.

We implemented a frame around our forms, because we wanted a very simple way to transform them and additionally we wanted to add a button for the context menu to the frame. This solution interfered with the handles on the path itself and the button could be placed freely, so we threw it out again.

An idea which was not connected to our task, was to move the toolbox to a right click menu. This would have the advantages that you can change the tool without moving the mouse to the left and the left window would be cleared.

Transformation Tools (Scale, Rotate, Mirror, Distort)

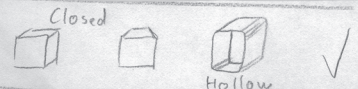
Selection Tools  
o Free Select Mode  
o Select All Mode



Filters on Paths & Forms (without switching to pixels)  
Area or Stroke or both.

Help lines  
Snap to grid

3D-Tool / Perspective



Perspective Tool

o Isometric  
o Vanishing Point



Rounded Edge Tool

Every form gets a frame

Appears by mouse over

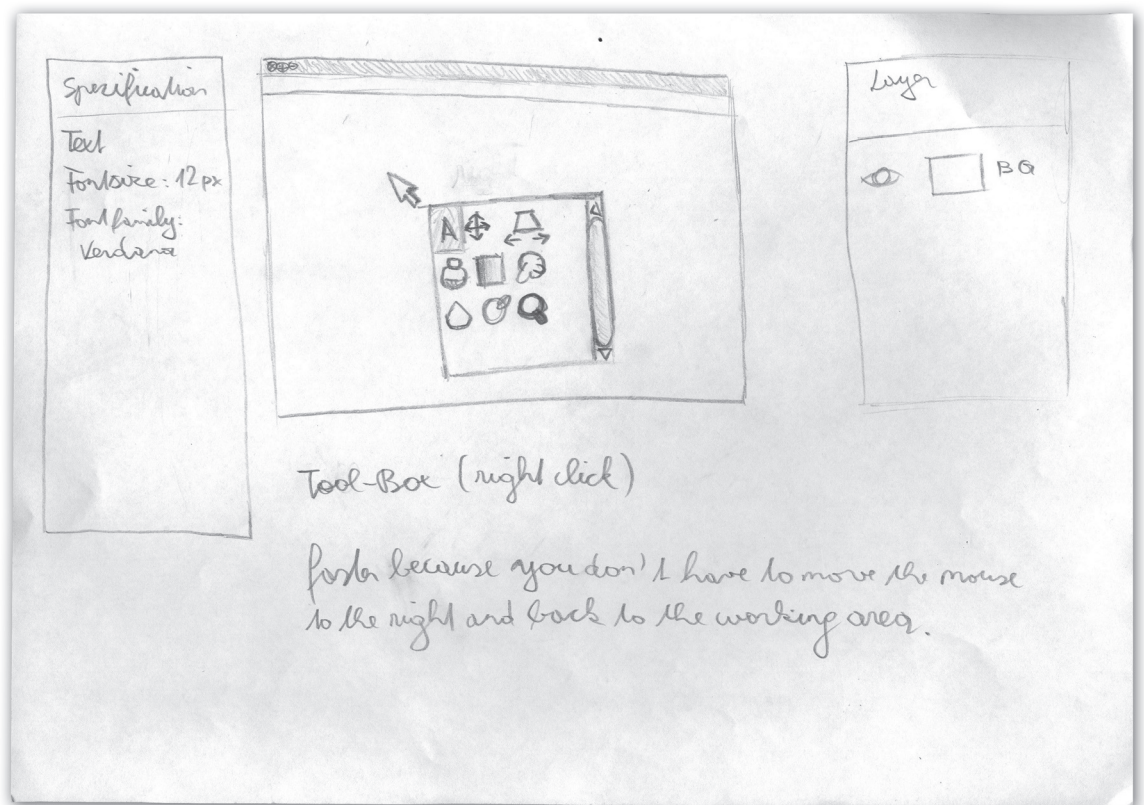
Scaling is possible

[- button is on the right/left



X Scaling Tool







## 4.2 Ideas for further development

These are the ideas which were left over after narrowing all the ones we collected during the brainstorming. They are the first drafts of what is in the final concept.

First of all we wanted to add a number of simple forms. The obvious choices were circle and rectangle. Forms like triangle, pentagon etc. were put into one category, where you can choose the number of edges. We also thought about other commonly used forms like star, arrow or heart.

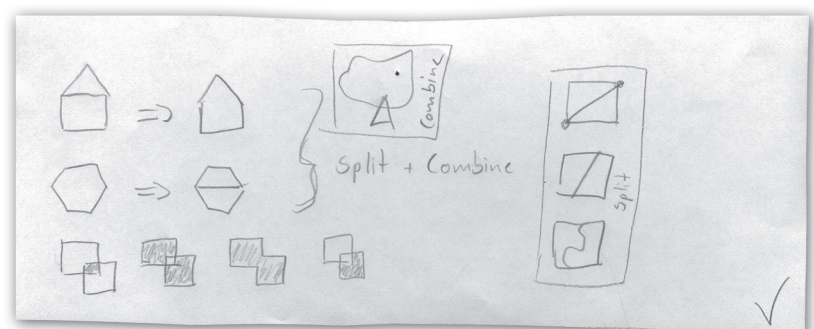
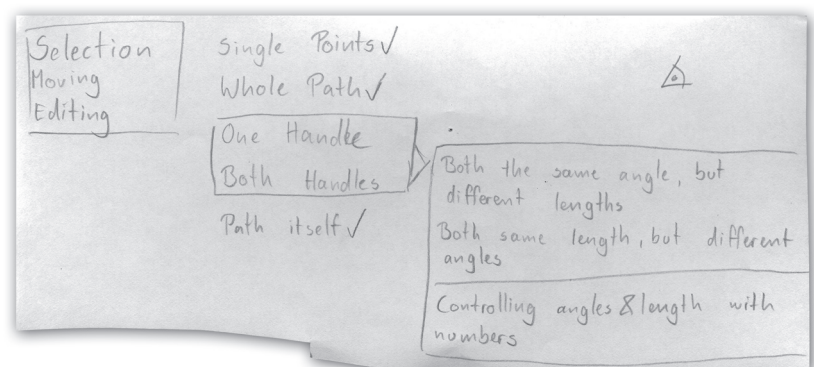
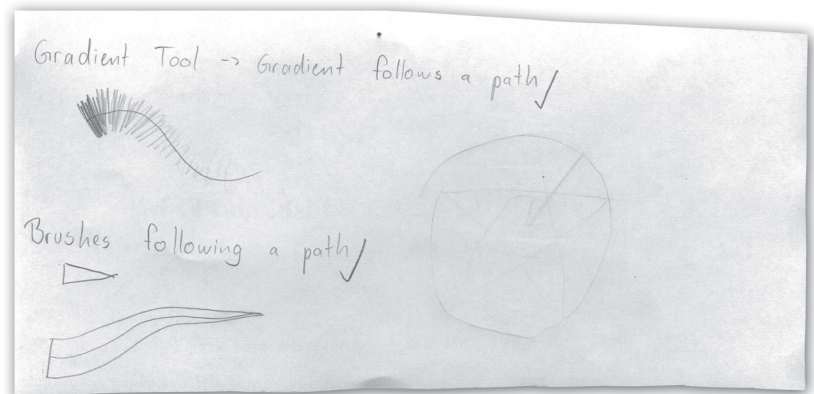
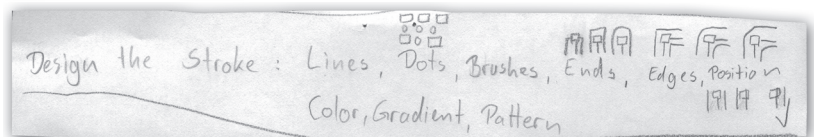
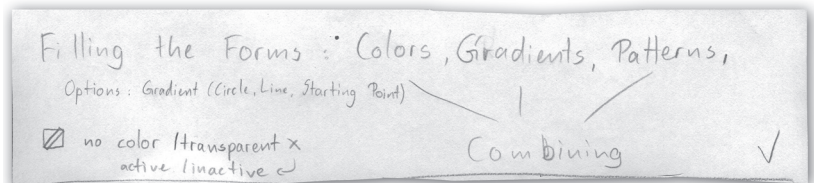
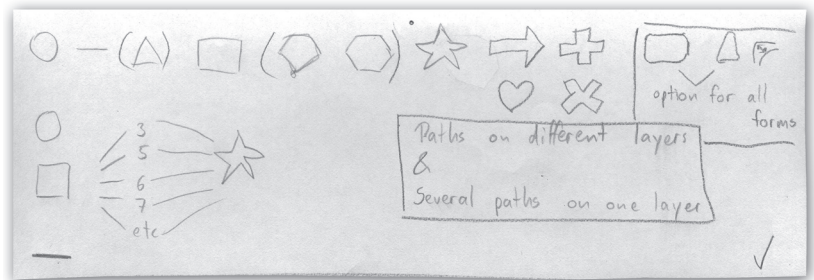
If you color a path and make it a vector with that it consists of two parts. The stroke and the area inside of it.

The area inside can be colored with simple colors, gradients or patterns. We also wanted a option to combine these three, e.g. a colored gradient. Another important option was to make a vector transparent again.

For the stroke there are much more options. Additionally to the color, you can also change the width of the line, the style of the ends and the edges and the position of the stroke at the path. More options are if you want the stroke dashed or with a brush style.

To work with paths you need the ability to move, edit and most of all select it. We wanted the possibility to select single points, the whole path, the lines between the paths and the handles for editing the curves.

Our last idea was the combine and split tool. It had different modes for combining and splitting.







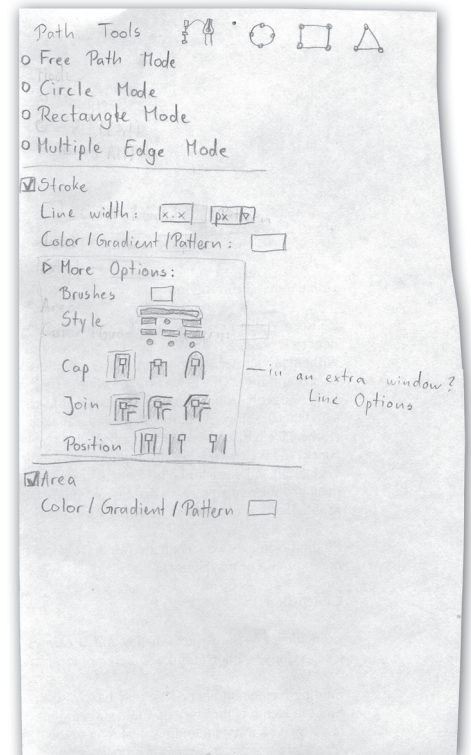
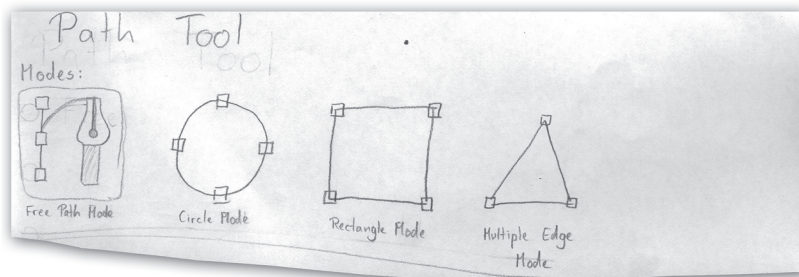
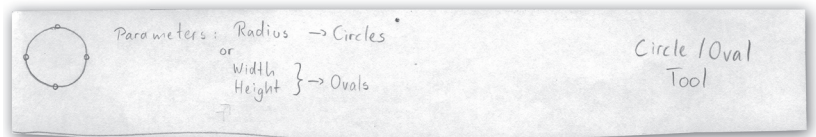
## 5 Concept development

### 5.1 The Path Tool

The options for the path tool were quite clear from the beginning. We gave it four modes, the free path, the circle, the rectangle and the multiple edge mode.

In the tool options are the same options for all four tool modes, except that in multiple edge mode there is an additional option to choose the number of edges and if it should be a polygon or a star. These options are color (opening a popup including gradients and patterns in different tabs) for area and color and line width for stroke. The additional options for stroke are in a drop down menu. They are brushes, dash style, cap, join and position. It is possible to switch stroke and area on and off. So we avoided adding a transparent color.

We also included different possibilities to edit the paths, namely design, edit, move and select.



- Path Tool
- Design ⇒ Create new path
  - Edit (Ctrl) ⇒ Edit chosen path
  - Move (Alt) ⇒ Move whole layer
  - Select (Shift) ⇒ Drag Frame or click on additional points

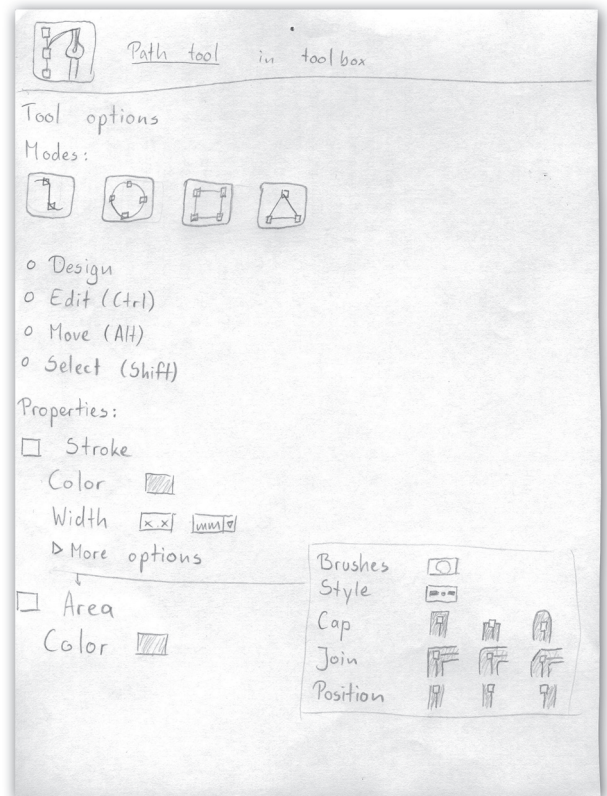
- Options:
- ☐ Stroke
    - Color
    - Width
  - ☐ Area
    - Color



After we decided on the final layout of the path tool and its tool options, we wrote down some comments how it reacts in specific situations.

The tool is in free mode after the program start, but it remembers if you chose another mode for the rest of the session.

If you have a vector selected and change the settings, e.g. another color for the stroke, it directly changes the vector. If you haven't selected anything the settings are used for the next vector you create. And if you select a vector its settings are automatically shown in the tool options.



If you choose a path tool mode, GIMP remembers it for this session.

After startup it's the free mode.

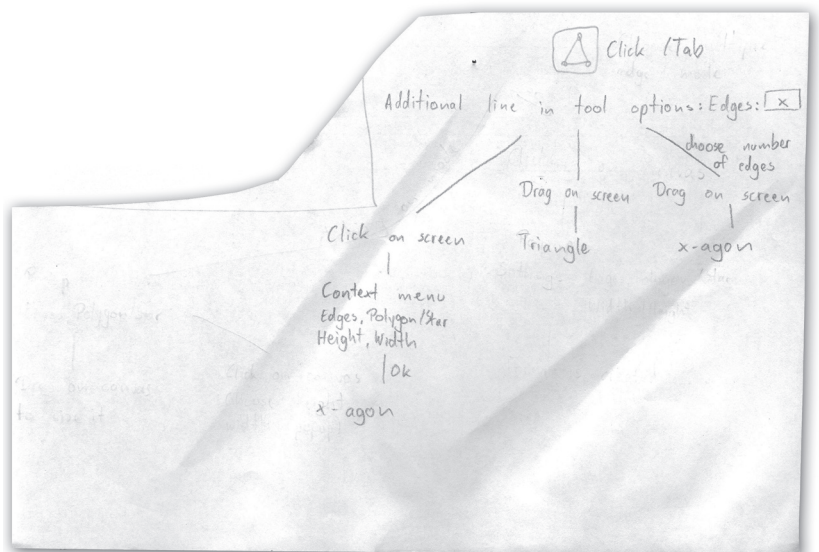
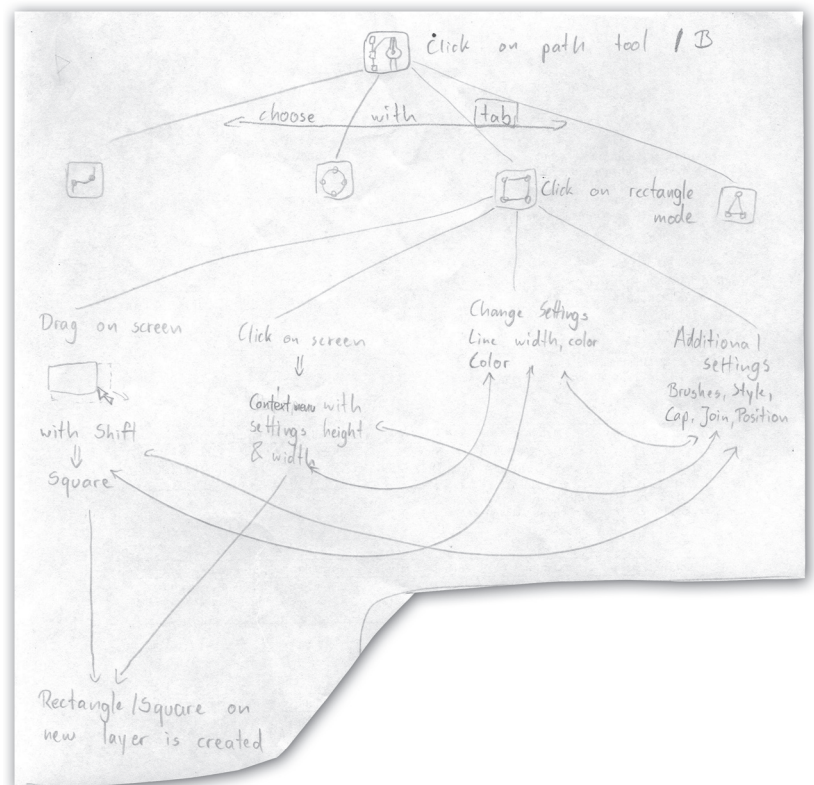
If you have a form selected and change the settings, the form is changed directly.

If you don't have anything selected, the next form uses them.





Finally we created scenarios how exactly the workflow with the different tool modes can look like.





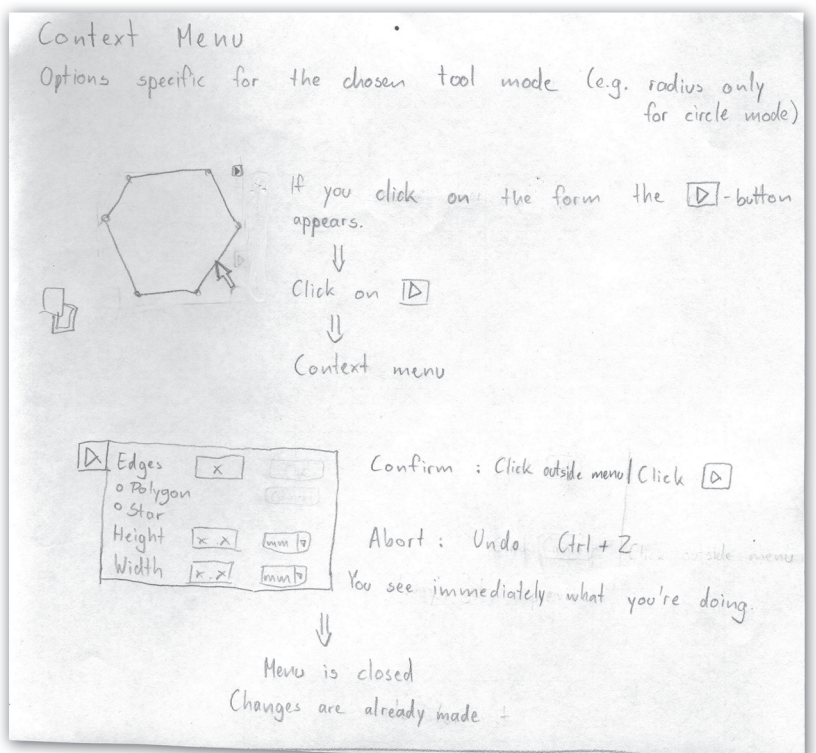
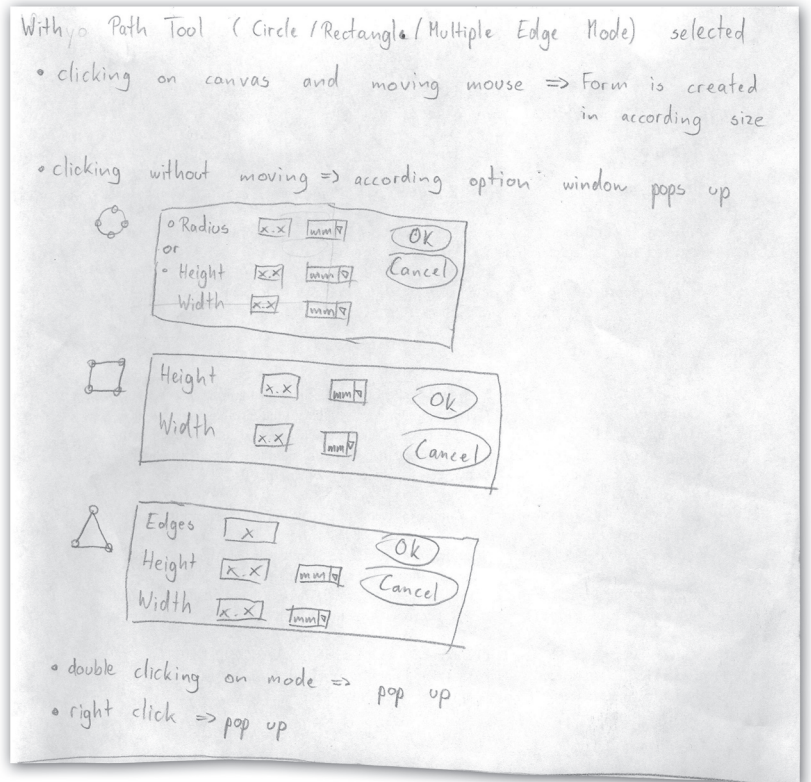
## 5.2 Context Menu

There were still basic parameters for our simple forms, but since the toolbox was quite crowded and they were different for every mode, we wanted to put them somewhere else.

The first idea was to put them in popup windows, which appear if you choose a tool mode other than free path and click on the canvas without moving the mouse. But this solution slowed down the working speed a lot and furthermore there was no possibility to get to this window after you created your form.

So we decided to put the options into a dropdown menu directly on the form on the canvas. We added a button on the upper right corner of the forms. With a click on it a context menu with the options opens. Any changes you make there are immediately applied to the form. The menu closes with another click on the button or a click outside of it. To undo the changes you can simply use Ctrl+Z.

The context menu is connected to the way of creating the forms. The first way is to click on the canvas and move the mouse. With the mouse movement you are controlling the size. The other way is to type in radius or height and width for the circle mode, only height and width for the rectangle mode and the number of edges, polygon or star and height and width for the multiple edge mode.



Creating geometric forms by

- pulling them on the screen ✓
- typing parameters (angle, length, width, edges) ✓





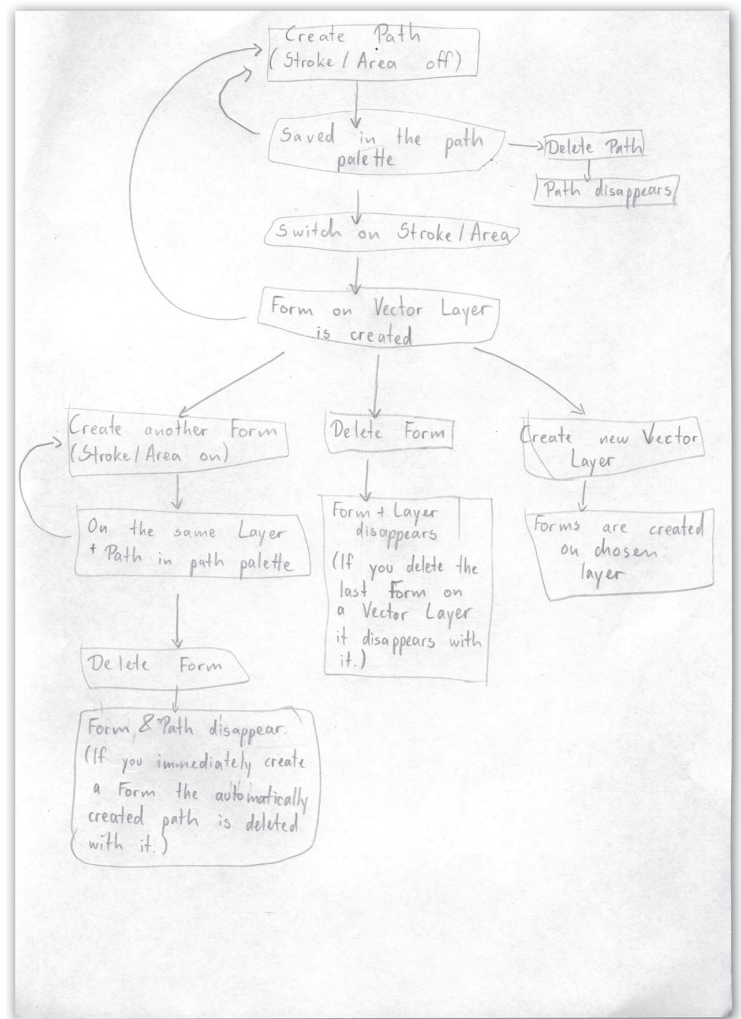
### 5.3 Paths, Vectors & Layers

Another important task was to determine the handling of paths, vectors and vector layers.

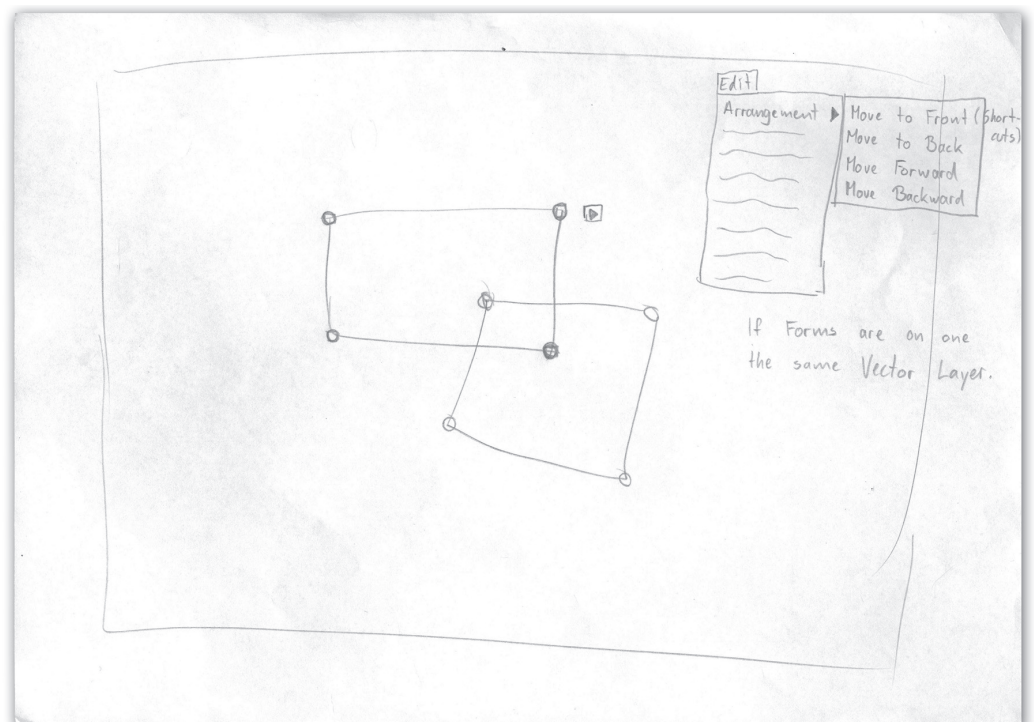
Paths are only the mathematical forms, stored in the path palette and invisible on the canvas. If you color them they automatically become vectors on a special vector layer. It is also possible to make a vector a path again by switching of stroke and area.

Since paths are only existing in the path palette there is no need to arrange them and vectors on different layers can be rearranged by switching the layers in the layer palette. Only for vectors on the same layer we needed a possibility to arrange them. So we added a arrange function to the edit menu.

We wrote down in a flow chart how exactly paths, vectors and their layers are handled.



If you create a path it is stored in the path-palette. As soon as you add color (switch on stroke/area) a vector is created on a new layer. All following vectors are on the chosen vector-layer. Additionally they're creating a path in the path-palette. If you switch of stroke & area (empty) the vector & its layer are deleted.





## 5.4 Combine & Split

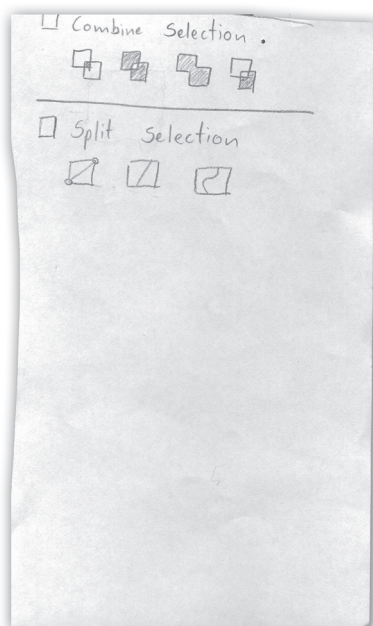
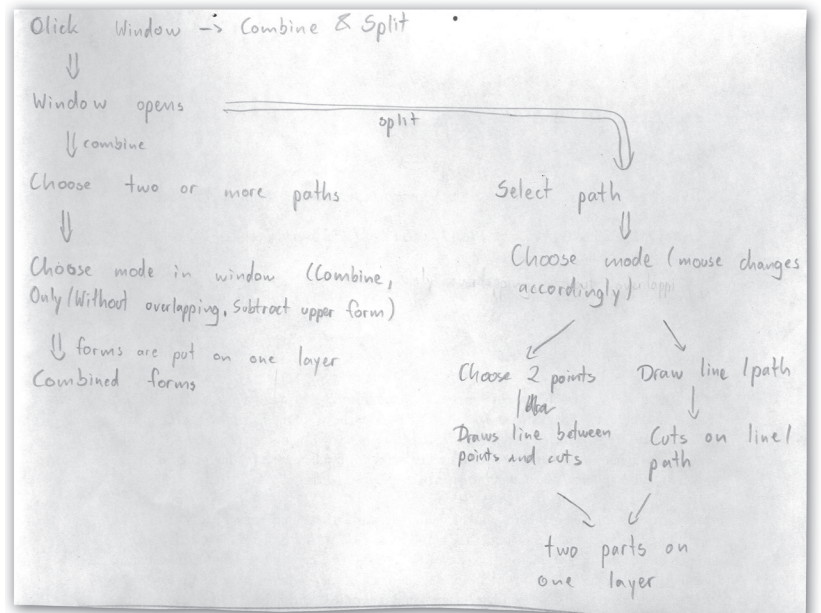
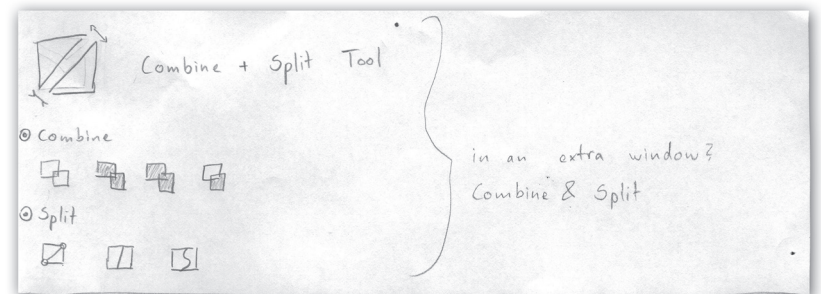
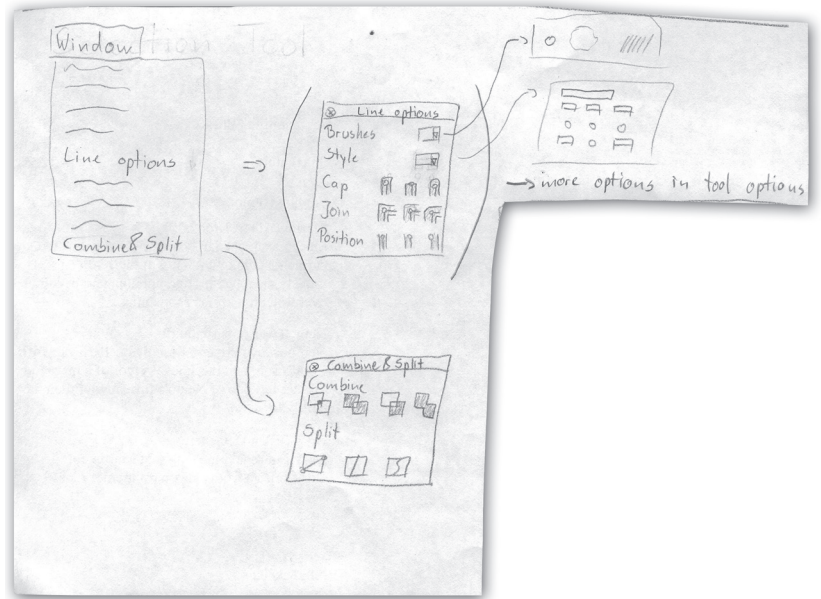
Combining and splitting paths and vectors is a very specific task, because you don't get a combination of pixels but a completely new path, which you can edit without any loss.

Our combine and split function started as a tool. But we soon moved it to a dockable dialogue, because there are already enough tools and it had too many modes to manage it over the tool options.

The options for the combine mode are combining two forms, cutting the overlapping areas, leaving only the overlapping areas and cut the upper form from the lower form. To use it you first select two or more forms and then click on the according mode.

With splitting you can choose between splitting from point to point, splitting along a line and free splitting, where you draw your own line. With this function you have to choose the mode and the work on a selected form.

We also created scenarios for these functions.







## 6 Conclusion

The outcome of our three day work is an improved “path tool prototype”, which is created to fit into the current GIMP environment. Inspired by our Illustrator, Photoshop and Freehand experiences we know what a path tool should be able to do and transformed this knowledge and our personal ideas into our improved path tool. Tested in different scenarios we are sure that it would work as planned. We hope that our work will influence the final new path tool version in a way that it makes the GIMPers happy and GIMP as such even more powerful.