What's new in Gimp 1.2

GIMP

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In the new version, the image processing unit of Gimp 1.2 is noticeably faster, and there are also lots more functions and tools. Gimp developer and propagandist Simon Budig explains the features of the new version.

On the first day of Christmas 2000 we were presented with version 1.2.0 of the GNU Image Manipulation Program, better known as Gimp. This means that more than two and a half years had gone by since version 1.0. I will be describing the main changes in this article. Nevertheless, Gimp is still recognisable.

Not much has happened with the last developers' releases. Since the distributors have long since decided that even developer versions of Gimp have to be presentable, many of the features listed here will seem familiar to you. But there may also be one or two here which you have not yet stumbled across.

Incidentally: The first bugfix release Gimp 1.2.1 has also just come out, which is important, especially for Gimp users on non-Linux systems such as Solaris. They will be disappointed with Gimp 1.2.0, since due to a bug it comes up to the limit for open files. This and a few other bugs have been removed. So now lines over the upper and lower edge of an image are also painted without rounding errors.

News from the toolbox

The toolbox (see Figure 1) is now bigger by four buttons. The ink tool is a new painting tool that emulates some aspects of quill pens. Various forms and sizes of pen can be set. The tool reacts to several parameters: So for example, the line becomes thinner when you move it faster. With

graphics tablets (see also the section headed "Graphics tablets for creatives") it also reacts to stylus pressure and stylus angle.

The next tool serves in the so-called dodging and re-exposure of certain image areas. The principle for this comes from the photo lab, where during exposure of the photo paper the image areas concerned are briefly covered. This dodging causes shorter exposure and thus a brighter image, while re-exposure on the other hand makes the image darker.

The smudge tool has an appropriate name: It wipes away parts of images. It is very useful for imitating watercolours or achieving watercolour type effects. In conjunction with selecting and masking, it is easy to create irregular image borders with this.

As the last of the new tools, there is also the measurement tool. It has no direct effect on the image content, but it is useful for determining distances within an image and placing artificial lines. If for example, someone is looking at an image taken by a scanning electron microscope and wants to measure certain image elements, he can adjust the image to the right resolution – measured in dots per inch (dpi) – and it is then easy to use this tool to measure the distance between two points or an angle. With the Ctrl and Alt keys, artificial lines can then be placed at the specified points.

But the old tools have also been improved: With the colour scale tool, it is now possible to create spiral scales. When you think about the hypnotic

eyes in many comics, it gives you some idea of what can be done with this.

The old paintbrush tool has undergone enormous change: It can now, like a real paintbrush, gradually lose colour and draw lines which are more and more transparent. It is also possible, instead of using the foreground colour, to paint with the colours from a colour scale. When you do this, the colours are selected from left to right from the current colour scale.

The transformation tool now also, depending on the setting, has a corrective action. So for example, to turn a crooked scan straight, all you need now is to adapt a grid to the straight lines in the scanned image. Distortions of perspective can also be corrected in this way (see Figure 2).

Daubing

Stylus, paintbrush tool and airbrush can now also cope with special coloured paintbrushes. Since the paintbrush brings its own colour information with it in this case, the foreground colour is ignored. Gimp presents the image of a green pepper, but you can also produce useful coloured paintbrushes yourself, by saving an image with alpha channel in the GBR format (Gimp Brush) and filing it in the directory *~/.gimp-1.2/brushes/*. For traditional paintbrushes, which paint with the current foreground colour, it is enough to save a grey shade image in this way.

With brushstyles, motion comes into play. You could imagine these as quantities of paintbrushes, from which a paintbrush is sought according to specified criteria. This now sounds exactly as if a mathematician had formulated it, so here's an example: let's take the brushstyle Vine, which comes with Gimp 1.2. When you click on the image area with the paintbrush tool, you see that, unlike the green pepper, six different images are painted one after another onto the image, and this occurs in a specified sequence (see Figure 3).

Longer lines appear somewhat livelier, because different paintbrushes are being used all the time. This is strongly reminiscent of the animated

paintbrush from Deluxe Paint III for the Amiga - only Gimp is, of course, much more flexible.

A brushstyle can in fact not only be simply played out in a fixed sequence, but can also depend on other conditions. The brushstyle Pencil Sketch simulates hatching. Here, the regularity of the Vine brushstyle would certainly have a negative effect, because the human eye is highly conditioned for pattern recognition and would inevitably see certain patterns in the hatching produced. Therefore these brushstyles are random, which means the paintbrush is selected at random, so the hatching does not look quite so artificial.

Brushstyles can also depend on the direction in which one is currently painting. So for example one can lay down simple footprints. It is also possible to make use of the printing and inclination information of a graphics tablet in this way. And last of all, everything can be combined with everything else, as described at length in the box "Creating brushstyles".

If one level is split into several cells, the cells will run through in the same sequence as when reading a text. With three levels (A, B, C), which are split respectively into two columns (l, r) and two lines (o, u), the process described would be based on the sequence Alo-Aro-Alu-Aru-Blo-Bro-Blu-Bro-Clo-Cro-Clu-Cru.

If you have read this far with interest, that's a good sign. Now simply try out the tools. If you manage to make a good paintbrush, we would be happy to include it in the Gimp distribution.

New functions

Seen it before: Gimp can now also save, together with the image, data on the resolution of the image and cope with various units of measurement. The most important interface for settings is the *Scaling* dialog. The box *Print size and display unit* has no direct effect on the image data, but merely defines its resolution.

If one then deselects, in the View menu, the mode *Point for point*, the image is controlled with

Figure 1:
Gimp 1.2 in its full glory.
Top left, the toolbox, under it
the options of the ink tool.

Figure 2:
The transformation tool can correct
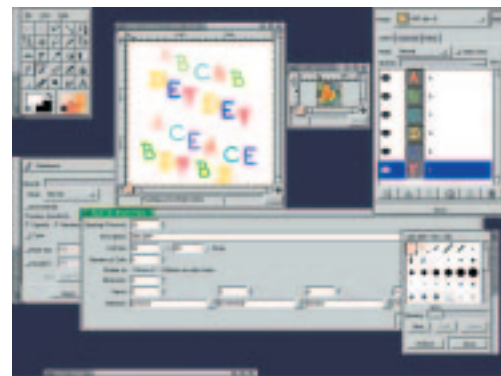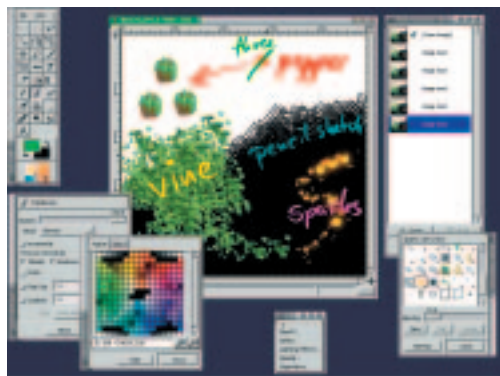**distortions of perspective.**
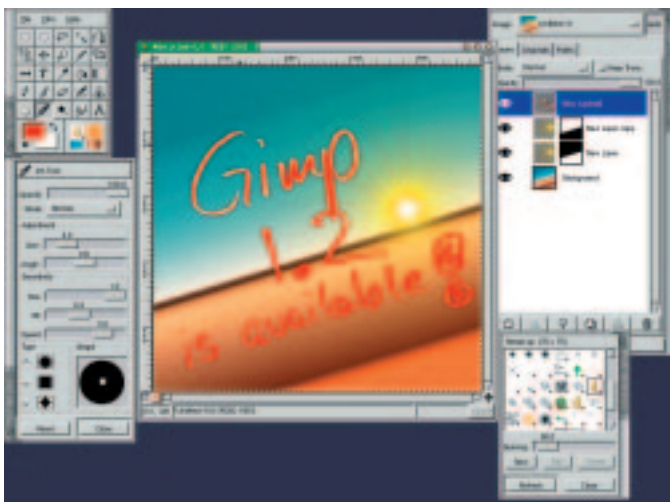
FEATURE

GIMP 1.2

Figure 3: A few Gimp brushstyles in Action.

Figure 4: How to make brushstyles - but you should still read the box.

the correct measurements and also printed out. If the resolution of the monitor has been correctly calibrated, the image also appears on the monitor at the right size.

Other things which make dealing with images easier, are firstly, thumbnails, which Gimp automatically saves if required. Gimp uses the same format here as the classic image viewer *xv*. If you look for an image later and are not quite sure of the file name, you can get your bearings in the *Open* dialog from the little thumbnail images.

It often used to happen to beginners that they created a complex image with various levels and then saved it as a JPEG file. In most cases, only the

level was saved which was currently active (JPEG can only handle one level), and the rest of the image data was lost.

Gimp is now aware of this and suggests exporting the image, such as, condensing a copy of the image down to the capabilities of the format and then saving it. In this way, the original image data is retained and can easily be saved in Gimp's own XCF format. When doing this it is worth saving the image as *.xcf.gz*, as this way the uncompressed image data of the XCF format is again put through a compression routine.

Also new, compared with Gimp 1.0, is the flexibility with Bezier paths. The dialog *Levels &*

Creating brushstyles

A brushstyle is really just a sequence of paintbrushes. They are created by saving an image with several levels in GIH format. Since the GIH plug-in has a hideous graphical user interface, I will have to clarify a couple of terms at this point.

A cell is an image in a brushstyle, thus an individual paintbrush. Let's assume an image consists of twelve levels. To begin with our cells are as large as the image, so there are twelve cells (each level contains one cell). By varying the cell size, one can make one level hold several cells.

So to find the number of cells, one has to multiply the number of levels by the number of cells which fit completely into one level. Then these cells are spread over up to four dimensions. In the simplest case, over one dimension, which then contains all cells, so has the rank of 12.

If two or more dimensions are assigned, the product of the respective ranks must not be greater than the number of cells. With twelve cells one can create either a one-dimensional style with the rank of twelve, one two-dimensional style with the ranks two and six or the ranks four and three together with a three-dimensional style with the ranks two, two and three. If one constructs style, one must bear in mind that the dimensions in the dialog further to the far left build stacks of cells in larger steps.

Each dimension is now assigned another function:
- *incremental: work through in sequence*
- *angular: depending on the angle in which painting is currently being done*
- *random: chosen at random*
- *velocity: should depend on the speed, but does not work*
- *n pressure: for graphics tablets, depends on the pressure on the tablet*
- *n x/ytilt: in high-end graphics tablets, depends on the angle of the stylus.*

For example: We have an image with six levels (A, B, C, D, E, F) and want to make a brushstyle that depends on the pressure of the stylus and also works through in sequence.

We will now assign the first dimension pressure (with two stages: light and heavy, rank two) and the second dimension incremental with three stages (rank 3). After saving the brushstyle (and the pressing Update in the paintbrush dialog) it is now ready for us to use.

If we now paint a line using light pressure, we shall see the following paintbrushes appear in sequence: ABCABCABCA... With firm pressure, on the other hand, these are the paintbrushes DEFDEFDEFD...

If we had arranged the dimensions the other way round (thus, first incremental and then pressure the image would look as follows:

ACEACEACEA... with light pressure and BDFBDFBDFB... with firm pressure (see Figure 4).

Figure 6:
An example of the capabilities
of Gimpressionist.

Figure 7:
Here the light reflection
is adapted to the image.

define within which parameters this image element rotates and scales and according to which strategy it is placed. A surface structure can then be laid over this image, such as marble or linen. With a bit of experimenting this can lead to grandiose effects.

While the plug-in for lens reflections defines the position and intensity of bright points according to a physical points of view, the Gflare plug-in takes a construction kit approach. You can compose the light reflection out of three parts here (main reflection, rays and secondary reflection). Each component can also be configured (see Figures 7 and 8).

Both plug-ins offer so many parameters, that it is impossible to remember all the combinations which have been tried. So once found, good combinations should be saved. Vidar Madsen, the author of Gimpressionist, requests that especially successful settings are sent to him, so that they can be integrated into the next Gimp version. By the way, in order to activate a composition in Gimpressionist, you must first click on the name and then on *Apply*. With that, the settings are included in the individual dialogs.

One important area is of course the output of images on paper. Here a group has formed around Robert Krawitz and, with the plug-in Gimp Print, presented a very good piece of work. The team is now also working very closely with the Ghostscript team. The output quality on several printers (especially various Epson, Canon and HP printers) can certainly compare with the results from the corresponding Windows drivers.

Expansions by Script-Fu, Perl or with plug-ins

Sometimes there are tasks that are hard to handle even with the plug-ins which are part of the package. Then one learns to appreciate it when the functionality of a program can be expanded accordingly. Gimp is especially flexible on this: If one wants to automate work processes, then Script-Fu is the obvious choice - a scheme dialect. It probably takes some getting used to, but there is currently a series running in Linux Magazine on the subject of schemes.

Anyone familiar with Perl can also use this language to paste some new menu items onto Gimp. Here Perl Data Language (PDL) is especially helpful when it comes to performing certain image operations particularly quickly.

But when it really comes to performance or one's own libraries have to be used, you can write your own plug-in (technically, by the way, Gimp Perl and Script-Fu are plug-ins). Gimp offers the *Libgimp* for this, which organises communication between Gimp and the plug-in. Since the documentation is also needed for this, *Libgimp* was written with the Gtk doc system. So you can look for the appropriate function in easy, linked HTML pages.

It is, however, still very deeply nested. For this reason, menus can be placed permanently on the screen to save time. One click on the dotted line on the top edge pulls down the desired menu. If one then selects a menu item from it, this always relates to the image (window) in which one last pressed a key or a mouse button.

New effects with new plug-ins

Since the source code for the plug-ins is open, it was already really easy to develop new ones off one's own bat. Since Gimp 1.0 a few gems have been produced in this way, These have now been included in the Gimp package. In all, there are over 150 plug-ins.

I can only go into three new plug-ins here. First, Gimpressionist, which can cover images with a structure (see Figure 6). What may sound very simple is in reality a very complex plug-in, with which impressive effects are possible.

The basic concept is to compose a new image out of one image element repeated many times (a chalk line or spheres or little hearts...). One can

Graphics tablets for creatives

Something that existed for Gimp 1.0 only in the form of immature, unofficial patches, has an important position in Gimp 1.2: support for graphics tablets. With graphics tablets, one paints completely in the classic style with a stylus on a smooth surface, where the pressure and sometimes even the tilt of the stylus are measured and passed on to the computer.

With the corresponding driver support Gimp can evaluate this data and convert it into natural-looking paintbrush strokes. This is extremely obvious in the quill tool: Here the stylus form adapts dynamically and calligraphic effects become very simple.

But the old Gimp tools, too, can evaluate at least the pressure information. The classic variant is the regulation of the covering power of the paintbrush. But it is also possible, depending on the pressure, to select the colour from a scale or to vary the size of the paintbrush. You can now select precisely what you want in the tool options that appear following a double click on a tool icon.

I would recommend to anyone who has any artistic ambition that they try out a graphics tablet. Working with these is completely different from working with a mouse: you just try signing your name with the mouse - if what comes out bears even a passing similarity to your signature, you must be good. After a short period of familiarisation, this is no problem with a graphics tablet.

Gimp for the MS world, too

You will already have seen this from the screenshots: Gimp speaks German. Or to be more precise: Gimp speaks Danish, German, English (American and British), Finnish, French, Gaelic, Galician, Dutch, Italian, Japanese, Catalan, Croatian, Korean, Norwegian, Polish, Portuguese (Brazilian), Russian, Swedish, Slovakian, Spanish, Czech, Ukrainian, Hungarian – hopefully, I have interpreted all the country abbreviations correctly.

Gimp uses Gettext, thus automatically adapting itself by default to the language of the rest of the system. Anyone wanting to set a different language has to set the environmental variable *LANG* to the corresponding value. *de_DE* for example, stands for the German variant, *no* for Norwegian.

Gimp has been ported – and this is an important step for free software in my view - onto Windows (95/98/NT/2000). Tor Lillqvist has also put a lot of work into porting Gtk+, so that in Gimp only at a few places, closely related to the system, does this platform have to be taken into account. Since both versions arise from the same source code, Gimp for Windows, too, is always up to date. But since the typical Windows users cannot be expected to do a
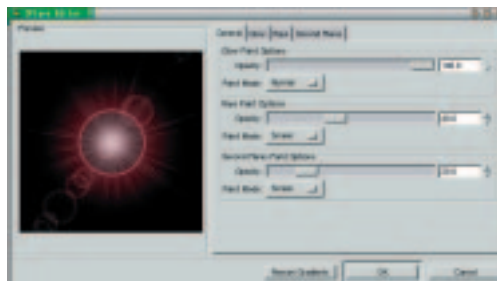
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./configure ; make ; make install
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they will have to wait, in the circumstances, until a new packet (with installer) is built.

Gimp under Windows has the same Look & Feel as under Unix, so it takes a bit of getting used to for Windows users, especially since Windows as window manager performs only light duties. Central things such as virtual screens or desktops have to be tacked on using external programs. But since there is only one person working on the Windows porting, a second interface, in line with Windows conventions, is not feasible.

What matters for a program to gain acceptance is a good help function: F1 activates context-sensitive help in every nook and cranny. So you want to know what a certain menu item does? Move the mouse cursor over the menu entry and press F1. You don't quite understand a certain parameter in a dialog? F1 helps again. Unfortunately the help has not been completely written, but a team has been formed and is working hard on writing the documentation.

If the online help is not enough, there are now lots of books which describe fairly current versions of Gimp and so can also be used for Gimp 1.2. In the UK alone there are at least five different books, so there should be something to suit every taste.

Lastly, I would just like to point out that you can find at least one Easter egg in Gimp. But where, obviously I'm not telling.   ■

Figure 9:
The start screen of Gimp is no longer reserved solely for Unix users.
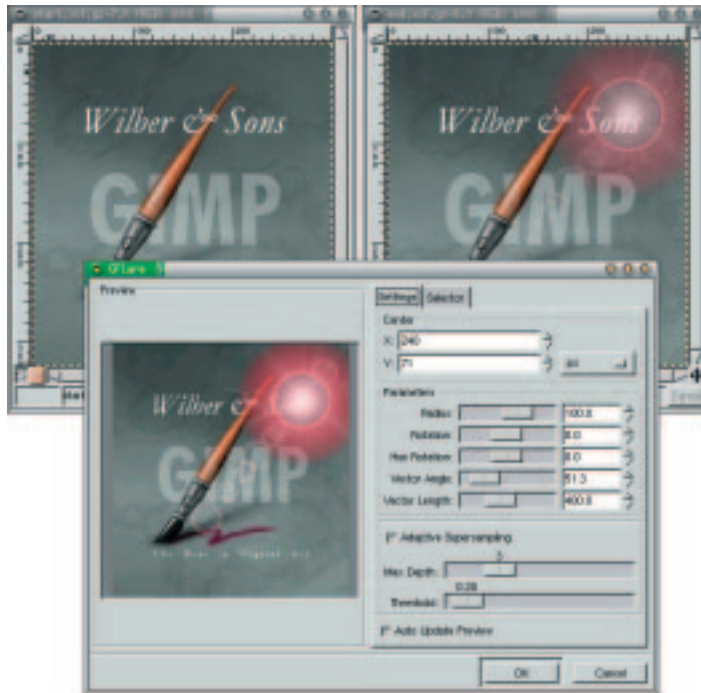
Figure 8:
With this dialog, the appearance of the light reflection is adjusted.

The author

Simon Budig has been involved in the free software scene since Linux 1.2.13 and Gimp 0.99.10. He got the stimulus to get involved in this in Unix-AG, a voluntary work group at the University in Siegen. He now has to watch out that his maths degree does not suffer as the result of the diverse Gimp lectures.