The Gimp

'*One picture is worth a thousand words.*'

American proverb derived from 1921 advertising magazine slogan. For the full story and its attribution as a fake Confucian proverb see fas.sfu.ca/~dhepting/personal/research/words/history.html

In this lead article, I am introducing a tool that should be of interest to many members of a university. The tool is the *Gimp*, and the topic is creating and editing pictures for the Web (mainly). If you are not interested in pictures at all, this article is not for you. However even if you do not have the time to learn how to be picture-literate yourself, you may still gain insight and useful information from reading the article.

Open source software

Open source software is a concept that can be traced back at least to the *Unix*™ operating system. Let's look at a rough definition. *Open source software* is generally:

- Provided free to anyone who wants it, or for the cost of the media. In the Internet era this may be a download across the Net or a posted CD; previously it might have been a posted magnetic tape or cartridge.
- The software is provided in 'source' form. This means that the actual programming language text, script text, and everything else used to create the software is provided to the requestor, so they can inspect the code, regenerate it, use it, keep it, or modify it.
- The user has no legal comeback if the software does not work as expected. In many cases there is no organization to sue. But when did you last consider taking legal action against a software company when the software you bought failed to work as expected?

Well that does not look too encouraging. You probably think: 'Free software means rubbish, doesn't it? Or bugs at the least? And there's no responsibility. It is probably just some silly little utility or game anyway. I am not a computer nerd, nor the slightest bit interested in looking at the programming code.' A lot of free software on the Web indeed falls into one or more of these categories. But some open source software has in fact transformed the IT industry, and some has much to offer you, a plain computer user. If you are interested in the background, see the next article.

The Gimp

The central point of this article is to introduce you to *The Gimp*, a really useful and sophisticated piece of open source software. Unlike much freeware, the Gimp is a useful tool for the *final consumer* of computing and the Internet. Not everyone needs Gimp, but a fair number of you do, or you need someone who can drive it. In case you wondered, Gimp stands for GNU Image Manipulation Program.

Image editing

Web pages full of text are boring and will not be looked at for long. Paper books, magazines and articles generally have similar but less pressing needs. So these communication media contain frequent instances of graphs, charts, tables and pictures (aka images). A table, chart or graph can often be produced from your favorite Microsoft or Lotus application, but an image is another story altogether. You may start by copying one from the Web, scanning it from paper sources or photographs, or capturing it with a digital camera. Having acquired an image, you are quite likely to want to change it before putting it into your article or onto a Web page. Enter the image editor.

The dominant image editing software in the world is *Adobe Photoshop*™. I've used it for close to ten years. It costs about $A1000 per license, and you'll need to upgrade every few years. It runs on Macs, Wintel PCs, and Unix systems. In an advertising agency or a Web site design company, the cost for 5-10 licenses for Photoshop is an expense that you can absorb into the business costs (the powerful computers they use cost much more). Think of Photoshop's relation to images as similar to the relation Microsoft Word™ has to prose.

The Gimp does practically everything Photoshop does, in a very similar way, for free. Photoshop users can become proficient Gimp users quite quickly and vice versa.

Exactly what can an image editing program do, you ask. Well, it provides facilities for changing images, using the individual pixel (picture element) as its basic building block. Here are some things you can do.

- You can adjust the contrast and intensity of images you have scanned or created. This can make the image look better, or bring out details in the shadows.
- You can change the color balance of an image, or convert it to black-and-white.
- You can import images from anywhere and in any common format.
- You can save edited images for books or the Internet and in any common format.
- You can overlay images, combine them, erase sections, and crop images to size.
- You can add text to images, either as titles or as annotations using leader lines if necessary. You can highlight a portion of an image by displaying it differently from the rest.
- You can change or distort images using tools such as wrap-around, stretch, blur, bevel, sharpen, stylize, etc.
- You can prepare images for printing by doing pre-press color checking, or for the Web by checking against the color range of video cards; the images can also be compressed to reduce their size and download time.

All these functions are obviously useful. It is quite easy to learn to use an image editing program to perform these types of changes.

Image Creation

Not all images are derived directly from photographs. Some are created from scratch at the screen starting with a blank document: a corporate logo for example, or a Web banner. Other images combine sources. In addition, the Web provides for images that move or change. These may be used for Java-activated buttons that indicate they are virtually pressed, or for eye-catching free-running displays.

The Gimp is better at these Web-oriented services than Photoshop or its commercial competitors. For example the Gimp can create animated GIFs, but Photoshop can't. Gimp provides the capability of making clickable image maps, and of dividing an image into a grid of buttons. It allows you to inspect the browser effect of a draft design. Its layering effects are very powerful. There is a wide range of user-contributed patterns and gradients, and there are editors for developing new ones.

A much more fundamental difference is that the Gimp lends itself to the addition of user-created scripts in a scripting language *script-fu*. The authors of Gimp knew they had to provide facilities for extending their software, whether by themselves or others, so they made it publicly available. This has encouraged graphics designers and programmers all over the world to create fascinating and powerful optional add-ons to the Gimp. Here is an example that attempts to turn your image into sealing-wax: www.pvtnet.cz/www/pvt.benkovsk/gimp/wax-seal.html.

Gimp case study

Suppose there is a company called *Spectrum Ltd*, which requires a new promotional logo for Web and T-shirt use. I get an invitation to produce a design. I start to explore producing an *ambigram*: a typographic play which exploits the ability of the eye to recognize distorted letter and word shapes.
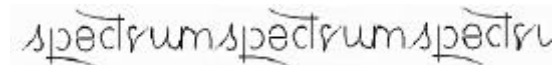
Firstly I play around with the letters of 'spectrum', looking for symmetries and correspondences. After some time, I note that 'um' has the possibility of 180° symmetry. So I look for a similar symmetry in 'spectr'. After 30 minutes I arrive at this hand-drawn sketch, which I scan into my computer and open in Gimp. (All illustrations are reduced in size.)

Now I am in business. The letters are cleaned up using the Pencil, Brush and Eraser tools, assisted by sharpen filters and some fiddling with the range of pixel values to make the darkest value black and the lightest white. To make sure the logo has 180° symmetry, I select and duplicate the left half of the image, rotate it by 180°, and move it over the right half. I keep editing until it looks clean.

I then extend the Canvas Size (the drawing space) to give me more room horizontally, and using the Selection tool, cut, copy and paste to create the linear sequence shown below. Now it reads right side up and upside down. This design could easily be extended to run around the chest of a T-shirt. But I am not happy yet. The symmetry isn't really obvious unless either the wearer or the viewer stand on their head.
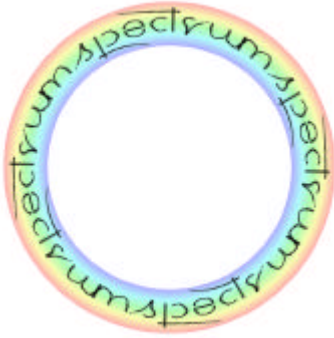

So I come up with the idea of running the text around a circle. To make the circle, I set up four repeats of the text, and then apply a radial distortion filter. In the next picture, 'spectrum' reads the correct way on the top *and* on the bottom of the circle.

That looks good, but I am still not satisfied. I would like to include a real spectrum, in the form of a rainbow. The idea occurs to me of putting a pastel underlay under the circumference, so I go back a step, add a new layer underneath, put a rainbow spectrum on it using the Blend tool with a selected Gradient, again copy four times, rewrap it into a circle, and *voila!* we have this:

I still have several steps to go before I can submit this logo to the hypothetical client, but I hope that this is enough to show what the Gimp can do in creating images. If the logo is to be used on the Web, I may even want to animate it so it slowly revolves, creating astonishment at how the word 'spectrum' repeatedly emerges on the top and bottom.

The Gimp's role in a university

The Gimp is free apart from the cost of downloading ~10MiB of files, and even this could be at effectively zero cost if the local IT Help Desk were to maintain a mirror. It is practically a clone of the industry standard Photoshop, so skills learnt in Gimp are transportable. You can even use the Gimp for commercial purposes for free when you leave the university, and carry it with you from university to university.

Any university teacher designing a course that has materials to be delivered over the university intranet or across the Internet is highly likely to need to incorporate images into the presentation. The teacher may do this, or it may be the job of assisting technical staff, either in IT or graphics design. Sophisticated images will be needed in the promotion of the course, and probably less sophisticated images in the main presentation. With very rare exceptions this is inescapable. Perhaps, though I doubt even these, in subjects such as law and accounting.

With the increasing penetration of the digital world into universities, the need for image editing is also likely to impact on the production of research papers and articles (increasingly submitted in electronic form and possibly published in the same form), course handouts, overhead or screen present-ations, and research grant applications.

University support staff are even more likely to want to know about image editing and creation. Not all academics can be expected to be image-literate, or willing to spend the time in developing the necessary skills, so the job will devolve to a member of the academic support staff. As well, it is usually the support staff who have the responsibility for maintaining the departmental web site, with all that entails. It would be a rare web site that did not include at least pictures of students at work or mug shots of the staff.

Students with the necessary skills and inclination have even more incentive to learn about image editing. Any student or personal Web site demands images almost as a necessity. Of course, if you can point to having image editing skills, you are likely to be that little bit more employable after graduation, if you are aiming at a job involving working with people. Employers will look forward to high-class reports, visual presentations, and sales promotions. You will also have a good chance of improving your presentation of your ideas in assignments, theses, and seminars.

Don't get me wrong. I make two caveats. If you aren't prepared to spend some time learning a new skill, or if you hate using computers, forget about using the Gimp. You will just give it a bad name.

Secondly, if you can afford Photoshop or its competitors, you should consider buying one of them. Then when the Gimp offers you facilities over what Photoshop can do, you can swap between them, quite easily and almost seamlessly. But if you can't afford Photoshop, Gimp is not a second-best: it is a profess-sional-quality tool, except for the warranty and the support services.

Getting the Gimp

The Windows 95/98/NT download site is not where you expect it to be on the download page. Just go to www.gimp.org/win32/. Be warned you are in for about 4 MiB of download and about an hour of connect time on a modem. You'll be told that it is unsupported, but you knew that anyway. Unix users (the minority) can head straight for the main download page at www.gimp.org/download.html.

There is a downloadable manual in Adobe™ pdf format (free of course) at manual.gimp.org/. If you really want it in paper, you can buy it from www.coriolis.com/ or www.amazon.com (956 pages, so don't even think of printing the files).

All users can find a lot of valuable information browsing from the main home page www.gimp.org, especially in the documentation and the resources sections. Did I mention the tutorials? A lot of people have taken the trouble to explain how to do anything from basic operations to the most stunning activities.

Summary

The teaching, learning and research population of a university probably falls into three classes:

- Maybe 20% have a real need for the Gimp. They will want to download the Gimp and invest some time to learn how to use it, to varying levels. I include here the few who have already discovered the Gimp.
- 75% won't use the Gimp themselves, but it would be valuable for them to have a look at what it can do, so they can ask their local computer guru to replicate the effect and quality when they need it. If the guru says it is too hard

to do, give them this article and ask them to update their skills. I really can't put examples here, so allocate 10 minutes to have a look at www.gimp.org/art.html and www.infotech.tu-chemnitz.de/~nt/marb/glaeser/gimp-plugins/html/index.html.

- That leaves 5% or fewer who have no interest in pictures and what they can convey.

Background

This section is for those interested in knowing a bit about the background of open-source software.

The *Unix* operating system was one of the first open source products. Early versions of the Unix code were freely available and Unix itself provided inter-connectivity between sites and users. Email started with Unix, as did remote log-ins and file transfer protocols (ftp). The domain of the computer programmer was changed so that today some variant of the Unix operating system is likely to be found on anything larger than a Wintel PC or a Mac.

Unix then developed from open source software into several commercial products, and then spawned a new open source spinoff in *Linux*. You cannot walk into a computer science department in the USA without being faced with ubiquitous computers running Linux. *Windows* is comparatively rare in these cutting-edge departments. Linux is now forcing Windows to match its multitasking capability.

How does it do this? Well, top-class open source software has the potential to recruit hundreds of world-class programmers to contribute to developing the software for free just for the creative fulfilment as opposed to their boring day job. Since world-class programmers are documented as being up to 100 times more productive than average programmers (yes, truly), the consequences can be far-reaching.

Unix and Linux are not the only examples. The World Wide Web also owes its start to open source browsers and definitions. To this day the source text of any HTML page is available to the reader simply by asking the browser to display it or save it. Open source programming languages *C*, *Pascal* and *Modula-2* grew without vendor assistance and established new standards for software quality; they resulted in ongoing influences on programming languages that are clear in *C++*, *Java*, *HTML*, and *XML*. The entire Java movement on the Web is as open as a commercial supporter (Sun Microsystems) can make it, in order to counterbalance the huge resources of Microsoft.

Tip—Email priority

I am always surprised at how few people use the priority facility when sending email. When you receive 20-100 email messages a day, it helps if the senders indicate how important the message is.

If you don't know about it, look for it in your email Help facility. In Outlook and Outlook Express there is a button in the message button bar (it may be called Priority or Importance). Each click makes the message status cycle through *Normal   High Priority   Low Priority   Normal*. That's it.

Your message won't be treated any differently on its way to its destination, but the recipient will see it flagged in their Inbox, and can choose to deal with urgent matters first, and low priority messages last. Send yourself a couple of test emails to see how this appears.

I use this facility a lot to mark messages that are non-urgent—just old-fashioned courtesy. I only mark something urgent if it really is, or sometimes when I have just sent a message and I need to send another one immediately afterwards to amend the first. Hopefully the recipient will read my correction first.

Editorial

If your university, college or school maintains this e-publication on its web site, you can download it and use the live links in the text. It will also be in full glorious color, which the reprinted version you read may not be. You may download and save the file for personal use, but you may not republish it without permission.

If you read this publication someplace else and thought it useful, you can suggest that your institution subscribe. The library or the IT department are good places to start. Contact me for a subscription flyer. The institution gets a licence to distribute the content to all its members.

In the next issue, I will explore useful search strategies for the Web, other than the ubiquitous search engines.

The policy of the journal is to provide professional and relevant advice on operating in the digital world to the teaching, learning and research members of a university. In other words to academics, their support staff, and students.

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Suggestions for topics or comments are welcome, addressed to me at ahjs@ozemail.com.au.