

Resizing Images

By Laurence Fenn

This article is an expansion of the talk I recently gave at the computer club about resizing images on your PC and getting the best results. I've taken the basic notes from my PowerPoint presentation and combined them with the text from the slides to hopefully give an idea of how you can improve your images.

Whether you want to increase or decrease the size of your pictures, there will be a loss of detail. When decreasing the size of the picture, you are removing detail. When increasing the size, you are adding detail that doesn't exist. If you ever see a film or television program where a picture is taken and then increased in size and detail magically appears, then you'll be disappointed when you try it with your own pictures. Computer software is just not that sophisticated, but you can still get a fairly good result, depending on how much you increase the size.

Where do you get your images?

● **Digital Camera**

As the megapixels increase on digital cameras, the images they produce get bigger. When you print your images this is great, but if you have other uses for your images, you probably need to make them smaller.

● **Mobile Phone**

Just like digital cameras, mobile phones now included a camera built in. They may not be as sophisticated as a dedicated digital camera, but they can produce good pictures.

● **Email Attachment**

Relatives or friends can send pictures as attachments to emails, or upload them to a web site to share with other people. Due to the limits of the size of file you can attach to an email, which will vary according to the program you use and your internet provider, pictures may be reduced in size. This doesn't make much difference for viewing them on screen, but sometimes they may be too small to print out.

● **Download from a web site**

Whether you are doing a project or found a site with interesting images, pictures from the web are not usually the same size as ones you can take with your digital camera due to the time it would take to download them.

● **Scanner**

If the original picture was taken with a regular camera or is on a slide, then scanning the image would be the only way to get it onto your computer and into the digital domain.

Why Resize?

● **Too big to send by email**

It may not be practical to send several large images as email attachments, so you may need to resize the images before sending them. The latest versions of Outlook have some resizing options to reduce the size of the picture before sending the email. In Office 2007, this is accessed from the Insert tab when composing an email. In the bottom right hand corner of the Insert ribbon is a box which you can access the Attachment Options. This brings up a column on the right of the screen where you can select the size of the image. When you send the email, the images attached to the message are resized before sending. Using this feature can reduce a 4.5Mb Jpeg (3040x4048 pixels) to a 42k Jpeg (360x480 pixels).

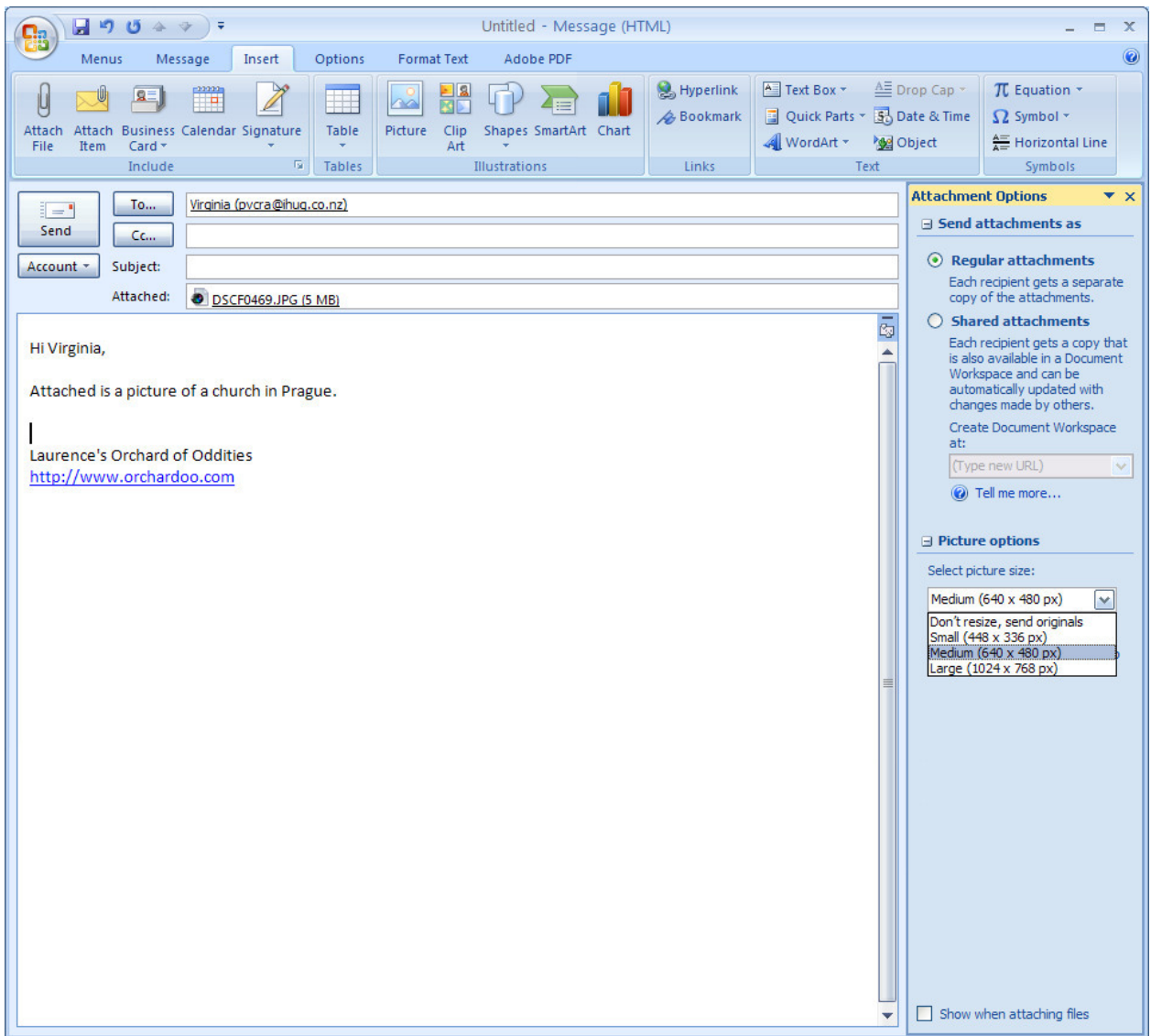


Figure 1 - The Attachment Options in Outlook 2007

☉ **Too big to add to a document**

Whilst you can use simple cut and paste method to import pictures into your Word documents (or use the insert feature) and then resize the image in the document, the original size of the image is stored in the document. If you import several large images, then this can increase the size of the final document. If you resize the pictures and then insert them into the document, they may not look that much different, but will take up less space. If you haven't resized the images, you can use a feature of Word to compress the space the pictures use in the document but I have no idea how much of the picture quality will be lost doing this.

☉ **Too big for a web page**

As mentioned before, people usually resize images before posting them onto a web site. Not everyone has a super fast broadband connection, and I have come across some sites where they put 20 or so large images on a screen, which means the page takes a long time to load. Thumbnails which link to the full size picture are better, but even the 'full size' pictures may be quite small. Web pages can be coded to resize the image regardless of the dimensions of the picture, but this doesn't make it any quicker to download them. A web page with a 1.5Mb Jpeg (2032x2096 pixels) could take up to five minutes to download on a 56k modem. Resizing the image to a 110Kb Jpeg (415x600 pixels) reduces this down to 9.5 seconds.

- **Too small to print**

If you've been sent a picture as an email attachment, it will probably be fine to view on screen. But in order to send it without any problems or limits the image may have been resized. Pictures sent like this may not be of a high enough quality or big enough to print out onto photo paper.

Resample methods

- **Smart Size**

Chooses the best algorithm based on the new pixel dimensions you set. This is default setting in Paint Shop Pro and usually gives the best results.

- **Bicubic**

Minimizes the jaggedness that often results from expanded, irregular, or complex images.

- **Bilinear**

Uses the two nearest pixels around each existing pixel to determine the appearance of newly created pixels.

- **Pixel Resize**

Duplicates or removes pixels to achieve the selected width and height of the image (recommended for hard-edged images and simple graphics).

- **Weighted Average**

Uses a weighted-average colour value of neighbouring pixels to determine the appearance of newly created pixels (useful for reducing photorealistic, irregular, or complex images).

Factors to consider

- **Blurring**

When resizing images to make them smaller, you are reducing the number of pixels used to make the picture. Irrespective of the resampling method used, this will usually result in blurring. Nearly all of the programs that resize your images will only resize the image and not worry about any blurring. The trick when you resize the image yourself is to use an unsharpen filter after resizing, to reduce the blurred effect. The same will happen when enlarging an image, but as the program is having to add pixels to the image and is guessing on what those pixels are, the enlarged image will also be blurred.

- **Colour depth**

The number of colours in the image to be resized can affect how the image will look when you change the size. A 2-bit image will look jagged if you enlarge it as there are only two colours to choose from when making the new image. Increasing the colour depth to 256 colours or more will mean there is a bigger range of colours to choose from. The resulting picture may be blurred, but the enlarged image will be smoother.

- **Resolution**

The number of pixels per inch (ppi) or dots per inch (dpi) may not affect the image on screen, but can change the size of the picture when it is printed. If you have a 300 dpi image and change the resolution to 150 dpi, then when you print it picture it will be twice the size. As the number of pixels used per inch had been reduced, but the actual number of pixels in the image hasn't changed, then the picture will be bigger. It also will have lost some of the detail.

- **JPEG Optimisation**

Many times the image format that your pictures will be in will be a JPEG. You can resave a picture and increase the compression to reduce the size of the file. Doing this will increase the amount of information that will be lost (as this is a lossy format) so care should be taken if getting the right

balance between file size and quality of the picture. Paintshop Pro has a JPEG Export wizard that allows you to see how the different compression settings will affect your picture.

- **Using copies of images**

If possible, you should work on copies of your original images. If you resize the image and just save it in the same place with the same name, then you will overwrite the original and any changes you made will be permanent. To be safe, you should copy your images to a working folder, and then resize them so the original image is always safe.

Why enlarge an image?

- **Downloaded from web site**

As previously mentioned, images from the web can be quite small, so depending on what you want to use the picture for, enlarging it may be necessary.

- **Sent as email attachment**

Again, small images sent as attachments have already been covered, so you might want to enlarge the image if you want to print it and you cannot get a bigger copy sent.

- **Original image lost**

If the small copy of the image is the only one you have, and you haven't got a backup copy, then you might need to enlarge.

Software to use

- **Paint Shop Pro (£57)**

I've been using this software from the very first shareware versions up to the latest version 12. It can do pretty much anything that Photoshop does, and can even use Photoshop plugins to add extra features to the program.

- **Photoshop CS4 (£602)**

Known as the industry standard for manipulating images, it has version for the PC and the Mac. It can do many things, but the downside of it is the price and steep learning curve.

- **Photoshop Elements 7 (£54)**

A cut down version of Photoshop that is considerably cheaper, at a cost. It lacks some of the features but it can be easier to learn how to use.

- **Image Resizer Powertoy (free)**

One of Microsoft's Powertoys, this program for XP allows you to just right click on images in Explorer and choose to resize them to a particular size. It is simple to use and free, but the results are not as good as using a dedicated graphics program. There are similar programs which are free, and some which cost a small amount. It's not compatible with Vista, but there are free programs that do the same thing.

- **ACDSee (£63)**

Although this program is also used to catalogue complete collections of images, it can also resize images in batches. It has some basic image manipulation features and can custom print pictures as well.

- **Reshade (£114)**

One of the professional programs for enlarging images, it can produce better results than Photoshop. It has some impressive features to avoid the blurring and distortion that can occur when making pictures very large, but it comes at a cost.

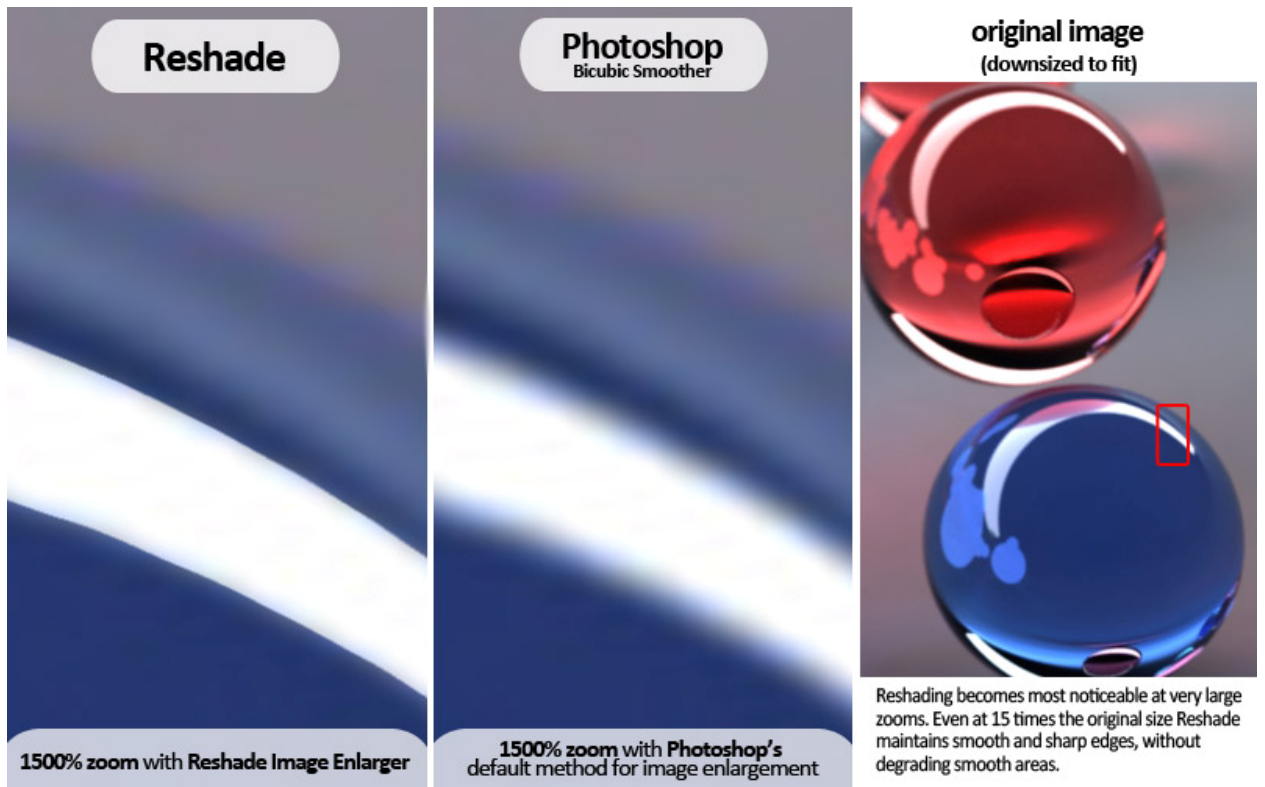


Figure 2 - An example of the enlarging by Reshade

Depending on what you want your resized image for can make a difference to what software you use. For simple images made smaller to upload to web sites or send by email, you can use one of several free pieces of software. If you want to tweak the result to get the absolute best image possible, then you might have to buy a graphics program or a dedicated resizing program.