

It's a fair clip

You can really put the clipboard through its paces; even frequent users may not appreciate its versatility. Tim Nott waxes lyrical on ways to use it in Windows and in DOS.

*What a wonderful thing is the clipboard,
Though not made of plywood or
chipboard,
It can keep anything,
From a textual string
To a pic of Madonna's top lip stored.*

More prosaically, the clipboard is one of the most useful features of Windows, and is astonishingly versatile. You probably know the keyboard shortcuts for clipboard operations — Control + C copies the selection leaving the original, Control + X copies and deletes the selection, and Control + V pastes in the contents of the clipboard.

What you may not know is that there is another set of keystrokes that does the same thing. Control + Insert (copy), Shift + Delete (cut) and Shift + Insert (paste) are a legacy from Windows 3.0 and earlier, but are particularly convenient for left-handers. Note that when you paste, it doesn't empty the clipboard; you can carry on pasting the same data into the same, or different, applications.

However, the clipboard can only hold one piece of data at a time, so if you Copy or Cut a new selection, the old clipboard content is lost.

The clipboard isn't really a single item; rather, it's a collection of related functions, and the way it behaves depends on the nature of the data being copied. Which brings us to the clipboard viewer. Windows for Workgroups comes with a deluxe version called the Clipbook, with multiple pages, a

toolbar, and the facility to share pages with other users on the network, but we'll keep it simple with the standalone version.

Try opening notepad and the clipboard viewer. Type some text into the former, select and copy it; you should see it appear in the viewer. Now go to the viewer Display menu, and you should find three entries: Auto is the default, which means the viewer has chosen the most likely format; plain ANSI text, as seen in notepad or cardfile and shown as Text on the menu; and there's an option to display as OEM text. This latter uses a fixed-pitch font and supports the box-drawing characters used under DOS. While we're on the subject, you can copy and paste in DOS sessions too, but the procedure is slightly different.

Open a DOS box and you should see the usual boxed instructions starting Type EXIT and press ENTER... Click on the system menu button, top left, or press Alt + Enter, and select Edit from the menu, then Mark. Drag the mouse over the area you want to copy (in this case, the box) and the colours will invert. Press ENTER

to copy; you'll see the text appear in the clipboard viewer. If you have the display set to auto or text, the box characters and spacing will be garbled. Switch to OEM and you should see the original DOS characters.

You can also paste to a DOS box, but once again the keyboard shortcuts aren't the same; type Control + V on the screen and you'll just see ^V. Try typing Dir followed by ENTER into Notepad and copy it. Then switch to the DOS box and select Edit/Paste from the system menu. You should get the same result as typing Dir then ENTER at the prompt.

Copying text from Write you'll see a third format in the viewer's Display menu, Owner Display, which will show the font and size. Unlike most clipboard data, which survives closing the originating application, this option reverts to the plain-text pumpkin when the Write document is closed. This happens because Write, rather than the clipboard viewer, is doing the real work here, and the formatting can only be pasted back into the same, or a simultaneous, instance of Write.

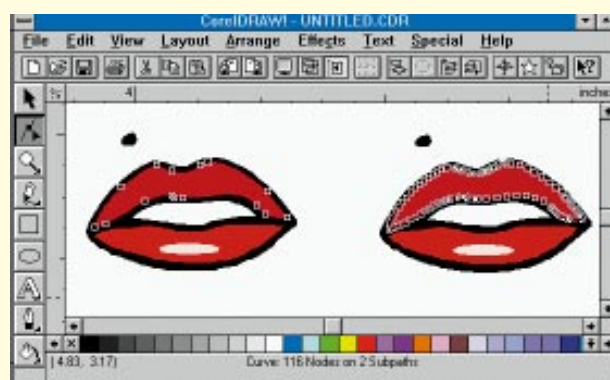
In the picture

Things get more complicated with pictures. Try copying part of a Paintbrush image to the clipboard and you'll see the display menu now includes Bitmap, Picture, Palette and three other greyed-out options. So what is actually on the clipboard? All of these things, and possibly more. If you save the contents of the clipboard as a .CLP file, you'll see that it is many times the size of the original data. The clipboard supports a substantial range of its own formats. In the case of paintbrush files, a Windows Picture, a device-independent bitmap, the colour palette used in 16 and 256-colour pictures and a



Left *The clipboard can hold data in a number of formats simultaneously*

Below *The lips are Corel objects. Copying and pasting in Windows native WMF format changes 15 Bézier curves to over 100 straight lines*



Paintbrush "object" are all available.

The native clipboard formats have their limitations however, particularly with vector drawing objects. If you have a copy of CorelDraw (or most other drawing applications), try copying part of a drawing, then Paste Special... into Write. You'll get a choice of pasting a CorelDraw object, or a Picture. Paste the picture, then copy it and paste back into Draw. The two shapes might look much the same but the Picture will have been changed to the Clipboard's own WMF format.

Luckily, the technology of OLE (Object Linking and Embedding) means that you're not limited to the Clipboard native formats. Applications can "register" themselves with Windows as OLE servers, and preserve their native formats as OLE "objects". Hence, in the previous example, if you paste the CorelDraw Object instead of the picture, you can close CorelDraw, copy the object elsewhere, restart CorelDraw and paste it back; it will retain its integrity as a Corel Object.

Guessing game

So what about the client, the application into which you're pasting the data? How does it know what to help itself to from all this richness? Like the Clipboard Viewer's Auto format, the client takes a look at what's on the clipboard and guesses at the most appropriate format. Word for Windows, for example, will default to choosing RTF if it's on offer. Failing that, it will go for plain text if, say, the clipboard contents originate in Write or Notepad.

With applications that are OLE clients (that is, they can accept embedded objects from OLE servers) you get a choice. The Edit menu will contain a Paste Special... option. The choice of formats available at any one time on the clipboard depends on the host application. If you use Microsoft Word, you can see a rather bizarre implementation of this. Select and copy some text from a Word document, then look at the Clipboard Viewer display options. As well as plain and OEM text, plus a load of greyed-out options, you'll see Picture.

Normally, with text from Write or Notepad on the clipboard, Paintbrush will prompt you to select the text tool and position the cursor — you'll then paste in the raw text using Paintbrush's current font

settings. Text from Word, however, pastes straight into Paintbrush as a bitmap, just as if you'd captured the screen with Alt+Print Screen. You can also Paste Special... back into Word as a scalable picture. This may sound sublimely useless, but it does have its good points; you can scale a whole page by copying, then paste a picture of it into a frame.

A clipboard Picture can thus perform as both a bitmap and a vector image. Generally, when faced with a Paste Special... choice between Picture, Bitmap and Object, the first will be the most economical in terms of file size. Pasting as an Object retains the original format, as illustrated in the CorelDraw example. Another advantage is that double-clicking

on the object will load it into the originating application for editing. With OLE 2, this can happen "in place": instead of the application starting up in its own window, the toolbars and menus of the container's application will change to suit.

Objects embedded in this way substantially increase file size, but you can opt to link, rather than embed, the object; thus, the linked data remains in a separate file and only the details of the link are retained in the container. It makes life more awkward as the container file is no longer self-sufficient, but it's particularly useful for including multiple copies of a graphic in the same, or different, documents.

As we've seen, the memory occupied by the contents of the clipboard (particularly with pictures or OLE objects) can be very large, but there's no universal way of clearing the clipboard to free that memory. The Viewer is the only Windows component with a built-in Delete command, and few third-party applications (PaintShop Pro being an exception) have a "clear clipboard" command. A quick-and-dirty way around this is to copy something small, say a letter or two of text, which will displace the previous contents.



Every picture tells a story: Word text pasted straight into Paint as a picture

PCW Contacts

Tim Nott can be contacted either by post c/o PCW or by email on timn@cix.compulink.co.uk