AGP angst

Advanced Graphics Port — you can either take it seriously as an important graphics standard of the future, or you can ignore it. Benjamin Woolley wonders which is best.

Sometimes it is hard not to believe that, when it comes to marketing, the PC industry is about as principled as an Albanian pyramid seller. How else can you explain the announcement of MMX just after Christmas, or motherboards being shipped without USB support?

If you are interested in 3D graphics, there is a strong possibility you may be caught in a similar trap, and the reason is another little triplet of letters courtesy of Intel: AGP stands for Advanced Graphics Port, and we are now beginning to see a host of new graphics products being announced bearing those initials.

For instance, leading graphics hardware companies like 3DLabs, ATI and S3 have announced "AGP-compliant" chips. The first will be offering the Glint Gamma processor, ATI the 3D RAGE PRO and S3 the Virge/MX and GX2.

So what *is* AGP? And, when it arrives later this year, is it going to render non-AGP PCs as non-MMX ones will no doubt prove to be? To address the latter question first, the obsolescence risk factor could be higher since AGP, like PCI, is effectively part of the PC's architecture. If your PC motherboard does not support it, you will be scuppered.

AGP was announced by Intel a year ago and marks an important step in the development of the PC as a 3D graphics platform. It effectively (although not literally) creates a Unified Memory Architecture (UMA). When Silicon Graphics launched its O2 workstation, UMA was one of its key features and one of the reasons it was so cheap (by Unix workstation standards).

In conventional systems, 3D graphics boards have to use limited on-board
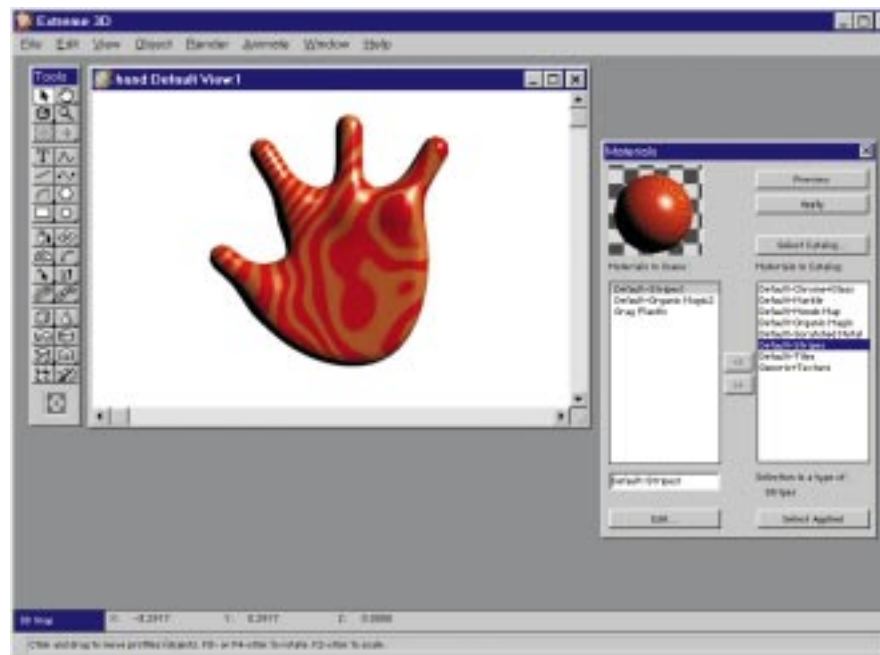

Fig 1 Extreme 3D's metaform used to create a balloon hand

specialist graphics RAM to store the depth, colour and transparency information (the z-buffer, texture buffer and alpha-buffer, in technical terms) that goes to making up a 3D scene. Such RAM is expensive and there is never enough of it.

AGP aims to solve this problem. It is a fast bus offering the 3D graphics accelerator chip direct access to the host system's RAM. 3D graphics applications can thus use any or all available memory as a unified block to build up each scene, enabling much larger scenes and much quicker rendering.

There seems little doubt that AGP will become an important graphics standard as 3D becomes increasingly pervasive on mainstream PCs. In a few years' time it may even be essential to run the latest 3D

applications. Unfortunately, it is almost impossible to tell how many years. Like MMX, USB and like Windows 9 (?), the manufacturers have given no clear launch dates nor cost information.

Intel originally suggested it would begin to make its mark early this year but currently there is still no sign of AGP motherboards or graphics controllers. Most AGP chip vendors now talk in terms of shipments beginning in the second half of 1997. It could take a lot longer. It could suddenly pop up after Christmas, once many people have invested in non-AGP systems. So what is an upgrader to do?

Then again…

One possibility is to ignore all future developments and take advantage of the

plummeting cost of systems that rely on older technology. It is generally agreed that the benchmark 3D platform at the moment is a 200MHz Pentium Pro with 64Mb of RAM, a graphics accelerator based on the 3DLabs Glint chip and a fast and wide SCSI interface driving a monster hard drive.

These systems are coming down in price, so now is a good time to get one. I spent a month using just such a system, Compaq's new Workstation 5000 installed with Windows NT 4.0 and I can report that it is perfect for modelling work, using applications like 3D Studio MAX.
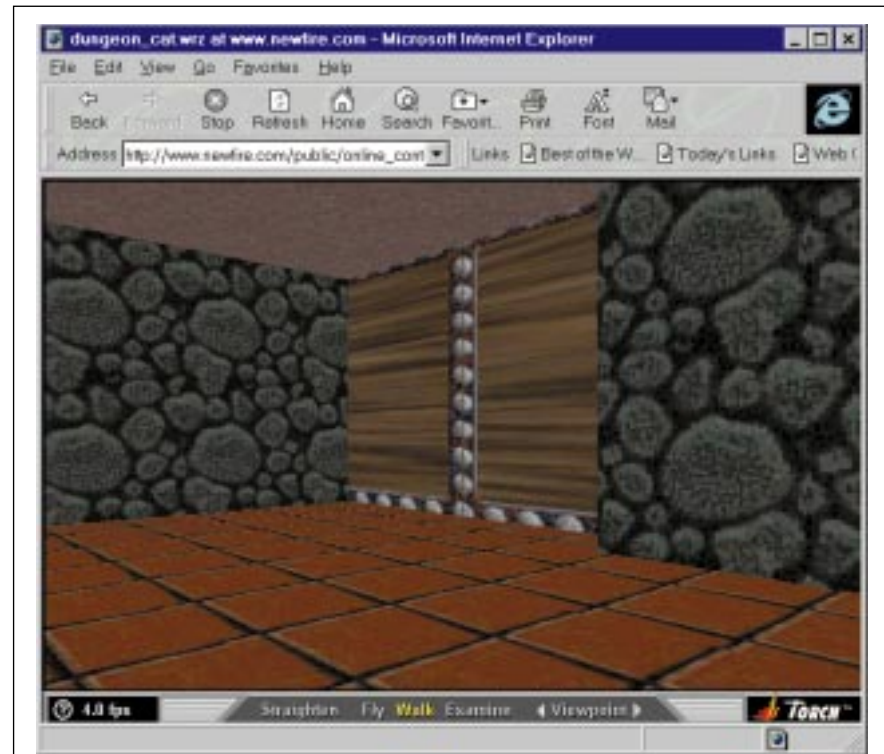
However, if you don't have the budget for such a radical upgrade, don't despair. You can do a great deal simply by swapping your video card. I've been trying a Diamond Fire GL 1000 slotted into my old Compaq Deskpro. It was a nightmare to install, requiring a new BIOS for the board, a new set of display drivers and, eventually, a new operating system (I could not get all the Win95 drivers to work, so I had to swap over to NT 4.0). Once I had it up and running it meant that, even with an ancient Pentium, the system could display properly-shaded and lit models in a preview window that were rendered in more or less real time.

Boards like the Fire GL with 4Mb of video RAM (£285 ex VAT) use accelerators, like the 3DLabs Permedia NT chipset, which are aimed at the intermediary graphics market. So it may be worth upgrading the graphics controller only, before you dump the whole system.

Extremely frustrating

Extreme 3D from Macromedia is an important product. At around £500, it is priced substantially below full-blown professional packages and its specification now almost equals many of them. The recently-shipped version 2.0 now comes with a particle system and an implementation of a modelling method generally known as "metaballs".

Particle systems (see *PCW,* November 96) allow you to create clouds of particles (snowfalls, dust clouds, hailstorms) that are animated along a specified trajectory, with a specified degree of turbulence over time. The one supplied with Extreme 3D 2.0 is quite sophisticated and relatively easy to use. There is no library of presets, however, which is a pity because it takes a lot of time and practice to get the dynamics of a particle system to work (because you usually need to see the fully-rendered

The Heat is On

A number of companies are trying to find ways of pepping up VRML 2.0. Many, like Black Sun, have concentrated on the idea of developing it to help foster virtual communities. A new name, Newfire, is more interested in straightforward gaming. It has just announced Torch, a player which it claims can turn VRML worlds into Quake-style games (the example shown above is from a "Dungeon" demonstration game). Torch is designed to work with Direct3D, so it should make use of any on-board 3D acceleration with DirectX drivers. The company claims that as a result of this and a 3D engine that "carefully eliminates unseen polygons", Torch is four to eight times faster than other 3D internet players. Judge for yourself at www.newfire.com.

animation to establish whether the required effect has been achieved: low-res partially rendered previews are rarely adequate).

The metaballs modelling tool, called "Metaforms", was, for me, a more interesting addition, because 3D Studio MAX, which costs around five times more than Extreme 3D, does not include such a tool in its standard set. Metaforms (Fig 1) allows you to create simple shapes and fill them with a sort of virtual putty that you can then shape to create rounded, organic forms. Unfortunately, when it came to using the thing I suffered some sort of imagination crash: I could *not* think what to do with it. I tried dinosaurs, dolphins, cartoon characters and in every case ended up with something that looked like the sort of elongated balloons entertainers twist into ingenious shapes at kiddies' parties.

Extreme 3D has improved with this new release. It offers welcome and particularly strong support for VRML (including version 2.0). And the network rendering, which can be used to good effect even over small

LANs (even those with a mix of PCs and Macs), is a boon. But, in my judgement, it still suffers from an awkward interface. For example, you can only swivel a view along one axis at once, which is very frustrating when you are trying to get a feel for an object's geometry: I find other budget packages, such as Truespace and Ray Dream, much easier in this respect.

Furthermore, Truespace version 3, which should be shipping by now, threatens to outclass the opposition with the promise of collision detection, its own implementation of metaballs ("Live Skin"), a way of moulding models called "Plastiform" and materials that give real physics (weight or elasticity) to the objects to which they are applied. It sounds exciting and likely to give Extreme 3D a run for its money.

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