

## **The Changing Role of Computer Graphics in Interactive Entertainment**

It's no secret that computer graphics and interactive entertainment have always gone hand in hand. Almost as soon as people realized that they could put a computer generated image onto a viewing screen, people began to wonder how they could produce entertaining computer games with those images. In the past, however, the relationship between computer graphics and forms of interactive entertainment was always a bit more clear. The video game industry has traditionally put a large emphasis on hyper-realism and flashy graphics, but now, the role of graphics appears to be changing quite significantly.



The impending launches of the Playstation 3 and the Nintendo Wii serve as perhaps the greatest examples of the crossroads that computer graphics are at. On one hand, Microsoft and Sony have engineered monstrously powerful machines that are capable of amazingly crisp high definition graphics. In stark contrast, Nintendo has countered with a new control mechanism, and a significantly less powerful system, choosing to emphasize game play over graphics. Less obviously, this crossroads has also appeared in the software that

is developed for gaming systems as well. Some developers have chosen to create realistic, graphics intensive applications that simulate the world as closely as possible. Others have chosen to take a more stylized approach, and have created compelling worlds that don't necessarily have the most technically complicated graphical systems. Several years ago, the technology was simply not there to support this type of divergence, but now, developers have the freedom to choose from a tremendous number of styles and effects that can be implemented relatively quickly. This freedom is one way in which the role computer graphics is maturing. Previously, graphics were about trying to make scenes that could be somewhat realistically interpreted by a user, but now, graphics can be about trying to capture the imagination of an artist looking for a particular style.



Beefier hardware has also allowed for more and more complicated simulations that have increased the role of physics in computer graphics tremendously. Several years ago, dedicated 3D acceleration hardware was a big deal because it allowed three dimensional simulations to become a reality. Now, physics processing units, or PPU's are starting to enter the equation due to the increasing role of

physics in game environments. The effects of a physics system cannot be captured with a screen shot, and sometimes, an uneducated user will not even notice the complexity of modern physics systems. This is quite a departure from previous improvements, where tweaks to the graphical system were immediately apparent to an end user. These underlying modifications are another way that interactive entertainment is truly moving forward in terms of significant graphical advances.

One system that promises to “Whip interactive entertainment forward” is the *euphoria* system developed by LucasArts and NaturalMotion Ltd. This system “enables interactive characters – from Indiana Jones himself to the foes he pulverizes – to move, act and even think like actual human beings without the limitations of traditional animation.” Basically, the system naturalizes animation so that characters can interact with environments in a dynamic way. Models will preform different animations each time they perform an action instead of queuing up a static animation that looks the same each time. According to the Peter Hirschmann, vice president of development at LucasArts, “...A.I. drives character behaviors so that there’s a different payoff every time. The depth of this character interaction gives us true next-gen gameplay that you simply couldn’t do with earlier generations of hardware.” The goal of this system, again, is increased realism, but instead of simply improving the polygon count of a model, the *euphoria* system is a far more subtle change. While the photo-realism of traditional graphics systems has already grown to the point where an untrained viewer can mistake renderings for reality, in motion, a lot of the animations for models still look somewhat fake since they were generally preformed under one set of conditions that may or may not reflect the current game world. *Euphoria* aims to remedy this problem, and it is just one ways that the role of graphics is progressing in a non-traditional fashion.



Lastly, as hardware increases in processing power, many people forget that advances have been made in the arena of user interface as well. Both the Playstation 3 and the Nintendo Wii have incorporated some form of motion control into their interface mechanisms. While the impact of such changes may not immediately impact computer graphics, interface changes still have a powerful effect on how graphical systems are constructed. This effect is already apparent in the way that user interfaces are designed for touch screen devices, such as Palm Pilots versus traditional PC GUIs. Furthermore, as the means of communicating with computers becomes more

interactive, game worlds will have to become more interactive as well. Once again, this could mean more advanced animation technology, but there could also be completely new developments that developers could choose to focus on. What is true about these advancements, however is that they are definitely a separate obstacle for graphics systems to overcome than the traditional problem of simply creating acceptable images.

Ultimately, it is impossible to say exactly where the field of computer graphics will advance to, but it is fairly obvious that it is branching out into new territory. The traditional problems of graphics systems, while not completely solved, are beginning to take a backseat to new problems and new types of technologies. Systems like *euphoria* are pushing the boundaries of dynamic animation, and new control interfaces are changing the way people play games. At any rate, it is clear that computer graphics are taking on a bold and intriguing new role in the world of interactive entertainment.

## **Sources**

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