

## *Avatars*

In a previous article I looked the possibilities of Artificial Intelligent Agents pursuing the information world looking for content that might be of use to you. I even suggested that these agents would have faces and that your relationship with them would be conversational.

A few days ago, I thought that I would revisit the teams working on Avatars and review the progress that has been made, since the relatively crude days of the Millennium Dome and the public Avatar Booths.

So quickly “what is an Avatar!?” The word “avatar” was derived from the Hindu Sanskrit Term meaning a “Representation of a Deity in visible form” But more recently an avatar is a graphical representation of all or part of a human being in a computer-generated world. Originally these avatars were little more than tiny “peg-people” with the simplest of spherical heads on the top of a (usually) tapering pole. They progressed through block-like representations of bodies into cartoon like creations that “floated” around virtual worlds. Today they are getting “photo-realistic”

Avatars being created today are replicas of people, they are now called "photo-realistic 3D models" which means that the proportions, skin texture, eyes, hairstyle and clothes are all faithfully reproduced. It's as if your photograph has come to life and is living in your computer screen.

Today there is no need for the cumbersome photo-booths of three years ago. An avatar can be simply created from two photographs (one from the front and one from the side) taken with a handheld digital camera in any environment – no need now for chromo-key equipment. The software that creates the avatar makes an assumption that one side of your face is very similar to the other and extrapolates the information of the two photographs into a complete 3-D model.

The avatar model is fitted with a random “blink reflex” so there is no disconcerting fixed stare that most people used to find quite un-nerving. The mouth moves realistically as the model talks and there are small natural head movement gestures to give a more human like appearance.

The avatars can now also show emotions. The wire-mesh model upon which the photographic images are rendered can be distorted to give changes in the shape of the avatar head. A slight drooping of the mouth and the lids of the eyes can convey sadness. One of the surprising

## *Looking at the Future Slightly Differently*

things of the human brain is that we use approximately 1/3<sup>rd</sup> of its capacity for the recognition of faces. It is this sensitivity that makes avatar expressions so difficult. Too much distortion of the image and mild concern leaps into major aggression!

And it would be a shame to have such wonderfully realistic avatars in the virtual environments of old. The first virtual worlds were made of large polygon shapes rendered in bright primary colours. This lack of realism was due in most part by the minimal computing power then available, and the fact that the Virtual Reality immersive headsets of the day had such poor resolution that you were “technically blind” with no detailed vision at all. Today you can buy from your local supermarket shelf a £800 computer that has more graphics power than a £30,000 Silicon Graphics machine of 2 years ago. This graphical capability is being used to generate some photo-realistic worlds for our avatars to live in.

I recently delivered a conference presentation for a well known high street bank. For the conference we chose one of their branches and replicated it as a virtual world, including photo-realistic avatars of the people who are normally at the counters. In the model you can “walk” down the street, browse around the shops and enter the bank branch. You can approach the counter in the usual manner – the only difference is that there are not the customary queues. You are greeted by recognisable staff and conduct business in exactly the same manner as you would have done in reality. You can ask a question, at the moment only by typing, rather than speaking, it is understood by a natural language engine and the requisite avatar delivers the information that you require.

The instigation of Broadband connections will make the virtual world experience quite possible, and you will be able to visit any shop, or call centre, at any time.

At the end of the conference presentation I said “and now, my alter-ego would like a few words with you”. And, as part of a PowerPoint presentation, my avatar appeared on the screen and said, “Hello, if you enjoyed this presentation, my name is Graham Whitehead, but if you didn’t then my name is Sebastian Jones! Good-bye” The audience was so fascinated by the avatar they did not notice that I had already left the stage!