

## **Augmented Reality: Enhancing the Tale**

### The Looking Glass

*Augmented Reality can be a very strong tool for engaging children's imagination. But the key to its success is grounding the technology in the underlying narrative. 'For a child everything has to be clear intuitively.'*

First things first. What exactly are we talking about? Augmented Reality is the combined perception of real and virtual images, explained Dutch ARLab director Yolanda Kolstee. It's adding an extra three-dimensional visual layer of information on top of what the human eye perceives as reality. Moreover, it's in real-time. Usually the camera picks up reference information in space after which the computer projects the three-dimensional layer of augmented reality. Reference information consists of a so-called 'marker' or it uses predefined features like corners, edges, faces or motion. Together with the universities of Delft and Leiden the AR Lab of the Royal Academy of Art in The Hague has been experimenting with AR since 2006. Their goal is the development of innovative AR applications in the field of art and design.

### **Markers**

The boundaries of the technology are far from clear. At the moment AR is confined to visual perception but other basic sensory stimulation such as tactile, oral and olfactory information can in time be integrated in the technology, according to Kolstee. Limitations also still exist in terms of equipment. Hopefully in the not too distant future contact lenses with an extra layer of AR will attract consumer interest but at the moment large goggles or a mobile phone is the most miniature form of experiencing the technology.

Even though AR hasn't been around for long and it is still very demanding in terms of programming, there have already been developed numerous applications. Oftentimes these applications were meant to just explore the possibilities, explore the playing field as it were. According to Kolstee we are still very much in this experimenting stage.

### **I'm in it!**

How does all this relate to children's stories? "What children really want out of this technology, is that their stories and toys come to life, that the characters jump out of the book", Fred Ellman began his analysis. Ellman has been designing internationally successful toy products for over 30 years for his family owned Lernell Company in New York. "Toys, games and baby dolls, that is what I do", Ellman introduced himself.

Can AR really enhance storytelling opportunities in toys and games, he rhetorically put the main issue in front of the audience and the other speakers.

According to Ellman the industry is wrestling with the concept. A box with a plastic figurine of *Buzz Lightyear* phrased its AR functionality as '2D to 3D!', which of course is not really what's going. This is important because the industry obviously has to know what to do with the technology before it starts investing. But maybe even more so, said Ellman, we need to rebrand it for children's sake, an idea strongly supported by another speaker, Matthias Greiner from leading German AR developer Mateio. "Children don't know what to do with something that's called *augmented reality*. We need to make it accessible for them", recommended Ellman.

So he came up with the idea of rebranding it into something like 'I'm in it!' Something the child can immediately relate to. "It's a simple phrase, it illiterates and it emphasizes the interactive role of the player. It projects the child into the game they're playing."

## **Gimmick**

“What is absolutely essential for AR to work in children’s narratives, be they games or books or films or television shows, is that the *real* object and how that relates to the child, remains at the centre of the narrative.” AR is not the goal, said Ellman. “It’s a tool to enhance the fictional experience. When the technology is not grounded in the underlying narrative, AR is reduced to a gimmick and children will reject it on the spot. The connection between the narrative and the AR should be designed in such a way that it’s all intuitively clear to the player.”

The business reality, said Ellman, is that big companies are hesitant about using this technology because of a few bad moves by early adopters. Toymaker Mattel put a board game featuring an AR robot on the market, which had something to do with the movie *Avatar*. That ‘something’ was essentially what went wrong. “There was no intriguing connection between the physical object – the board game – and the AR experience. Moreover it wasn’t clear what the AR added to the original *Avatar* story. So the item didn’t sell.”

Ellman’s company was asked by Disney to come up with an AR version of the Cinderella fairy tale. Adhering to their own principles, the company used the technology as an added layer to the basic story. Added meant, it was not the essence of the game, it wasn’t leading in Cinderella’s adventure. The AR was just a fascinating addition to the game, but it could still be played fully even if the AR stopped working. The traditional Cinderella remained at the core of the gaming experience.

Ellman summarized by going back to his childhood. “Back in the day when I wanted to ride a horse and didn’t have one, I would take a stick and pretend that was the horse. That stick is a pivot point in what I want to tell you. Through the stick a child takes ownership of the story.”

## **Through the looking glass**

To expand a little and get the imagination going, British AR developer James Alliban with typical speed, lucidity and flair took the audience on a tour through the different fields and types the technology can be used for.

Usually two different types of AR guide the user experience. First there is the mirror, where a camera picks up the object and overlays the AR image. This is typically done using markers that trigger the AR. Alliban showed a business card he developed onto which a black square marker was placed which the software on his laptop recognized through the camera. On a large screen the audience could then see a 3D head popping out of the card, introducing the cardholder. But markers can be a lot more than a specific black pattern. *Natural feature tracking* is based on a pre-recorded image of a natural scene of which certain characteristics trigger the augmented reality image. Similarly the AR trigger can be found in faces, colours, people and motion. An very nice example of the latter according to Alliban is Mehmet Akten’s *Webcam Piano 2.0*, which transforms movement into colours and music.

The second type of AR is everything in which the first person perspective is central to the experience. The head mounted display is probably familiar to most people.

Through a helmet or goggles an AR layer is projected onto the real world. The signal, as Yolande Kolstee explained earlier, can then be ‘peeked’ to a beamer so other people can see exactly what the person with the helmet sees. And there’s the other first person looking glass, the mobile phone through which the AR can be viewed. An example is the *Nearest Tube* iPhone app developed by Acrossair that projects directions of the nearest London tube station over the real scene as seen through the mobile camera.

The list of possible fields for using AR is growing rapidly. Marketing, gaming, entertainment, healthcare, engineering, art, education, the military, publishing... For kids, Alliban said picking just one of many applications, gaming with AR on a mobile phone really looks like a portal into another dimension. “It’s a real looking glass.”

Demand may be rising but there are still only a few companies that develop the required software: ARToolworks, Layar, Total Immersion and of course Metaio.

### **Lego**

Though every one of those companies claims to be an industry leader, Metaio actually is the biggest player out there. Matthias Greiner, sales manager at Metaio's German headquarter in Munich, explained how the company has been developing AR for the past ten years. But, said Mr Greiner, interest has really exploded in the past three years.

"The growth of AR is based on three essential criteria. The end user value, creating great technology and creating great content." There is a huge demand for content developing, even at Metaio. Why? Because the company decided to focus on the development of technology and so it depends on third parties for content production. "For kids, as Ellman already explained, it has to work intuitively. Remember that kids are very critical users." Metaio together with Danish toy manufacturer Lego put an AR application on Lego boxes. When deciding whether to buy a box of Lego in the store, children could see an augmented reality live action version of the toy they were thinking of buying. A fully operational police station for instance, or a helicopter ready for take-off. For Adidas the company developed an application that used a marker that was incorporated in a new shoe. Holding the shoe in front of a webcam launched an entire 'Adidas neighbourhood' on the computer screen where kids could then play several games. Both Lego and Adidas were very pleased with the results, according to Mr Greiner. The success of these large projects notwithstanding, he concluded, still a lot of small experiments are essential for the evolution of the technology.

### **Focus on the child**

"Keep the child in the centre of attention', Moderator David Freeman rounded up two days of in-depth talks on script writing, animation and augmented reality. "We need to bring AR to the child's space, not the other way round. I know of a television show that was created around a doll. But because the development of the doll had cost so much money, the companies involved urged the screenwriters to let all the stories revolve around the doll. In the end, all the children that didn't have that particular doll couldn't make any sense any more of the show. So I would say: don't write for the doll, write for the child."