BIOGRAPHY - HELEN PAPAGIANNIS

Helen Papagiannis is a designer, artist, and PhD researcher specializing in Augmented Reality (AR) in Toronto, Canada. Helen has been working with AR since 2005, exploring the creative possibilities for AR with a focus on content development and storytelling. She is a Senior Research Associate at the Augmented Reality Lab at York University, in the Department of Film, Faculty of Fine Arts. Helen has presented her interactive artwork and research at global juried conferences and events including TEDx (Technology, Entertainment, Design), ISMAR (International Society for Mixed and Augmented Reality) and ISEA (International Symposium for Electronic Art). Prior to her Augmented life, Helen was a member of the internationally renowned Bruce Mau Design studio where she was project lead on "Massive Change: The Future of Global Design." Read more about Helen's work on her blog and follow her on Twitter: @ARstories.

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INTERVIEW WITH HELEN PAPAGIANNIS

BY HANNA SCHRAFFENBERGER

What is Augmented Reality?

Augmented Reality (AR) is a real-time layering of virtual digital elements including text, images, video and 3D animations on top of our existing reality, made visible through AR enabled devices such as smart phones or tablets equipped with a camera. I often compare AR to cinema when it was first new, for we are at a similar moment in AR's evolution where there are currently no conventions or set aesthetics; this is a time ripe with possibilities for AR's creative advancement. Like cinema when it first emerged, AR has commenced with a focus on the technology with little consideration to content. AR content needs to catch up with AR technology. As a community of designers, artists, researchers and commercial industry, we need to advance content in AR and not stop with the technology, but look at what unique stories and utility AR can present.

So far, AR technologies are still new to many people and often AR works cause a magical experience. Do you think AR will lose its magic once people get used to the technology and have developed an understanding of how AR works? How have you worked with this 'magical element' in your work 'The Amazing Cinemagician'?

I wholeheartedly agree that AR can create a magical experience. In my TEDx 2010 talk, "How Does Wonderment Guide the Creative Process" (http://youtu.be/ScLgtkVTHDc), I discuss how AR enables a sense of wonder, allowing us to see our environments anew. I often feel like a magician when presenting demos of my AR work live; astonishment fills the eyes of the beholder questioning, "How did you do that?" So what happens when the magic trick is revealed, as you ask, when the illusion loses its novelty and becomes habitual? In *Virtual Art: Illusion to Immersion* (2004), new media art-historian Oliver Grau discusses how audiences are first overwhelmed by new and unaccustomed visual experiences, but later, once "habituation chips away at the illusion", the new medium no longer possesses "the power to captivate" (p. 152). Grau writes that at this stage the medium becomes "stale and the audience is hardened to its attempts at illusion"; however, he notes, that it is at this stage that "the observers are receptive to content and media competence" (p. 152).

When the initial wonder and novelty of the technology wear off, will it be then that AR is explored as a possible media format for various content and receive a wider public reception as a mass medium? Or is there an element of wonder that need exist in the technology for it to be effective and flourish?

"Pick a card. Place it here. Prepare to be amazed and entertained."

Picture: **PIPPIN LEE**

I believe AR is currently entering the stage of content development and storytelling, however, I don't feel AR has lost its "power to captivate" or "become stale", and that as artists, designers, researchers and storytellers, we continue to maintain wonderment in AR and allow it to guide and inspire story and content. Let's not forget the enchantment and magic of the medium. I often reference the work of French filmmaker and magician George Méliès (1861-1938) as a great inspiration and recently named him the Patron Saint of AR in an article for *The Creators Project* (http://www.thecreatorsproject.com/blog/celebrating-georges-méliès-patron-saint-of-augmented-reality) on what would have been Méliès' 150th birthday. Méliès was first a stage magician before being introduced to cinema at a preview of the Lumiere brothers' invention, where he is said to have exclaimed, "That's for me, what a great trick". Méliès became famous for the "trick-film", which employed a stop-motion and substitution technique. Méliès applied the newfound medium of cinema to extend magic into novel, seemingly impossible visualities on the screen.

I consider AR, too, to be very much about creating impossible visualities. We can think of AR as a real-time stop-substitution, which layers content dynamically atop the physical environment and creates virtual actualities with shapeshifting objects, magically appearing and disappearing—as Méliès first did in cinema.

In tribute to Méliès, my Mixed Reality exhibit, *The Amazing Cinemagician* integrates Radio Frequency Identification (RFID) technology with the FogScreen, a translucent projection screen consisting of a thin curtain of dry fog. *The Amazing Cinemagician* speaks to technology as magic, linking the emerging technology of the FogScreen with the pre-cinematic magic lantern and phantasmagoria spectacles of the Victorian era. The installation is based on a card-trick, using physical playing cards as an interface to interact with the FogScreen. RFID tags are hidden within each physical playing card. Part of the magic and illusion of this project was to disguise the RFID tag as a normal object, out of the viewer's sight. Each of these tags corresponds to a short film clip by Méliès, which is projected onto the FogScreen once a selected card is placed atop the RFID tag reader. The RFID card reader is hidden within an antique wooden podium (adding to the aura of the magic performance and historical time period).

The following instructions were provided to the participant: "Pick a card. Place it here. Prepare to be amazed and entertained." Once the participant placed a selected card atop the designated area on the podium (atop the concealed RFID reader), an image of the corresponding card was revealed on the FogScreen, which was then followed by one of Méliès' films. The decision was made to provide visual feedback of the participant's selected card to add to the magic of the experience and to generate a sense of wonder, similar to the witnessing and questioning of a magic trick, with participants asking, "How did you know that was my card? How did you do that?" This curiosity inspired further exploration of each of the cards (and in turn, Méliès' films) to determine if each of the participant's cards could be properly identified.

You are an artist and researcher. Your scientific work as well as your artistic work explores how AR can be used as a creative medium. What's the difference between your work as an artist / designer and your work as a researcher?

Excellent question! I believe that artists and designers are researchers. They propose novel paths for innovation introducing detours into the usual processes. In my most recent TEDx 2011 talk in Dubai, "Augmented Reality and the Power of Imagination" (http://youtu.be/7QrB4cYxjmk),

Picture: HELEN PAPAGIANNIS

I discuss how as a designer/artist/PhD researcher I am both a practitioner and a researcher, a maker and a believer. As a practitioner, I do, create, design; as a researcher I dream, aspire, hope. I am a make-believer working with a technology that is about make-believe, about imagining possibilities atop actualities. Now, more than ever, we need more creative adventurers and make-believers to help AR continue to evolve and become a wondrous new medium, unlike anything we've ever seen before! I spoke to the importance and power of imagination and make-believe, and how they pertain to AR at this critical junction in the medium's evolution. When we make-believe and when we imagine, we are in two places simultaneously; make-believe is about projecting or layering our imagination on top of a current situation or circumstance. In many ways, this is what AR is too: layering imagined worlds on top of our existing reality.

You've had quite a success with your AR pop-up book 'Who's Afraid of Bugs?' In your blog you talk about your inspiration for the story behind the book: it was inspired by AR psychotherapy studies for the treatment of phobias such as arachnophobia. Can you tell us more?

Who's Afraid of Bugs? was the world's first Augmented Reality (AR) Pop-up designed for iPad2 and iPhone 4. The book combines hand-crafted paper-engineering and AR on mobile devices to create a tactile and hands-on storybook that explores the fear of bugs through narrative and play. Integrating image tracking in the design, as opposed to black and white glyphs commonly seen in AR, the book can hence be enjoyed alone as a regular pop-up book, or supplemented with Augmented digital content when viewed through a mobile device equipped with a camera. The book is a playful exploration of fears using AR in a meaningful and fun way. Rhyming text takes the reader through the storybook where various 'creepy crawlies' (spider, ant, and butterfly) are awaiting to be discovered, appearing virtually as 3D models you can interact with. A tarantula attacks when you touch it, an ant hyperlinks to educational content with images and diagrams, and a butterfly appears flapping its wings atop a flower in a meadow. Hands are integrated throughout the book design, whether its placing one's hand down to have the tarantula crawl over you virtually, the hand holding the magnifying lens that sees the ant, or the hands that pop-up holding the flower upon which the butterfly appears. It's a method to involve the reader in the narrative, but also comments on the unique tactility AR presents, bridging the digital with the physical. Further, the story for the AR Pop-up Book was inspired by AR psychotherapy studies for the treatment of phobias such as arachnophobia. AR provides a safe, controlled environment to conduct exposure therapy within a patient's physical surroundings, creating a more believable scenario with heightened presence (defined as the sense of really being in an imagined or perceived place or scenario) and provides greater immediacy than in Virtual Reality (VR). A video of the book may be watched at http://vimeo.com/25608606.

In your work, technology serves as an inspiration. For example, rather than starting with a story which is then adapted to a certain technology, you start out with AR technology, investigate its strengths and weaknesses and so the story evolves. However, this does not limit you to only use the strength of a medium.
On the contrary, weaknesses such as accidents and glitches have for example influenced your work 'Hallucinatory AR'. Can you tell us a bit more about this work?

Hallucinatory Augmented Reality (AR), 2007, was an experiment which investigated the possibility of images which were not glyphs/AR trackables to generate AR imagery. The projects evolved out of accidents, incidents in earlier experiments in which the AR software was mistaking non-marker imagery for AR glyphs and attempted to generate AR imagery. This confusion, by the software, resulted in unexpected and random flickering AR imagery. I decided to explore the creative and artistic possibilities of this effect further and conduct experiments with non-traditional marker-based tracking. The process entailed a study of what types of non-marker images might generate such 'hallucinations' and a search for imagery that would evoke or call upon multiple AR imagery/videos from a single image/non-marker.

Upon multiple image searches, one image emerged which proved to be quite extraordinary. A cathedral stained glass window was able to evoke four different AR videos, the only instance, from among many other images, in which multiple AR imagery appeared. Upon close examination of the image, focusing in and out with a web camera, a face began to emerge in the black and white pattern. A fantastical image of a man was encountered. Interestingly, it was when the image was blurred into this face using the web camera that the AR hallucinatory imagery worked best, rapidly multiplying and appearing more prominently. Although numerous attempts were made with similar images, no other such instances occurred; this image appeared to be unique.

The challenge now rested in the choice of what types of imagery to curate into this hallucinatory viewing: what imagery would be best suited to this phantasmagoric and dream-like form? My criteria for imagery/videos were like-form and shape, in an attempt to create a collage-like set of visuals. As the sequence or duration of the imagery in *Hallucinatory AR* could not be predetermined, the goal was to identify imagery

that possessed similarities, through which the possibility for visual synchronicities existed. Themes of intrusions and chance encounters are at play in *Hallucinatory AR*, inspired in part by Surrealist artist Max Ernst. In *What is the Mechanism of Collage?* (1936), Ernst writes:
One rainy day in 1919, finding myself on a village on the Rhine, I was struck by the obsession which held under my gaze the pages of an illustrated catalogue showing objects designed for anthropologic, microscopic, psychologic, mineralogic, and paleontologic demonstration. There I found brought together elements of figuration so remote that the sheer absurdity of that collection provoked a sudden intensification of the visionary faculties in me and brought forth an illusive succession of contradictory images, double, triple, and multiple images, piling up on each other with the persistence and rapidity which are particular to love memories and visions of half-sleep (p. 427).

Of particular interest to my work in exploring and experimenting with *Hallucinatory AR* was Ernst's description of an "illusive succession of contradictory images" that were "brought forth" (as though independent of the artist), rapidly multiplying and "piling up" in a state of "half-sleep". Similarities can be drawn to the process of the seemingly disparate AR images jarringly coming in and out of view, layered atop one another.

One wonders if these visual accidents are what the future of AR might hold: of unwelcome glitches in software systems as Bruce Sterling describes on *Beyond the Beyond* in 2009; or perhaps we might come to delight in the visual poetry of these Augmented hallucinations that are "As beautiful as the chance encounter of a sewing machine and an umbrella on an operating table." [1]

To a computer scientist, these 'glitches', as applied in *Hallucinatory AR*, could potentially be viewed or interpreted as a disaster, as an example of the technology failing. To the artist, however, there is poetry in these glitches, with new possibilities of expression and new visual forms emerging.

On the topic of glitches and accidents, I'd like to return to Méliès. Méliès became famous for the stop trick, or double exposure special effect, a technique which evolved from an accident: Méliès' camera jammed while filming the streets of Paris; upon playing back the film, he observed an omnibus transforming into a hearse. Rather than discounting this as a technical failure, or glitch, he utilized it as a technique in his films. *Hallucinatory AR* also evolved from an accident, which was embraced and applied in attempt to evolve a potentially new visual mode in the medium of AR. Méliès introduced new formal styles, conventions and techniques that were specific to the medium of film; novel styles and new conventions will also emerge from AR artists and creative adventurers who fully embrace the medium. ■

[1] Comte de Lautreamont's often quoted allegory, famous for inspiring both Max Ernst and Andrew Breton, qtd. in: Williams, Robert. "Art Theory: An Historical Introduction." Malden, MA: Blackwell Publishing, 2004: 197

"As beautiful as the chance encounter of a sewing machine and an umbrella on an operating table."

Comte de Lautréamont

Picture: PIPPIN LEE