

## Global Visual Effects Pipelines

An Interview with Hannes Ricklefs

Hye Jean Chung

In a digital era, the workforce in film production pipelines is becoming more and more geographically dispersed. I attended a panel at SIGGRAPH in July 2010 to hear visual effects specialists discuss the difficulties of navigating an increasingly globalized media industry.<sup>1</sup> The panelists worked at major post-production companies with global visual effects pipelines, namely, The Moving Picture Company (MPC) with facilities in London, Los Angeles, Vancouver, and Bangalore; Digital Domain in Los Angeles and Vancouver; Rhythm and Hues in Los Angeles, Kuala Lumpur, Mumbai, and Hyderabad; and Sony Picture Imageworks in Los Angeles, Albuquerque, Novato, Bristol, Vancouver, and Chennai.

The visual effects pipeline entails a long, laborious process that spans pre-production to post-production, including such tasks as pre-visualization, modeling, rigging, texturing and surfacing, lighting, matte painting, and digital compositing. The panelists mostly agreed that synchronization among the various departments, which are often located in geographically diverse facilities, is a major challenge on multiple levels: temporal synchronization

(or time-zone management), software synchronization, and synchronization of language, including the lexicon of visual effect technologies. Despite these challenges, the panelists noted that this global dispersion of labor has its advantages. For one, a representative from Rhythm and Hues observed that the collaboration of people in different time zones enables a steady workflow, joking that “the sun never sets on Rhythm and Hues,” a phrase which echoes the colonialist rhetoric of the British Empire while emphasizing the company’s global reach. He also asserted that this current global pipeline differs from traditional outsourcing models, as it creates a “unified global talent pool” that works on the same projects within a fully integrated infrastructure, which links each facility to one another despite their geographical dispersion.

To follow up with some of the issues that were discussed, I interviewed the panel organizer, Hannes Ricklefs, Head of Pipeline for MPC’s global film division.<sup>2</sup> Ricklefs has much experience and expertise in the domain of visual effects, having worked on several large-scale projects, including *Clash of the Titans* (dir. Louis Leterrier, 2010), *Watchmen* (dir. Zack Snyder, 2009), *G.I. Joe: The Rise of Cobra* (dir. Stephen Sommers, 2009), *The Chronicles of Narnia: Prince Caspian* (dir. Andrew Adamson, 2008), *Harry Potter and the Order of the Phoenix* (dir. David Yates, 2007), and *X-Men: The Last Stand* (dir. Brett Ratner, 2006).

**Hye Jean Chung: First, could you tell us about the different artistic and technical departments that work together to create visual effects, and how this collaborative process has been affected by the globalization of post-production pipelines?**

**Hannes Ricklefs:** At MPC we work in a department based structure. These departments are split between shot- and build work. Build is where we create all the creatures, props, buildings, sets, vehicles, and so on, which then get referred to and worked on within the individual shots. For film we have roughly thirty disciplines that are split into creative, production and support disciplines. Examples for creative disciplines are: modeling, texturing, rigging, lighting and compositing. Production examples include production, editorial and management and finally for support: development,

“renderEngineering” (supporting lighting TDs to resolve complex technical challenges), “dataOperation” (handling our data storage; this includes everything from moving data between disks, to archiving and deleting data) and “renderWrangling” (administering our render farm by allocating priorities and distribution of the different render jobs). These are departments we have set up at MPC to support our production workflow in regard to these technical challenges. All of these different disciplines have a fairly well defined scope of work, so whenever we share work between our facilities we base it on these disciplines to ensure we can guarantee as little interruption of the production process as possible.

**HJC: Where do you work and how geographically dispersed are your colleagues? Why did the company choose these locations above others? Does each facility have their own specialized areas, and do their locations affect the production process at all?**

**HR:** I am based in London with the largest part of the software development team. There are technical staff in all of our facilities (London, Los Angeles, Vancouver and Bangalore), with whom I have regular contact via email, phone, and video conferencing. There are a variety of benefits for each of the locations. For Vancouver and Bangalore we were able to utilize office space from our parent company Technicolor. Our early move to Vancouver in 2008 has proven an especially huge success with a lot of other major studios having made the same move since then. All of these locations have different benefits, such as tax breaks, availability of skilled workers, lower costs, and a local client base, which combined with having the option to distribute our work across multiple time zones, have made globalization a very attractive addition to our business.

**HJC: Could you give us an example by describing the geographically dispersed workforce that worked on a particular film still or sequence?**

**HR:** *Percy Jackson & the Olympians: Lightning Thief* (dir. Chris Columbus, 2010) lent itself perfectly for sharing work between London and Vancouver. There were various sequences that required leg replacement of live-action actors with faun legs. After having worked on Walt Disney’s *The Chronicles of*

*Narnia: Prince Caspian* in London, we had lots of experience in the modeling, texturing, rigging and roto-animation of faun legs. Our characters contain lots of simulation parts like muscles, skin sliding, and clothing. The rigs to enable these effects are getting so complex that the actual simulation can take hours. Hence we only simulated these rigs in London and wrote out per frame geometry caches and synchronized these to Vancouver for lighting, compositing and final delivery to the client.



**HJC:** Last year, you organized a panel at SIGGRAPH on “Global Visual Effects Pipeline.” Could you tell us why you felt the need for the panel, and what you hoped to achieve?

**HR:** Asset management, automation and workflows are some of the last remaining challenges within the VFX industry. They are essential to enable us to deliver the ever-increasing shot complexity and shot volume in an effective and efficient manner without hindering the creative aspect of our work.

It’s a common theme amongst the studios to open up additional studios around the world. As I mentioned earlier: tax breaks, distribution of a skilled work force, and being local to your client base are just some of the benefits of globalization that cannot be ignored by studios. Having to work across multiple sites increases the need for the above even more. By organizing the Birds of a Feather<sup>3</sup> on “Global Visual Effects Pipeline,” I was hoping to show

that we are all facing the same challenges and we need to raise the importance of opening up a discussion about pipelines.

I was very fortunate to have Sony Picture Imageworks, Digital Domain and Rhythm & Hues as part of the panel, and the high attendance of the event showed that there is genuine interest in the subject and highlighted the importance of sharing our approaches to pipelines and discussing solutions within the community.

**HJC: Was it a rare opportunity for different companies to meet and discuss these common issues?**

**HR:** We are a fairly small industry where everybody has worked together at some point. However, getting everyone together is a rare occurrence. We have set up a Google group following on from the [Birds of a Feather](#), but nothing beats face-to-face discussions about these issues. We announced the Google group at the Birds of A Feather events and lots of people handed me their business cards or sent me their email address to be part of it. The Google group currently has seventy-five members from all major studios and 3<sup>rd</sup> party vendors.

**HJC: What are some of the challenges that you and your colleagues face in a global visual effects pipeline? For instance, the panelists discussed the need for, and difficulties surrounding, synchronization among the geographically diverse facilities, in terms of technology, communication, and data or time management.**

**HR:** Yes, all of these are major challenges:

- how to share data
- what data to synchronize
- making the most of overlapping times during the day

For us, a particularly difficult challenge has been the issue of distribution and configuration management of our software stack.

**HJC: Could you perhaps give a concrete example, so our readers will have a better sense of what these challenges mean in the work process? For instance, how do different facilities share data, and how do you keep track of the huge amount of data?**

**HR:** A standard character at MPC easily contains more than a few hundred assets. If the character is being shared among different sites we need to ensure that all of these assets are synchronized. We have developed dedicated tools to allow the transfer of these assets to be as seamless as possible. Our setup allows production to specify which shots are shared and even further down to a level of splitting the work between 2D (compositing, paint/prep, etc.) or 3D work (animation, lighting, fx, etc). Given our ability to split the work at a discipline level we need to enhance our data distribution toolset to include options, such as animation in London, matchmove in Bangalore, and compositing in Vancouver, as currently we are distributing too much data whenever a shot is shared.

**HJC: I also remember hearing that one of the biggest challenges was making everyone feel as though they are on the same team. How important would you say this is? Have you discovered effective ways to achieve this?**

**HR:** I believe that this is the most important aspect of globalization and working with a geographically dispersed workforce. Our department-based setup allows us to have regular meetings between the leads and Heads of Department (HOD) of each discipline via videoconference to discuss new tools, working practices, and current challenges. This ensures we utilize the same process in all of our studios. Also, having our HODs travel to the other sites has proven to be an invaluable expense, as there is nothing more effective than a face-to-face meeting. In addition, remote collaboration tools that allow audio and video sharing with the ability to draw and annotate ensure that everybody gets the detailed creative feedback they require.

**HJC: In addition to the technical and structural changes brought about by globalization, could you describe the cultural aspects or effects of a globalized visual effects pipeline? The panelists mentioned, for**

**example, the issue of talking the same language, or using a common lexicon of visual effects.**

**HR:** A common taxonomy and understanding of the workflow are essential for working globally. An unexpected bonus has been that different cultures draw their creative inspirations from different sources. These different views have diversified and enriched our creativity substantially. Every shot we work on or every character we create generates a multitude of challenges, starting from the aesthetic look of the end result and the technical approach of achieving this result. The way people address these challenges is based on a multitude of aspects: culture, education, personal preferences, etc. It is hard to give a concrete example as we tend to work so closely together using collaborative technologies, such as video conference and video sharing sessions, that it's hard to determine where the lines are drawn.

**HJC: Visual effects artists collaborate with other departments in the pipeline to create an audiovisual product that could retain traces of local or national cultures. Or would you say that your job is to erase specificities of local or regional input, unless called for by the content of the film?**

**HR:** Since the primary aspect of our work is to deliver a director's vision, we work extremely closely with our clients to ensure we meet their expectations of the final look and feel, as well as their creative direction.

**HJC: Again, does the global dispersion of your workforce bring up any challenges in delivering the clients' vision?**

**HR:** There are always going to be misinterpretations and misunderstandings between people, even when working right next to each other. Globalization does increase the potential for miscommunication, and being in different time zones with limited overlap increases the chance for wasting a lot of time to resolve an issue.

**HJC: Keeping in mind our issue's theme of "media, labor, mobility," would you say there are certain problems or situations that are specific**

**to the context of global media industries and audiovisual media practices? Aside from the global dispersion of media products and sites of production, do you think the current globalized structure achieves mobility for the workers themselves? If so, do you and your colleagues welcome these opportunities for travel or migration? I imagine certain difficulties might arise from the “nomad” existence that is sometimes necessary for visual effects artists who work on various projects, such as homesickness or constantly changing working conditions.**

**HR:** In general the VFX Industry is a very young industry and workers seem to thrive on the option to work anywhere in the world, depending on preferences of movies to work on, cultural interests or other lifestyle choices. It's also a very small industry and it seems that you meet the same people wherever you go.

**HJC: Does this create a sense of familiarity and camaraderie that is helpful in creating a collaborative environment?**

**HR:** At MPC we have extracurricular activities such as softball matches, cake bakeoffs and live drawing classes which all help the camaraderie within the teams. But as you said, I know of people that came back to work closer to where their friends and families live.

**HJC: In popular and scholarly discussions on global media industries and digital technologies, there is much emphasis on fluid and seamless integration, not only in regard to the final product but also the production process. Do you think this is an apt description, or would you use other words or ideas to better describe what goes on, or is valued and prioritized by visual effects specialists?**

**HR:** Yes, that is a valid statement. The goal for us is to provide fluid and seamless integration whenever possible, but this is by no means easy. We are still facing issues and are constantly developing our pipeline further to adapt to what we have learned but also to try to stay ahead of the game, as every show we do generates new challenges. These challenges require us to rethink involvements of disciplines, technical approaches, and restructuring and



enhancing of our assets. Being able to not only introduce these changes to the production process within one site but also every site involved within the project is a huge requirement for us to deliver our work with the ever decreasing timescales and continuously increasing complexity of our projects.

## Notes

- 1 SIGGRAPH (short for “Special Interest Group on Graphics and Interactive Techniques”), an annual conference on computer graphics, was held at the Los Angeles Convention Center from July 25-29, 2010.
- 2 MPC specializes in post-production and visual effects for film, television, and advertising.
- 3 Birds of a Feather refers to “[i]nformal presentations, discussions, and demonstrations for people who share interests, goals, technologies, environments, or backgrounds” ([http://www.siggraph.org/s2010/for\\_attendees/birds\\_feather](http://www.siggraph.org/s2010/for_attendees/birds_feather)). These events provide a casual atmosphere for people to meet, exchange ideas, and share information on a wide variety of topics.

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