

“There’s an unbelievable amount of potential in 3D”

A conversation with Florian Maier*

Your job title is “stereographer”. What exactly does a stereographer do?

The job of a stereographer can best be compared to that of a cinematographer, but for stereo 3D. In a normal 2D film you tend to have a “duo” consisting of the director and the cinematographer. In a 3D film there’s another “key role”, the person responsible for the whole 3-dimensional execution of the film. Together with the director, the cinematographer and the other departments, the stereographer tries to develop a third dimension which supports the story and takes into account what the director wants to express in a particular scene, for example.

On the other hand, the stereography is meant to fulfil viewers’ expectations of a 3D film and to bring them closer to the story – enabling them to experience it more intensely.

For example, the strategic selection of focal lengths can be used to influence what is known as “roundness”, i.e. how round a body is perceived as being. This in turn influences how the specific sequence or scene is per-

ceived, the impression it makes on the viewer, and how the story is understood. It makes a difference, for example, whether I have an intimate dialogue scene in which I want to present the participants as suitably 3-dimensional, so that the scene seems as natural as possible and you feel as though you’re standing next to

them, or as though you’re part of the conversation. But if I choose a focal length that gives a flat representation of the face, which seems unnatural to the viewer, then I lose this intimacy and create distance between the viewer and the film instead. One of the tasks of the stereographer is to choose the right focal length and use this tool of roundness to create effects such as this intimacy.

What opportunities does this third dimension offer for storytelling, and for story comprehension on the part of the viewers?

We go through the world with 2 eyes, that is, we see everything in 3 dimensions. The US director James Cameron put it very nicely once. He said that even with HD or super HD resolution in 2D, it’s as if we were going through the world wearing an eye patch. But super HD and high frame rates in 3D are far more like the way we perceive the world. So the question is “Why should we be satisfied with the 2-dimensional when we have the option of seeing in 3 dimensions?”

Of course over the decades, in fact for a good century, we’ve got used to seeing in 2D, because we never had the opportunity to capture the environment in good quality 3D. We’ve learnt to abstract to a 2D film by leaving out one dimension. But of course this dimension contains important information. We have become accustomed to using a depth of field that is as shallow as possible, so the background is soft

and the foreground can stand out from the background. This enabled us to draw attention to the important parts of the picture. But now that we have the option of capturing the world around us in high resolution, good quality 3-dimensional images, we can of course convey quite different things in a film. The separation of foreground and background is already achieved by the 3-dimensional medium itself, and no longer has to be conveyed circuitously with a shallow depth of field.

Can you give a specific example of how 3-dimensional effects can play with different moods?

A good example is the animated stop-motion film *Coraline*. It's about a girl who moves into an old villa in the country with her parents. She loses all her friends and is utterly bored. The 3D is constructed to be equally boring, i.e., everything is presented in a rather flat, conservative manner. This impression of boredom is also supported in the colour grading, by keeping the colours relatively dull. And then the girl discovers a secret door in the villa, which takes her into a parallel world. This parallel world is a mirror image of the boring one, so to speak, except that everything is colourful and exciting all of a sudden, and the people are much nicer etc. On the one hand this is expressed in the colour grading, through more brilliant colours and contrasts; on the other hand it is also shown in the 3D through bigger depth budgets, much more interesting depth staging, and "out-of-screen" or "pop-up" effects which make the whole picture more exciting. This approach emphasizes both the feeling of boredom in the

normal world and, in contrast, the excitement of the parallel world with its different 3D design and colouring.

Amongst other things, you worked as the lead stereographer for the film Vicky and the Treasure of the Gods. What are some prominent examples in Vicky where the potential for storytelling with 3D was used?

In *Vicky* I used a technique that enabled us to express different 3D

moods throughout the film. We had 3 categories: one in which the 3D effect was conceived as "low-key" and was meant to recede into the background, one with a "normal" 3D effect, which was supposed to be perceived as neither boring nor too obtrusive; and one with "strong" 3D effects for the relevant scenes. My concern in the 3-dimensional execution was on the one hand to bring viewers closer to the story – to make it more tangible – and on the other hand to deploy 3D effects strategically in order to emphasize things, and of course to give the children a certain fun factor. For example we only made strategic use of out-of-screen effects where it fitted the story, e.g. when Vicky shoots an arrow to pull Schnorre's tooth. We deliberately didn't use the pop-out effect all the time so that it wouldn't become

ridiculous or lose its freshness. And I think we succeeded in using it in the right places: when I saw that 80 % of the audience jumped and instinctively jerked their heads back in the arrow scene, I knew: "The viewers are emotionally engrossed in the film, that worked brilliantly there."

But we also used 3D technology to express Vicky's emotions. In emotional scenes when Vicky talks to his father, for example, we conveyed intimacy by minimizing the distance between the two of them, including the spatial distance. The opposite applies to the scene in which Vicky is sitting in the dungeon with his companions from the village after being duped by Svenja, the daughter of Sven the Terrible. At first he thought they were friends, and entrusted her with secrets. But then suddenly he is let down, and is

totally shocked to discover that she is the daughter of Sven the Terrible. In this moment, in which his father and the other men are also furious with him – where they say "How could you fall for that?" – I used a "3D vertigo effect". That is, we simultaneously zoom in with the camera and move it backwards – and all this in 3D – and at the same time I also changed the stereo settings, i.e. the spatial depth: when Vicky sinks down on the floor, realizing "I was friends with an enemy", and his father begins to scold him in the background, at this moment the background becomes more and more separated from Vicky in the foreground. And at the same time Vicky's face becomes flatter and flatter; it loses its roundness. This effect can be put to wonderful use in 3D to reflect the distance between Vicky

and his mental state on the one hand, and his father on the other. I see this as an excellent illustration of how brilliantly 3D can be used to give emphasis to feelings.

Another example has to do with long takes, i.e. plan sequences/long tracking shots with the Steadicam or dolly, without many cuts. This brings us much closer to natural vision, because it imitates what we do in everyday life, i.e. moving around in a space “continuously” (that is, without “jumps”). This works amazingly well, is exciting, authentic, and close to the action. And at the same time the film also works in 2D, without seeming boring in terms of its camera work.

Is there anything else that is set up differently in 3D camera work?

Yes, for example in the choice of lenses or the settings in general. I always try to construct the whole film in such a way that it is visually attractive, for example by trying quite deliberately to incorporate monocular depth cues, which are also used for stereoscopic vision. Instead of standing face-on in front of a wall, it looks considerably better to angle the camera in, i.e. to use perspective lines. I keep noticing that, when filming in 3D, you often use camera angles or movements which are not often used in 2D – whether out of convenience or because it’s not considered necessary. In 3D, on the other hand, we look for the most unusual camera angles and then realize later that this also looks great in 2D. For example I deliberately try to design the space in a way that gives good depth staging, i.e. a foreground object, a middle-ground object, and a background object, not just 2 levels, foreground and background. In 3D it’s also possible to express various proportions – think “miniaturization” and “giantism”. That means that I can use a wide interaxial base and a wide angle of view to make actors appear dwarf-like; at the same time I can use a very narrow stereo base and a narrow angle of view to make things

Glossary

Roundness: the degree of roundness with which 3-dimensional objects are perceived

Focal length: the focal length has a big impact on 3-dimensional perception. If it is too short, everything looks too small and overly round, if it is too long, everything appears too flat. 3D images thus tend to remain within the range of normal focal length

Out-of-screen/pop-up effects: when an arrow or a sword comes out of the screen, so that it seems as if one could almost touch it, this is referred to as an out-of-screen effect. In the past, 3D films consisted almost entirely of these effects, which sometimes came across as gimmicky and forced. Today these effects are deployed much more strategically and can be used to emphasize a particular moment in a film

3D vertigo effect: the camera moves e.g. away from an object, but one zooms in on the object and simultaneously changes the distance between the 2 cameras. This means that the way the space is perceived is also 3-dimensionally “distorted” – similar to the 2-dimensional vertigo effect

Monocular depth cues: depth cues which are based solely on monocular, i.e. one-eyed cues, e.g. the interplay of light and shadow, texture, proportions, perspective, motion parallax, occlusion of objects etc.

Miniaturization: objects seem very small in relation to the viewer, almost as if one were looking into a doll’s house

Giantism: objects seem gigantic in relation to the viewer; as a viewer, one has the impression of being very small

Stereoscopy: the reproduction of images with a spatial effect of depth

Stereography: the art of 3D design

seem gigantic. I used this for a historical film, for example. It was about normal humans fighting against giants. And these giants were filmed in such a way that they looked gigantic. The normal actors, on the other hand, were deliberately filmed in a somewhat “miniaturistic” way, so that the difference between the giants and the humans became even greater.

In what productions can 3D be used?

When you say 3D, people always think of major feature films in which a budget of millions is spent on effects; they never think of using it in a television drama or something for educational television, for which no special effects are needed, and no elaborate tracking shots or set extensions are required. By now we’ve developed 3D rigs that can be carried on the

shoulder, such as our lightweight rig or our nano rig, and that are not much bigger or heavier than a normal film camera. It’s possible to make fantastic 3D with relatively little effort, a small budget, and a well-trained crew. You just need to take a chance. There’s an unbelievable amount of potential in 3D! ■

* Shortened version of a conversation between Florian Maier and Dr. Maya Götz (IZI). Florian Maier is stereographer and both founder and CEO of STEREOOTEC, Landsberied, Germany (www.stereotec.com).

For *Vicky and the Treasure of the Gods* he won 3 Lumiere Awards for Outstanding Achievement from the International 3D Society in Hollywood.

