IBC PRODUCTION VILLAGE

S3D Challenges

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Kommer Kleijn SBC

- Visual Effects Cinematographer - Stereographer
- Worked on stereoscopic productions starting '98
- Used a large choice of 3D camera systems
- Co-designed a stereoscopic camera
- Collaborating with camera development projects
- Personal stereoscopic screening room
- Member of UP3D, SBC, IMAGO, EDCF, BKSTS, SMPTE
- Free lance consultant and stereographer

What is a stereographer?

- Stereographic supervisor (prep, shoot, post)
- Explain limits, options and possibilities
- Recommend solutions to creative team
- Recommend solutions to technical team
- Determine interaxial, convergence settings
- Supervise Stereo Grading
- Consult on Distribution and exhibition

Why is 3D more complex than putting 2 cameras together?

- The conflict between the projected image space and real (theatre, living room) space
- Unnatural ways of established AV language
- While screen sizes vary, our interocular distance does not change .....
- Limits of human stereoscopic vision (causing eye-strain and/or double images)
- Human stereoscopic vision is fragile and much different from person to person

Stereographic Presentation Options

- Giant screen 3D - Immersive 3D
- Television Screen 3D
- Cinema Theatre 3D
- Mobile Phone 3D

Giant Screen 3D

- Works well when screen borders are not much present to the viewer. This avoids the conflict between the projected space and the real (theatre) space.
- Of all, it mimics natural human vision best. Closest to "as if you were there"
- Reproduces real size of close actors and objects, resulting high emotional impact
- Shot and projected mostly parallel (non converged) and with 60-65mm interaxial

Around the screen 3D (TV and Cinema)

- Mandatory option when screen borders are present to the viewer forming a window (cinema back seats and TV)
- Viewers eyes stay referenced on the screen plane (unless floating windows)
- All depth is orchestrated relative to the screen window (and mostly behind it)
- Apparent size of actors and objects varies often (it also does in 2D movies)
- Both camera interaxial and convergence are re-adjusted for every setup

TV and Cinema Theatre differences

- Bigger cinema screen amplifies 3D
- Bigger cinema screen limits far 3D limit quickly for excessive positive disparity
- TV screen allows for a pixel wise wider depth range (less positive disparity risk)
- 3D optimised for TV can not be shown on a cinema screen
- 3D optimised for cinema theatre may result in more moderate 3D on TV
- 3D for TV only is less critical to make which can sometimes lower the costs

Mobile Phone 3D

- Screen size very small in comparison to human interocular: Traditional stereography can become inefficient
- Only a limited depth feeling can be generated because of the very small window: high risk for retinal rivalry
- Vibrating displacement 3D (like V3) may be quite appropriate (additionally viewed without glasses)

Screen size Incompatibilities (resume)

- The higher the compatibility required, the more limited the stereographers options are (and the duller the 3D...)
- Cinema Theater 3D creation has the most constraints
- Mobile Phone 3D is most limited in results
- Immersive (giant screen) 3D is the most rewarding but only works well if many conditions are met

Cinema Theater 3D creation has many constraints

- Long form and relaxation expectations make that avoidance of eye strean must be a high priority
- Cinema Theaters have different sizes and shapes. Screens sizes differ too.
- Front customers close to screen: high risk for positive disparity incomfort
- Back customers far from screen: strong window and also theater presence
- Actual market requires high or often complete 2D compatibility

"3D!".... Is it here to stay?

- Compared to the 3D vague of '52-'54 we have significantly better (but still not perfect) equipment, technology and viewing comfort
- Digital post production is a very big help
- Digital projection helps
- IMAX 3D (immersive) helped promote 3D
- So did 3D in theme parks and museums
- More installed 3D cinema theaters today than ever before in history
- First serious interest from the TV industry
- Blue Red Bad - abandon of old anaglyph 3D

Stereoscopic Challenges

- Positive disparity management (cinema)
- 3D window management (tv and cinema)
- Uneven and limited viewer experience levels
- the 10% of impaired stereoscopic perception
- The low theater projection light levels
- Lack of stereographic production experience
- Stereo evaluation difficulties for professionals
- Screen size incompatibility
- Need for 2D compatibility

Thank you

Thank you for your attention

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