Student notes 020 – Depth of field

Computer renderings, because they do not rely on physical camera lenses and their properties, render everything in the camera view in sharp focus. In the real world, however, the combination of physical glass lenses and aperture mechanisms mean that there is always a tradeoff between more light coming to the camera sensor and more of the scene being in focus.

With chemical film, the wider the aperture and the more light coming into the camera, the slower and more fine grained the film that could be used. But there was another feature. Directors and cinematographers could use a change of distance of focus in the scene to control the audience’s attention. When the focus changed from a character in the background to one in the foreground, the audience’s attention shifted as well. This is too valuable a tool to lose in digital animation and effects, so depth of field remains a feature in virtual cameras.

Depth of field effects
Depth of field can serve to concentrate a viewer’s attention upon a particular part of the scene; in cinematography, changing the focus in a scene from a character in the background to one in the foreground will also change the audience’s attention from one to the other. It can also introduce a subtle sense of scale. Ansel Adams’ hyperfocused landscape images are famous for have a sense of vast scale, while shallow depth of field images and videos (such as The Sandpit – [https://vimeo.com/9679622](https://vimeo.com/9679622)) miniaturize the subject.

DoF in Blender
Although depth of field in Blender can be defined in the Internal renderer, it is a post processing effect that is created in the Node Editor (you do not have to use Cycles). It’s a simple effect, but one has to be slightly familiar with node editing to create it. There is a guide to the process at [https://users.soe.ucsc.edu/~yonge/02_PDF_guides/020_DepthOfField.pdf](https://users.soe.ucsc.edu/~yonge/02_PDF_guides/020_DepthOfField.pdf) For more detail on the physical effect and its use in photography, see the article at [https://en.wikipedia.org/wiki/Depth_of_field](https://en.wikipedia.org/wiki/Depth_of_field). A similar effect called Tilt-shift is described at [https://en.wikipedia.org/wiki/Tilt schizophrenisches_photography](https://en.wikipedia.org/wiki/Tilt schizophrenisches_photography).

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