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Keynote: Optimizing for Artist Happiness

Alex Evans, NVIDIA

https://www.youtube.com/watch?v=eGfX1iWzkh0

Alex begins by talking a bit about his background, including founding the studio that created Little Big Planet, a popular PlayStation game. He then goes on to speak on how graphics research empowers the artists, making their job easier. In the past, things were relatively stable as far as the tools that artists used. Now, artists are able to use virtual reality to fully interact with their work using tools like Dream, or NVIDIA's own Omniverse. Most of the tools today work with the premise of a goal in mind to create. There is a lot of potential for tools that are based on just playing around and creating something new. He then moves on to speak about "sensitive tools," including the pencil. The pencil is a sensitive tool since it is an extension of the artist. It doesn't have a ton of different complexities such as settings, knobs, dials, etc. This contrasts with a lot of tools today. There are so many settings to learn about and different tools that it is difficult for the artist to do what feels natural without years of learning. This isn't to say that technicalities are not good and off limits for a sensitive tool. The piano for example is a sensitive tool with many complexities. The difference here though is that you don't need to know how the tool works to play and create music of your own. The computer mouse is another such example.

The questions Alex posed following this was "How can research and software help to make more sensitive tools?" This is answered by making the underlying algorithms quick and responsive. For example, Level of Detail (LOD) and Occlusion Culling. LOD is where 3D objects in the viewport decrease in complexity and polygon count dynamically based on the distance from the camera. Occlusion culling is where objects that are hidden from view are skipped when rendering. These features allow the viewport to increase efficiency and become more responsive. Using cluster LOD allows changing parts of the object viewed since it uses a tree structure. This is helpful for large objects since changing the entire object based on view would make the entire thing either very low quality or very high quality with no in between. Similarly, Occlusion can use clusters to see what’s visible within the same object. These algorithms work well on GPUs since there are many tasks that can be run on a parallelized system.

Alex then moves on to talk about how creating parameters and tooling your algorithm as if an artist will use it, then using it in a way where you explore all the options is a great way to find bugs and parts of the code that will break the algorithm. Even if the programmers that are watching the keynote don't really care about the artists, they can at least realize that this framework for creating tools is a fantastic way to test the robustness of their algorithms. Creating these algorithms as tools is quite useful in other ways as well. Creating tools simply and in an iterative manner makes tools brilliant and flexible, extendable, and usable. The more minimal, the better. All in all, simple and sensitive tools are what enables artists, developers, and the community to better use the technology around them.