“Virtual Flowers”
an interactive installation at the
ArtScience Museum
Marina Bay Sands Pte Ltd, Singapore

Description: “Virtual Flowers”, an interactive exhibition using motion capture, was created for the visitors of the ArtScience Museum. Visitors could step inside the motion capture volume to interact with the “Virtual Flowers”.

Design goals: Motion capture performance allows animators to create scenes from a story. Animators can map a three-dimensional scene of a story inside the motion capture volume. This is a new possibility for the study of the interactions between actors, animated characters and the elements of a scene.

Conceptual design:
Ideas and concepts about interactive animation and motion capture performance can find their origins in *Peter Pan*, one of the most innovative films in the history of animation.

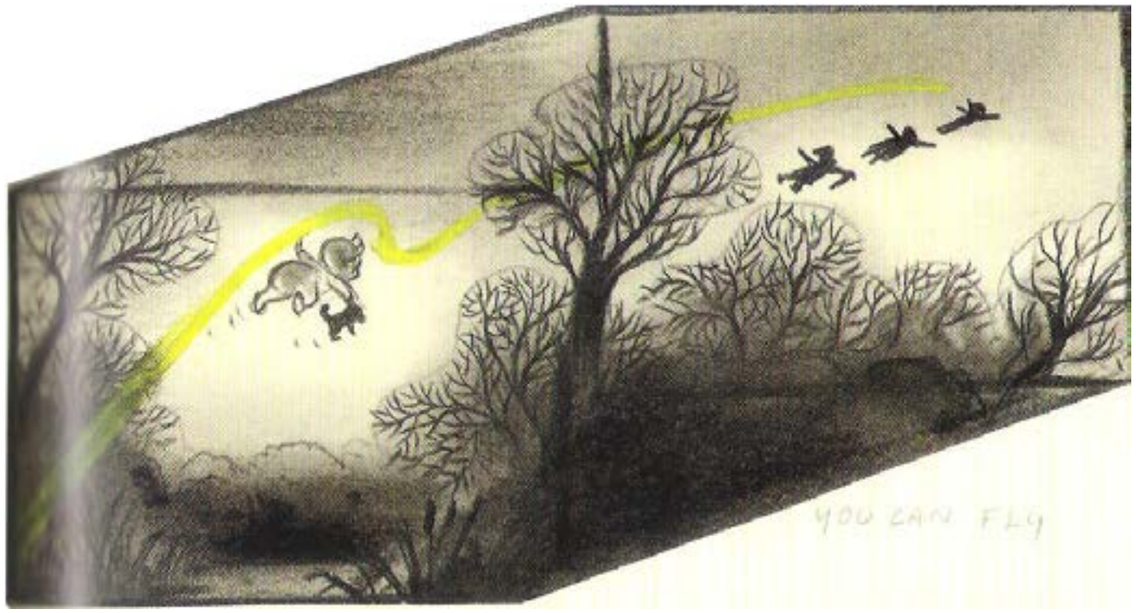
“Virtual Flowers” was presented at the ArtScience Museum, Singapore, as part of the First Sunday Showcase of faculty and student works, August 2013.

Sources of Inspiration

Peter Pan, 1953, Disney

Ken O'Connor or Ken Anderson developed the storyboards for Peter Pan. The main goal of these storyboards was to combine the navigation of the camera path and the character animation in one document. This may perhaps be one of the earliest examples of a 3D storyboard.

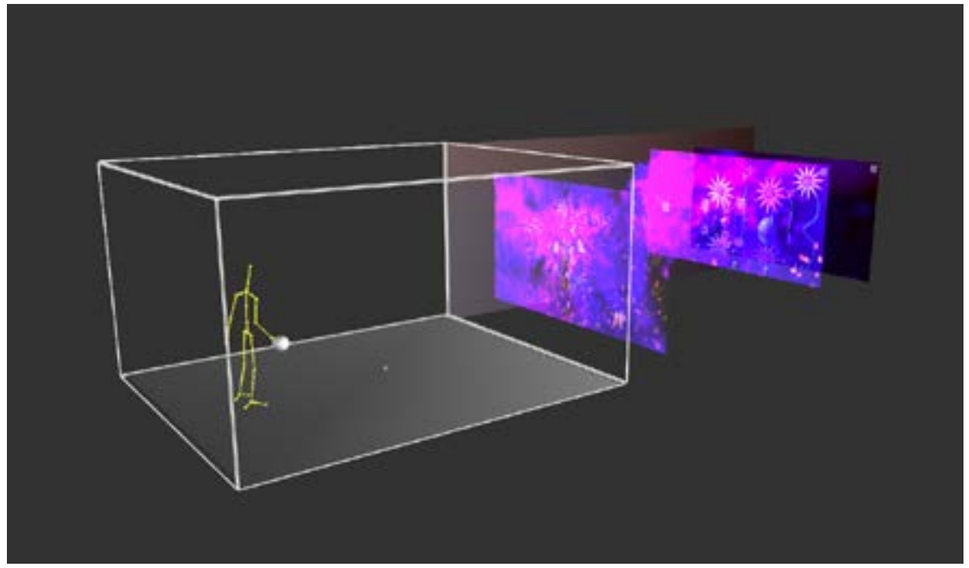
Instead of a traditional layout as a succession of flat thumbnails, the storyboard is a volume where sequences of actions are represented. The volume of the "space" includes characters, background, the path of the action and the view point of the camera.



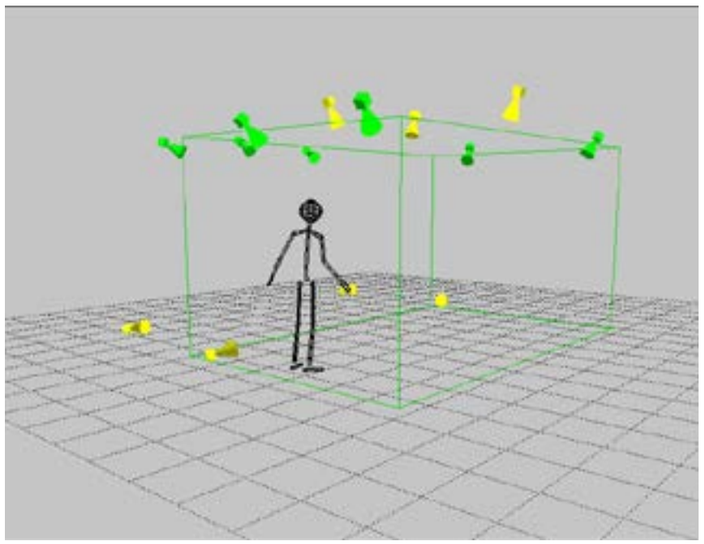
Sketch from the book "Paperdreams" by John Canemaker (1999)

The below frame from the animated movie shows Peter Pan flying and his friends inside a three-dimensional space.

Technique



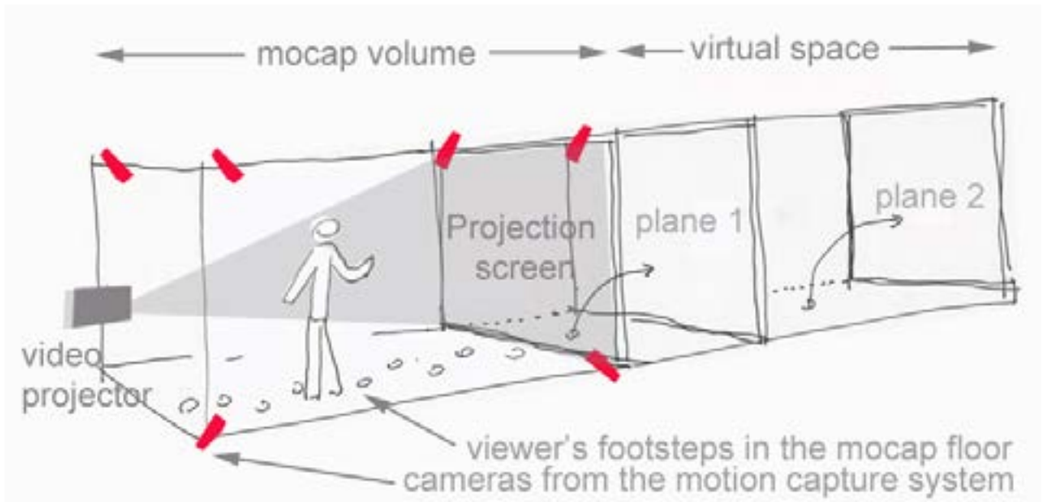
Based on the concept of the 3D storyboard, I created this example of one-on-one interaction between a viewer and a virtual world projected on the screen. Using motion capture, the actor holds a sphere that tracks the right hand. This technique is useful in expressing the interaction and the "look and feel" of touching virtual objects.



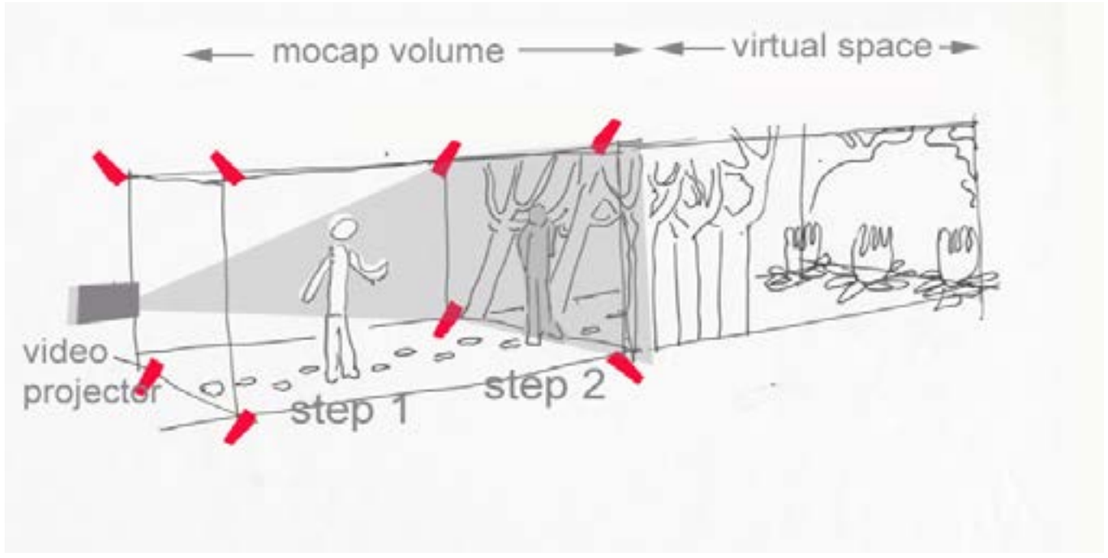
This preview was created in Motion Builder, a 3D software networked to Organic Motion; a markerless motion capture system. This is where the virtual flowers will be animated and scripted. The animations inside the virtual world are controlled by the hand movements of the viewer and by the sound level in the room.

Conceptual drawings

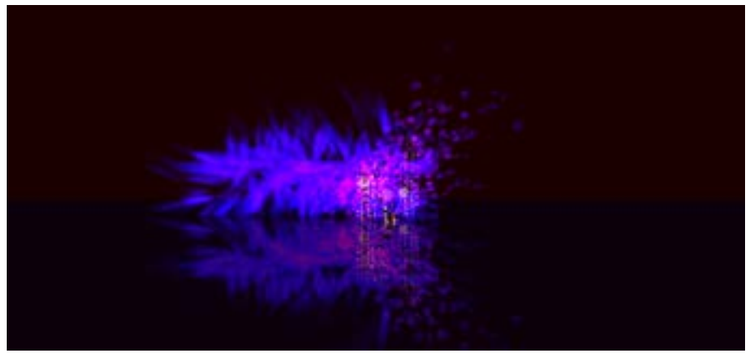
The “Virtual Flowers” project originated with conceptual drawings of the interaction design between physical and virtual spaces. The viewer moves inside the physical space of the motion capture volume, the “mocap” volume. The projection screen is the interface between the physical space of the viewer and the virtual space with the content of the story.



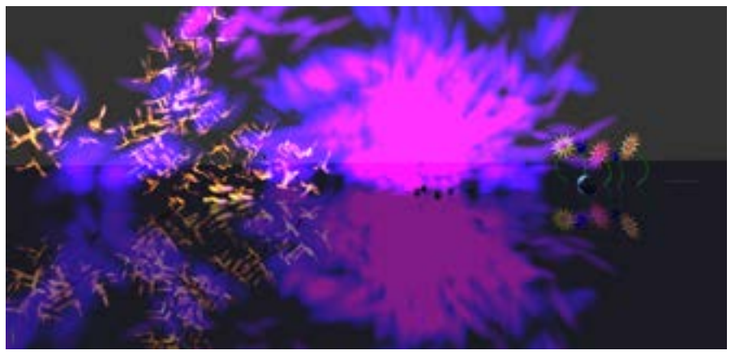
The below drawing shows a character walking through a forest of animated trees. The trees stand vertically when the viewer is far from the scene. The trees move when the actor moves across the scene.



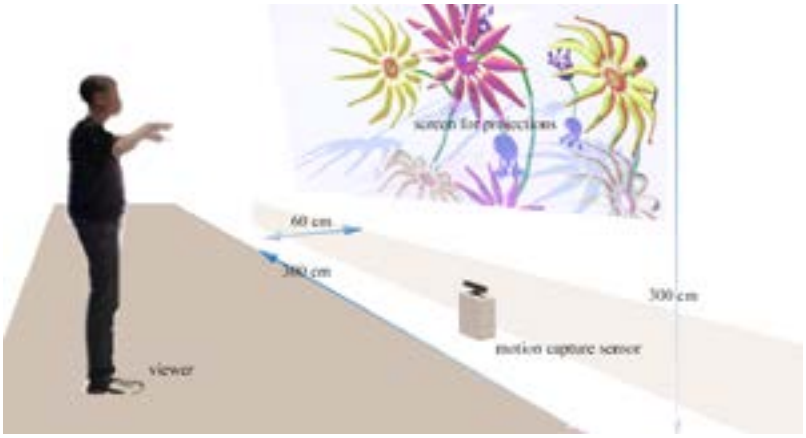
3D Storytelling of a Sequence of “Virtual Flowers”



From a wide-angle shot to a close-up shot of the virtual flowers, this illustrates a sequence of shots taken by the virtual camera moving inside the virtual world.



Viewer Interface



The above illustration shows a viewer inside the motion capture volume. The viewer is tracked by the Prime Sense motion capture system. The viewer interacts with the animated flowers projected on the screen. When the viewer moves, the animation is affected.

Conclusion

At a time when the borders between animator, player and viewer become more blurry, exploring the relationships between storytelling and technology unites old and new directions for digital animation. I hope that this example inspired by a historical piece of animation illustrates for you a unique evolution of a viewer's experience.