

Workflow and CG Tools for the Cartoon TV Program "Monkey Turn"

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Figure 1 Frames from "Monkey Turn"

1. Introduction

"Monkey Turn" is a cartoon TV program in Japan weekly-aired since January 2004. The highlights of this cartoon animation are dynamic motorboat race scenes, which are achieved by hybrid use of 3D CG and hand-drawn objects. This sketch describes the workflow, CG software plug-ins and script tools specialized for efficiently making the animation program under restricted time and work force.

2. Background

The original work of "Monkey Turn" is a popular Japanese comic, which features dynamic motorboat race scenes. We are involved in the project of making the weekly-aired cartoon TV program based on this work and engaged in creating the race scenes by merging 3D CG and hand-drawn animation.

About one-third of the cartoon animation is occupied by the motorboat race scenes, where a variety of dynamic water waves, splashes, and wakes are required. Such dynamic expressions are very hard to get in a traditional hand-drawn way. Our challenge is therefore to create these effects by adding 3D CG so efficiently that the TV program of high quality can be aired weekly.

In order to make this possible, we introduced the workflow, in which traditional animators and CG creators can work independently from each other without undue delay. We then developed the semi-automatic animation tools for generating the dynamic wave expressions.

3. The workflow

As shown in Figure 2, CG operations in a traditional workflow start after the storyboard is completed. However we had to make all of the CG cuts, under very restricted budget and time. Therefore we decided to create the whole race, rather than cut-by-cut animations, based on the scenario and original comic, in advance of the storyboard's completion. When the storyboard comes up, our CG creators can concentrate mainly on the camera control for the animated scene. In addition, if we want some parts of the dynamic scene to be changed, such as the amount of splashes from a motorboat in the scene, we can modify the wave dynamics by using the 3D CG tools described next.

4. Semi-automatic animation tools

In order to efficiently harmonize 3D CG and cel animation,

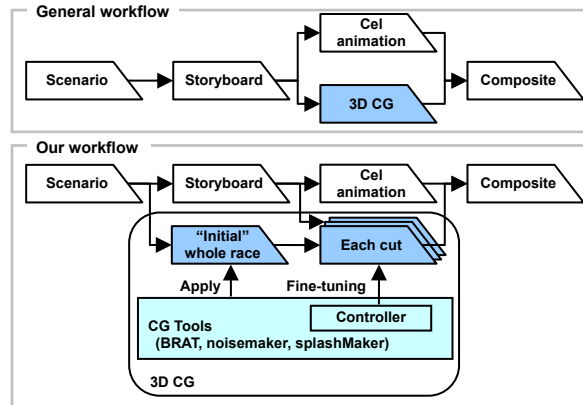


Figure 2 Workflow comparison

we developed several original software tools, as shown in Table 1. In making the "initial" motorboat race, we use BRAT, which allows us to animate 6 motorboats in the race, by giving the speed and trajectory for each motorboat. The particle effects are then added by the other tools in Table 1. The controller in Figure 2 actually consists of BRAT, noiseMaker, and splashMaker, which are used for manually controlling the particle dynamics to get a better result when needed.

	Name	Description
1	BRAT (Boat Racing Animation Tool)	Creating motorboats race animation. Boat attributes and trajectories are input (3dsmax script)
2	noiseMaker	Creating boat oscillation animations, such as up-and-down vibrations. (3dsmax script)
3	splashMaker	Creating animation of splashes, waves, and wakes. (3dsmax script)
4	AnimatingTexture	Assigning billboard texture according to particle age. Texture files are input. (3dsmax plug-in)
5	ParticleWithAT	Facing free particle system, using AnimatingTexture for instance object, such as a sphere (3dsmax plug-in)

Table 1 In-house software tools

5. Results and Conclusion

Based on the methodology described above and with the twenty 3D CG staffs, we could efficiently make this TV animation series for 26 rounds (10-min CG cuts per round). Because of this success, the period of airing the TV program is extended until the end of this year.

We are further developing in-house software tools, in order to make this workflow applicable to other projects.

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