

THE PROCESS BEHIND “RUPERT,”
A STUDENT PRODUCED 3D ANIMATION

Contact
SCOTT PORTER
Brigham Young University
3620 Castano Drive
Camarillo, California 93010 USA
+1.805.383.2766
sap@email.byu.edu

This paper documents the educational experience of collaboratively developing a student-produced animation. It is my hope that these materials will be useful to those planning collaborative artistic endeavors, especially students and educators who are planning computer animations as an educational experience. Video clips and images into the write-up (including the final animation) are included as illustrations in the electronic version of this paper.

I was fortunate to have participated with more than 30 students in creation of the computer-animated cartoon “Rupert,” a process that took us about two years. In the beginning, we did not know how to coordinate the efforts of multiple students, so besides learning about animation, we also learned to collaborate on an artistic endeavor (and the different roles that we as individuals could play in this collaborative process). We tried several different approaches to organizing our group during the production of the animation, and though the flow from one form of collaboration to the next was not planned, in retrospect I see a “method to our madness”.

Each approach to organizing the group had trade-offs in how well it helped us to effectively distribute work versus how well it helped us to collaborate creatively. In retrospect:

- Different approaches to organization and decision-making were appropriate at different stages of the production.
- The way we organized ourselves in each stage had an effect upon the artistic outcome of our work during that stage of development.

Since it was difficult for us to understand our collaborative experience until after the project was finished, groups organizing other collaborative art projects may be able to use our experience from “Rupert” as a resource.

THE ARGUMENTATIVE APPROACH TO GOAL MAKING

The project began without an organization per se. We were a large group that was not differentiated into different “jobs.” A faculty member arranged for a classroom and a time for a meeting of those who were interested in creating an animation project. We met at the appointed hour and discussed what we wished to accomplish. Initially, decisions were made by group vote. I am not sure if our input was evaluated more by logic, by emotion, or by volume, since all three factors seemed important in getting our point across.

The first progress we made in our discussions was an agreement that we would collectively accomplish “something more difficult” than we had previously been able to do individually or in small groups. We then needed to define “something more difficult.” Because working in small groups severely limits the length of the animation you can produce, almost all of our previous student animations had relied on gags or effects to “pull off” something interesting in a short amount of time. Previous student animation projects averaged 10-30 seconds in length. We decided that with more people working together, we could finally do an animation that had an in-depth story and was several minutes in length.

We also discussed the idea that the animation needed to be “worthwhile” to justify the substantial time and resources necessary to complete it. However, it was not easy to define “worthwhile.” We decided to define “worthwhile” by the characters and issues addressed in the story. We felt that most of the student computer animations with which we were familiar tried to make up for weak stories by either shocking the viewer with some surprise (visual or narrative), or by showing off the latest and greatest animation technology (“eye candy”). We decided that “worthwhile” for this project meant a story that invited the audience to try to understand the characters and the issues they were dealing with.

Our last requirement was suggested by people who were tired of all the serious talk it took to figure out what “worthwhile” meant for our animation. “Sure it needs to be worthwhile,” they said. “But whatever we do, it also should be fun.” That was a good idea. We did not want to put in long hours working on our animation unless it was fun.

So, our overall requirements for the animation ended up as follows:

1. Story-driven (rather than being driven by effects or gags).
2. Worthwhile characters and issues.
3. Fun.

Once we had our overall requirements for the animation, we decided on a story. After several stories were suggested and discussed, we voted. First we voted on the top three stories, then the top two, then we took a final vote for the story we would produce. We chose a story that had been written and illustrated as a children’s book by Heather Stratton, an illustration student. It follows a little boy named Rupert who heard about microbes for the first time from his older sister. We liked the story, we liked the characters, and the issues that they dealt with, and it seemed that we could have quite a bit of fun exploring Rupert’s imagined ideas of microbes.

We now knew what we wanted to do, and we began to decide how to proceed. We already had criteria to help us in making creative decisions, with our three requirements for our story: story-driven, worthwhile characters and issues, and fun. However, we still had to organize ourselves and choose the process by which we would make those decisions (for example should we stick with a simple group vote, and if not, who should decide what, etc?).

Time to proceed; but how to organize or make decisions? Deciding how we would organize ourselves and how we would make decisions was difficult, and we changed our approach several times throughout the project depending upon the needs at the time. Our method of organization progressed from every decision being made by the entire group and competitive bidding to sub-groups whose autonomy increased as the project progressed.

THE LARGE GROUP

The large-group discussion approach was helpful to us during the initial weeks of the project. The creative interchange helped us to develop well-thought-out, worthwhile ideas. If there was a problem with an idea, it was sure to be quickly pointed out in our heated discussions. Ideas would be proposed, rejected, revised, and re-proposed, which helped us to more fully develop our ideas. Also, ideas had to appeal to a large group of people with differing interests. This helped us to avoid story ideas with a narrow appeal.

I did not realize how important it was to have general appeal to the story until later when I came across another story with an extremely narrow appeal. As we began the second year of working on "Rupert," I attended a film market with one of my classes. While there, I saw flyers for a film whose producer was seeking a distributor; I found it humorous that the film was about an oppressed filmmaker whose movies could not get distributed. Although the movie seemed interesting and relevant to the filmmaker, it was not a general-interest film. A comparable mistake for us would have been for us to make an animation about hopeful college age animators, or something to which only computer animators could relate. The large size of the group of people collaborating on the story, some of whom were not even animators, helped us to bring more diverse interests and insights into the creative development of the animation.

Our large-group approach, which allowed everyone to discuss and vote on each issue, held important advantages in helping us to develop our ideas. The problem with the single group approach was our rate of progress. It was slow going. It took more than two weeks just to decide on criteria for the project and pick a story. In order to get more done, we decided that we needed a way to explore more than one idea at once. So we tried a system of competitive bids.

THE COMPETITIVE BIDS

We started the competitive bids as we began work on our initial storyboards. There had been several ideas raised in the large-group discussions about possible ways to visualize and sequence the animation. However, the ideas needed further development. We divided our group into three storyboard teams, and each team independently developed the story. Each team made a rough storyboard showing the action and some visual story elements. After all three storyboards were presented to the group, we voted on which version to use as our primary storyboard. The primary storyboard was then re-written and further developed. We fixed problems discovered in the group discussion, and we incorporated some of the better elements from the work by the other two storyboard teams.

There were advantages to the degree of collaboration that we used during this stage of the animation development (as opposed to collaborating either more or less closely). We were far enough into the project that we needed to get more done than we could do in one group. Dividing into smaller groups allowed us to explore multiple creative options simultaneously and helped us accomplish more work because we were not limited to working at the specific

times when all 20 individuals' schedules overlapped (usually only during class time). However, it was good that we collaborated closely enough that everyone was able to give story input by helping to develop a storyboard and then by discussing the results. On a project that required enormous amounts of work, this input was important, as it allowed all of us to develop ownership of the project, which helped to keep us going when work on the animation became difficult.

Once again, the collaboration also aided us in producing well-developed ideas. This time it was not simply that we had peer feedback. We also had the advantage of trying several possibilities. When writing a story, this is especially important. Our approach was similar to a technique sometimes used when developing a motion picture script. In this approach, several writers proceed with script development simultaneously. At certain stages, the results are evaluated, and one or more of the writers are asked to continue. This sort of approach is helpful because it is hard, even for experienced writers, to develop a story that "works". The other reason that this method of organization helped us to refine our ideas was that it gave us extra time to work on the ideas. Our smaller groups were able to meet more often than the whole group, so the sub-groups would discuss and develop ideas that they could then share with the whole group.

The obvious disadvantage to collaborating simultaneously in three groups with final decisions saved for the whole group was that progress was still slow. Although we were exploring different options and asking everyone to help create the story, we were also duplicating work. After we finished the storyboards, we realized that at the pace we were progressing, we could not afford to continue to work this way throughout the entire production.

THE BEGINNING OF THE SUB-GROUPS, THE DIVIDING OF "WORLDS"

After completing the initial storyboards, we began to write a more detailed storyboard and script based on our rough version. To do this, we decided to break into groups again, but this time we did not duplicate work. We began to use the term "world" for our four groups, because there is the "real world" and the three daydream "worlds" where Rupert's imagination takes him. We used the term "world" inclusively: it was the segment, it was the people working on the segment, it was the location where the story took place. "Battle World is looking good;" "Does Food World have their shot ready?"; and "So, when Rupert first enters Garbage World, what happens?" are all valid statements in Rupert production terminology.

Each sub-group (or “world”) took their section of the story (which we also called a “world”) and fleshed it out into a script by refining the story ideas and by adding dialogue, action, and effects. We also designed the characters, first as sketches, and later in the computer as 3D models. When the entire group met together, we discussed how the segments were meshing. We wanted the segments to play off of each other, but we also wanted each segment to have its own “feel”. In order to make the pieces fit together cohesively, we ended up making some pretty dramatic changes. These changes were very important to ensuring that the story was cohesive, that the characters had “depth” (no pun intended), and that the developing story remained fun.

However, although the story was improving, some of the changes that we made for narrative purposes ended up adding enormous amounts of extra work to the production. We had not thought to establish criteria for production decisions such as how long we should extend the production of a segment in order to improve the story. However, if we had established production criteria, such as how long we should continue working on each segment, earlier, it would have been easier for us to know how well we were balancing the creative needs with our production limitations.

FURTHER DEVELOPMENTS IN THE SUBGROUPS

Although the creative work was now being done in several groups working simultaneously on different parts of the animation, the work had not sped up considerably because we still discussed almost every decision with the entire group. Once the story ideas were firmed up, we decided to allow the sub-groups more autonomy as we began to design the characters and the environments of the animation.

These autonomous sub-groups or teams (or “worlds”) became the mainstay organization throughout the rest of the production. Although initially these smaller groups were only going to be used during the character and environment design stages, with only occasional changes, we ended up using this same organization throughout the rest of the production. Actually, the groups we used remained fairly close to the groups that began even earlier, during the scriptwriting phase, so these teams worked together for almost the entire process.

These autonomous sub-groups ended up functioning very much like the original large group. The subgroups would usually meet and/or have discussions (via phone and email) several times a week. First, the sub-group discussed the initial ideas for environment design, character design, plot, animation, etc. Next, an individual would be given a particular assignment (for example, designing a character based on the ideas they had discussed). Then the results would be reviewed by the sub-group, feedback would be generated, changes would be made, and more assignments given. When the sub-group was pleased with its progress, it would present it to the entire group for additional feedback. The entire group met either once or twice a week.

Extra autonomy helped in two ways: it allowed us to develop more diverse styles, and it allowed us to get more work done. Although feedback was welcome from the entire group, we did not vote on changes to the sub-groups’ work unless it somehow affected the whole animation (for example if segments did not mesh well or if something affected our overall message). Artistically, this let each of the groups develop a unique look and feel for their segment. I do not think that we would have been able to develop such different daydream “worlds” without this autonomy. From a production standpoint, because we were not deciding every detail as a group, we were able to progress more quickly. Because the group only dealt with large-scope issues, individuals were able to spend more time on smaller issues. We were able to focus on the little details that we did not have time or energy to discuss as a group.

Of course, each group did not have as much input from the entire group as we did in the beginning, but we referred to the overall guidelines that we had established, and assistance and advice from either our sub-group or the whole group was readily available.

As the project progressed, we continued to develop our organization. Over time, we added a project manager and team leaders in order to ensure that all of the work meshed. The project manager became especially important when schedules became more complicated and acceptable meeting times became increasingly scarce; we needed someone who could track things down, make spot decisions, and coordinate among the groups. The team leaders did similar duty coordinating the members of the group. Due to schedule conflicts, often there would be only one or two members of each team at the meetings of the whole group (hopefully, the team leader was one of them). The individuals at the meeting had to relay their team's input to the group and later relay the group's feedback to their team.

The project managers and team leaders were also important because of the turnover we experienced. We had to acquaint the new students with our creative guidelines and our system of dividing up the work. However, the new students caught on quickly. In fact, one of the new additions to the team became our second project manager and helped push us to completion.

PULLING IT ALL TOGETHER

Once we started the editing process, it became apparent what had worked and what had not worked in our organizational plan, by what flowed well together and what did not.

Through editing, we were able to see that "Rupert" did indeed work creatively. Although it needed the editing to give the story the right pacing and to tie it all together, the segments meshed, while retaining their own flair, as we had hoped. However, editing also allowed us to see that more rigorous production standards would have been beneficial, because each scene had been completed to a different level of technical rigor (technical issues included lighting, color, realism of motion, etc.). If we had created technical standards, we could have brought each scene to approximately the same technical level, thereby avoiding the necessity of adjoining one scene at 99-percent proficiency with another scene at only 70-percent.

Another issue that became apparent as we began to edit "Rupert" was that we should have been editing all along. We ended up cutting scenes in editing to make the story clearer and to fit within the five-minute limit of the Alias/Wavefront Student Animation Contest (we submitted "Rupert" to the 1999 contest). Editing was frustrating, because the scenes that we had spent extra time perfecting were cut, while scenes that were still rough were left in because they were critical to the story. If we had been editing all along, we would have realized which scenes were critical, and we could have put our extra effort on the scenes that would actually be included. Of course, projects that do not take two years to finish will not have as much trouble with this. We could not even remember who had done the first shots by the end of production, so reworking shots was difficult.

Editing from the beginning would also have helped us creatively. We could have been more sensitive to the story if we had been more aware of how the story would be shaped through editing. We might have made changes to the story in response to the timing and pacing that developed for "Rupert" as part of the editing process.

LOOKING BACK

All in all, we went through at least four stages in the evolution of our group's organization: the large group, the competitive bids, our initial sub-groups, and the more autonomous sub-groups with a project manager to coordinate; although I am sure that we could further sub-divide our process into additional steps. Each of these stages required a balance between how closely we cooperated, which helped us to develop creative ideas, and how much we separated out the work to improve efficiency. Each different segment of the organization had a place in the development of the animation, and our organization seemed to flow very naturally from one stage to another.

These stages are not only applicable to animation but also to other "creative" group projects. We can summarize the process as follows: a group of people with similar interests meets together to accomplish a creative goal; they decide what it is they want to accomplish and how they think they will accomplish it; decisions and tasks are entrusted to smaller groups, and then to individuals, who report back to receive and act upon feedback. Other creative endeavors could easily fit this model. Closer to everyday life, if we were to plan a social or a party, we might go through many of the same steps to combine our creative ideas while still maintaining a manageable organization. Most artistic or creative endeavors that allow all of the participants to participate creatively will no doubt follow a similar path to ours as the idea progresses from something that is talked about to something that is actively engaged and completed.

Although I think that the way we progressed from one form of organization to another was quite natural and even helpful, there are things that we could have done better. First we could have planned more proactively at the beginning if we had anticipated the kinds of organizational steps to which we would probably progress. This would include establishing guidelines regarding production issues (not just creative issues), clarifying and reinforcing our project guidelines by making them available to everyone in writing, and posting them in meeting rooms.

Also, if we had been more conscious of the process, instead of stumbling upon each succeeding level of organization, we could have maximized the creative potential of each organizational method of each group. For example, when we met as an entire group at the beginning of the project, we could have saved time by discussing only those issues most appropriate for the entire group, realizing that there were certain issues that were best left to smaller groups (even though we did not exactly know the organization that would come later). Similarly, once we organized the sub-groups, we could have waited on small detail-oriented decisions until we could assign an individual to handle them. This kind of awareness of the proper scope of issues to be decided by different segments of the group might have helped us work more efficiently without sacrificing too much of our creative energies.

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As I said in the beginning, I feel fortunate to have had the opportunity to participate with so many students in a project that I feel was worthwhile, not simply because of what we learned about animation, but because of how we learned to collaborate on an artistic project. All of us will participate in other creative collaborations (perhaps even on other animations), and our experience on “Rupert” will be a valuable asset. Also, participants in any artistic collaboration will have to deal with the issue of allowing creative collaboration while maintaining a working, flexible organization. Hopefully other groups who are organizing creative collaborations can make use of our experience.



Figure 1. The characters went through several stages of development. Clockwise from bottom left: one of the original illustrations from Heather's story, a storyboard sketch, a shot-breakdown sheet and sketch, and the clay models used to prove that Rupert and Molly worked as 3D characters.



Figure 2. Dividing into teams allowed us to weave four worlds with distinctive looks and feels into the story. Top left: Rupert and Molly in the “Real World.” Top right, middle left: Rupert is ready to take on disease microbes in “Battle World.” Middle right, Bottom left: In “Food World,” Rupert imagines that microbes must test if pickles (or Rupert) are completely fermented. Bottom right: “Trash World” lacks microbes to break down garbage, so trash fills the earth.