Designing a Pixar Film

At Pixar Animation Studios, we think our entire filmmaking process is a design process, alternating iterations of planning and implementation, all centered on storytelling. Like a painter, imagining the brush stroke is planning, and actually painting it is implementation. Like a painter, we view both as risky creative acts, both a part of our design.

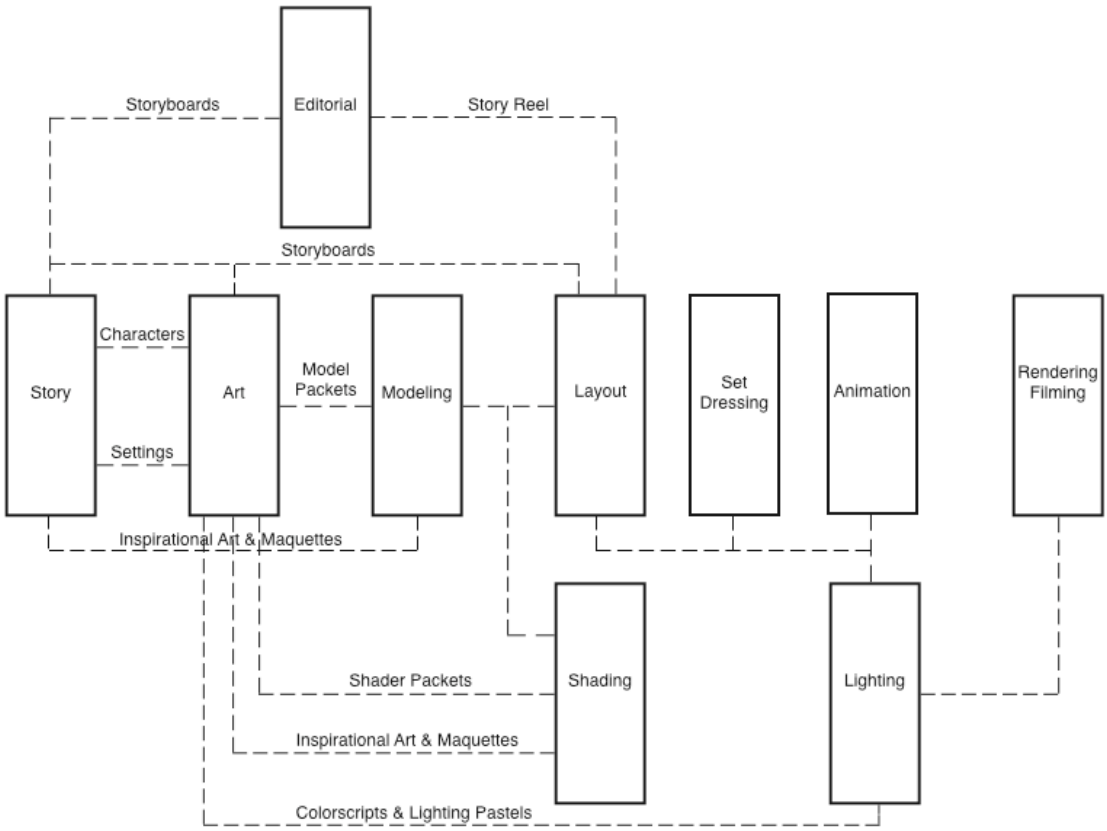
Manufacturing is something we do not do — that happens when the single finished print of the film leaves our building and goes to Technicolor for reproduction.

Our films require us to design worlds, and characters to fill them, and stories to take place in those worlds. We are world builders, who must first imagine everything in the world, and how it differs from the world we all know and why it differs and how much. We are character creators and must imagine characters that live beyond the frame and framework of the film, dimensional characters with desires and wishes and will. We are storytellers who must find an engaging way to bring the story's problem to life on the screen, presented as action, not description.

We emphasize freedom in the planning part of the process because of the nature of animation, which means building each frame of a 120,000 frame film. Later on in the implementation process we will have a lot less room to improvise and discover, so we need to get in as much of that as we can while our focus is on planning, when the cost of exploration is low.

Our design process is based on a few simple approaches. Our films are visually developed, meaning our process is one that celebrates 'show, don't tell.' We use traditional skills, like drawing, painting, sculpture and storytelling, low-tech not high-tech, in our planning process. We develop our ideas slowly, using an iterative process that attempts to add value to the work of others, to 'plus.' We work on our films as a team, collaboratively.

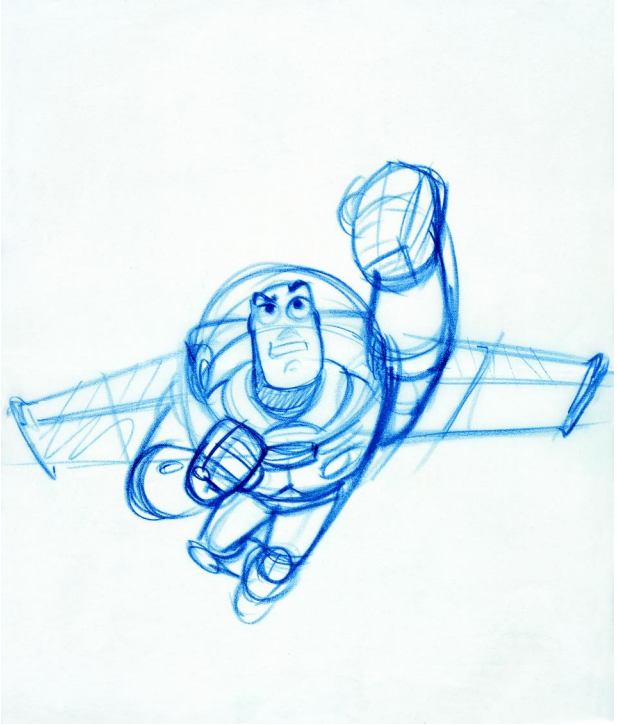
Part of our ability to collaborate comes from a design process that involves the routine exchange of our design products between the designers. These design products are recognizable in many cases, like designs for characters and settings, and unique to our process in others, like model packets and shader packets.

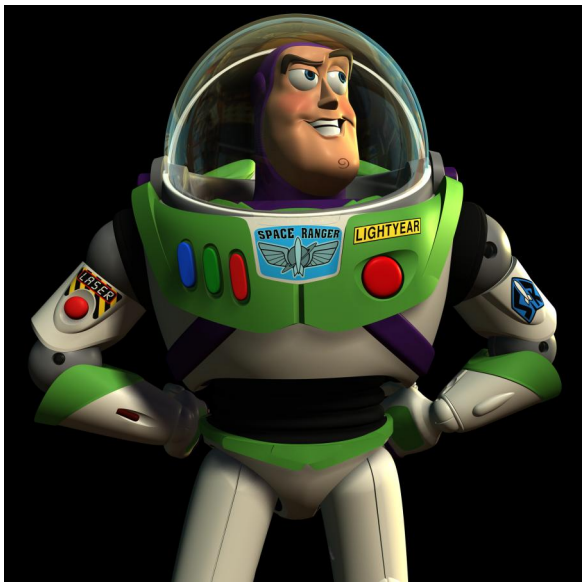


Pixar Planning & Implementation Pipeline

Some of the designers add incrementally to the art they are given, collectively creating their results. A character design bounces between story and art as the character is iteratively defined by their shared work. The character designer draws the final image, informed by the back and forth of a process that involves numerous contributors.

Other designers use the art as a reference to produce a new product, using the completed character design as the starting point for the creation of a model packet, essentially the blueprint to allow a computer artist to sculpt the character digitally.

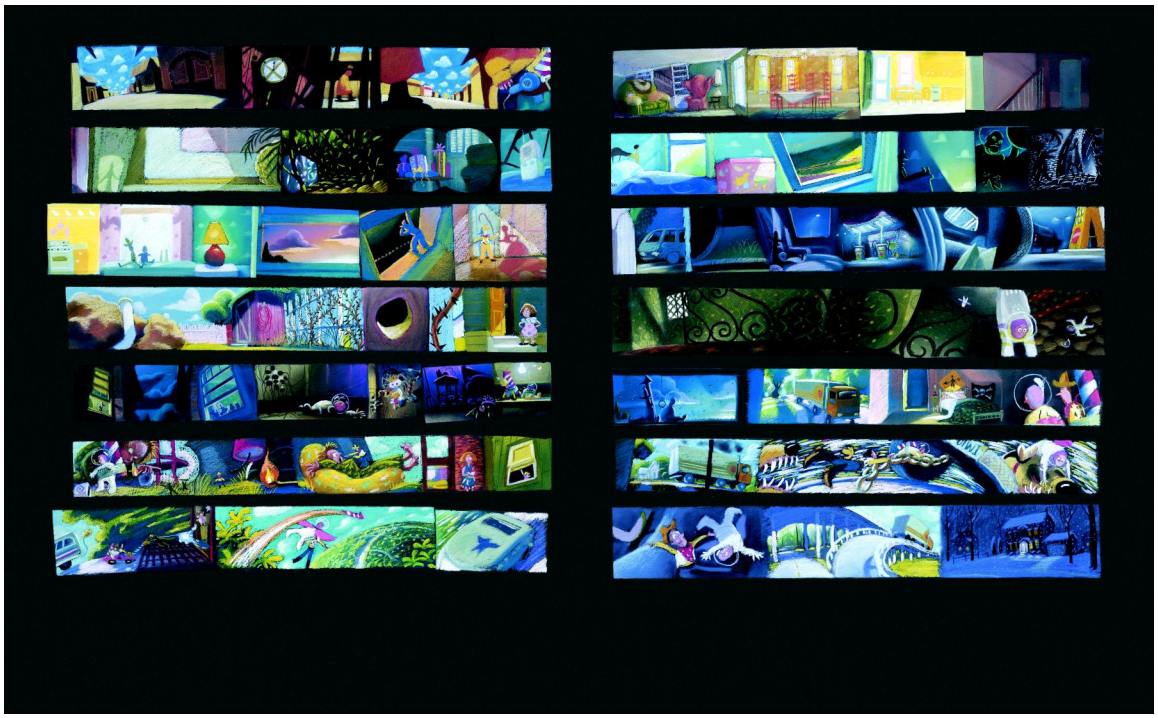




Buzz Lightyear Character Designs and Finished Image

Our design process takes advantage of several traditional design techniques: decomposition, abstraction and approximation. We use decomposition to break the whole into parts that can each be designed separately. The core separation into world, character and story is a good example of our most fundamental decomposition. Experts in environments can concentrate on discovering the rules of the world. Character specialists can make believable actors from bugs or lamps or toys. Storytellers can concentrate on what happens and why. Each process informs the other, inspiring a new environment with a story point or a different way to see a character against a fresh background.

Another technique is abstraction, removing less critical details to focus on more important ones. In our colorscripts, a product of our first year of design, we remove time and detail to represent the entire film as a sequence of simple color images, in pastels, gouache or collage, so we can concentrate on the emotion of the film as it is represented by the colors of each scene.

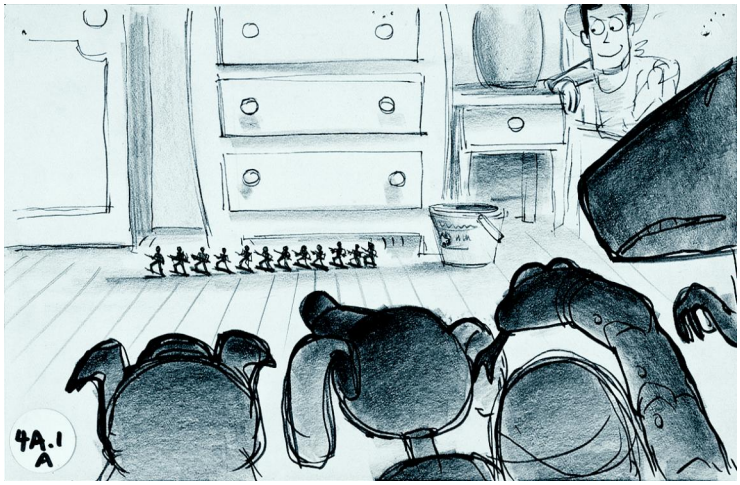


Toy Story Colorscript

Another is approximation, building rough draft representations of the finished product that allow us to see the whole, rather than its parts. The story reel is a good example of approximation. We make a very rough film version of our work in progress, using the storyboard drawings to stand-in for the animation. The story reel is a vehicle for substitution and replacement: each slightly more finished version of each scene goes into the story reel. In the end, four years later, the story reel has evolved to become the finished film.

The planning process is driven by the work of three teams: Story, Art & Editorial. The Story team leads the creative cycle, turning script pages into storyboard frames, using drawing skills to capture improvised actions.

The storyboard is a way to write a story using pictures instead of words. The goal is to find actions, presented visually, that provide clues to what the character is thinking, feeling or wants. In writing, it is easy to describe something, like ‘Woody is tired.’ In a film, description is not enough, we have to deliver experience, so the goal is to create action onscreen that leads the audience to discover, ‘hey, look at how Woody is acting, I think he is tired.’



Toy Story Storyboards

The storyboards feed the other two departments, Art & Editorial. The products of those departments return as fresh sources to the Story department and the cycle repeats. In the course of the four years it takes to make one of our films, the first three and a half years are driven by this cycle.

The settings and characters that show up in the story are starting points for the Art team. Art creates designs for characters and settings that attempt to capture their essence in a few simple elements. Each design need not be complete; each will be mined for useful ideas that will feed new variations. Most designs are produced as drawings, but characters and sometimes important settings are also sculpted in clay. These sculptures are known as maquettes.

Woody Maquette

Later, art planners hand off model and shader packets to computer implementers. Starting with the finished design for every object in the film, Art creates two blueprints, one for shape, the model packet, and another for surface color and texture, the shader packet. These visual instructions are guidance for the computer artists who will use them to shape and surface every object in the film.

Early on in the process, Art creates drawings and paintings, referred to as inspirational art, that feel like moments grabbed from the film. Late in the process, Art creates images in pastels of the color for each shot that describe the specifics of its lighting.

All of these art products act as guidance and inspiration for the story team, who can stay focused on the emotional structure of the story because art takes the lead in visualizing it.

Editorial takes the storyboards and puts time back into them. Editorial's product, the story reel, comes about not only from the storyboards but also from watching the storyteller's pitch, the process of acting out the storyboard sequence to give it life. Editorial's focus on the film's structure in time allows story to concentrate on the story's believability.

The cycle of planning and implementation by collaborating designers with different skills and different tools allows us — slowly — to craft a story rich enough to return to. In many ways, the story's strongest quality, its believability, can only come out of long

experience in the world of the film, shared with our fellow travelers to it. In the end, if we're successful, it all comes down to five words: a good story, well told.