

Staying one step ahead at Pixar: An interview with Ed Catmull

The cofounder of the company that created the world's first computer-animated feature film lays out a management philosophy for keeping Pixar innovative.

Ed Catmull has been at the forefront of the digital revolution since its early days. The president of Pixar and Disney Animation Studios began studying computer science at the University of Utah in 1965. In 1972, he created a four-minute film of computer-generated animation that represented the state of the art at the time.

In his 2014 book, *Creativity, Inc.*, Catmull chronicled the story of Pixar—from its early days, when Steve Jobs invested \$10 million to spin it off from Lucasfilm, in 1986; to its release of the groundbreaking *Toy Story*, in 1995; and its acquisition by the Walt Disney Company, for \$7.4 billion, in 2006. But even more, he described the thrill and the challenge of stimulating creativity while keeping up with the breakneck pace of the digital age.

Catmull recently sat down with McKinsey's Allen Webb and Stanford University professors Hayagreeva Rao and Robert Sutton for a far-ranging discussion that picked up where *Creativity, Inc.* left off. They delved deeply into Catmull's rules for embracing the messiness that often accompanies great creative output, sending subtle signals, taking smart risks, experimenting to stay ahead of uncertainty, counteracting fear, and taking charge in a new

environment—as Catmull did when he became the president of Disney Animation Studios.

The Quarterly: *One of the questions we had after reading your book is how do you, as the leader of a company, simultaneously create a culture of doubt—of being open to careful, systematic introspection—and inspire confidence?*

Ed Catmull: The fundamental tension is that people want clear leadership, but what we’re doing is inherently messy. We know, intellectually, that if we want to do something new, there will be some unpredictable problems. But if it gets too messy, it actually does fall apart. And adhering to the pure, original plan falls apart, too, because it doesn’t represent reality. So you are always in this balance between clear leadership and chaos; in fact that’s where you’re supposed to be. Rather than thinking, “OK, my job is to prevent or avoid all the messes,” I just try to say, “well, let’s make sure it doesn’t get too messy.”

Most of our people have learned that it isn’t helpful to ask for absolute clarity. They know absolute clarity is damaging because it means that we aren’t responding to problems and that we will stop short of excellence. They also don’t want chaos; if it gets too messy, they can’t do their jobs. If we pull the plug on a film that isn’t working, it causes a great deal of angst and pain. But it also sends a major signal to the organization—that we’re not going to let something bad out. And they really value that. The rule is, we can’t produce a crappy film.

The Quarterly: *So that’s the rule; that’s the strategy?*

Ed Catmull: Our real rule is to make a great movie. Our business is predicated on this. Of course, we need the film to be financially successful, and restarting a film is very expensive. But if we’re to avoid becoming creatively bankrupt, we have to do things that are high risk. This affects the entire culture—everybody keeps raising the bar, upping the ante in terms of what goes on the screen. This raises costs, so we have a continual struggle to reduce our costs.

People coming in from the outside, as well as employees, look at the process and say, “you know, if you would just get the story right—just write the script and get it right the first time, before you make the film—it will be much easier and cheaper to make.” And they’re absolutely right. It is, however, irrelevant because even if you’re really good, your first pass or guess at what the film should be will only get you to the B level. You can inexpensively make a

B-level film. In fact, because the barriers to entry into this field now are quite low, you can get to B easily.

If you want to get to A, then you have to make changes in response to the problems revealed in your first attempt and then the second attempt, et cetera. Think of building a house. The cheapest way to build it is to draw up the plan for the house and then build to those plans. But if you've ever been through this process, then you know that as the building takes shape, you say, "what was I thinking? This doesn't work at all." Looking at plans is not the same thing as seeing them realized. Most people who have gone through this say you have to have some extra money because it's going to cost more than you think. And the biggest reason it costs more than you think is that along the way, you realize something you didn't know when you started.

The Quarterly: *You mentioned signals a moment ago; say a bit more about that.*

Ed Catmull: Restarting something that doesn't work is costly and painful, but in doing so, we send a major signal to our company. But there are other signals, too. We put short films at the beginning of our movies. Why? Nobody is going to go to a movie because of the shorts, and neither the theater owners nor Disney gets any more money because of them.

So why do the shorts? Well, we are sending some signals. It is a signal to the audience that we're giving them more than they're paying for, a signal to the artistic community that Pixar and Disney are encouraging broader artistic expression, and a signal to our employees that we're doing something for which we don't get any money. While they all know that we have to make money and want us to, they also want a signal that we are not so driven by money that it trumps everything else.

The Quarterly: *Are there any other signals you'd highlight?*

Ed Catmull: Here is a simple example, so simple that most people would overlook it: our kitchen employees are part of the company. I think a lot of companies overuse the phrase "our core business"—for instance, "making food for our employees is not our core business." So they farm it out. Now, in a lot of companies, including ours, there are certain things you do farm out. You don't do everything yourself. But this notion of "our core business" can become an excuse for being so financially driven that you actually harm your culture.

If you farm out your food preparation, then you've set up a structure where another company has to make money. The only way they can make more money, which they want to do, is to decrease the quality of the food or service. Now we have a structural problem. It's not that they're bad or greedy. But in our case, the kitchen staff works for us, and because it's not a profit group, their source of pride comes from whether or not the employees like the food. So the quality of food here is better than at most other places.

Also, the food here is not free—it's at cost. Making it free would send the wrong signal about value to the kitchen crew. Everybody loves the chef and the staff. We have people who are happier. They're not gone for an hour and a half because they're going somewhere else to get a decent meal. They're here, where we have more chance encounters; it creates a different social environment. That's worth something to us, to our core business.

The Quarterly: *You said that risk taking is critical to your artistic and, ultimately, your business success. Could you describe how you think about risk at Pixar?*

Ed Catmull: For me, there are three stages of risk. The first stage is to consciously decide what risks you want to take. The second is to work out the consequences of those choices; this can be fairly time consuming. The third stage is “lock and load,” when you do not intentionally add new risk. The trick is to make sure you do stage one—doing something that has risk as part of it.

For example, when you're building a team for a film, if you have a team that's worked together before and it's exactly the same team, you know *they* know how to work with each other and that they can be very efficient. If you keep doing this, though, you're going to end up with an ingrown team. On the other hand, if you build a team with all new people, then they won't see looming hazards, and they can fall apart. So you put together a blend. The mix of new and experienced people is a conscious risk taken at the beginning—stage one. The second stage then is getting the group working as a coherent whole for the heavy-duty work at the end of a production.

Likewise, with technology, we know that if we don't change the technology from film to film, we can become extraordinarily efficient because everybody knows how to use it. But we also know we'll become out-of-date if we do that. So we introduce new technology. Sometimes it's a small risk and sometimes it's a complete replacement of the underlying infrastructure—a huge risk, with great angst and pain. But our people buy into it because it's

for the good of the studio, even though they know it will cause them so much trouble.

Similarly, if you consider the stories themselves, they're all hard to make—it doesn't matter whether it's an original film or a sequel. But there are different levels of commercial risk. If we're making a sequel to *The Incredibles*, it is low commercial risk. It is very hard to make, yet low commercial risk. A sequel to *Frozen* would be low commercial risk. However, if we make a movie about a rat who wants to cook or a trash compactor that falls in love with a robot, this is high commercial risk.

But if we only made low-commercial-risk films, we would become creatively bankrupt. Again, we make conscious choices to assume different levels of risk. This isn't the same thing as risk minimization or spreading risk. In the case of Pixar, every film we have started in the last 20 years, except one, we have finished. These are our babies.

The Quarterly: *In your book, you suggested that Disney Animation fell into a trap like that.*

Ed Catmull: When Walt was alive, Disney made impactful films. After he died, the quality went down. Then in the '90s, they had four more impactful films—*The Little Mermaid*, *Beauty and the Beast*, *Aladdin*, and *The Lion King*. At that time, they thought they had found a template to consistently produce good movies. They said “animation is the new American Broadway.” So every film was a musical with five to seven songs and a funny sidekick, and they kept doing that. Spectacular success doesn't lead to deep introspection, which in turn leads to wrong conclusions. You see this all the time, right? Successful companies draw conclusions about how smart and good they are, and then a significant number of them fall off the cliff because they drew the wrong conclusions.

The Quarterly: *You said the barriers to entry have fallen in your business. What other big changes are taking place?*

Ed Catmull: We can all see that technology is changing and, just as obvious, the way people spend their time is changing. One result is that major tentpole movies have become increasingly important because they bring a lot of people into the theaters. These are a great social experience, although I should add that none of us wants to see the smaller films marginalized—they bring a lot of creativity into the industry. It is a real dilemma.

Meanwhile, if you look out 10 or 20 years from now, will the changes we are seeing lead to new business models? Change is coming, and the impact isn't clear. In my career, I've gone through many major transitions. If you pay attention, you can get it right about two to four years out. After that, we are doing a lot of guessing. I can see, though, that more people in this industry embrace change than ever before.

On the hardware side of things in our business, the technological change, frankly, is driven by the gaming industry. Even though we were the originators of the graphics technology, which they fully acknowledge and are thankful for, we're just not big enough to drive people to design chips for us. So we are fortunate that there's this major gaming industry and that graphics chips keep getting better so we can keep driving forward.

But there is nothing stable in this environment. Disney is in the extraordinary position of having three graphics and animation R&D groups—Pixar, Disney Animation, and now ILM [Industrial Light and Magic, acquired by Disney when it purchased Lucasfilm in 2012]. In addition, we have two research groups at major universities to keep driving the technology, as well as research at Disney's Imagineering. Participating in and driving change are taken very seriously.

The Quarterly: *So it's about placing a lot of bets and hedging your bets?*

Ed Catmull: My own belief is that you should be running experiments, many of which will not lead anywhere. If we knew how this was going to end up, we'd just go ahead and do it. This is a tricky issue—people don't want to fail. They put a greater burden on themselves than we intend to put on them. I think it's natural because they never want to fail. One of the things about failure is that it's asymmetrical with respect to time. When you look back and see failure, you say, "it made me what I am!" But looking forward, you think, "I don't know what is going to happen and I don't want to fail." The difficulty is that when you're running an experiment, it's forward looking. We have to try extra hard to make it safe to fail.

The Quarterly: *That's fascinating. Experiments are great in retrospect but not in prospect—because you're scared.*

Ed Catmull: In addition to the asymmetry, there are two meanings to the word "failure." The positive meaning is that we learn through failures. But in the real world—in business, in politics—failure is used as a bludgeon to attack opponents. So there is a palpable aura of danger around failure. It's not made

up; it's real. This is the second meaning. So we have these two meanings and, emotionally, we can't separate them. And we don't actually call something educational until after it happened.

The Quarterly: So what can you do about that?

Ed Catmull: On the film side, we are making more experimental films that aren't burdened with the expectation of theatrical release but give us the opportunity to try something riskier. For feature films, we try to make sure that a certain number are "unlikely" ideas, which force us to stretch.

The Quarterly: It sounds as though you think a lot about fear and how to counteract its corrosive effects.

Ed Catmull: Fear is built into our nature; we want to succeed and we respond physiologically to threats—both to real threats and to imagined threats. If people come into an organization like ours and they're welcomed in, what's the threat? Well, from their point of view, they're thinking, "this is a high-functioning environment. Am I going to fit in? Am I going to look bad? Will I screw up?" It's natural to think this way, but it makes people cautious.

When you go to work for a company, they tell you something about the values of the company and how open they are. But it's just words. You take your actual cues from what you see. That's just the way we're wired. Most people don't talk explicitly about it, because they don't want to appear obtuse or out of place. So they'll sometimes misinterpret what they see. For example, when we were building Pixar, the people at the time played a lot of practical jokes on each other, and they loved that. They think it's awesome when there are practical jokes and people do things that are wild and crazy.

Now, it's 20 years later. They've got kids; they go home after work. But they still love the practical jokes. When new people come in, they may hear stories about the old days, but they don't see as much clowning around. So if they were to do it, they might feel out of line. Without anyone saying anything, just based on what they see, they would be less likely to do those things.

Meanwhile, the older people are saying, "what's wrong with these new people? They're not like we were. They're not doing any of this fun stuff." Without intending to, the culture slowly shifts. How do you keep the shift from happening? I can't go out and say, "OK, we're going to organize some wild and crazy activities." Top-down organizing of spontaneous activities isn't a good idea. Don't get me wrong—we still have a lot of pretty crazy things

going on, but we are trying to be aware of the unspoken fears that make people overly cautious. If you're just measuring yourself by your outward success, then you're missing a huge part of what drives people.

The Quarterly: *In light of your experience integrating Pixar and Disney, what do you think a new CEO coming into an existing organization should—and should not—do during the first month or so?*

Ed Catmull: When we came to Disney, we spent two months just listening. Obviously, John [Lasseter, the chief creative officer of Pixar and Disney] and I were talking with people, doing some coaching and so forth. But we drew no conclusions for two months, about people or anything else. We just watched. The idea is to pay attention to the psychology and the sociology of the people.

When you come in and you're the new boss, everybody's rather nervous. They're trying to figure you out, too. So you should start with the assumption that everybody's trying to do the best they can. For me, it's not even putting people on a provisional basis by saying, "well, we'll see how they work out." I'm just assuming they're going to work out. When they start to falter, you help them. And it's only after you've tried to help them—and they don't respond after repeated tries—that you do something.


Here's another thing that isn't obvious that we tried to be very careful about. Let's suppose somebody doesn't work out. And you, as an experienced person, know fairly soon that they don't have the ability to do the job. If they're leading a team and you've determined they can't do it, what should you do? The normal thing is to say, "why would I waste people's time by letting a poor leader stay in place?" We don't say that. The reason is, if we remove somebody as soon as we figure out they can't do the job, we've just induced fear in the other leaders. They don't usually see things as fast as you do because they're focused on their jobs. It makes them think, "oh, if I screw up, they're going to remove me." So the cost to the organization of moving quickly on somebody is higher than it is if you let the person go on too long. You make the change when the need for it becomes obvious to other people. Then you can do it. I will admit that there are a couple of times, though, that we waited too long. This is a hard part of managing.

The Quarterly: *As you look ahead, what worries you?*

Ed Catmull: Everybody talks about succession planning because of its importance, but to me the issue that's missed is cultural succession. You have to make sure the next level down understands what the actual values are. For

example, Walt Disney was driven by technological change and he brought that energy into the company. This was sound and color in the early days of the film industry. Then, in the theme parks, he used the highest technology available to create experiences and animatronics.

But after he died, the people left didn't fully understand how he thought. So it fell away from the company, and it didn't come back until Walt's nephew, Roy Disney Jr., used his authority to reintroduce the concept. He insisted on getting into a contract with Pixar, over the objection that our software wouldn't save any money. He said, "no, I want it because it will infuse energy into animation." He was very explicit about it—he understood better what Walt was doing.

The question is, "if Walt understood it, why didn't the other people understand it?" They just assumed that he was a genius, without thinking about what he was actually doing. Thus, the value wasn't passed on. Today, much of our senior leadership's time is spent making sure our values are deeply embedded at every level of our organization. It is very challenging—but necessary for us to continue making great movies. 

This interview was conducted by Stanford University professors **Huggy Rao** and **Robert Sutton** and the *Quarterly's* editor in chief, **Allen Webb**, who is based in McKinsey's Seattle office.

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Dr. Ed Catmull is co-founder of Pixar Animation Studios and the former president of Pixar, Walt Disney Animation Studios, and Disneytoon Studios. For over twenty-five years, Pixar has dominated the world of animation, producing fourteen consecutive #1 box office hits, which have grossed more than \$8.7 billion at the worldwide box office to date, and won thirty Academy Awards®. His book *Creativity, Inc.*—co-written with journalist Amy Wallace and years in the making—is a distillation of the ideas and management principles Ed has used to develop a creative culture. July 5, 2018. McKinsey Quarterly: “Staying one step ahead at Pixar: An interview with Ed Catmull” July 5, 2018. “Pixar’s Ed Catmull: If something works, you shouldn’t do it again.” July 14, 2015. Ed Catmull has been at the forefront of the digital revolution since its early days. The president of Pixar and Disney Animation Studios began studying computer science at the University of Utah in 1965. In 1972, he created a four-minute film of computer-generated animation that represented the state of the art at the time. In his 2014 book, *Creativity, Inc.*, Catmull chronicled the story of Pixar—from its early days, when Steve Jobs invested \$10 million to spin it off from Lucasfilm, in 1986; to its release of the groundbreaking *Toy Story*, in 1995; and its acquisition by the Walt Disney Company, for \$7.4 billion, in 2006. But even more, he described the thrill and the challenge of stimulating creativity while keeping up with the breakneck pace of the digital age. Ed Catmull Interview. February 21, 2007—News Pixar. The iinnovate blog, has a fantastic interview with the one and only, Dr. Ed Catmull, co-founder and president of Pixar. The interview is conducted by a few Stanford business school students and alums, and they talk with Ed about managing creative talent and on maintaining an innovative edge. Dr. Catmull (according to iinnovate, Ed claims only his mother calls him that) was the keynote at the Stanford Entrepreneur Conference a few weeks ago, when he sat down to talk with the iinnovate blog. Click here to view the video of the interview or listen to the podcast. Well worth a watch/listen. Last modified: February 21, 2007. — Previous Story *Ratatouille* Roundup. Ed Catmull, president of Pixar and Disney Animation Studios, couldn’t disagree more. That notion, he says, is rooted in a misguided view of creativity that exaggerates the importance of the initial idea in developing an original product. And it reflects a profound misunderstanding of how to manage the large risks inherent in producing breakthroughs. At Pixar, daily animation work is shown in an incomplete state to the whole crew. This process helps people get over any embarrassment about sharing unfinished work—so they become even more creative. It enables creative leads to communicate important points to the entire crew at once.