

Radical Innovation, Part I: Unleashing Creativity

You can't legislate creativity or innovation. "But you sure as heck can take whatever creativity exists in an organization and kill it very quickly," says Kimberly A. Wagner, a partner and a managing director at the Boston Consulting Group. In this Knowledge@Wharton video, Wagner explains how managing breakthrough innovation in large organizations is very different from two people doing a start-up in a garage. At big companies, "senior managers oftentimes say, 'We don't have the creative ideas.' But if you talk three or four layers into the organization, at the rock face, what you hear is, 'We have a lot of creative ideas. We just can't ... get permission.'"

An edited transcript of the conversation appears below.

Knowledge@Wharton: I want to welcome Kim Wagner to Knowledge@Wharton today. She's a partner and a managing director at the Boston Consulting Group, or BCG. She is an expert in corporate innovation. She's also the author of a piece of BCG research titled "Managing the Unmanageable — Radical Innovation." So, radical innovation for corporations — why is radical innovation is important?

Kimberly A. Wagner: Why is radical innovation important? First let's define it. Radical or breakthrough innovation is where you're creating a new market or a new category of products. So, it's when the iPod was first introduced. It's when the cell phone was first introduced. Remember, when the Walkman was first introduced, which now we think of as something archaic but at the time it was pretty revolutionary? And so, that's the category of new products that we're talking about.

If you are a startup company, you start typically in the garage. The person who has the idea, has the technology, has the vision — it may be in one brain, it may be in two brains, but it's not in 5,000 brains. So, it's very easy to manage all of the cross functional pieces you need to get a product to market because it's in a limited number of people's minds.

When you move to corporate America, the idea that you're going to do something breakthrough, radical, really different is really hard to do because you have a huge company with lots of processes, a history to protect and numbers to hit. And when you start to bring the idea of something really breakthrough and a lot of rules together, it starts to get very difficult.

Knowledge@Wharton: Nevertheless, it's and great if you can do it, if you can produce the next iPod. So, companies do want to do this.

Wagner: They definitely want to do it. Interestingly, our research shows that there are two kinds of strong, innovative companies. There are ones that say radical or breakthrough innovation is an important part of my portfolio of products. So, I'm going to spend a certain amount of my time doing continuous improvement on products that I have. And then I'm going to spend another portion of my resources on things that are truly new to the world. Apple epitomizes that. If you think about every Apple product, there's always the next version, the next version, the next version. But at the same time everybody's waiting for "What's that hot new thing, what's the breakthrough thing?" And when you don't deliver that breakthrough thing there's huge disappointment.

There are other companies — and oftentimes it's your standard, consumer goods companies, but not always — who do more incremental innovation. And they do a very good job of it. They're extraordinarily successful. They return well to their shareholders. But they focus their innovation on incrementally adjusting either things that other people produce — so, fast follower — or their own products.

Knowledge@Wharton: Creativity and innovation are abstract ideas. People immediately seize on the idea that you can't legislate creativity or innovation. It's hard to take [corporate] processes and come out with creativity and innovation. How do you view this?

Wagner: It's true, you can't. But you sure as heck can take whatever creativity exists in an organization and kill it very quickly. Think about the evolution of where, kind of in the early 90s, innovation and new product development was. That was a time that big enterprise — software packages were getting introduced into corporate America. There was a desire to control things. People were worried about waste. They were starting to think, "Am I investing too much in research? Am I getting out what I was supposed to get out?"

And so, a lot of management science started to get applied to the innovation process. There started to be more metrics, more forms, more gates, more "if you want capital, you will need to jump through these hoops." All of these processes served to take the creativity that existed in any organization and make it a very straight path.

Think of yourself as moving from side streets to super highways. It basically said, "We want to move on super highways." And so, all of a sudden, that shift makes the idea that you would get off on an exit and go to a local diner for dinner — it just doesn't happen because you're on the super highway and you're trying to get to the next toll road. So, that process very much took creativity out of organizations.

And now if you talk to companies, if you talk to the very senior folks, oftentimes they'll say, "We don't have the ideas. We don't have the creative ideas." If you talk three or four layers into the organization at the rock face what you hear is, "We have a lot of creative ideas. We just can't fill in the form to get permission to be part of the portfolio anymore.

Typically the "form" to enter the portfolio requires you to have some sense of what the forward revenue stream would look like — not only how much is it going to be, what's the cost of goods going to be and when can we expect it? Is this three years out or five years out? And often, for a breakthrough innovation, you can't even comprehend that yet. You're still at the stage of, "I need resources to test if this even possible." As opposed to, "I'm ready to tell you how much money you're going to make."

Knowledge@Wharton: You have interesting example on your paper — Corning.

People may not realize they used to make cookware?

Wagner: They still do.

Knowledge@Wharton: But then suddenly with the world of the internet — the digital world, fiber optics and so forth — the products that they made lent themselves incredibly well to that industry. Somewhere inside of Corning was a division that was working on that. How did they breakthrough and get management to pay attention? Or was it just so obvious that, "Hey, we've got the right technology here to do this. This is a no brainer." It wasn't a no brainer, was it?

Wagner: It wasn't a no brainer, but remember this all happened in the 1950s, 1960s, and early 1970s. So, it was the same time as Bell Labs and IBM Labs and lots of labs. And so, a lot of industrial companies had these almost pure research institutes associated with them. And that was great. There was a lot of great innovation that came out of it.

There was prior work that was done by many other scientists, both in academic labs and other commercial labs that showed that you could pass light through fibers in a way that you didn't have to add a lot of repeaters. So, basically, the technology was if you could imagine sending a signal down a copper wire, the signal could only go so far before it faded out and you had to re-amplify it. With a light path you could go much, much further.

There was a lot of technology and proof of concept around, "We could make a fiber." And it started off as just, "I want to make an optic fiber like I would a copper fiber." And so, it wasn't for the why. There was already some evidence that showed that you could send a signal down it, you could send an audio track down it, you could send an image down it. That was all academic work. But what I mean by "down it" is not like, miles and miles away, it was, from point A to point B really close in a lab.

So, they started that and in the 1970s they proved that they could make that cable, so to speak. They then, in the late 1970s, formed a joint venture with another company to start thinking about, "How do I commercialize it?" The research that they started with happened in the 1960s. So, you're going from the 1960s

to the late 1970s before you're even thinking about commercialization. And then, there were many kinds of mistakes along the way – or you could call them “learning opportunities.” In the 1970s we weren't quite ready for a video phone yet. It was technically possible but the idea that the infrastructure would be out there and people would start buying them was really not there yet.

Knowledge@Wharton: Except at Disney World.

Wagner: Except possibly at Disney World or another proof-of-concept type situation. And so, there were opportunities for Corning to learn as they go and go down some paths and decide maybe it wasn't time yet – back out and go down other paths.

Knowledge@Wharton: There was also an idea that you can't follow every idea. This was a great idea and it worked out. Most of them are dead ends. How do you know? How far do you follow them? And how do you figure out which ideas give you the best odds for success?

Wagner: This is where you have to remember that innovation is part science and part art. If you think back to what we did in the 1990s when we tried to really industrialize innovation – we tried to take all the art out of it – almost push the button and hope that innovation comes out. And actually that works very well if all you want to do is change the flavor of something, change the packaging of something.

Knowledge@Wharton: So, refinements.

Wagner: Yes, refinements and incremental innovation. If you want to actually go to the step of bringing something new to the world, there you have to bring back the art. And oftentimes [that happens] when you reach the end of an investment period and you sit back and you say, “What do I know? And based on everything that I know now, can I get a product? I think I can or not. And what are the critical risks to getting a product?” And then that's what you test next.

So, you take an incremental learning approach. And if each time you're getting closer and closer to a product you keep going. If, all of a sudden, something happens and you realize that the risks are too high, the

technology's not in play – you either shelve it, you sell the IP or you stop.

Knowledge@Wharton: Another point that you make in this paper, which I think is important is that old ways, old processes, just looking at KPIs and that kind of thing – the way companies typically go about things – cannot just fail to foster innovation, it can actually kill it or hurt it, slow it down. So, how are companies supposed to think about that? On the one hand these tools are good for certain things but you have to be careful how to use them.

Wagner: You don't want to completely abandon them because this radical innovation project, this breakthrough innovation, has to exist within the confines of the corporation, where you're doing incremental innovation in parallel. So, it's mostly about thinking – how do you learn with a program. Oftentimes companies will have a stage gate process where in order to get, say, a release of capital funds you need to check off certain boxes around future revenue, future cost of goods, proof of concept, design criteria and the like.

Rather than thinking about check lists and stages – you should think about learning. Think about, “What are my unknowns and what do I need to learn to go to the next level?” If you keep this rigorous learning process going, then you can quickly decide, “Do I have something there or do I not have something there?”

But none of this is going to be a metric of the future revenue is, yet. Eventually you'll get there. Eventually you have to get to the point where you manufacture whatever you're going to manufacture. And it has to fit into your manufacturing plants just like every other product. So, it's not that you abandoned it. It's just that early on you need to protect it from the metrics killing it because if you do a pure rack and stack on things like probability of success, this is going to have a low probability of success but a high potential return in the event of a success. Just drawing a line on a rack doesn't help.

Knowledge@Wharton: So, that suggests balancing between creativity and serendipity, and having some hard core process to monitor what's going on and measure it, and make some judgments along the way.

Wagner: Right. You need to govern it. You just can't over-govern it.

Knowledge@Wharton: And successful companies rarely follow traditional management practices. They have some quirky way or some different way of doing things. Can you generalize about creativity?

Wagner: Sure. So, what's interesting is if you talk to companies that have very rigorous [innovation] processes in place – the first thing what we've learned is that to be a good breakthrough innovator you have to start by being a strong innovator. So, there's a certain base – you need to know how to innovate in a corporate setting in order to be a breakthrough innovator in a corporate setting.

If you want to go to kind of plan B and break a piece of your portfolio into breakthrough, you need to start by saying, "What do I need to shield this from?" There are some companies that have a thoughtful process. They maybe call it a "swim lane" or a "breakthrough path" or something that allows it to exist in its own type of governance for a period of time until it has to intersect with the regular process.

Companies that are not as proactively thoughtful, but still successful – it turns out that they had a skunk works. They had somebody who was very senior who thought that this product had to go forward, it had to be protected, they found a way to make it happen, they kind of broke the rules on the side, they had their little team. And then when it was ready for prime time, it got introduced into the portfolio.

Knowledge@Wharton: That latter one's harder to replicate, right?

Wagner: It's much harder to replicate.

Knowledge@Wharton: That's like, an entrepreneur in your midst and someone – somehow they got to a position of power where they could just let it run.

Wagner: Right. But what you often find – if you go into a company and they say, "We really want to get good at this." You start by asking them what were the breakthrough products that they've launched over their history. And then you start to understand how that got through. "How did you manage that?" And then you start

interviewing people and you talk to the older folks that were there then or were actually junior then, so they're senior managers now but they were on the working team back then. And you often find the examples of the skunk works thing worked. So, how do we now make that a normal part of business? How do we accept the fact that this is a piece of radical innovation and now how do we control it in an appropriate way.

Knowledge@Wharton: It's already in the culture, so try to harness that in some way.

Wagner: Or it used to be in the culture and don't be afraid of it. Because you may have squashed it out of the culture.

Knowledge@Wharton: So, do you have a – it sounds crazy to talk about – blue prints in creativity and innovation? Do you have a list of processes that companies can follow to help them as they allow the creativity to run wild in their companies?

Wagner: Well, you don't want it to run wild!

Knowledge@Wharton: Or, so they don't run wild?

Wagner: Exactly. So, typically what we find being a strong innovator is important. So, you need senior management support for this. And you often need more senior management visibility and support to do radical well than just merely being a strong innovator.

There's typically a focus on intellectual property. Interestingly, radical innovators not only worry about intellectual property from the perspective of, "Can I protect my product and do I have the permission to operate in this space?" They also think about it in, "Can I create a business around this IP on top of it?" So, they often have a side business around monetizing intellectual property that they create. They have strong portfolio management processes. They have strong project management and new product development and governance processes. And they have a customer focus. They're very focused on what their customers need and not necessarily what their customers tell them they need but what they intuitively know is an unmet need of a customer.

Knowledge@Wharton: So, focus on customers but not overly reliant on focus groups.

Wagner: Yes. If I asked you 15 years ago, “Do you want an iPad?” you would say, “Why would I need such a thing?” Because 15 years ago you were just getting used to lugging around a laptop. So, if you think about it in those terms you have to have the vision.

Knowledge@Wharton: Always something new under the sun.

Wagner: Right.

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