The next thing we might want to look at is that not only can we see that innovations can be products, processes, platforms, programs, projects, or any combination of all these things; but we also need to be aware of the fact that any innovation goes through a kind of life cycle and that for particularly successful innovations, this life cycle may take a very long time. Or, there may be even multiple cycle embedded in it. Dan introduced you to the idea of the adaptive cycle as an interesting way to understand, both resilience and phases and stages.

Just to briefly go through that again, the adaptive cycle was created to look at shifts in ecological systems on two dimensions—the potential and the connectedness—and to understand how much potential is available or stored—this would be natural capital—and how much variety or connectedness or sameness is there in the particular system. He suggested that they were four different boxes. The first is what you call creative destruction—what is sometimes called release, which we can imagine as a forest fire burning. The second—and this is what we call the back loop—with a kind of renewal when suddenly lots of different species rush in and take up all the carbon and other elements that were released by the fire and new growth starts. You could have lots and lots of different variety there all competing for the available resources. Then a kind of shake out happens where you have exploitation and a pattern of dominance where some of that new life dies out and others grab up those resources and start to grow and dominate that particular system. And, then, a final conservation phase, such as an old growth forest. Dan took you through those stages and what it tells us about resilience and the cycles through which systems remain resilient. I'm going to look at this in terms of innovation.

We can use this same cycle to talk about social innovation and its phases and stages. One of the reasons we can do that is that C.S. Holling drew a lot of inspiration from Schumpeter, who was an economist, who was interested in entrepreneurship. He came up with a very similar cycle where he saw a new idea entering in to any particular industry regime and moving through it and becoming a dominant invention.

He would say that an idea is born in what was the release phase when, in fact, the old industry or old structures are starting to fall apart. Then, the idea is developed and tried out and often combined with other ideas as it gains its momentum and potential. Then, the idea can be launched as a product, a process, or an organization; and finally, it becomes an established innovation, no longer thought of as innovative.

This cycle happens over and over again, both at the level of product and also around new organizations that become old established organizations and to develop and run those kinds of products, and as a much broader societal trend like we saw in the Great Bear Rainforest where it goes from people starting out that particular initiative and process, developing and trying all kinds of experiments, then launching a suite of initiatives, which finally became the state finding additional resources, legislative support, and finally an established innovation. We can see that any particular innovation goes through all those different stages.

So, for these four cycles and social systems as well, and if we look at them like we look at the forest fire and we think of them as an innovation, we can see that that first phase, which is the release phase where an idea is born, is, in fact, a place where things may be in disarray but where people who have really good ideas have a lot of potential to act on them because it's a good opportunity context. There are a lot of resources sort of

sitting around. If you looked at that as a kind of psychosocial space and realized that when things do fall apart, when something doesn't work, and you can think of this as a program that's ended, an organization hasn't worked out as an idea that's fallen apart within an organization, there, key pressures are trying to kind of make sense of what's going on and trying to reconfigure the resource.

When you think of after the financial crash, for example: no one really understood why that had happened. People were running around trying to think about how to repackage resources and how just to make sense of what was going on. During times like that, there tends to be a breakdown of trust. People don't know what is going on, so they don't know whom to trust. There's a lot of confusion and lack of clarity. People are sort of stealing and pirating ideas and resources wherever they can get them, but some of that may be quite novel and not seen before.

There are some people who love this. They love these kinds of crises, which they see as opportunities and they get very excited. But others find it very difficult. In many organizations, the idea that a natural phase of a resilient cycle would be that you had to repeatedly go through this creative destruction with all the human suffering often associated with this, is not very desirable at all.

Assuming you get through that particular phase, you move into what we call the exploitation phase, and this phase is a psychosocial space. It has its own key pressures. At this point, you're starting to get some idea of what's going on, but you need the resources to facilitate the introduction of a different way of doing things. There's not a lot of connectivity, and there's a lot of time pressure: looking for funds, for time, energy, attention, skill; there's a lot of competition. This is just like we saw the new species rushing in after a forest was burned to take advantage of those resources.

When things fall apart on a social front, whether it's in a single industry or around a particular problem domain, there's a similar rushing around for resources and trying to find new ways of doing things. In a social sector, think of it as the closing of fundamental programmes of government funding. Think of it as closing all the institutions for disabled people and saying *"Wow, we want to take care of the community,"* without anybody actually knowing what that means. There's a lot of pressure to come up with new ideas.

Experimentation has a certain quality to it. Again, remember it's emergent. People don't really know where they're going or they wouldn't be innovating. It's often been described as if you were in a helicopter looking down on a valley in the mountains that have a bunch of explorers in it trying to find a pass through. They would all come down and set up camp, and then, you would see a lot of what would be random walks: people going out in small parties to explore the valley and then coming back and then going out the next day. And nothing seems to be happening. They're just going and coming, when all of a sudden people all get together, pack up, and go off in one direction because they've made a discovery that they think they can trust.

During those experiments, there's a lot wasted time and wheel-spinning and things that aren't going to amount to anything as people try different solutions. People who learn by doing are happy here and who enjoy inventing; but others are increasingly anxious that there isn't actually going to be anything that's going to emerge, that's going to solve the problem. There are lots of false starts and sometimes frustrations and mounding anxiety; but for those who really, really enjoy being in this space, they have a

kind of a confidence. They've been here before. They've found solutions. People who are social innovators often repeatedly find new solutions to new problems, partly because they can live in the space for much longer than many other people can.

Once they've found something new that they think is going to work—and you also see this in big complex firms that are constantly innovating—it goes into what we think of as production. Now, we think we're going to try this out. At that point, we need a whole new influx of resources.

First of all, we've had to let a lot of other ideas drop, and the resources that might be associated with those, including people's imagination and energy is let loose. But now it has to be reconnected to the particular idea or the particular avenue that we've chosen to take. During this period of exploitation, you're really concerned with how we take an idea now and make it reality. How do we find the resources to do it? How do we iron out all of the wrinkles that any start up has? How do we launch this? How do we make it work? How do we get the funds to make it work? How do we explain what it's going to do? And we're still, in a way, partly experimenting.

People who like working in teams, who like putting things into action are very happy here. The people who invented the ideas in the back loop, often start to get impatient because no matter how it lands, it isn't going to look quite as good as it was in their imagination, because you're in reality now. You have to deal with the reality of resources, technical limitations, human limitations, and political limitations that are going to make it hard for you to do something which might be as perfect as you would think.

If you're successful in launching it, you come from that space called exploitation and you move into this space called conservation. That psychosocial space is when you really can see an innovation becoming an established way of doing things. It's at this point that you need to standardize it so people can do it over and over again, and replicate it. You should be able to get measurable returns and measurable impacts, but only at this stage of an innovation. You have increased demands for reliability and productivity, increased reliance on systems for monitoring and rewarding efficiency, and you really need good management at this point. The visionaries often get bored and start to move on.

If you go back to the Barefoot College or to the Great Bear Rainforest, two cases that we know well and we've talked about here, you can see that probably at very early stages when he was going out working in the villages, he just had an idea. His idea was that he could see all this expertise; so, why couldn't they just build a place of learning and a place that built self-sufficiency and made the village stronger using that particular expertise? In the process of doing that, there were lots of little expirations about making the thing work, making plants grow, making the roof not leak, and what kind of technologies we're going to use, etc. One of the discoveries that we clearly see—and there are probably others that we couldn't see—was that they needed training. In the process of staring to establish training, you see some of the *bricolage* happening; and you can see that these become part of the idea set, but then, in order to build this to make all these things work once he decided that this was the way he was going to do it, he needed to secure more resources. He needed to draw more attention to it, etc. Coming and giving a TED talk is probably a sign that he succeeded; but it's also a part of the way he gets attention and resources, etc. to make this thing an established part of life.

We don't know that it's going to be there [to become established], but you can be sure that about the time it gets there, he'll be off working on something else. Because, in fact, innovators, and system entrepreneurs as well, tend to be restless. They're interested in the process of moving something through these stages but not so much when it's complete. By the time it's complete, they can see all the things that are wrong with it and how they need to start yet another cycle over again.