The State of Agile

featuring Alistair Cockburn and Suzanne Miller

Suzanne Miller: Welcome to SEI podcast series, a production of the Carnegie Mellon University Software Engineering Institute. The SEI is a federally funded research and development center sponsored by the U.S. Department of Defense and operated by Carnegie Mellon University. A transcript of today's podcast is posted on the SEI website at sei.cmu.edu/podcasts.

My name is Suzanne Miller. I am a principal researcher here at the SEI. Today, I am very pleased to introduce you to Alistair Cockburn, one of the initiators of the Agile movement in software development who helped write the manifesto for Agile software development [the Agile Manifesto] in 2001 and the Agile Project Management Declaration of Interdependence in 2005. He was also a co-founder of the International Consortium for Agile in 2009. And, he is a principal advocate of the use case for documenting businesses processes and behavior requirements for software. He is also the inventor of the Cockburn Scale for Categorizing Software Projects. Welcome Alistair.

Alistair Cockburn: Thanks for having me.

Suzanne: I am so pleased you are here. The Agile Manifesto is old enough now that many listeners may not know actually how it came about. And, you were one of the people that were there. There were not very many and you were one of them. Could you tell us what was significant about that meeting and that time in software engineering that led to the creation of the manifesto in your opinion and, in my mind, at least as important as that, the 12 Agile principles that came a little bit later.

Alistair: OK, so in the mid-1990s there were at least a half dozen people advocating what we considered to be lightweight processes. In my particular case, I had been working for IBM Research in Switzerland in 1980s. When I came back to the U.S., I was picked up by the then fledging IBM Consulting Group (not the same as IBM services). They asked me to create a process and methodologies for use on Smalltalk and C++ projects.

I said to my boss, *I don't know what a methodology is. I got all the books, and they all disagree. I don't know which one is the right one.*

She said these really prophetic words: *We don't have a competing interest. We don't have any prior art. We actually don't really care what the answer looks like. We just want a good answer. How about you go and debrief some project teams and find out what worked and didn't work?*

So, she gave me basically unlimited airplane miles, and I flew literally all over the world for a couple of years debriefing teams and asking them what worked and what didn't work.

What I got back out of that in 1991, '92, '93, was stuff that was not written in any of the books. I just was trying to make sense of that. But, it was for sure not anything that was written in the books. You know basically the punch line was, *Limit your projects to four people. Put them in a room. Give them access to the customers. Ship every month or two. And, if you do that, good things will happen. And, by the way, we don't use case tools and we don't use this, we don't use that.* So, there was a lot of *not*, *we don't do*.

Out of that I just read those notes and those, eventually 10 years later, became my Ph.D. dissertation. But, I took those notes and I just believed these people. I wrote down whatever they said. The big thing was to get rid of the bureaucracy, get rid of all that stuff.

I got to try that out for real on a fixed-time, fixed-price project in 1994-95, 10 million dollars, 50 people, one and half years. It was very real. I used all of that, everything I had learned. In that same time frame '94-95, we also had the DSDM Consortium in England that was forming. We had XP [Extreme Programming] that was forming. We had Scrum that was forming. Jim Highsmith was doing Adaptive--that was forming. So, there were half a dozen of us saying similar kinds of things. All road tested, field tested in the mid '90s. And, in 2000, Bob Martin said, *Hey, you know, I think there's a bunch of us who are saying something similar. I want to have a meeting and see if we actually have some real ideas in common, and if so, I want to write a manifesto.* So, he actually deliberately wanted…

Suzanne: So, he did have a manifesto in mind.

Alistair: He deliberately wanted to write a manifesto.

Suzanne: OK. I did not know that.

Alistair: Jim Highsmith and I were living in Salt Lake City at the time. So we said, W*ell, we could either be in Chicago in mid-February or on the ski slope at Snowbird in mid-February.* So, we convinced people to go to Snowbird. So, Bob Martin repeated all of that at the start of the meeting. We all said, *Well, that is a pretty good place to start for a meeting.* We didn't know what we were doing. It was like a hypothesis to test. We traded notes and said, *That all sounds*

pretty similar. Lightweight process is a reaction against, but what would it be FOR if we were for something.

We did about an hour to an hour half word search and came up with the top two words: *Adaptive* and *Agile*. We had a bake-off between the two words. It turns out you need both words; they were both correct. In a sense you want your culture to be adaptive and you want your project management to be agile in a certain sense, right?

Suzanne: Yes.

Alistair: But we choose Agile. It was a good term. So, we chose that. That is a nice word. We all could get behind that. But what would that mean? What does it mean to say you are doing that? So, it was a very free-flowing meeting, very loose. Nobody knows who suggested what. It was the best get together ever: huge ears, huge heart. Everybody was very generous. Somehow it started with a this-over-that proposition. We knew we were going against the big plan, the big document, the big tools, and the big stuff at the time. So, we wrote the four values and said, *Well, OK, this is very clear this is a value center*. If you know the *Shu Ha Ri*, there's no Shu. This is a Ha and Ri level. This is only for people who know what they are doing to help them center themselves.

If you had 200 important things you could choose from, we picked these four as like the heart and center, right? So we've got the values, and so that's cool. Well that is nice, but that is kind of vague. So, if you were going to go any further, what would you look at to help steer you on those values? We started to write the 12 principles. Now, here is where the individual differences started to come into play between the different people because on a day-to-day, minute-to-minute basis we disagreed with each other quite strongly, and we wanted to preserve the right to disagree and pursue our own commercial, intellectual, experimental pathways. So, we didn't want to go too far. We ran out of time. I have a hypothesis and I love being able to put this on the podcast: I think that each of us included, or allowed to be included in the principles, something that we were not in favor of, particularly, and we let it slide.

Suzanne: OK.

Alistair: So, with the value statement, we had a 100 percent thumbs up; we word-smithed that to the word. But, we didn't have time to do that with the principles. People were getting on planes and stuff. So, for example, for me the [principle] we welcome late-breaking requirements. No, I don't welcome late breaking requirements. I don't. I am sorry. I wish they would just stay still, frankly. Now, given that I know that isn't going to happen, I will set up the project to accommodate it.

Suzanne: Yes, I will accommodate them, but welcome maybe a little bit too strong.

Alistair: Then there was for me the emergent architecture thing. It gives me heartburn when I look at it. I would just love it if somebody—each time they are talking to one of the writers—asked --*which of the 12 principles gives you personally heartburn?*

It would be kind of fun to collect, but those are the two for me. So we said, W*ell, good enough.* We wrapped it and wrote it and that is the way it came out.

Suzanne: That's wonderful insight.

Alistair: A little bit of history trivia that you wouldn't otherwise get.

Suzanne: Yes. Well, it is something we don't normally get to hear. So, I really appreciate that.

Alistair: The other thing that for me is very significant is that this represented for us a summary of what we did in the 90s. So, in a sense, people like me have a very rich pictorial memory of the stuff in the 90s that gave us material to summarize in those words.

People who come in after see the words and they expand it to have a different meaning to them than what we had because there are only very few words in there. So [it is] interesting for me to watch how people kind of re-hydrate those words into fully fleshed things that maybe didn't include anything that we were thinking about at the time. It just comes with the territory.

I wanted to say that, for us, it was a closing or inflection point kind of a thing. It wasn't a beginning kind of a thing.

Suzanne: That is actually a really interesting point. I think for listeners, that is an important point that this was all road tested as you said. It was based on experience that we were having in that time frame.

Alistair: Yes. It wasn't speculative at all.

Suzanne: And, it allows us to move on. One of the things that we talk about in some of the courses is how everything that you see in most of the Agile methods that are prevalent today are things that have been done for decades.

It is the way that they are put together that's maybe a little different. But, it is not new stuff.

Alistair: For one of the universities in Utah I designed a one-semester software engineering course following the ACM Communications and IEEE guidelines, et cetera. It was incremental, iterative, and had all the best practices at the time for 2006. In the entire course I never once mentioned the word Agile, not once. But, you would find in there all of the testing, all of the integration, all of the UX [user experience], all of the user feedback, all about communication.

Each of those strands is defensible separately. The only Agile thing was to cherry pick and bundle them. That is what we did. People forget that; they say, *THE Agile method*, but people like you have seen stuff going out for long enough; each thread has its own value going back for decades.

Suzanne: Switch gears a little bit. Your quote before we got started is, *I am just basically traveling around the world teaching what I know.*

Alistair: I don't even teach what I know. This may be a bit personal, but I got divorced and my kid graduated from high school, so I had no dependents. I put all my belongings in an apartment intending to come back, which I never did. Then I went to France to learn French. From there I went to Japan. From there, I went to Australia to see Christmas. Then, I went around the world then I went back to France. I finally gave away all the stuff I put in my warehouse. So, I now have literally one suitcase, two backpacks, and a kilt in my closet of a friend somewhere. So, when I say I am a traveling bum, I actually feel like I am more a bard (a travelling storyteller) in the old sense.

Suzanne: There you go.

Alistair: I spend all my time just trying to live life. I am having a super, super time. What is interesting is I teach wherever I go. Then I watch and try to pick up threads and put them back together into whatever the next thing is I teach. Mostly I am learning languages such as French and Spanish.

Suzanne: And Swiss German.

Alistair: Swiss German I have. I got into argument with the border control in Swiss German. That was kind of fun.

Suzanne: But, with this experience, you do teach when you are out on the road?

Alistair: Yes, of course.

Suzanne: So, you see a lot of different settings all over the world? Many of those are what I would call more free-form, commercial. But some of them, I know you worked with some organizations that are much more regulated, much more constrained in terms of their business. That is the research that we are doing here, with Mary Ann and the rest of the team--Agile adaption in those kinds of settings. From that experience, what I am interested in is what do you think are the top two or three barriers, in those kinds of setting, to adopting—and I am going to say not the methods so much—but the principles and values.

Alistair: It is all attitude. It is all attitude, yes. So, there are two things that I have gotten to in the last one or two years, probably more in the last year. They are both relevant to you. One is cultural; it has to do with hierarchical cultures. I will bring in France right there. The other is the merger of Agile and risk management, which is my current interest. I call it disciplined learning. It is the merging of Agile and risk management on the one side and incorporating lean start up ideas, you know, just kind of in passing.

I like that because Agile methods have done remarkably well for being so sloppy in project settings they were never intended for, if you look back at the mid 90s. It is just stunning, surprising to me how well these projects survived doing basically nothing. It is actually surprising. But, when I look at difficult situations or really highly skilled teams they don't do that. They actually are quite disciplined in what they do.

The phrase that I am allergic to that people say is, *Fail early, fail often*. I don't know how anybody can stand in front of an executive and say that. I see this being done all the time. I don't want to fail. I don't like to fail. I don't intend to fail. There is not going to be a failure here. But. if you want to not fail, you better *learn* early and *learn* often. That means you are always doing experiments. Some experiments are not on the straight business path, right? It is a side cost, side expense.

Suzanne: Right.

Alistair: Now, when you look at learning, as I call it, with high discipline, experiment-based learning, which fits very well with incremental development, it is stronger than risk management. So, risk management would say, *Are we building the right product? Do we have the right people, et cetera?* Learning says, *Assuming that we don't have the right product, how could we learn what would be a good product, to be able to say this is a learning?* Instead of, *Do we have the right people?* You say, *Given the people we have—assuming for a moment that we have the right people—how could we help them learn how to work well together, so they become a stronger and more capable team?*

So, there is learning of *What should we build?* And, *How do these people work together?* That is not classical risk management. So, that has been my study for the last year or two. It is like newly published work that I have, I call it disciplined learning. It is very interesting, because learning is stronger than risk management. Risk management is like a non-negative whereas learning is an amplified positive. So, it is very, very strong. So, that is one thing I'm working on.

The cultural piece is, when I am in France, people always ask me, *Can Agile work in France?*

Suzanne: Really?

Alistair: [It is] very hierarchical there. Every conversation is, *Can Agile work in France*? I have finally come to the conclusion that the answer is probably *no*, because if you go to an anarchistic or self-organized or democratic kind of a model inside of a project team—let's say you are in Finland or Sweden or Scandinavia, they are very egalitarian. There is no problem with spreading that laterally and vertically and everything else. You do that in France and you bump into traditional corporate, social, nationalist, cultural boundaries where there is this real hankering, loving for, reflex to have a hierarchy in place. So, you get these Agile project teams that bump into a hierarchy, so that is a dominant question in France.

Now you [go] to a highly regulated context and you see it is pretty much the same kind of a thing. It has all got do with the cultural reflexes of the people who suddenly are having this anarchistic, socialist, democratic, whatever you want to call it: a bunch of people running around making decisions. And, you have this embedded in a very hierarchical culture. There are going to be boundaries and walls and places where the things just aren't going to fit. So, that is a borrowing from my international traveling that I can offer you guys.

Suzanne: We do see the hierarchical culture, and actually we talked about a risk-averse culture as one of the aspects in the DoD-contracting arena as a particular area. But, we actually have seen some interesting successes, too.

Alistair: When you say risk averse, and given that my new area of study is disciplined learning, if you were risk averse, you would use Agile.

Suzanne: Risk averse in terms of doing a different culture.

Alistair: What you are saying is averse to doing things differently, which is not the same as risk averse.

Suzanne: Good point. Yes, yes.

Alistair: It is actually a higher risk. It is just that it is familiar.

Suzanne: Yes.

Alistair: Familiar failure is…

Suzanne: …is more comfortable than uncertainty.

Alistair: Yes, exactly. That is it, and that is where the heart of it, it is, right?

Suzanne: Yes. The places that we have seen success have had some interesting attributes. And all of them have the characteristic of someone protecting the team from the hierarchy in some way or another.

Alistair: Exactly. There you are.

Suzanne: That seems to be one of the conditions for success. Sometimes you can make that happen, and sometimes you can't. So it is not always…

Alistair: Right, that's a cultural topic. What else you got.

Suzanne: What about size? That is another aspect that we run into. Both the principles and the practices that enact them in many places really are very high leverage when you have got co-located, small teams, but when you have large projects, possibly part of a hardware system…I've worked with—I am sure you have too— teams of 100 software developers. And, when you try and work in that environment, what have you found? You have the Cockburn Scale that goes clear up to violet, but what changes when it goes that large?

Alistair: The Cockburn Scale is relevant here. I was, in the late '90s, trying to work out how would I give methodological advice. *If I know that every situation is different, how am I going to get started?* So, I put on the horizontal axis, the number of people being coordinated with the idea that about every—times two to two and half—there is some fundamental change in the way that coordination, communication happens. If you have 6 people, you put them in a room, give them access to users, and you are done with the story. If you have 20, you've got walls between the people, so you've got conversation blocks. If you've got 50, you've got multiple technologies, multiple teams, and multiple floors. If you have 100 people, you've got consistency problems across teams.

Suzanne: Often distributed locations.

Alistair: I am even talking about one location. I am just right there for right now. So, that was when I created that scale.

So, the insight off of the horizontal axis is there will be fundamental differences in communication and coordination structures and strategies as you simply increase number of people. On the vertical axis, I put basically how many people die if something goes wrong.

On the top, you have got life-critical systems of which there are many: avionics, medical, FDA, nuclear, et cetera. Then you come down to things where like bridges fall or buildings fall down, but there is nobody in them or companies go bankrupt and that is essential moneys. Then you have got discretionary moneys, like your phone bill, where you just call up and say, *Hey you screwed up*. Then you have got play systems where nothing really matters if something goes wrong. The idea there is your validation and verification strategies would be fundamentally different. So, I use these two axes, although there are many more. There are like 7, 11 or 17 dimensions—but I picked out two and said, *Those would be markers that you would expect to*

see something very different in each one of those squares. And, there are a lot of squares. So, that is the Cockburn Scale.

I have three things I wanted to say about your question. You have got distribution, you have got scale, and then I forgot what the third one, what I was going to pick up. But, it doesn't matter. A recent thing and I speak in metaphors and sorry, for that…

Suzanne: I love it.

Alistair: Someone was asking me about distributed teams. Co-located teams work because it is very easy to build trust between the people because they stare in each other eyes. You move them to different cities, and the thing that is hard to get back is the trust. So, I wrote in which I said, *I think that they are different species*.

We talk about distributed teams as though it was just a co-located team where we happened to move them across some space, but they are not. They are fundamentally different strategies, because what it takes to build trust in people who don't get to see each other every day, and talk to each other every day, is a fundamentally different question. So, you don't start by saying, *We have co-located Agile. We are just going to move the people apart. Now what do we do?* No. We really say, *We are doing a different thing. It is a different animal.*

Suzanne: And, honestly most of the situations I see you start out co-located and you want to these people to work together for some reason. So, there is even more difference because…

Alistair: You said co-located. Did you mean distributed?

Suzanne: I am sorry, distributed. Yes. You start distributed. This one works for this part of the organization. This one works for another part of the organization. So, you have already got different cultures *in situ*, and now you are trying to combine them into a team.

Alistair: Well, the mistake that the sponsors make, naively I think, is trust and communication are free when people are co-located. They assume that trust and communication are free if you merely move the bodies apart, and it isn't.

Communication—and this is a more recent insight— is much more expensive, but trust is near impossible. So, if you are doing distributed, you just have to start with a different sheet of paper and start from the beginning and say, *How do we build trust amongst people who aren't going to meet each other under normal circumstances?* You can't force that.

The other thing is scale. And, people are very much asking, *How do you do Agile at scale*? And they mean, now, enterprise. I distinguish. I don't call it scale if you've got 80 people working on a project, and they are distributed. I call it scale if you have different parts of an enterprise trying

to work together. To me—we are at CMU/SEI, I can use engineering terminology—there is a phase transition like from water to ice.

Co-located or small Agile teams are project-focused. They know what their mission is. They know whether they are making forward progress. They know what done is and they're all working toward the same purpose and like that. I call those *water discussions*. All the discussion, whether it is distributed to co-located are, *How do you play with water?* Water is very fluid.

If you have got an enterprise, now you have got different departments with different profit streams and now you are doing initiatives, merging with lots of political platforms going on, multiple cultures in play. You are not in the same discussion at all. So, it is like ice. I call it ice.

Ice has different properties than water. You make a bar out of ice. You go to an ice bar, and you get a drink or something like that. You fall on ice, you break your tailbone. Ice discussions are fundamentally different discussions than water discussions. So, to me, when people say scale, if they just have 80 people but they are mission focused, it is still a water discussion. If they are talking about transitioning an entire corporation, it is an ice discussion.

Suzanne: Is the anchor between the two the values and principles?

Alistair: Yes, I guess.

Suzanne: I have been observing a government organization that is in the several hundreds of people, where the leader of that organization is applying Agile principles across the entire business, not just software. And, it is really about the principles, because some of their businesses have nothing to do with software.

Alistair: Exactly.

Suzanne: They are still bringing in, *We want these kinds of principles adopted*. So, that is what makes me think that even where you have ice, it is still H_2O. The principles are the H_2O, maybe.

Alistair: Let me ask you a question: Did it start off as a small company or was it an existing company that converted?

Suzanne: It is a government agency.

Alistair: Wow. That is very impressive.

Suzanne: Yes. They are not done yet, so I am not going to call them out.

Alistair: No, no, but what I am saying if you ask them, *What are the strategies that they applied and the issues they ran into*, it is all ice discussions. So, the ice discussions are going to be all

cultural: *How do we change the mindset, how to align cultures*? The thing that we talked about with France where they were regulated. Whereas if you have a project, you are talking about milestones and progress and lean and stuff. So, that is what I mean by water discussions and ice discussions.

Particularly the ice discussions will be around culture and politics, and water discussions will be about velocity and progress.

Suzanne: Thank you for giving us a little bit of insight into your current work with use cases and risk management and disciplined learning.

Do you have any goals for that, anything that you are thinking about now that you want to share with our listeners, things to look forward to in terms of new books? You are an incredible blogger, so I know we will be seeing blog posts on this.

Alistair: I would say that disciplined learning interests me because, in a sense, this is a pendulum situation. So, the pendulum was very predictive, very analytical. Then, it went to very loosey goosey, anything goes.

Now, I see the good teams coming back and being more thoughtful. So, my courses would be called like, *The Thoughtful Product Owner*, as supposed to something else. For me, the disciplined learning is really nice because you have to do it, work in an Agile fashion, but you have to be deliberate and thoughtful in what you are doing. So, the pendulum is coming back again. For me, this is very interesting, really interesting strategies, very aggressive, very creative, very effective and, of course, difficult, hence the word disciplined inside of there. So, that is the up-and-coming stuff.

Suzanne: Well, I look forward to seeing what comes out of this because everything over the last several years that you have come up is has been at least interesting. Sometimes, I can apply it. Sometimes I can't, but it is all good.

If you are interested in Alistair's work, he has several published books, Crystal Clear is the most well-known. You'll find them if you search on Alistair Cockburn.

Alistair: A-L-I-S-T-A-I-R and the last name, which is pronounced, Coh-burn, is a Scottish name but its spelled C-O-C-K-B-U-R-N with a silent C-K.

Suzanne: Yes.

Alistair: So, Alistair Cockburn and my website alistair.cockburn.us.

Suzanne: Your blog is there. Lots of insightful articles, how-to stuff. Alistair is very generous with sharing his knowledge, books, et cetera. Soon, there will be a podcast.

Alistair: Yes, that's right, thank you.

Suzanne: We thank you for that. If you have more interest in the research that we are doing in Agile adoption and regulated settings, that work can be found at sei.cmu.edu/acquisitions/research.

This podcast is available on the SEI website at sei.cmu.edu/podcasts and on Carnegie Mellon University's iTunes U site. As always, if you have any questions, please don't hesitate to email us at info@sei.cmu.edu. Thank you for making time for us Alistair, and thank you for listening.

Alistair: Thank you.