



22-05-2024 SHIRLEY GREGOR – TRANSCRIPT

2 SPEAKERS

Sebastian Reiners
Shirley Gregor

Duration

26m 52s

START OF TRANSCRIPT

[00:00:02] Sebastian Reiners

Hello everyone, and welcome to another round of interviews in the Design Science Research Academy. Today I have the amazing opportunity of meeting Shirley Gregor, who is a professor emeritus at the Australian National University in Canberra. She has been named in a Stanford University study as being one of the top 2% of scientists worldwide for her career. So, I'm very, very excited for you to be here, Shirley. Do you maybe want to introduce yourself a bit?

[00:00:37] Shirley Gregor

Well, I've written various things at times about my career. In fact, they were kind enough when I retired to ask me to write something that was in JIS, which is called, no, in CAIS, it's called, Design Research Journey. So, if you want to read something about my life, look up Design Research Journey, Shirley Gregor. That's quite a personal account. It sort of points out that I started out in a very relaxed environment, living in North Queensland in a little tropical town. Tiny little town. Very, very small school. It's been a long journey, and I've gone through different careers, really. I was a software engineer, and then I was a housewife and mother for a while, and then I came back to, really, to teach at the university because I had children, and I wanted a job. I'm saying this because it can encourage some women who may end up in similar situations. So, I was working at the local university, and then I realized that if I was going to stay there, I needed to do some more studying. I started out, and my PhD was on AI. Sometimes I'm sort of halfway between computer science and IS, I think, which is quite a lot of our people. I did something on artificial intelligence and explanations, and that was my PhD thesis. But even then, because I'd been in industry, I sort of struggled with the idea that we were meant to do behavioral science research. Seems to be the predominant mode. And really, why couldn't we be doing design science work? And so that was sort of a theme, I think, through the rest of my work is that I was looking really to see how that work could be made respectable, because I could see how I mean, it's everybody knows it's really, important that we have sound design knowledge, isn't it?

[00:02:58] Sebastian Reiners

This? Yeah, absolutely.

[00:02:59] Shirley Gregor

It is. And it's not just computer science knowledge. It's knowledge of how systems work so that we don't get dreadful disasters all the time. So that really has been sort of an underlying theme. But I have continued to do behavioral science work as well, because I did psychology at the university as well as math. Even then, I was sort of in between. There wasn't any computer science when I went through university. I think there was something called numerical analysis. When I came back to academia, I was still sort of well-fitted to do behavioural-type work because I'm used to experiments, and that's not a bad thing because if you're having trouble getting design science work published, sometimes you can just go back to the testing part of it. And I think I've got one paper with Alexander Maedche and Jeff Parsons, where we look at design-oriented behavioral work. And that's the idea that, you know, you might sometimes have to decide: do I focus on the

building part or the artifact, or do I focus on its application in the world, and I might do some experiments, and sometimes that could in some sense be easier to get published. So that's probably me, in a nutshell.

[00:04:40] Sebastian Reiners

A long life and a very small nutshell for that. But yeah, thank you very much. Very interesting to see like how many lives you lived really. How many different persons you've been.

[00:04:51] Shirley Gregor

I've got a new one.

[00:04:53] Sebastian Reiners

Yes. Yeah, absolutely.

[00:04:58] Shirley Gregor

No, no, I do. I do; I've gone back now that I'm retired. I'm, well, we can talk about this later about projects I'm doing. But I was always interested in art. So now I've gone back to painting.

[00:05:11] Sebastian Reiners

Okay, I'm not so sure if I'm qualified for interviewing for Arts right now, but I'm qualified for doing interviews.

[00:05:19] Shirley Gregor

What would I be doing if I'm doing art nowadays and I've got a computer science background? What would I be looking at?

[00:05:28] Sebastian Reiners

Um, Pixel Arts?

[00:05:30] Shirley Gregor

Generative AI.

[00:05:32] Sebastian Reiners

Yes, I see that. I see that connection. But what you did while you were a researcher — or maybe you still are a researcher. But while you were doing research ten years ago, you wrote a paper, and this paper is called Positioning and Presenting Design Science Research for Maximum Impact. It was published in 2013 in the MISQ, and it's renowned as one of the leading papers in design science. It has over 4000 citations in Google Scholar. You basically go over the fact that there are current misunderstandings and gaps in the application of design science research concepts and methods. I want to talk about this paper with you today. First off, what was your first idea? How did you and your co-author come up with the paper? What was your reasoning?

[00:06:33] Shirley Gregor

Well, what happened was that I was at a workshop. I think it was a DESRIST workshop in St. Gallen in Switzerland, and I was talking to Alan Hevner. I just happened to mention the paper I'd written with David Jones on Design Science Theory. But when we published that, we had an appendix that had the outline of what a Design Science Theory should look like. The schema for writing a theory paper. And at the time, the editors for that paper said that we shouldn't include it because nobody needed that, because that was just sort of common sense. Alan and I were talking about this, and we thought it wasn't really common sense because we could still see people struggling to get their papers published. So, we thought we'd look at that a bit more and look more in detail at what you've actually got to do. It's the demonstrating part — to

demonstrate that you've got a design science contribution by writing it up. I think Al picked the title too, which was good, but that's what we were trying to do — trying to help people. And so, after we'd started, the idea came out: Well, what sort of contribution do you have? And that's where we got the idea of the quadrants. The two important parts of that that people have used are: one, the quadrants; you know, are you an improvement, an exaptation, or whatever. The other thing people seem to have used a lot, which we didn't expect, was the actual levels of knowledge. Saying that there was level one, which was implementation, and level two, which was products. They're not products. Concepts and constructs, or principles were there too. And then the higher level was the theory. I think people seem to have been using that quite a lot to say, I've got the artifact, I've got level one, but then I've gone on to level two because I've tried to pull out some design principles as well.

[00:08:52] Sebastian Reiners

So, would you say that the key idea of your paper was rather these quadrants, as opposed to the levels, or what was your idea, what you wanted to contribute?

[00:09:05] Shirley Gregor

I think it's both.

[00:09:07] Sebastian Reiners

Mhm.

[00:09:08] Shirley Gregor

But it really was trying to just help people better understand what a contribution would look like because we didn't have that at that point. So, we'd have, you know, the Hevner et al. paper, which explained what design science was, but it didn't really help people, I think, show how they could justify a contribution. What their contribution was.

[00:09:30] Sebastian Reiners

Okay. And if you now look back, I mean, it's been 11 years. I mean, the paper has been the making for longer, probably maybe 15 years. Even if you just came up with the idea. What is the main contribution that now looking back, that you are particularly proud of, that maybe shaped the field of design science research?

[00:09:56] Shirley Gregor

Well, again, I think it's just giving people some tool that they can use because it was an MISQ. They can say, well, MISQ. You know, this is our justification for what we're doing.

[00:10:15] Sebastian Reiners

Yeah, I do agree. I mean, it's good to justify that something that you've thought about is actually actionable and has been renowned by other researchers that this can be used as an artifact. Definitely a good contribution. I do agree wholeheartedly. Maybe looking back at this paper, this is something I come across when I look at my research, which is not as old as what you have done. But would you change something right now? If you could write it anew, if you could change something, would you write it differently today?

[00:10:54] Shirley Gregor

I don't know that we'd change it, but, I mean, things have evolved since then. There is actually a little mistake in it.

[00:11:04] Sebastian Reiners

Oh, okay. Do the editors know?

[00:11:09] Shirley Gregor

Well, it's probably not of interest to very many people, but I think we said that Habermas and Karl Popper's ontologies were very similar, and I thought they were. But there's some important differences, which I haven't realized until later. Their world theories. Their descriptions are a bit different. So that's something I'd put in a little bit. That is a very small thing. Probably hardly anyone's interested in that. The sorts of things we've expanded on, though, are the design principles. We wrote — you know, really, we've written more papers. So, I wrote another paper with Leona Chandra Kruse and Stefan Seidel. Now, Leona has been working on design principles in her PhD with Stefan. We thought that people still weren't sort of getting that enough, because that's what seemed to happen later: that people seem to focus more on the design principles as being the sort of usable part of knowledge that they could have as a contribution. Then I did another one with Alexander Maedche, where we ended up sort of decomposing. No, that was the paper with Leona and Stefan. But again, as you know, often design principles need to be decomposed. So, if you look at the example that's in the 2013 paper on a design principle, it's very, very general. It says, you know, in order to achieve something, use such and such a process. But, you know, really, you would need to have a sublevel there to say what the process was. So, you need to decompose the design principles down to lower levels.

[00:13:12] Sebastian Reiners

So being more explicit at times. Maybe that's the case.

[00:13:18] Shirley Gregor

I think it's just, again, giving people more scaffolding to build on, and people use them in different ways, of course. I mean, an interesting thing is that some people still try to deduce their design principles at the start before they build the artifact, and they put it in the front part of the paper. And then quite a few other people have that as their... Yeah, so you're sort of shaking your head a bit, but

[00:13:48] Sebastian Reiners

Mhm.

[00:13:48] Shirley Gregor

Quite a few others tend to put at the end, in the contribution section, what they think their design principles are.

[00:13:58] Sebastian Reiners

Yeah. Maybe it's about finding a level in between because you don't want to be too rigorous at the very beginning. And you still want to have this knowledge area available. It's a tough task to really do.

[00:14:13] Shirley Gregor

It is. Yeah.

[00:14:15] Sebastian Reiners

So, the Design Science Research Academy we're doing is about helping young researchers in particular, including myself, I guess, because it's tough to publish. Let's just leave it at that. Reviewers tend to be hard to satisfy at times. Looking back at maybe this paper, at other papers you have done, this paper in particular does give a contribution of how to publish, really. But what have been your experiences with publishing

design science research in the information systems domain? Can you give any recommendations to young researchers on how to publish?

[00:14:54] Shirley Gregor

Well, I mean, some of my recommendations would come from working with my PhDs or just helping people in workshops and so on. And there is one little hint that I think others have found useful at times: if you're going to build an artifact, try and think of an interesting name for it.

[00:15:19] Sebastian Reiners

Mhm.

[00:15:20] Shirley Gregor

So don't call it my data mining algorithm. That could be anything, couldn't it? So, try and think of a name for your artifact that actually sums up what the contribution is in that artifact. What makes that artifact distinct?

[00:15:39] Sebastian Reiners

So you're saying kind of a marketing term? You want to market it; you want to sell it?

[00:15:44] Shirley Gregor

No, no, it's just that, I think, when we do the work ourselves, we get it so bound up in it ourselves that we think, well, it's our data mining tool, you know, and we understand what it is. But then, if you're going to describe that in a paper to someone, what is it about your data mining tool that makes it different from other people's or what is actually the contribution? And just before we started, I had a little look. And so, there's a paper in MISQ, which is a I haven't read the whole paper, but in 2022, Sudha Ram is the last author, but they produce an artifact, which is about explanations. That's how I came across it because I still look up things on explanations. It's a machine-learning tool. It's a tool to look at explanations in machine learning. And so, they've given it the name ROLEX, which stands for RObust Local EXplanations. So, you can see what they're claiming, and then they can say that, you know, our tool is better than it outperforms other tools on such and such. But you can see the argument?

[00:17:02] Sebastian Reiners

I see that. Yeah, it's recognizable.

[00:17:06] Shirley Gregor

It's recognizable. Yeah, and that's it. If you can get a recognizable name, like a relational database, we understand what that means, don't we? It instantly gives you that idea. So, if it's a distinctive artifact that's different from what other people have, you should be able to have a distinctive name.

[00:17:30] Sebastian Reiners

Yeah, okay. That's a very good point of producing the publication. Is there anything during the design process that you came across when working with co-authors that is particularly hard in design science research that could help other researchers?

[00:17:50] Shirley Gregor

Well, it's all hard. I mean, the thing I look at mostly when I do reviews or I'm an editor, I think one of the things is that it the projects are usually big.

[00:18:04] Sebastian Reiners

Yeah.

[00:18:05] Shirley Gregor

And that's especially the case, I think, for the ones from Europe. So for the big projects you've got, there might be one person working on a team. It's hard to break off the bits. And they go on for years, some of them. And it's hard to get the bits that are publishable because you can't fit them all into one paper. As I said, I think I said before, you've got to sometimes make a decision. Do you focus on the actual artifact, and then the people will say, Well, you haven't tested it properly. And if you go too much into the testing, then they'll start to look for a full-blown behavioral science experimental setup. And sometimes, for our people, it's hard for them to do that properly. And anyway, it's like another whole project. It doesn't seem fair. Why have we got to build the thing first, but put all the effort into building it, and then have to go and put all the effort into the testing, whereas someone, a behavioural science person, would just do the testing, you know, do experiments, and say this feature is better than that feature. I just think it's a maybe experience. I think we might need to rely on your mentors and supervisors.

[00:19:27] Sebastian Reiners

Yeah.

[00:19:30] Shirley Gregor

One other thing we found, though, is that sometimes if there is a big project, it can be helpful to have part of it where you do some traditional behavioral science work, like a survey. Even before you start so you might have some data that you can publish separately from the big project.

[00:19:59] Sebastian Reiners

Yeah, researching is hard, and design science research is hard as well. And it's tough to find an angle, really. That's something a lot of my interview guests have said: it's about experience and finding good co-authors who can help you with the guidance, and it's just about starting at some point, maybe just finding the starting point.

[00:20:24] Shirley Gregor

Well, the other thing is, though, that to make a really innovative artifact, you do have to be clever. So again, I haven't read that paper by Sudha Ram, but if you know how to actually come up with a new algorithm for finding explanations, she's probably got some pretty heavy computer science people on that team.

[00:20:46] Sebastian Reiners

You got to be clever for that. Yeah. I see that.

[00:20:52] Shirley Gregor

Yes. So anyway, I mean, we don't want to put people off, though, or make it look too difficult because, again, I did send you a paper just before I started about experiences. And in that, I refer to quite a few surveys that people have done. Some of them are European people, and they've done systematic reviews of how much design science research is getting published. And I think it's promising. Some of the tables in that show that there has been an increase over the years.

[00:21:26] Sebastian Reiners

Maybe just for the record, the paper Shirley has been talking about is Reflections on the Practice of Design Science and Information Systems. Which we will hand to the interview as well, just for everyone to know what paper we're talking about. Maybe to kind of finish it up and put an end to this topic. If you look at the design science field in general, do you desire anything that we could change as researchers in the field? Any recommendations for other researchers? How should or could the field progress in the future?

[00:22:16] Shirley Gregor

That's hard, isn't it? I mean, I think we're slowly working towards it, just getting it more accepted and getting more people onto editorial boards who understand design science research. So MISQ now has Jan Recker as a senior editor and Alexander Maedche as an associate editor. I'm sure there's more, but I just happen to know those people, so I know that they're there. You're doing well with journals like these. Which does publish design science work. But with the other journals, I think JAIS and EJIS have the highest percentages of design science work, followed by JMIS and then MISQ. That's in that paper I sent you anyway. But that's the thing. I mean, I know that when Andrew Burton-Jones was at MISQ, he was very actively looking to get more design science researchers on the editorial board and to get people to submit their papers. So that's how we, AI and I, got that paper published, the one you've asked me about the 2013 one, because Detmar Straub was very supportive. So, it's getting an editor who can recognize that there is some value in this work. So sometimes that's partly when you submit the paper, trying to find an editor who will understand design science research.

[00:24:01] Sebastian Reiners

So, it's about hoping you will get the correct reviews and editors, which has always been the case in publishing. It's hard: I get that. So maybe as a question that is not in the script, at least because I did not know that. Is there any connection between art and design science that you have found in your recent month?

[00:24:31] Shirley Gregor

Well, since I retired or became semi-retired, I've gone back to practicing art, which I have been trying very hard to improve. I do sell some paintings, so that's good, but it's a great occupation. But just recently I started looking at AI-supported art, and many of the sorts of questions that come up with that are similar. What would come up with generative AI with things like ChatGPT? Especially things to do with ethics. But I think I haven't gotten far enough into it yet, but I think there's some potential to look at the creativity aspect, because how I'm using the tool is not just to produce pictures, which is what a graphic designer would do, but I'm using it to give me ideas. So, it's sort of an ideation process. It'd be the same if I looked at 100 YouTube videos or 100 galleries, but they're all there, collected up for me. And I look at them, and then I go away and do my own painting. But I could also see that I think people are using this type of tool. So industrial designers could be using it in that idea stage. So possibly in software engineering as well.

[00:26:06] Sebastian Reiners

Yeah. As inspiration.

[00:26:09] Shirley Gregor

Inspiration. Yeah. So, I haven't gotten far enough into it yet to see how that could work, and I must admit, I'm just learning about using these tools. The learning curve is pretty steep, so I wouldn't like to make any big pronouncements at this point.

[00:26:30] Sebastian Reiners

I mean, we're also learning, and it's amazing where technology takes us and what new types of collaboration we might find along the way, which is kind of cool.

[00:26:39] Shirley Gregor

Yes, it is.

[00:26:41] Sebastian Reiners

All right. Shirley, thank you so much for the interview. Thank you for answering all these questions. I will now stop the recording.

END OF TRANSCRIPT