

Steering Change in a Whitewater World: Working with Wicked Problems

Questions & Answers

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Introduction

On August 18th and September 3rd, 2020, John Seely Brown (JSB) and Ann Pendleton-Jullian (APJ) participated in two 90-minute webinars hosted by the Institute for the Future in which they presented several key concepts and techniques from *Design Unbound* (MIT Press, 2018).

The first webinar began with a description by JSB of the “whitewater world” of rapid, continuous change, hyper-connectivity, and radical entanglement in which we now operate. APJ then presented “world building” as a means for creating a potential future environment that can serve as a platform for transformation. The second webinar introduced the concept of the “pragmatic imagination” that combines creative speculation with analytical thought to provide the “sensebreaking” that can help to generate truly novel solutions to seemingly intractable problems. The webinar concluded with the case study of a year-long design initiative with the Association of Research Libraries (ARL) to reimagine the role of research libraries in an academic world that has been profoundly disrupted by networks and digital technology.

Although both webinars provided time JSB and APJ to respond to questions from the audience, there was not enough time for them to answer all of the questions that had been submitted. After receiving copies of these additional questions, JSB and APJ got together and provided answers. Below is a lightly edited transcript of their responses.

Question 1: Did you notice patterns to building well-functioning coalitions? How do you keep momentum to ensure that results are acted on?

APJ:

I'm going to assume that that's two separate questions.

In terms of building coalitions, there's a difference between what is needed for doing the design work and then what is needed to put the results of that work into action.

In a key collaborative activity that was part of the regional design workshops in the first phase of the ARL project¹ (“Conversations with Pens” in which participants in groups of five were equipped with different colored pens and were encouraged to draw on the wall as they shared stories with each other), we focused on making sure that the coalitions were not overly engineered. The makeup of the groups was not overly engineered in terms of talent or diversity or disposition or anything else. The critical thing was making sure that everyone talked.

You don't want violent discussions, but you want to manage discord such that it's productive and does not lead to either bad feelings or work that goes nowhere. We deliberately chose not to use sticky notes, which allow for just one idea per note, and not to overly orchestrate a linear procedure. We wanted to avoid a situation that constrains what one comes up with, where

there's no room to actually be different. The keys were the five colors [of pens] and providing enough real estate for drawing on the wall that group members could easily break off and do something on their own.

And after the work is produced by the small groups, that is not the end of it. In fact, the work is really fuel for a much richer conversation. Let's say there are five or six teams. So as we go around the room, each one will report out, and then they'll be discussion by everyone in the room. That discussion gets longer as it goes on, and we're able to reference things that were said earlier and things that are on the wall that were talked about earlier. In the end, there is a knitting together of these separate conversations.

JSB:

We're talking about something as different as a bicycle is from a Ferrari. I'm struck by several things.

Having five different colors for the pens for writing on the wall turned out to be infinitely more important than I ever thought. After being in several of these sessions, I began to realize, "My God. That really helped, especially if you went back and looked at things later."

A key point that goes back to well-functioning teams or well-functioning coalitions is that the coalitions that formed did have quite different ideas, did break apart, did move to the left slightly, started sketching their own sub-drawings, often with one other person or a few people – which is a brilliant move to simultaneously engage multiple points of view of one group. There was also a considerable amount of looking over one's shoulder at what was happening. A group would break off and pretend to be completely independent. Yet by the time a half an hour went by, Group A was looking over their shoulders to another team and vice versa.

You were exploiting peripheral vision, totally non-threatening, which then invited in a non-confrontive way the ability to appropriate, build on, and see if the other subgroup liked it. It struck me that this strategy was infinitely more powerful than I first expected.

The other point that I would emphasize is that after everything was done, after all the writings were captured and taken home, you then worked to find deeper patterns that may not have been immediately obvious and/or anomalies that may show up as deep structure patterns. This after-the-fact analysis often turned out to be surprisingly powerful. You managed to do it in a way that when you would come back, the teams felt that it was theirs.

APJ:

That also happens when we're having a discussion around the room immediately after the work is done. We would leave at least 45 minutes for that, because patterns emerge in that discussion. Another team would say, "Yeah. We were actually saying the same thing. We didn't use those words. We used these words."

There is a lot of self-reflection that happens in the process of going around the room. It's not assessment. It's a conversation. The great thing about that is that they are doing their own critical analysis, and then ownership becomes, not just team against team, but group ownership, just like the conversation with pens means that the whole room has ownership of the body of work. It doesn't mean that everyone agrees, but there is no feeling that there might be something secret happening behind the scenes, and somebody's idea will be better than someone else's. There's a conversation, which I think is critical.

JSB:

The feeling that there's a conspiracy behind the scenes is what often happens in corporate settings.

APJ:

Yes. In many corporate settings, it's a matter of "We've got all our yellow stickies. Let's group them. Let's vote. Let's collate. Let's coalesce." But in doing that, you get rid of the detail and the detail is really important. That is way of creating a democratic process, but it's a process that becomes, in my mind, anemic, as opposed to a democratic process that captures the richness of the texture.

You also brought up the notion of peripheral vision. The important fact is that there's so much real estate [on the walls], you're actually covering the whole room. One team will be looking at another team. One team or one person might go get some water and as they go, they peruse the room. You're not constrained to an easel, where one page gets done and you flip it. Rather, you're always seeing everything out in the space and even just this really healthy competition.

Sometimes in these workshops, there might be one team that would be thinking, and then they would put something down and then think some more. Then there'd be another team that was literally conversing with pens. Others would look over and they'd go, "Oh boy. They have all this work done and we're not doing anything yet." This ability for everyone to see what others were doing promoted a healthy competition.

JSB:

The feeling of everything being constructive with peripheral vision at work struck me as being amazingly powerful. I don't see this in the more classical approaches to collaboration

APJ:

Let's go to the second half of this question: How do you keep momentum to ensure results are acted on? This is really a great question.

In the ARL project, the momentum was not evenly distributed. There was some politics within the organization that created a situation where the executive director was asked to step down. It wasn't because of his process. It was because of other politics inside of the organization related to the governing board.

When you've built a system of action, you're trying to work off of things that are already started, where scaffolding them or getting some money or doing something actually scales their capacity to make change. Sometimes it's orchestrating and putting different groups together, sometimes it's adding new things.

It's like the notion of a leader as a gardener. Tending a garden takes care. Some trees are already growing and they're past their vulnerable stage, and so they will keep growing on their own. Others have to be tended until they've reached a certain maturity, while other trees need to be planted.

The beautiful thing is that when you've got 400 people involved, they're all doing something already. You're trying to play off the momentum and work with it and to start new things and build it to a certain degree.

JSB:

That's a nice challenge for the leader. Most in the corporate world don't think about gardening as a leadership model.

APJ:

It's so much more fulfilling to be the gardener. You don't have to do all the work yourself, especially when you can find the people who are passionate about what they do and good at what they do, even if they've just started doing it.

I had two staff people at the Knowlton School of Architecture (OSU) who were beginning to digitize the slide library but who had the desire to really become tech savvy. I started sending them to all sorts of symposia and had them begin to network. Not only did they take off, but MIT stole them away.

People were like, "How could you... Look what you did." I said, "That's great for them. This is great. We'll get somebody else and we'll do it again." I think it's much more fulfilling too. It's horrible being behind someone with a whip trying to get them to move. It's much better when they're doing what they do best and they're already running. You just have to keep up with them.

Question 2: Can we franchise Wicked Problems Studios?

JSB

I think franchising Wicked Problem Studios is harder than it first appears, because it requires A) listening; B) firing up the imagination; and C) knowing how to probe things in action.

For starters: How do you discover the entanglements that underlie a wicked problem? How do you probe a problem and see how it is apt to respond? How do you even figure out what the boundaries of a wicked problem really are? The ability to build a causal influence diagram of underlying structures requires a phenomenal amount of finesse.

This is where the right kind of critique becomes critical. A wicked problem is the furthest thing from something that will yield to a reductionist, mechanistic approach. And yet almost every attempt to approach the wicked problem is based on an existing toolkit and a certain notion of how to tear apart a problem to see its inner components in terms of gears in a mechanistic system. So much of our past training has a reductionist, mechanistic causality built into it.

Our new approach is counterintuitive without some moderately serious coaching.

APJ:

Well, I think that's the word – coaching. The Wicked Problem Studios (at the Pardee Graduate School at RAND) are not courses, they're studios. They are based on architecture studios, which are already dealing with multi-disciplinary problems. Architecture is a cultural pursuit, but it's got a lot of technology associated with it. It's got technology related to the environment. It's got technology related to materials, to processes, and operations. It's also got cultural, political and economic aspects.

We've based this new practice on studios that are already by nature multidisciplinary. In other words, it's based on a practice that's been existence for years, for centuries.

If you take the idea of it as a practice, architecture studios can scale. I was mentored into the practice, and after a certain amount of time, I was able to teach it. The question is how do you reduce the amount of time it takes to be mentored or coached into that practice?

Wicked Problem Studios require learning to use certain tools that should be easy to scale: The causal inference diagrams, network analysis, world building. There is a taxonomy of tools that you don't use linearly or even use all at once. You reach into your tool bag for what you need for a particular problem, depending on how complicated or complex it is. The tool set, which we keep adding to, is knowable, doable, franchisable.

I believe that mentoring people into the practice is also scalable, but it takes thought about how to actually do it. At RAND, I'm co-teaching with people to build capacity, but for each person

that turns out to be able to do it, there are four who aren't, which is mostly a matter of disposition. The hard thing is to find those who are dispositionally primed to negotiate a fine line between experimenting, interrogating, doing things that work off of what you already know, and the other side of that line, which is "I don't know exactly what I'm doing and that's okay."

It's learning to function in this zone of white water, that's more difficult than the water you've been in, and not just for the person leading the studio, but for the students who often come from a position of "I can only do what I know or what you tell me to do," and help them enter into the rapids and quickly get up to speed.

Most of the students in the first-year architecture studios that I have taught were coming from excelling at everything. I was telling them that they have permission to not know what they're doing. In fact, if they know what they're doing, then they're just working off of what they already know and they're never going to break out of the box. If they won't get into the water, you have to push them in, metaphorically.

JSB:

Or not.

APJ:

Or not. So it's that ability to understand that edge and know how to bring other people along. I will be having a conversation with a student about their project, and I can see them get more and more tense. When I see someone drawing back, I'll say, "I can see that you're not comfortable with this. Talk to me, tell me where the problem lies."

I'm thinking of one student last year where I had to say, "I know this is out of your comfort zone. I know that you don't have experience with things that aren't quantitative, let alone aren't clear, but what matters is you're learning to get to a greater degree of comfort, because then you are going to be able to work more out of the box than you have in the past."

There's always a moment in a studio where students spent, I don't know, six sessions, feeling like they are just spinning their wheels going down different pathways that have not lead anywhere. They haven't resolved anything.

Then there's an epiphany moment where the mind begins to pull everything together. It's not prioritizing. It's saying, "I started these six paths of inquiry and now I can see that four of them are coming together." It's that kind of an aha moment, and how do you orchestrate those epiphanies.

Architecture has been going on for centuries so there's no lack of people who have been mentored into this practice. Here, we're starting a new practice so we have to begin to build it.

JSB:

Architecture as a practice versus this is a nice example, because how you have an existing practice is well understood by many people. But how do you bring somebody new here, when virtually no one has a practice?

APJ:

Last year I had three (established RAND) researchers taking the studio, who were just being students with the graduate students in the studio, because that's how you start. You start by doing it yourself, and then you begin to move through the system. I won't say it was fully successful. One of them dove in and was just eating it up. The other two were like, "I'm a researcher." One of them was, "Okay. I'll just pop in now and then to see what people are doing because I know how projects work."

JSB:

It goes back to the need for a certain dispositional stance that's really critical.

APJ:

You need to create a gateway or threshold moment where people are asked to throw away what they know. At the Institute of Architecture, at the Catholic University of Valparaiso, which I have written about,² the professors took the students out in the boat and told them to throw all their IDs overboard so they could be reborn. Or having a boot camp, not just a pre-class orientation program, but a real boot camp where you're forcing people to understand that what they know is just a very small corner of the world. You show them how big the world is and go from there.

I think it can be done. I'm going to say, "Yes, we can franchise Wicked Problem Studios." I'm going to say, "I know about 60% of how to do that." I suspect that I know how to do the rest of it, but I haven't don't it yet. We know where the problems are, so yes.

JSB:

Oh I think there's no question that you can do this. The real question is how do other people start picking this up?

APJ:

But that's what I'm saying. I think we can franchise it. I don't think they can "pick it up." They have to be mentored and coached into it.

JSB:

Right. And mentored into something that itself is evolving.

Question3: Why does the complex adaptive system (CAS) crowd dismiss the value of vision to catalyze change?

APJ:

I love this question. There are absolutely some in the Complex Adaptive System space who dismiss the value of visions to catalyze change. In fact, when I started trying to understand what people meant when they talked about theories of change or decisionmaking under uncertainty, I realized that no one knew what the delta was. In other words, what are we creating change for and towards?

A theory of change is a way to get you from A to B, it's a way to create assessments and mile posts and all that stuff to get from A to B, but there's usually just one paragraph or a page about what B is. B is what the community tells you they want, right? Which is definitely a way to do it, but this is mostly a problem solving mentality: Here's what's wrong with whatever now. My house is getting flooded. I don't want it to get flooded. My whatever the situation is. It's a kind of incrementalism: Here's a problem in my life I want to solve. The real value of vision is that it's not about "here's a problem that I want to solve."

Of course, there are real problems of this type and I'm going to honor them, and solving them is really important. But if you relax the constraints, you can ask someone what living in a better community 15 or 20 years in the future would look like, or what a better state of the problem of homelessness would look like. Or, in the case of RAND's graduate school: If you started a new school of public policy to be built in 2030, what would it look like?

As a designer, the first thing I'm going to ask is, "What's the context I'm designing for? What does 2030 look like?"

Vision is everything. What you're really going after is not a default future but a desirable future. So many people who look at theories of change and the complex adaptive system crowd assume that the trends that are happening now will continue as they are and that you just want to pick the better trends to work with and get there. If we're not working toward something that's desirable and are just troubleshooting or incremental problem solving, why do all that work?

This really worked with our design studio that took on the problem of homelessness. The conventional approach was to say "Okay, we need to provide housing. We need to create a system of housing." But if instead you say, "In 15 years, if you're a college student and you say what's important is to be a full participant in college life, that's not just housing." That's a vision as opposed to framing the problem as "we need to provide housing for people who don't have housing," because you're forgetting all of the other world of problems.

Without a vision, you can't construct the world. And most problems while they seem like they don't implicate a whole world, they really do. I think it's really, really important. A lot of the view that you don't need to build a vision can be attributed to people who also believe that you go for the critical priorities, and then most other things are externalities or will work themselves out.

You can't construct a world or a new state without a vision of what makes that different than today. Why it won't just be the same as it is today.

JSB:

A lot of texture has to go into constructing that vision.

APJ:

A vision has to be large enough, abstract enough, but specific enough that it can help you sort through your assumptions, sort through the problems, articulate your values. Most visions are laden with values. If you're not working out of values, then you really are just problem solving around things.

JSB:

It also could be the case that if you are really understand how to play with complex adaptive systems, you're really thinking about how you work with the context. You change the propensities of the context so it steers things in a certain direction. That's a whole different approach than most people would think about using.

APJ:

You can't create change unless you can tap into the motivations of everyone who's implicated by that change. Motivations are fundamental and they're big and most people can only articulate some of their motivations. Some of them are defaults coming from their histories.

You can't get people to move without motivations being tapped into and you can't do that without a vision. You can't just do it just by problem solving.

Question 4. I would appreciate your thoughts on "imagination" per the opening discussion. In particular, as I have moved into my "elderhood" years and continued working in pro bono areas, I find myself "waking up" in the middle of the night with very new innovative thoughts about problems I have been addressing. Is this "imagination" at work in the mind?

JSB:

This question nails one of the kinds of imagination that plays out in the cognitive spectrum having to do with experimental. The catch here is that imagination becomes so powerful when you're sleeping, but unless you build up serious cognitive equity in the problem, these flashes don't do much.

But if you build cognitive equity, lo and behold, the default network of the mind along with the imagination can pull together images that get combined in a way that honors the depth of the equity you have built, so that suddenly a flash happens and the right image pops up.

APJ:

Or you put them together in a different way. Maybe we need to talk about what we mean by cognitive equity. It's the idea that when it seems like you're not making progress in a problem space, all of the pathways you go down and the things that you wrestle with that don't resolve themselves are still part of you finding the boundaries of the problem, finding the possibilities in the problem.

Cognitive equity is this building up of work, reasoning, non-reasoning, imaginative work before it actually resolves itself and structures itself. It's like a child in a sandbox playing with different tools or different forms or whatever, and then there's a point at which the right tool hits the right form, and something clicks.

What's interesting in this question about "elderhood years," is I don't know if it's elderhood. I think what happens, because if indeed the imagination is the banking of experiences or images, auditory, visual, even body images. If you're banking images, then, as Damasio says, you are working on them even as those images are being assimilated; they filter through the other images you already have. They're being by changed by the way you've closed other gaps. They never stay the same.

I don't know what older means. Let's not put it physical body years, but in terms of cognitive energy years. I think a bunch of things are happening. You've got more images to come together. You've got reasoning skills, reflective skills, you've got the ability to sort better as well. For me, I'm doing more things, there's more noise in my day, but in terms of that covert energy of the mind, I find that it actually has less noise than before, because whatever it is with my brain, some stuff it just takes in, it goes, "That's easy. That's easy. Put it here. Put it there. That's easy."

The brain is calmer or able to do to do more. It may be that if the noise goes away, you're able to pay more attention to the images in your mind. I think it's both having more to work on and the skill of putting images together.

I remember when my late husband and I went on our first trip to France together. I was 30 years old, and he was 24 years older than me. I was taking all of these pictures, and he kept asking me, "Why don't you be selective?" He was really irate that I was taking all these pictures. The only difference was age. At his age, he'd seen certain things one hundred times. He had already sorted through and kept and worked on images were already there. That's part of the development of the adult mind.

The other thing he used to say, "It's a horrible thing as he got older and older that you we can't download our brains. We spend our entire lives building a more sophisticated and more elegant

and more simple and more valuable kind of brain, mind experiences, critical reasoning, and then we die and we can't download it."

JSB:

That puts a lot more texture into the notion of elderhood. Most models of getting older assume that the combinatorial capability of your brain is decreasing as opposed to saying, "No. No. You build up a richer and richer cache of images" that can get composed subconsciously in very, very powerful ways that can become evocative powerfully when the right context gets evoked through the cognitive equity we were talking about a moment ago.

APJ:

Right. The noise is gone because one is doing potentially less of those nasty things one has to do—the administrative functions in the brain.

JSB:

It's also interesting graduate level work in theoretical mathematics often involves a rich interplay between trying to prove a given hypothesis and trying to find the counter examples to that hypothesis. You get a phenomenal interplay and a lot of the attempts to construct the counter examples, which are almost always 'visual' in some higher dimensional space, becomes a powerful part of the cognitive equity.

APJ:

It can also be useful to look at the social practices and the ideas of elderhood of the first nations and indigenous people, especially as we begin to expand our understanding that the world is not just a thing we use, but actually an active agent in the whole system.

Having worked with some first nations, the elders often have ideas and come up with things that seem more imaginative, more groundbreaking, more out of the box, more lateral thinking than people who are younger. It's not just that as you get older, you've gotten better at critical thinking. I think you actually have a capacity to let go of some stuff and find those lateral connections, those peripheral ways to think, to put bizarre things together and not immediately dismiss them, but actually say, "Those bizarre things I just put together, why did I do it and what could it mean and how could it be useful?"

JSB:

The second component of that is breaking down the false dualism between mind and body, mind and world, which the first nations also understand better than we do. Thinking is not just internal to the mind, but it's integral to the practice of working with the world. It's stunning that education looks at knowledge as a thing to be put in the brain rather than as an interaction with a problem situated in the world, and how rich that can be.

APJ:

We talk about the imagination as a muscle, the idea that you don't let it atrophy, the idea that you use it over and over again. As the body ages or goes through different stages, the mind also goes through different stages. It's not a question of the weakening of that muscle, it's a question of changing the fibrous structure of that muscle.

The worst thing in terms of elderhood is when people give up, when someone reaches the point where they say, "I've done what I have to do in life. I've succeeded some things and failed at other things and jobs done." It's a kind of giving up on the future.

It isn't just a state of elderhood, it's also a dispositional state. I think that as we go through life, it's critical not to retreat into believing that "as I age it gets worse."

JSB:3

The irony here is that as one gets older one thinks that one's mental capacities are decreasing, yet the reason we bring in imagination as a muscle is that, in fact, the cache of images that you have becomes a richer basis for the mind to work on.

Question 5: Is it a contradiction to look at case studies (the past) to understand the future?

APJ:

Is it a contradiction to look at the past to understand the future? Absolutely not. We don't experience the future, and we don't experience the past. We live the present, and the past is something that we've already operated on with our imagination, by our reasoning, in all sorts of ways. And the future is something that we might envision based upon the past.

The important thing about using case studies is how you do it. At RAND, I'm always saying, "It's not a case study, it's a precedent." The difference being a case study is often used as something that you are going to repeat whole. When we look at precedents, it's to get inside of it, to unpack how we did it. Case studies you tend to look at from the outside, but with precedents, you can get inside of them, figure out how they worked.

For example, in our analysis of the transformation of Special Operations in Iraq and Afghanistan by General Stanley McChrystal:³ We tried to understand, How was Stan thinking? What was he thinking? When was he thinking? Then, one can ask, "Okay. How is that like and unlike my problem?" It's not just what Stan did. It's the ability to get inside whatever was happening. The kind of unpacking what he did, pulling out the mechanisms that he used.

It's not something Stan saw at the time or had reflected on himself or could articulate. But as he said, "It's all there."

Someone asked General McChrystal, "How did you know to use these mechanisms that Ann has been talking about?" He said, "I didn't. We just did it in action and if it worked, we did more of it. If it didn't work but needed something to scaffold it, we did that as well."

I could look at what he did as an ecology and figure out the interactions that were necessary. Case studies don't do that. They tend to present you with a history, and then say, "Here, apply this somewhere else."

I told Stan that I liked his first book, *My Share of the Task* (2012), the best. It's just him talking about what he did. It's not overly structured. Then he did a second book with a ghost writer, *Team of Teams* (2015), that adopted the language of organizational theory. But it wasn't the same. They created a case study, looked at it from the outside as opposed just describing how did what he did. He laughs, because he says, no one reads that first book. But to me, it's the only one that I feel is worth reading. The others are actually very good within the realm of organizational theory, but they are much more like other books on organizational theory.

JSB:

You have a very rich notion of how you use precedents, which is more than just using case studies. It's basically, how do you look at how operation X runs. It becomes an interesting precedent, not because you copy it, but because what it brings up in terms of how you look at it, how it fires up your imagination.

APJ:

To go back to your term of *context*: You want to ask, how did that precedent work in that context? How was that context like my context? How is it different than my context? How is the org structure? How are all the conditions like and unlike mine? But always with a deep understanding of why it worked and didn't.

Question 6: How to become a futurist?

APJ

This goes back to being able to see things that no one else can see with that quote we use all the time about not being tied to the tyranny of the present, not being tied to the tyranny of the possible, but to expand and widen your aperture way beyond what you see now, way beyond trends. The only way to be a good futurist is to understand that working for desirable futures is really, really important.

JSB:

It's not just a question of extrapolating.

APJ:

I was at my daughter's graduation at Princeton and the speaker said, "You can have three attitudes towards the future. First, you can figure that the way it's unfolding is the way it'll continue and as a futurist, you would figure out what was happening, and hedge so you might be in the right place."

The second is to figure out how it's unfolding and hedge forward so that you might do better in that situation." But the third one is to realize that we are constructing the future with every decision we make, every store you, every store that we buy from, every piece of social media we create, every vote, Some moves are bigger than other things, but we are constructing our future with every action taken."

APJ:

Good questions. Thank you, everybody.

JSB:

Thank you.

¹ For a detailed description of the ARL project, see *Strategic Thinking and Design Initiative: Extended and Updated Report*, Association of Research Libraries, 2016, <https://www.arl.org/wp-content/uploads/2016/06/arl-strategic-thinking-and-design-initiative-extended-and-updated-report-june2016.pdf>

² Ann Pendleton-Jullian, *The Road that is Not a Road and the Open City, Ritoque, Chile*, The Graham Foundation/MIT Series in Contemporary Architectural Discourse, Cambridge, MA, 1996.

³ For a description and analysis of General McChrystal's transformation of Special Operations, see Ann Pendleton-Jullian and John Seely Brown, *The Change Triangle 3.0*, pages 75-139, <https://www.desunbound.com/chapter/chapter-17>.