The Risk Calculus

Game Plan

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Host: Andrew Reddie
Guest: Ellie Bartels
Series: Shall We Play A Game?

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Ellie Bartels
You know, the whole point of games is that they are way to get at the squishy-ness that's going on inside people's heads. The question then becomes, how do we elicit that from people? How do we pull it out of their head and get it into something that you and I as observers can see.

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Andrew Reddie
Hello and welcome to the Risk Calculus, a podcast from UC Berkeley's Risk and Security Lab.

I'm Andrew Reddie, the lab's founder and your host for this series on wargaming. In the last episode, we discussed some of the past applications of wargaming methods.

Today we're gonna be talking about game design and what it takes to build and run a war game in one of the world's leading experts on game design. Specifically, we ask what are the basic elements of a war game? What kinds of choices do game architects have to make? And what are the implications of these choices?

[MUSIC PLAYING]

Andrew Reddie

My guest today is Dr Ellie Bartels, the co-director of RAND's Center for Gaming and a policy researcher focused on defense issues.

Welcome Ellie. As we get started, just given your background in the field, I'm wondering if we could speak through, kind of, what from your perspective are the basic elements of a war game?

Ellie Bartels

Sure, yeah. So I tend to think of a wargame as having sort of three constituent parts. But maybe let me back up quickly and start by saying what I define as a wargame because there's lots of different terminology out in the field and can be kind of confusingly overlapping.

So when I talk about a game, I talk about an event in which human players are asked to make decisions in a contested environment and then experience the consequences of those decisions. And so what I think of as the three elements of a game design are really embedded within that definition.

So on one hand, you have the actors who are making decisions and in particular, the human beings who you're actually asking to take on those roles. And so that's really important because it distinguishes games from things like workshops or seminars in which we have experts come together and offer their opinions about what might happen and questions that are maybe similar to the types of questions we ask of a wargame. But we're not asking them to take on the type of role that we do when we're playing a policy game.

The second piece is really that contested environment, right, and so in a classic war game, we think about, you know, a battle or a war, but we actually use games in a lot broader space and so I like to think about contestation. That can be bureaucratic friction between different elements of the same government, that can be between, you know, in nondefense spaces between like the residents of a city and a city planner and the real estate developers, right. Any time that you've got a policy space where there are different issues that people feel have different values and different preferences on, that's really encapsulated in the environment of the game.

And then the third piece is really the living with the consequences of their decisions. And so that's really the roles and the process of adjudication that we have that determine what actions

people can take and what impact those actions have on the other players and on the game environment.

And so when we put those pieces together, we end up with a system that has on one hand, the actors who have a particular set of preferences, goals, objectives, we have the environment that they're trying to shape and move, that presents the policy problem of interest. And then we have the roles, adjudication that govern how those actors can influence one another and the policy space itself.

Andrew Reddie
Perfect, that's great.

And so obviously, as you're kind of thinking about game design, there's all sorts of decisions that you have to make, right regarding medium and the format of the game and you know how you wanted to have adjudication occur. I'm just wondering if you can kind of speak to the variety of different choices that you have to make as you're kind of making those game design decisions.

Ellie Bartels
Yeah. So the first place I start with is really trying to think about what type of game am I running? And so there's a couple of sort of big framing ideas I use when I think about that.

So the first is, is this a game for research and analysis or is this a game for communication and education? And the big distinction there is whether this is a game where I'm hoping to learn information from the players, I'm trying to pull information out of them to be able to generate new understanding or is this a game that I'm trying to communicate my understanding of a problem to the players through the experience of going through the game?

You know, is this a game where I have a clear understanding of how this problem works and what I think the sort of important parts of the system are? That's gonna lead me towards a game that is probably more structured, maybe a little bit more of that kind of classic rigid rule set.

Versus do I have a game where I'm interested in trying to pull information out of the players? And there I want more flexibility because in part, what I'm trying to do is say, I don't understand the full dynamics of this system well enough to think I'm able to completely represent it in a game. So I wanna leave space in my game design for players to be able to tell me their understanding of the system and be able to impact that themselves.

And so that tends to lead to looser designs where there's more space for that player input. The next kind of big decision that I'm gonna make is really about sort of who the audience of the game is and like what the type of problem I'm interested in exploring is.

And you know, my work, I'm mostly working on the research and analysis side of the spectrum. And so in that space, I really tend to think about games as either being about really trying to explore the structure of the policy problem or being about kind of experimenting with different potential solutions.

And then I think a little bit about who the audience for the game is. Is this really about the game design team learning? And maybe, you know, sort of the immediate people who are involved in the game directly as players or indirectly as like the sponsors and observers of the game. Or is this a game where I'm hoping to be able to take the data I'm collecting from the game and persuade people who weren't in the game themselves that the evidence I've collected is sort of valuable for decision making purposes.

Again, that's sort of a question that has to do with the maturity of the research problem, right. Am I in that early kind of soaking and poking stage of research or have I actually kind of coalesced in having strong hypotheses that I'm in the process of doing testing on.

And so what that sort of sets up is a, a sort of classic two by two kind of framework where we can think about problems where, games where we're interested in exploring a problem space for internal audiences. And I tend to think about those as system exploration, I'm trying to figure out what the component parts of a policy problem are and how they interact with each other.

I can think about innovation games where I'm interested in exploring what potential solutions might be, so it's almost like a brainstorming activity. I can think about games that are about

exploring alternative conditions, this is like AB testing and Andrew, I think your work fits very neatly in this category. What we're interested in exploring, you know, if I have policy context one or policy context two, how is decision making different under those conditions?

And then the last category, and this is probably the thing that games are best known for in defense context, though actually, I don't think that they're the majority of games that we run, is really games for evaluation. And so this would be, like, course of action or concept analysis type games in which we're, you know, almost prototyping or road testing an idea or we have a potential solution and we want to run it through the game and see how well it performs.

We don't want to say that then going to validate that, that that solution is definitely going to work. But it's a really great way of telling us what the second order consequences that are really lousy that we haven't anticipated of our potential idea are. And so that's, that's sort of the, the fourth main sort of chunk.

Those distinctions are important because I'm gonna design the game differently depending on which of those quadrants I'm existing in. If I'm in that system exploration point, I really want to have a big open space in which players are able to tell me how they think about the structure of the game and so that's a game that's likely to have pretty loose rules.

That might be what's called a seminar style game where people are sitting around the table and most of the game play happens just through verbal conversation. And so in that sort of game, rather than having like a set of rules about what plays you can and can't make and what the consequences are, it would be more discussing. I would have a player who's representing the US and a player that's representing Russia and the US player would say, hey, I'm thinking about XY and Z and the Russia player would say, well, in response, I would do AB and C.

Right, so almost the entirety of the rules are just that discussion practice back and forth because we don't know enough to be able to set up more rigid rules. Right, we're really trying to understand what the space of action is that's available and what types of consequences there might be from the other actors in the system.

We can contrast that when we get into those sort of policy prototyping type games, those evaluator type games. Those we tend to be much more interested in being able to play out the consequences of decisions in a way that lines up with our other types of analysis. So that's where, you know, I might pull on technical system data. I might pull on historical operations to be able to say here's the types of effects that I would expect to see based on the the military interactions or the social interactions or political interactions.

And so you'd see similar types of choices in all of these quadrants, where when you're speaking about sort of how you're selecting your players, how you're constructing your environment and what sorts of rules you are or are not putting into place. Those are really going to fall in line with those sort of big buckets from my perspective.

Andrew Reddie

That's great. Yeah, I really appreciate the point that you have to be really intentional about what your game is for and letting that kind of drive your game design decisions.

Because I think that's where, that's probably where the most kind of games that go wrong, kind of start going wrong. Right, where you've got a game that, it doesn't match actually what you're trying to use it for.

Ellie Bartels

And we often have this problem where people have seen one game And so they think that their game should look like the game they've already seen, right.

Andrew Reddie

Yes.

Ellie Bartels

And I think that that's natural, right. Like most methodologies aren't as, I mean, informal in the sense of the way the thing looks, like games can look so different from each other.

You can have a room with a bunch of people sitting around with sheets of paper in front of them and a powerpoint on the screen and you think you just stumble into a meeting like that can be a game.

Andrew Reddie
Yeah

Ellie Bartels
Or we can have a game that's got people with boards and counters or we can have games that have computers. I think it's really easy to fixate on that sort of medium, the format of the game and then kind of miss some of these sort of more foundational questions about what's really driving the research questions and the research design that follows out of it.

Andrew Reddie
Yeah, I mean, I know you've obviously designed games for a variety of different government agencies over your career. And I'm just wondering, kind of, have you found the different types of game, wargame sponsors are, are more or less comfortable with the particular types of war game designs?

Ellie Bartels
It's a good question. I think there does tend to be a little bit of, you know, what you've seen previously in your career is kind of what you expect. That's consistent across government though.

Andrew Reddie
Ok

Ellie Bartels
So just to give an example, there's lots of games that are interested in interagency processes, right. How does the whole of U.S. government get itself aligned around a singular policy issue that might be novel or particularly problematic at the moment because there's big differences between how different agencies think about it. Those games tend to be seminar style games and that makes sense, right. They tend to be in that system exploration place. Players come in with really different understandings of the problem and what you're doing in that game is ironing

out those differences. But then when you try to put more game mechanisms on top of that, sometimes that can be jarring for people who are used to that sort of seminar style format.

I think the converse side of it is that often when you're dealing with uniformed military officers who are very used to operational games that are looking at either sort of tactical level or operational level war fighting decisions in the kinetic space, there's some sort of standardisms we use to present that information. So we have maps that have hex boards overlaid on top of them, counters that we use to indicate different types of military force, more rigid rules about how we're adjudicating the kinetic interactions between military systems. And if you then transfer them into using a game, for example, acquisition policy, and all of a sudden, there's none of that, that sort of infrastructure that they're used to, I think that can be jarring as well.

I think what's important though is that's not just that they're sort of latched on to the visuals of it or the structure of it, they're also latched on to the use case for games, right. I think a lot of times whatever the first game we see is what we think of as what games look like, but also what we think games are for.

And so part of why I find that the sort of framework is helpful is because it sets up the diversity of what we can actually use games for. So we can illustrate some of that breath to people who might have only seen one piece of the pie so far.

[MUSIC PLAYING]

Andrew Reddie

And Ellie, what I want to kind of move the conversation to now is thinking about kind of what distinguishes a good game from the RAND perspective from a bad game. And when you're kind of brought in to consult in a war gaming project how do you look to make a game better?

Ellie Bartels

Yeah, it's a great question. So, I think the first thing, and this isn't probably gonna be a surprise to those who listen to me in the first part sort of lay out the differences I see between different

types of games, is that I think it's really important that we design a game specifically to the question that we're interested in getting after.

And I think often, you know, when you read through the gaming literature, there's lots of talk about the importance of the game purpose and the objectives in shaping how you do game design.

And that's true. But I think that can be a little amorphous for people sometimes. The way I like to think about it is what is the information that you are trying to generate out of the game? And because games are fundamentally about human decisions, that piece of information is almost always either the specific decision that somebody made or the process by which they made that decision or something about how people reacted to the outcomes of the decision. And different games will, will touch on all three of those. And some will only be kind of really interested in digging in on one or two of those.

But really what you want is a game design that's going to highlight those decision points that you're interested in. Both so that players can sort of think about them consciously, but also so that you can capture the data that you need about it. And so the way I often think about game design is that game design should be helping you capture that data.

Jeff Appleget has a really good book called The Craft of Wargaming that does a really nice job of walking through some of how you can think about decomposing this in order to be able to try to get down to it.

And I think one of the things that this focus on decision making does is it helps keep us from trying to have a game that's answering too many questions, right. I think it's really tempting to just add, oh, you just collect data on this one more thing and this one more thing and this one more thing and the next thing you know, you've got a data collection list that's so long you can't possibly get through all of it.

And so I think really reframing from sort of the general point about, you know, the purpose and objective should drive game design to what is the decisions that you want the game to highlight so that you can generate information about them from the game? I think that that sort of necks

us down a little bit and I think it also can help highlight when we've got objectives that are in tension with one another, right. If you're really interested in understanding agency decision making and also super interested in understanding tactical details about how XY and Z system is going to perform, you've got a really clear disconnect there between the kind of level of analysis.

The last thing I would say, and this is a really common pitfall, is that people want a game because they want a game, not because a game is suitable to the research question that they're asking. And so attention to, you know, is this question that's really about human decision making or is this a question that is about other aspects of policy making and can probably be better tackled using other types of tools?

For example, if we've got really good real world observational data about a phenomenon

Andrew Reddie
Yeah, use that. Yeah.

Ellie Bartels
Use that, don't use a facsimile when we've got the real thing.

If we're interested in studying the far future and there's no data available on it, like then go have a conversation about games. If you're caring about the specifics of technical performance, that's not really about the human, that's about the machine, like go run range tests and figure out whether it actually does what you think it does.

Andrew Reddie
Perfect. So now Ellie, I'd like to, to move us on to a conversation around what kind of games you're building now and how kind of new methods, new technologies, are helping us to kind of do wargaming better to kind of carry out this analysis of the inferences that we can glean from these gaming environments better in the future.

Ellie Bartels

Yeah. So I think I tend to think about sort of three big areas where I think we're seeing a lot of really exciting work right now.

So I think one of them is really in kind of fundamental research design. You know, gaming has really, I think suffered from a little bit of a tendency to reinvent the wheel. There are a few kind of canonical texts, but a lot of them are on the older side. We've just got some new really exciting texts within the last couple of years, but a lot of them are, you know, 20-30 years old. And so there hasn't been what we think of as kind of a natural sort of building on, on the field in the way we would expect in an academic discipline.

And so I think having more of those conversations has really helped have conversations about sort of what, what is the intellectual framework around what we're doing, what is good design look like and bad design look like in a way that is more comparable to other types of research methodology and let's just have that conversation on a level playing field where we can start to say, you know, here's how we're different from statistics or how we're different from a workshop or how we're different from all these other tools that we use.

The second piece that I think is a place where we're seeing some growth and some change is this question around measurement of human decision making, right. So, you know, the whole point of games is that they are a way to get at the squishy-ness that's going on inside people's heads. The question then becomes, how do we elicit that from people? How do we pull it out of their head and get it into something that you and I as observers can see?

And this is a place where I think the field has really, kind of, not made a lot of progress. If you go back and you look at the historical games from the fifties and sixties that I know John and Reid talked about in earlier episodes. You know, when I go back as a modern game designer, one of the things that's always really shocking is that the state of data capture, the state of, sort of, the measurement tools that people are using, haven't moved that much.

And so this is a place where I think there's been a really rich conversation between practitioner game designers and social scientists, not just political scientists where you know, me and Andrew come from, but also kind of the broader discipline of econ and psych about how do we do a better job at getting at some of these measurement problems so that we've got a better idea of what is actually going on inside people's heads.

And this is so telling when we run games about, like, escalation management. Right, the number of times where the group came to one decision and then you pull individual people and the average decision that an individual would have made is different than the group would have made. Right, we get such strong signs of what's called process loss in the form of literature.

There's lots of ways of getting at measuring that and figuring out whether that's a helpful representation of group, actual real world group decision making or whether that's a bias or laboratory effect. And we're really just starting to get into spaces where we're playing with that more. And Andrew, obviously, your work is really important in trying to think about some of that laboratory effect piece of it.

And the third piece and I think this is the one that most people sort of would have thought of that I would start with, but it is really sort of improving the state of some of the tools that we use to do modeling of basically causal inference, right. But we think about it as outcome modeling or adjudication, right. And this is a place where there's a lot of interest in using some of the new tools that are coming online, whether we're thinking of large language models or agent based models or the AI magic from the Sky, that's gonna fix everything.

There's a lot of trying to incorporate those types of tools in games to, to improve the underlying models, to make the game scale better, faster, cheaper. I think that that's important and interesting work. I think one of the places though where I keep seeing places where the state of the sort of computational modeling isn't actually particularly well suited to the types of questions that I think make for really interesting games.

So I think a lot of when we're gaming is when we don't understand the structure of the problem, that is the sort of thing that a lot of these tools are also not that good.

Andrew Reddie
Not very good at.

Ellie Bartels
Exactly.

So in some ways, we're leaning right into that black box that a lot of AI or generative models tend to have problems with, you know, we don't have, you know, games are not sort of replicable in the normal sense. And so we don't have the training data that you might expect to have at a surface level when you're thinking about, you know, games in the commercial sense like Starcraft.

And so often I'll get the question of, well, we can teach A I to play Starcraft, why can't we teach AI to play your game? It's like, well, this is actually like a really fundamentally different type of game structure even though the name is the same.

And so that's a place where there's a lot of interest and I think it's important that we sort of keep our eye on emerging tech and we keep playing around with it so that as things become relevant to us, we can start incorporating them in. But I do think that this is a place where sort of the technological promise of computers is sort of, the promise is more than the actuality.

What's sort of funny again, looking back at the historical record is that's always been true. You know, computers were used to support games in the fifties and sixties and there's all sorts of entertaining whining about the fact that the computer can't actually sort of keep up with the bookkeeping in the way that you might want it to. So this is definitely a past keeps repeating itself kind of thing.

Andrew Reddie

That's great. That's a great list of homework for all of us in the community to kind of be keeping track of the last question here.

While I, while I have you from the practitioner side, I think perhaps for some of the students in particular who might be listening to today's podcast they might be interested in how do you become the next, you know, the next Ellie? How do you become a wargamer or a wargame designer? If you were giving advice to younger folks interested in the field, how would you guide them?

Ellie Bartels

Yeah, I mean, I think the first thing I would say is that if you look at the careers of most of us, they're really, really idiosyncratic. We've got all sorts of different disciplinary backgrounds. We came into games, lots of different ways. And so there's not any one path. That is both a blessing in that, like any road in is not the wrong road in. But it also makes it really sort of frustrating as somebody who's trying to break into the field that there's not a stronger kind of clear road in.

There are some sort of nascent folks who are starting to get more interested in doing education around this space. But still a lot of it is really kind of on the job training more than it really is any type of formalized education. You can't go out and get a degree in policy gaming. And so I do think it tends to be a little idiosyncratic.

The historical way that most people have come in is that they came in through hobby gaming. And so I think when you talk to older members of the field in particular, that will be one of the really strong kind of pushes that you'll get to explore that space.

And there's people who find that a really valuable way in. Sebastian Bay at Georgetown is a great example of somebody who's been a really strong advocate for the power of commercial games, both to help sort of as as building blocks for games, but also as a way to train people up. You know, obviously from the way I'm talking, I come from kind of a different perspective.

And so I'm approaching this much more as a research design approach. And so most of the people who will sound like me tend to have come in through a social science background rather than say an engineering background and we tend to approach the problem more from almost like a structural perspective. Right, we're interested in questions about data collection and how it compares to other methodologies.

I'll say there's also a third camp that isn't so much a road in but is definitely a personality that you're going to encounter as you talk to people, which is that there are people who sort of treat games as a modeling and simulation approach, right. And so that's more of the, like, operations researcher type field. And so those people tend to come in with more of a background in military operations in particular, this doesn't tend to apply so much into the non-military ops domains.

And so what you end up with is sort of three loose tribes. There's sort of that first tribe that sees games very much as an art form. It's all about the narrative of the game. A lot of the constructs are about sort of how, how you are engaging people through the game.

You have a sort of social scientists who are all about, kind of, measurement and research question design. And then you've got more of the ops, researcher types who tend to be more about sort of how the game is an extension of a model almost. And so it's much more about kind of how we're representing those core mechanics and how you're kind of building out that world.

And so you'll get all of those types of people and so you end up with really wide range of backgrounds. And so I think a lot of it is sort of when you have opportunities like this podcast to hear different people coming from different backgrounds, kind of seeing which ones resonate with you, checking out the type of work that they're doing both in terms of substantively, but also where are they working.

I think that often ends up being that sort of feeling the elephant type feel, which is not the answer that any person trying to get into a field really wants to hear, but unfortunately, is like where we are.

Andrew Reddie
Yes, indeed.

Give me an internship, right?

Yes, very good.

And just in closing, do you have any quick recommendations for those that want to dig deeper in terms of a favorite book about the topic or a conference that you think folks should be attending?

Ellie Bartels
Yeah. So I do.

I mentioned Jeff Appleget's book early on in this. I think Craft of Wargaming is a really great approach. It sort of complements some of the other books that are out there.

You know, if folks are sort of interested in hearing more, how I think about these problems. If you go to the RAND website, there's a bunch of my publications building Better Games for policy analysis is where a lot of the frameworks I've been talking to come from.

So if you want to look up in more detail or have questions about that, that might be where I would point you, you know, in terms of opportunities to engage with the community. On the policy side, you know, there's the Connections wargaming conferences, that I think are sort of an important hub, but there's also sort of more informal communities that move back and forth across the policy and non policy spaces.

And so that includes, for those of you who are coming from a political science background, there's a group of us who do gaming work pretty regularly at the International Studies Association's annual conference, there's also more informal groups. So there's more and more universities that have, you know, groups of interested students who are looking at gaming. And so if your university doesn't have that, that's where reaching out to the network of the folks who are on the show and asking for help linking into one of those networks might be useful as well.

Andrew Reddie
Perfect.

And Ellie, just thank you so much for joining us. Really appreciate you taking the time.

We'll include the links to your suggestions in our show notes, we'll also post a list on the BSL website.

We're almost at the end of our series. For the final episode I'll be joined by my colleague from across the Bay, Dr. Jackie Schneider at the Hoover Institution at Stanford University. We'll be talking about the cutting edge of war gaming research from practice, from her perspective. And we'll also tell you how you can play some of those games with us as well.

I hope you'll join us for that.

Thank you Dr. Ellie Bartels for joining us.

Thanks to Andre Anderson and Citrus, our recording studio host and special thanks to our amazing producer Jane Darby Menton and finally to all of you for tuning in.

Until next time I'm Andrew Reddy and you've been listening to the Risk Calculus.

[MUSIC PLAYING]

Andrew Reddie
Oh, sorry.

We'll restart.

I'm using acronyms again that I shouldn't.

Ellie Bartels
Yeah, I was gonna say, do we want at some point for me to define what an FFRDC is and what the hell is RAND?

Andrew Reddie
No, no, that's good

Ellie Bartels
Cool.

Andrew Reddie
No, good. OK.