

**BREAKING DOWN SILOS: ENCOURAGING TRANSDISCIPLINARY PROBLEM SOLVING
FOR GLOBAL FOOD AND NUTRITION SECURITY**

Panel Moderator: *April Mason*

October 20, 2017 - 11:25 a.m.

Introduction

Margaret Catley-Carlson

Council of Advisors - World Food Prize

Okay, the final panel this morning before we all go off to the lunch, and we will be asking you after this panel is over to hurry upstairs, because this is the final lunch with our laureate giving a talk and being the guest of honor.

But this is an indispensable subject that we are ending with this morning, and it is the whole question of how we get at transdisciplinary, trans-sectoral issues and try and incorporate these together into solutions.

Several of the panels yesterday, the business leaders, the business leaders today, talked about the absolute need to be able to reach across sectors to form partnerships. But nothing could be more difficult. And you've got to try and work out why this is and then wise people like our panel are going to tell us, I hope, a little bit about what can be done in the real world to try and break down these disciplinary silos.

It's not extraordinary that they exist. The 20th century was the age of specialization, and Ismail is a renaissance man. But during the real renaissance, thinkers and knowers and knowledge had knowledge in all sorts of different ways. You might go to a doctor for mathematics. You go to a doctor for treatment. Then we moved into our 20th century, which gave us an enormous movement ahead in so many fields because we were specializing.

Now we are paying for the fact that it is extremely difficult to move from that specialization to other necessary fields and collaboration with those necessary fields. And it's buttressed by the way academic publication policy works, where the reward through publication is often by very, very narrow definitions of what the issues are to be discussed. And yet at the end of the day, the end of the project, as things go along, as the business goes along, everybody says— Well, it isn't the technology, it isn't the plan, it's that it really didn't take into account the sociology of the area, it really didn't take into account all of these other things.

So now you're going to tell us how the world should be solving this issue, and we've got very good people to do it. Peter McPherson is the president of the Association of Public and Land-grant Universities. He was the administrator of USAID back at the time when I was the president of CIDA, so we got to know one another well then. Dr. Cathann Kress is vice president of Agricultural Administration and Dean of the College of Food and Agriculture and

Environmental Science at Ohio State. And Kendall Lamkey is the professor and chair of the Department of Agronomy at Iowa State. And our moderator today is very capable of doing this. It's April Mason, and she is the provost at Kansas State University, so you're used to chivvying people into discipline and results and productivity. Go to it.

Panel Members

- Peter McPherson** President, Association of Public and Land-grant Universities
- Cathan Kress** Vice President for Agricultural Administration and Dean, College of Food, Agriculture and Environmental Sciences at The Ohio State University
- Kendall Lamkey** President and Chair, Department of Agronomy at Iowa State University
- April Mason** Provost, Kansas State University
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Panel Moderator

April Mason

Thank you very much. Thank you all for being here at this session. We need to transcend our individual disciplines and work forward on the challenges that we've been talking about all week. I hope that if you haven't had the opportunity to actually read this report, that you will go to the Association of Land-grant and Public Universities' website and get it. We brought a whole bunch of these to the meetings. They're gone, and if you just check on the website, we'll be able to get it to you.

This is the challenge of change, harnessing university discovery engagement and learning to achieve food and nutrition security. Food and nutrition security brings us from all around the world to these meetings in Des Moines, to both honor Norman Borlaug's legacy and those who do the important work of global food and nutrition security. This is truly a grand challenge for all of us.

The challenge, and as is described in this report is to sustainably feed an expanding population and improve the prospects for food and nutrition security for all. It's a very complex challenge, and it focuses around a number of areas.

First, availability of food. Increasing yields sustainably with low loss and very little waste of the resources. Access – getting resources for all populations equitably. And lastly, utilization – addressing both malnutrition and obesity to ensure full human potential and doing this safely to protect and improve public health.

This report looked inside universities. We really analyzed ourselves. We challenged ourselves to bring together the talent and the knowledge to address global food and nutrition security – truly a big challenge – but I think we're up to it. And we have the educational institutions, the research programs, the government and nongovernment entities and industry. And we've

heard from each of these groups this week. We can bring these groups together in venues like the one we are exchanging information here now.

Wednesday afternoon I learned a great deal about CRISPR-Cas, not enough that I can rattle off what the acronym means, but from an Iowa-raised researcher who now is at MIT and others, I learned its power as it relates to the attributes of crops.

Today's wonderful panel represents the educational and research universities that produce the teachers and researchers of tomorrow. We take this challenge of food and nutrition security very seriously, and we've challenged ourselves to see how we might address it more directly by harnessing the powers of many disciplines, all disciplines in some cases. We propose doing this by using a truly transdisciplinary method, as defined by Rosenberg, literally back in 1992, as collaborating in the exchanging of information, sharing resources and integrating disciplines to achieve this truly important common goal of global food and nutrition security.

To talk with you about this from their three different and unique perspectives are our panel members. From a very high level, across many different institutions, Peter McPherson. From a college level at an individual institution, Cathann Kress. And from a departmental faculty perspective, from Kendall Lamkey.

Each of our panelists is going to straight with a three-minute overview of the topic, and then we're going to jump into questions and discussion about breaking down the silos as it relates to global food and nutrition security. Peter, will you start us off?

Peter Well, it's good to be here. It was this commission that APLU put together that challenged the Change Commission whose fundamental conclusion was that the problems we have before us need cross-discipline work. We had a number of people who actually have attended this week, and I thought it was worthwhile pointing out a couple of those. Jim Borel, known to so many of you, a long-time senior executive at DuPont was here. And on the Commission Helene Dillard, the dean at Davis. Steve Leath, who was then the president of Iowa State. Stan Blade who is the dean at Alberta. And Cindy Rocky who is now the head of FPA, that important foundation at USDA, so those and several other people. There's a real mix of people from private sector, from some government, and of course from universities to identify some of the key objectives that we must do to feed the world by 2050 and our contributions to them.

Now, let me give you some perspectives from my background and experience. I ran Michigan State eleven-plus years, have now run this association of literally all the big public universities in this country. And so I've traveled and talked to the leadership of the universities across the country for years and still do. And let me identify what I see, some changes that really I think give us a special opportunity now on driving solutions.

Ten years ago, let's say, everybody said we've got to work at things across disciplines. Everybody has said that. There isn't an academic here or many others who wouldn't say that, and we believed it. But I think that people felt it was a dream, not a reality. Well, as I look around the country, talk to people, I think in fact it's beginning to really happen.

For lots of reasons – we may talk about them – but there is a focus on a cross-discipline approach that we’ve never had before. And the way we’re doing it was a practical matter is a large number of universities have identified formally or otherwise, big challenges that they’re trying to get done. Ohio State, and we’ll talk about that, but it’s not the only school; there’s dozens, actually. We can’t talk about priorities, because some people feel left out if you say priorities. But we can say, here are the big issues we’re going to get at. And it bottomed in our capacity and in our state for lots of reasons.

So I see a movement, and big issues almost always take cross-discipline work. There’s just no way you can do this. We’ve moved faster, by the way, I think in healthcare. Where NIH huge grants that forced us to be cross-discipline. But I think it’s happening across universities generally.

And, by the way, when you identify some big challenges – this gets a bit in the weeds, you may say, but it’s an important reality on a campus – the big challenges almost always require social sciences as well as traditional hard sciences. Just think about the big things you want to get done. You need people engaged along with the technical solutions. And when you have big challenges that involve the whole university or big chunks of the university, it becomes politically practical to drive the big challenges.

So that’s the world that’s emerging, and I think we are set for a time with the Challenge of Change Report and other such efforts, to have a big impact.

April Thank you, Peter. Cathann.

Cathann Yeah, Peter, I would agree with you, and I would also agree with you that we are moving from saying it’s important to doing it. But I think what slowed us down for quite a while is that prioritizing research is also political, like you said, along the priorities. And the problems don’t fit neatly into disciplines and to figuring out who takes the lead, how do you get something to happen. I think we had some real fits and starts around how to do that.

But what I think is really exciting is seeing with the grand challenges and projects like we have at Ohio State with our discovery themes was the idea of having it emerge from the faculty and that being able to have the faculty identify and then being able to connect them to one another across different departments and allow that to organically grow and try to get the structure of the university out of their way is part of the way I think that that can be really effective.

And what we’ve done is much like you said – we recognized the importance of bringing the bench sciences and the social sciences together. Because really what we’re talking about with these grand challenges is just as much about equity as it is about agronomy. And it’s just as much about political science as it is about animal sciences. So we’ve really tried to keep that in mind.

Where we find, though, we often struggle has to do, though, with the reward system and the incentives that we have in the different disciplines. Because of all the specializations, as was mentioned, typically what these faculty are looking for is to

publish in very specific journals that are very specialized still. So being able to do the transdisciplinary research becomes very, very difficult if we think that we can't get it published in those journals or we can't secure the grants that are in these specialized areas.

And so one of the things we've tried to do at our university is figure out—how do we create the seed, if you will, the incentives that can help to launch that, particularly among the junior faculty where we think there's some tremendous opportunities.

So what we've done with our discovery themes is that it begins organically with the faculty determining the area. One we have is called InFACT. It's food and agricultural transformation. It brings together faculty from across a number of our disciplines, everything from the climate and food production that you might expect and food systems and health and nutrition, to culture, art and design, as well as business and entrepreneurship, all working together and with their mission to transform the way we grow, process and distribute food but with a transfer from thinking about it in terms of production to thinking about it in terms of consumption.

And so I think there is just some tremendous opportunities. As we look to the future, we also have established ways to engage the students, such as a newly launched learning community that's focused on agro-ecosystems and sustainability but isn't just for students in our college but attracts students from all over the university to engage with us as we do this work.

April Very good, thank you. Kendall.

Kendall Thank you, April. So it's a pleasure to be here, and when I became chair 12 years ago in agronomy at Iowa State, you know, our department is focused on looking at the production system—right?—and believe it or not, we involve different disciplines. And we're trying to tackle these complex, wicked problems like we've outlined in this Challenge of Change Report. And I realized that our disciplines weren't talking to one another, at least formally.

And so we started implementing a systems thinking perspective and started implementing a framework of systems modeling. I know those words give some people the jitters—I understand that. But I think they bring three things to us that are important for our conversation today. One, they allow us to synthesize the knowledge that we've all accumulated in our disciplines and bring it together to bear on these problems and world food security.

Secondly, they form a glue to hold our faculty together around a common cause and to get them to work together and help them develop the common language that they need to talk with one another. And then they allow them to pursue these individual disciplinary questions in a thoughtful way—right?—as they apply to the system that Cathann was talking about earlier. And I think that's been working for us, and it takes time. And then once we get this together internally right, then we can start working with the sociologists, and then we can start working with the economists,

which we've really got to do – right? – because without them we'll never solve these problems.

So at the university level, I'm going to talk about some things just from my perspective with faculty – right? So first of all, we need to engage university leadership all the way to the top – right? They've got to recognize the complexities, problems, and how that impacts all the way down; because we need them to set examples for how we should behave and act and do these things – right?

And secondly, we need to focus on how and who we hire as faculty and staff. And so they are the folks that are going to be doing this, and we need to continue to focus on a diversity of people and thought. And these people need to come in with excellent communication skills. And then after we hire them, we need to mentor and support them as people. Because that's what they want to do. These people want to solve problems, and we need to give them the freedom to do that.

We need to make some changes at the funding system, and the funding system, we can maybe go into that later. We need community engagement. If we're going to solve these problems, we've got to be engaged with the communities that have them at the faculty level, rather than the arm chair approach of trying to predict what their problems are. And I think we also need to start training our undergraduate and graduate students to think like this and give them the perspective of working in these teams in a transdisciplinary way and developing the language that they need to communicate with people in other disciplines, like engineers, like economists, like sociologists from a department like mine in agronomy.

April All three of you have brought up some really good points. I want to pick up Kendall's last comment. Let's talk about funding. So our research is driven and supported by incredible funding at many different levels. How do you see our funding as helping our transdisciplinary research or hindering it? What are the obstacles that we need to overcome to truly have efficient, sufficient convergent research support? I'll let anyone start. You brought it up, Kendall.

Kendall I brought it up, so I'll start then. So I think this is a wicked, complex problem, too – right? And so I don't think there are any single solutions, but I think part of the problem is, so the grant review system itself, I think, sort of canalizes grants down a path because the very people who are reviewing them also have an interest in how these things move forward.

I don't think we do a very good job of measuring impact from grants. So right now we're measuring in like a publication framework, and what we really need to do is set metrics for how they really tackle the hard problems we're trying to solve. And what kind of impact have they had on the ground? How have they impacted a farmer?

And of course the other grants is there's lots of lobbying for different kinds of individual research – right? – because we have this single-factor approach that we're going to solve these problems with single factors.

And so I didn't offer any solutions, I don't think, but I think we can deal with the review process and how we measure grants.

Cathann Well, even creating review processes for the grants and for funding that has transdisciplinary representation on the review teams would help, because then you have that broader view, even taking a look at what the project is and making determinations about funding. I'd also agree with what Kendall was saying about leadership sort of all the way along. You know, one of the things at Ohio State that of course I'm pleased by, because of where I'm sitting now. But I'm a social scientist as dean of our College of Food, Agriculture and Environmental Sciences because of our recognition that you absolutely have to start demonstrating and role modeling, the transdisciplinary approach, not just talking about it.

Peter Well, it seems to me whenever you're part of or running a big organization, you need to have big goals. I mean, that's true. When I ran AID, we had some big things, ORT and so forth that we drove that changed the organization. In business, you better have some big goals. And in universities when you go back over the generations, we have been more focused on multiple goals that were quite specific.

And what I see happening – I mentioned this before – is our institutions are changing to have a handful of big cross-cutting roles. Why did we do that? Well, part of it is the world has gotten more complex. At least we've understood it better and understood the complexity better. So we've got a very complex world, and there aren't good, simple answers.

And part of it is I think we better understand how to do things. And of course we're under even greater pressure to respond to society with their problems. Public universities have to respond to society's problems in the way private schools don't really need to. Many of them, of course, do, but they don't need to.

So as I look at where we are in the history of higher education in this country, public universities, we are reasonably positioned to do really big things in food, in energy, and a number of areas. And it's because I think we have a different mindset than we did ten years ago. I really believe it. I'm sure to those of you who are not part of universities, this seems like all kind of inside baseball. But what I'd like to have all of you come away with is the idea that universities more and more are capable institutionally and want to say – here are the big things that we can get done at Ohio State or Iowa State or Michigan State.

Cathann Or even Purdue.

Peter Or even Purdue. And I can tell you one thing – Mitch Daniels thinks like this. Mitch Daniels is the ultimate – let's have big ideas and drive them. And when you get that..., and as we said, none of these big solutions are going to come via just a test tube.

Cathann Well, and the exciting I think too is to think about not just the transdisciplinary within one institution, but what can it look like if it becomes trans-institutional, trans-regional, and then trans-country. And what I'm excited about is seeing faculty who it used to be, to be multidisciplinary meant that maybe Kendall and I got a

grant together, we went in together, we wrote the proposal, we got it, and then we divvied up the funds. And okay, Kendall, you go do what you are going to do, and I'm going to go do what I'm going to do. And that's not really what we're talking about.

Now what we see with the transdisciplinary is much more where we're working together collaboratively to identify what the issue is and then to work together throughout the whole process. That to me is where some real excitement is about what we can do. And the thought about being able to broaden those partnerships — and that's the beauty of the public university system to a whole variety of other partners as well as internationally, the power of that is infinite.

Kendall Well, I think we're more prepared to work as we surely should be with the private sector, too, with different relationships. And their problems don't come in neat packages.

Cathann Or departments.

Kendall Or departments. They don't come in departmental packages, and they come with a problem.

Cathann Right.

Kendall And so you've got to figure out. And I think that pressure and that engagement with the private sector, in part because we need the money. I mean, this is driving some of this, surely. But also this whole idea of we want to solve problems at public institutions.

April Well, I think we're all in agreement this is absolutely critical work to do and from very different perspectives. How do we remove the barriers for those who are on our campuses that want to be part of this? Can we do that at the university level? Do we have to start at the departmental level? I have some scars — they're not terribly visible, but I have some scars for working on tenure and promotion documents from our campus. How do we remove the barriers that may be somewhat self-inflicted? The journal that you publish in. How many publications? You're working with an industry? Oh, my goodness. How do we remove those barriers so that aren't the barriers, that people will go on and do the work that's very important and needs to be done.

Kendall Well, I'll start. I can start on that. So then you have to be careful. So I think we need to quit focusing on money, to start with. And so sometimes I feel that, while we're all about just getting indirect costs — and I'm not meaning this as criticism of Iowa State, but I think this mentality sort of starts pervading. And we need to focus on the problems, and then the money will come — right? — if they're good problems to be working on. I think we sometimes set up unintentional barriers internally. We set up these processes internally, and we have these unintended outcomes — right? So we're a complex system, too, just like the ones we're trying to figure out, and we don't always think about the consequences of these things that we do internally and how faculty starts thinking about them. We don't want them thinking about money. We want them thinking about problems. And I don't want them writing grants 24 hours

- a day. I want them thinking and writing about the problems and teaching students, and that's what they want to do, too.
- Cathann Yeah, it's like if you had decided to take a road trip, say, to the Grand Canyon, and you plotted your whole route based on where you could find the gas stations instead of plotting your route based on how do you get to the Grand Canyon.
- Kendall That's a good analogy. I like that.
- Peter I do think that there is some problems, and of course you as a long-time provost understand. But I think you would agree with me that university leadership to get things done has to drive visions. We have relatively little direct authority compared to a private sector situation, though I will point out in government you can't fire anybody either. So vision is a big deal in universities. And universities that come together with a vision – and it can be the president, provost off sitting there – but come together with a vision, some people will get excited about the vision, and other people really won't. But those people that don't get excited end up not getting as much resources, as much acclaim. It's an important point that I know we all agree with. Decisions change universities and important become a matter of vision and big goals. There's idealism, I think, in public universities that's pretty deep and broad, that that's an exciting thing to harness.
- April So the three of you have seen many different universities. You represent different universities. Where do we see transdisciplinary research being done well or examples of it? And a couple of you have said things that have made think. And how do we move forward with new majors for our undergraduates that fit into this so we're training the future generation of researchers, but let's focus on where you've seen good examples of transdisciplinary research moving forward, for whatever reasons – and we'll dig into what the reasons are.
- Kendall Yeah, well, I kind of like what Peter was saying earlier. And I've been in some conversations here lately with the private sector, and I think the private sector actually thinks about these things in a transdisciplinary way, because they do have to solve real-life problems in a real-life world and get things to work and explain to people how they do work – right? And so, but they don't always have the mechanisms to do all the research. And I think we can learn a lot from working with them on these problems – right? I really do, because I think we can learn about how to think about the transdisciplinary problems at the faculty level, because I think some of us need to learn how to think about these problems. I mean, that's where I see the thinking going on. You know, the research, but they don't always do the deep research, though – right?
- Cathann Well, I think there's lots of examples of great ideas that are working, and to me it's when we can start putting them all together, the pieces together. And so like at Iowa State with the Rising Stars Internship Program, which puts together teams of interns from different disciplines that work together on whatever the issues are, typically around local foods and sustainability out in the communities, that's a great way to start that training of that.

When I think about our discovery themes, one of the things that I think is so powerful about that is, if we're working on a particular issue in agriculture and we decide that we really need a geographer, it really allows us to be able to reach into that department and pull somebody in, as well as leveraging new hires.

But the really exciting thing that I think fits with what Kendall was just talking about is it also allows us to reach out into the networks that are external to our university and to be able to pull them into our discovery themes as well. And that's where I think there is some real power that we haven't fully thought about of – how do we engage these public/private partnerships in ways that really are effective? So often I think in academia, we think, well, then they're going to drive our research, or then my research won't be unbiased. Well, you know, we're trying to solve a problem, and when you have the kind of applied science that we really do have in these areas, then the partnerships are just critical to us being able to do that. And I think there's a number of institutions right now that are really moving forward on public/private partnerships in ways that I think are very encouraging and are really going to be part of the key.

Peter Well, the schools that are most visible, I suppose, are those who have decided they're going to have..., what their big challenge is. They call them by different names – grand challenges, whatever. And certainly Ohio State is going through that process. And you have to go through a process, and a lot of it ought to come from bottom up, ought to be based on what the strength of your faculties are, what you've got. I think that my understanding – and I haven't been there in the last couple years – but Nebraska's water effort, for example, cuts across the campus, but guess what. Nebraska is the place to do water. Now, we could do it in Ohio and Michigan, and we've got some water issues, but you would feel it differently in Nebraska. Minnesota has made the same kind of broad commitment to identifying key issues.

Now, going further, our friend Michael Crow at Arizona State has essentially begun to break down the departments. And there's some very interesting stuff there. Michael is infinitely creative, and he seems to be able to get away with it and sustain it. I'm of course intrigued with breaking it down that much, but I've always found in running big organizations that first comes the big vision. And the organizational stuff gets kind of dragged along once you've decided the big goal you're going to choose.

Cathann Well, and sometimes they kind of interact with each other, too. Because one of the things I was thinking about as you were talking about that is – it can sound so simple. But one of the things we've done at Ohio State is, every new building that's coming online can no longer just be for one college. So if you're proposing a new building, you've got to have partners and you have to have essentially how this ties to our discovery themes or our grand challenges.

And so even that kind of thought process forces the deans, forces the departments, forces the faculty to already be thinking in those ways, even as we're doing something like capital planning, which often can seem kind of removed from what's our research focus going to be.

Peter The master plan of the landscape, the building of the campus is a big deal.

April Yeah, the physical proximity of our faculty, yeah, is very important. I wanted to refer to an example in the Challenge of Change document where in the Northeast a coalition of universities, both public and private, have come together to address issues related to low-income families having access to food. About 23% of the country's population are in these states, and people have come together to try to address an important issue of food deserts in those areas. Impact – addressing the particular issue. My experience having been in administration for some time now is – if the problem is such to bring people together, we'll find out how to make it work administratively. We can get those barriers, but we need... I think, Kendall, you mentioned it, up and down the line, keeping people informed as to what the issues are. How do we do that better?

Peter And I hope this is a direct response. I was at the University of Toledo about a month ago. Now, Toledo on Lake Erie has got this huge water problem. It's a big deal. So what have they done? Well, they have got Toledo, which has developed quite a lot of real expertise in terms of the toxic water and all that. But they've got as a coalition with them a couple other higher education institutions, the local governments. It's a group that spent an hour with me, happily telling me what they were going to do and what they've done.

Now, that grabs an institution. It grabs the board, it grabs the political leadership of the place. Nobody talked about what department somebody was from. It was beautiful.

Cathann But the other thing I'd add to that, though, that I think that we really have to make sure our leadership and even sometimes our board of regents are contemplating in the future is that when you start to take on some of these things, you know, water quality and certainly in Toledo, or whether you're taking on some of the food security which is so tied to equity issues, somewhere in there it gets political. And I think that's one of the things that our leadership is really going to have to be thinking about in the future is, you can't solve some of the grand challenges without at some point grappling with the politics and the tension that exists among our constituents around a number of these issues.

Peter Absolutely, but that's why we're public universities. That's why it's fun being part of these places. On the other hand, you know, our secret tool, sometimes secret anyway, is that, if we can be in the business of helping sort out what are the facts, it goes a long way. Most public policy in this country, certainly now, are a dueling set of facts. If you can decide the facts, then at least some of the answers come out.

Cathann Yeah, but hang on, because what I want to say is that sometimes, though, as a dueling set of facts. Sometimes, like if we think about water quality, for example, what we know is that there isn't a clear answer, there isn't a clear solution. The best we can hope for is finding balance – right? – because we can't just say, well, we want food, and we'll deal with bad water,...

Peter Right, I agree with that.

Cathann ...or we want water but we aren't going to have food. So we have to find a balance, and what we might recommend up in Northwest Ohio is maybe not at all what will

work in Central Iowa. So what we're seeking then is always this sort of balance. I think in the past, we could create the facts and we could have the facts, and so that was easier. Now, we can't necessarily create facts. All we can do is hope to be able to talk about where the balance point is and the recognition that the balance point may change.

Peter Well, then the body politic needs to struggle. The Toledo situation is excellent because, yes, you could take care of the water problem if they didn't farm anymore in that part of the state.

Cathann Right, right.

Peter Or the Chesapeake Bay, or for that matter, Iowa.

Cathann Right.

Peter Right? Des Moines.

April Kendall.

Kendall Well, you know, so I was wanting to think about this from a structural point of view at the university. You know, we're all familiar with the old cliché that the world has problems and universities have departments. And that became apparent to me recently, because... Well, sorry – you guys haven't heard that. I thought you had. And so the organization is trying to interact with us, and they didn't know where to enter – right? They don't understand our structure. They don't have our structure. So we need ways of managing the personnel in our institutions without them becoming these things that become so loyal to – right? We need to become loyal to the problems, and these other structures just for managing personnel and faculty – right?

And so then we have teams that work on water on campus, and we know about those. Or we have teams that work on crop production systems, and we know who they are? Does that make sense? I don't know how to do that. I'm not an organizational expert, but...

Peter I want to pick up on something that was mentioned earlier, and that is that many of these big challenges are going to involve multiple institutions, both the private sector, governments and other universities.

Cathann Yes.

Peter And because of the Internet, we can do that today. It's a lot easier. Moreover, it's going to involve universities in other countries.

Cathann Yes.

Peter As many of you know, a few years ago, APLU asked several, a select group really, a Mexican and Canadian university to become members. It's been great, because, not surprisingly, we've got common water issues, we've got various environmental issues, we've got lots of things, energy and food. So I think that once you start

- figuring out, once you start focusing on the problems, then you'll say, "Well, jeez, over there they've got some expertise we don't have."
- April Kendall, I might propose a partial solution to what you indicated. You're right. Public university, as large as we are, people will come to us in many, many different ways, and they'll hear something. It may not be consistent with a different department that they touch. We need to communicate in a manner that is consistent across the entire organization.
- Peter I agree.
- April Very difficult, easy for me to say, very difficult to do. And it relates to this, even to the political issues that you bring up, Cathann. Those are tough, but you need to be communicating them in a way that doesn't alienate any particular faction. Address that. Does that ring true to you in any way?
- Kendall To me, well, no, it does. I talk about that frequently, that we're out there. And pick a subject that's important in agriculture in Iowa – we'll have nine different opinions on it. If you ask nine different people, you get nine different pieces of advice. I'm exaggerating a little but not much. Thank you. And so I do think we need to be on a common page, and these people need to work together and communicate in one way. That's just my opinion.
- April There's a woman over my right shoulder and a clock that continues to tick and a lunch that we're all going to. I want to thank the panelists. We could go on for a great deal of time. I have got seven more questions that I thought of as you were speaking.
- This is a huge issue, and it is an issue that we as public institutions are willing to address, and it means that we need to get a little uncomfortable and move out and be able to talk across disciplines, talk within disciplines, and I'd like to see another panel perhaps in the future about how we now work with our students as we move this forward. We didn't get to talk about that. Would you help me in thanking our panelists for talking about this issue?

Margaret Catley-Carlson

It absolutely breaks my heart to have to close down a panel that has just got to the important question – water. So they were talking about water at least twice, and I was delighted that you used that as an example. You have absolutely justified our confidence that you would be saying very important things about this subject. And I think you've given many of us a little heart that the seemingly insoluble phenomena actually has some transitory, forward-looking solutions. Keep on pushing, and it's not surprising, given the quality of people worrying about it. Good for you. Thank you very much.