PlexusCalls

Brenda Zimmerman

In Conversation with

**Liz Rykert
&
Henri Lipmanowicz**

Complicated And Complex Systems: What Would Successful National Health Care Reform Look Like?

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Stanley: Today we are pleased to have Brenda Zimmerman in conversation with Liz Rykert and Henri Lipmanowicz. Brenda Zimmerman is Associate Professor at the Schulich School of Business and author of a number of articles applying complexity science to organizational strategy and change. In addition she is also co-authored with Curt Lindberg and Paul Plsek a book, *Edgeware: Insights from Complexity Science for Healthcare Leaders*. Brenda is also a member of the Plexus Science Advisory Board.

As I just mentioned, Brenda is in conversation with Liz Rykert and Henri Lipmanowicz today and both are very active members on the Plexus Board of Trustees. Henri has recently retired from Merck where he was the president of the Merck International, Japan Division. And at present he now devotes a great deal of time and passion to developing the growth of Plexus. And Liz is the president of Meta Strategies. Meta Strategies is a Canadian Consulting firm devoted to helping charitable, non-profits, and public organizations use the Internet and develop innovative web-based capabilities.

…perhaps I might begin with a question, if I might. How does that work with the rest of you?

Zimmerman: Sure, that is fine Darren. Go ahead.

Stanley: So, Brenda, you have been invited to talk about this paper that you have co-written with Dr. Glouberman for the Commission on the Future of Healthcare in Canada and your paper is entitled, "Complicated and Complex Systems: What Would Successful Reform of Medicare Look Like?" And, although I am also Canadian, three out of four of us happen to be Canadian here on this call, sorry Henri, we will be kind, I do know both from what I have read and--

Lipmanowicz: I could switch to French.

Stanley: Oh, we could, but maybe just for the sake of our other listeners, we will keep it in English. From what I have heard, at least down here on the news and in the states, the Canadian healthcare system is often held up as a model for healthcare. And, in fact, I think some would say it is a great model and many Canadians would say that it is an integral part of our Canadian identity. So in your paper you suggest that Canadians need a new perspective on healthcare. And this might sound like a big question, but why, and what does the question have to do with your paper?

Zimmerman: Well, I think the major point we are trying to make is not that we need a new that we need a new conception of healthcare but we need a new conception of how systems work and that includes healthcare systems, it includes health, it includes policy making systems. And so, I guess the challenge is actually larger than just the healthcare system. It is really thinking about more deeply about what we understand about how systems really work, which is why we differentiate between complicated and complex perspectives, arguing that what we are learning more and more is that natural systems and social systems, including democracies are natural systems, have many complex attributes, which cannot be explained and cannot be understood from the traditional, what we are calling in this paper, complicated perspectives on understanding things.

So that is really the challenge there and we think at some level it is a huge challenge and other levels it is a very intuitive kind of switch for many people to make. Do you want me to talk a bit about the difference between complicated and complex?

Rykert: Sure Brenda, that would be great and particularly understanding what is the difference between the two so that, so often we find ourselves going down these traditional paths of identifying those complicated systems and how did you come to the realization that looking from the complex point of view is more helpful?

Zimmerman: Before this call started I was having sort of an informal conversation with Stuart Mennin about education. So I am an educator first. And one of my frustrations in being an educator was that in the classroom we were teaching perspectives and models and the way things were supposed to be happening in organizations and systems. And there was always a sense of inauthenticity to it because although it explained part of what going on in organizations and part of what was going on in systems, I never felt that it explained the most interesting things or the most challenging things in organizations so I'd have to teach these materials because

we didn't have anything else that really fit with how my observations of how things happened.

And so I'd teach these things and they would say, yeah, but-- And it was always that "yeah, but" that was really the interesting part of that discussion in the classes. And so when I then decided to my doctoral and started to read things in those days it was pre the language of complexity science and it was chaos theory and dissipative structures and all these other weird and wonderful ideas. The connection for me was they were describing reality. In that case it was all sorts of different kinds of systems, physical systems and biological systems and chemical systems but they had the same kinds of challenges and questions that I was having and many others like me were having about human systems and organizations.

So that to me, it was like coming home actually to finding these ideas. I did have a science background before I went into the organization side of things. So that is part of where it came from. And in the paper Sholom Glouberman and I, when we did this paper, we were trying to really differentiate between these two perspectives on what systems are, how systems operate, how systems are naturally configured. And we compared simple, complicated, complex, and then the simple is really quite uninteresting really. It is the part where we know a priori what is going to be happening. It is almost like following a recipe is the way we describe it in the paper. So that was really not a very interesting piece.

The really interesting on is the complicated and complex because the complicated one is, we argued, is like sending a rocket to the moon. And we have given incredible privilege to that way of thinking where you need to have formula, you need to have expertise, you need to have co-ordination between the expertise and depth of understanding of very specific skills and the co-ordination is a layer that you put on top of that to make sure all those individual components and silos and parts work.

And to me in our society, especially western society, we have given incredible privilege to that way of understanding things as opposed to a complex way, and our analogy there is, it is like raising a child. And it is not just adding more complicated dimensions. There is a qualitative shift between something that is complicated and complex, things that you cannot explain through the complicated model, so. Yeah, we could use experts to raise our children if we can co-ordinate the experts but presumably

that will insure that the therapy industry thrives when the children become 30-year olds and have to explain how they were raised by a series of experts.

We know that there is something fundamentally different when we are in relationships like that. And that is really a lot of what we are talking about here in complex systems is a qualitative shift between something that you could figure out the parts and then just connect the parts as opposed to something where the connections and the relationships are the key that drive the whole thing and the parts are just a manifestation of it. That is a bit esoteric but that is really what we are talking about.

Rykert: Well, they are great observations Brenda and one of the things I think I am hearing too is that when you move to the complex it is like there is room for everybody, where in the complicated it is really up to the experts and we have to sort of disconnect ourselves. And so I think often times people are finding themselves very disconnected from society, from the systems, believing they could have any influence on these systems, and so it is hopeful.

And that was something I think I read a number of times was the notion of optimism that was embraced by the complexity. Can you speak to me a little bit more about that?

Zimmerman: I think one of the -- And I agree, the optimism is the part that really attracted me early on as well because we have been trained in the complicated way of thinking about things that there was a limit to these, to the capacity to understand things and hence the need to have experts and so paradoxically living in this democracy we were looking more and more to explain things by the heroes, by the expert, by the one. The all-knowledgeable, omniscient, omnipotent leaders had to be there in order for things to happen.

And that to me was a very pessimistic way of understanding things because, maybe it was because as I was getting older I had more chance to hang out with the elite and the leaders and realized, hmm, if we are relying on them to solve all of the problems of the world, then they are just like everybody else and it is pretty scary. It was a situation that if we relied on that piece -- There is a huge kick-back right now from that, both the parallel stories happening in the U.S. and elsewhere, where the need to have the comfort of the old model of the hero or the one-pint villain that we can look to. It is a very scary place to be as opposed to something that is more optimistic that we can have distributed control, that we can have reliance of a system, that we can have a potential

of an emergent outcome as no doubt John Holland was talking about in the last call, that are far beyond what you can explain by one individual. To me it is a far more optimistic view of something.

Rykert: Henri, I am going to take one more question here and then I will hand it over to you. One thing I am wondering if it might be helpful for people who are listening in today is Brenda, if you could just paint an example of how you would see the complicated system manifesting itself versus the complex system manifesting itself. Can you give us an example that would contrast those two?

Zimmerman: Sure. And I will try to use one for anybody who has got the paper or would like to follow-up with the paper. I will focus on one aspect of this. There are many, many aspects, but one aspect of that, and that is the whole nature of how you ask questions from a complicated perspective versus a complex perspective. Just to give a bit of background to that, my argument here is that managing change is fundamentally about managing the question that you influence the answers. And that in complex systems we can't directly change the answers but the nature and the quality of our questions impact the outcomes.

So questions change what we see. They change what we pay attention to. If they are really effective questions they change what we even think about what we see. So, this goes back to your elitist question, Liz, because in a democracy the capacity to ask profound and useful questions can't just be held with the elite. It has got to be a more broadly spread capacity. So in the paper, Sean and I looked at a couple of examples. We looked at France but we also used a case study that I used for another paper as well on Brazil and its approach to AIDS.

And for those who are unfamiliar to that story, a very short way, story here, Brazil was one of the worst, hardest hit countries in terms of AIDS in the mid-1980s and far worse than South Africa. And today, South Africa's rate of infection is over 25% and Brazil's is hovering around the 0.6%. So something remarkable happened in a very short period of time. So ...(inaudible) needed to start to fiddle with that. And what he uncovered in looking at that was the World Bank and others who came in and looked at Brazil and all sorts of other countries as well, used a complicated perspective when they looked at the analysis and that shaped their questions.

They didn't say they were looking at things in a complicated way but implicitly you can see it in the way they ask questions. So their questions were all questions

around what sort of resources do we need to have in place to be able to deal with AIDS in a developing country. What kinds of resources are needed to deal with huge populations of illiterate and homeless people? And the questions were ones that in the paper we sort of go through. But they end up with a conclusion at the end that in a country like Brazil, which was a poor country, the logical conclusion was, since they didn't have an infrastructure, since they had this huge homeless and illiterate populations, since the drug costs were three times the per capita income, *etcetera*, they had to focus on prevention.

And the conclusion to that, of course, or the implication to that of course, is you are going to have to let people die off and I mean huge, serious implications. Meanwhile in Brazil, unfolding at all different levels of society is the fact that they don't like the answers to those questions and so they change the nature of the questions. If you don't like the answers, change the questions. So rather than asking questions like what will drug costs be for the infected population, ask, in other words, how can we afford to treat it, they turn the questions around to how can we reduce costs so we can provide treatment to all who need it, which sounds like a simple shift.

But if you start with the first question, the complicated question, it is a question which ends up with a data point: What will the costs be? It ends up with a point. And the conclusion is one that you can't support it versus how can we reduce costs and provide treatment for all who need it. Embedded in that is a value statement of we are going to provide treatment for all. Embedded in that is creative potential of we are going figure out ways to solve this. And they did. Over and over again, they figured out ways to solve things that the complicated view of the world did not lend itself to.

Another example, the World Bank asked questions like, what infrastructure do you need to implement the plan to support and treat people? And the questions that were -- And the conclusion, again, was you don't have the infrastructure. And the cost of adding that infrastructure will be so huge that we can't do it. Brazilians in all different, again, in different, not just the Ministry of Health, it is happening at all different community levels as well, asked questions like, where are the formal and informal networks and relationships that already exist that are consistent with what we are trying to do.

So they went and they found a network, an informal network, of over 600 NGOs, of churches, of all sorts of places and they started to go to them and use that existing

network. So they were able to reveal the hidden resources so it did not bankrupt the country as they were implementing these enormous shifts and policies. So it is one of these things where, if the values shifted substantially in terms of the nature of the question but also the logical, rational thinking of the complicated, which assumed that you had an expert-driven model. It is radically different when you are talking about distributed control, distributed network. So, all sorts of things are revealed that you could not have seen otherwise.

Rykert: That is fascinating. Okay. Henri, I am going to hand things over to you. And just before I do that I just want to remind listeners that you can email questions in to the staff at the Plexus Institute by sending those emails to Plexuscalls@PlexusInstitute.org. And I think we have a question coming in even from London, Ontario. But when we get that question, we will forward that along but until then, Henri, over to you.

Lipmanowicz: Brenda, I would like to bring you back to Canada a little bit and sort of move a little forward in the future asking what experience have you had when you are presenting this paper. To whom have you presented? What sort of questions? What are the positive reactions and what are the negative reactions? And sort of what has been your experience with that?

Zimmerman: Sure. It depends, of course, on who you present this to and what they, and how they understand change and healthcare systems to be happening. Some of the responses have been incredibly positive in that they resonate with what people already understand so they have said, yes, of course, we can't control it all. The myth of the complicated view is that we can control it all; we can figure it all out in our heads and then implement the plan. And yet I will have to tell you Henri that a lot of people just can't buy this. A lot of people, particularly in positions of significant power and influence in the traditional infrastructure find this a bit threatening.

And there was one particular conference that we were at where the countries, including Canada, were represented and Ministers of Health, or ex-Ministers of Health or ex-Deputy Ministers, or ex-whatever stood up and made their presentations and six out of the seven said, the problem is, in my country, that we didn't implement my brilliant strategic plan. And one after the other said that. And the Canadian who attended said, maybe our problem is that we are not understanding the nature of the systems change properly and it is not a matter of not implementing the plans but the plans do not get

implemented by somebody figuring out a plan ahead of time and then imposing it onto the system.

So I think there is something happening in the Canadian psyche at some level that understands that there is a complex nature to this problem and phenomenon and so it is getting more positive response in all sorts of different quarters than I expected, actually, when I wrote this paper, including some MPs, members of Parliament, including people in various medical and healthcare organizations but some are still very suspicious of the fact that these things can happen, emergent properties can happen without somebody being in control.

Lipmanowicz: How does one get politicians on board with that kind of proposal?

Zimmerman: Some of the politicians who have been interested in this are -- And it is interesting. One of them in particular is a doctor, Carolyn Bennett, and she is very intrigued with this because she believes that this is how health really happens. And she is much more interested in a wellness health system than an illness system. So she is very aware of the fact that our current system is perpetuating structures don't solve the problems that she is intrigued with. But part of it is going back to what they were called to public life for.

I think that the most difficult ones, Henri, are probably the ones who are in the real power and the spotlight on them all the time because the seduction of the complicated approach is that you can be the hero and that you can solve everything. And it is has been fascinating in Canada to watch as these Commissions play out because there are two or three of them happening and watch the different approaches that they have been taking. And one of them in particular has been going out to the hinterland and really trying to talk to Canadians and really try to access it that way and some of the politicians really respond to that and others sort of say, no, no, we have got to go back to our experts and I am not doing my job if I have not shown the plan and the 18 steps and how it is actually going to play out.

Rykert: That is fascinating. One of the things, just trying to tie in that concept around the democracy and those notions of hopefulness and involvement of everyone within complex systems, Brenda, one of the questions I am wondering we could ask you is to put ...(inaudible), what are the questions we should be asking, whether we are in Canada, the United States or Great Britain, which is going through a similar kind of

reflection on its healthcare system. What are some of the questions we could be asking that would lead us to these kind of conclusions?

Zimmerman: I think -- Before I answer that question directly, I think one of the pieces -- since that I don't know who is in on this call but, just a bit of background here, one of the things that we understand about complex systems is that they have these patterns that repeat and these are patterns of relationships or connections and sometimes they are called ...(inaudible) by people like Gareth Morgan and sometimes they are called simple rules or these connections and I think it is understanding that what we need to be -- The questions need to access those minimum specifications or those simple rules of interactions that are repeating over and over again that are holding our system in its dysfunctional state but also looking for what are those ones that are really are the ideals that we want our system to go towards.

So it can sound quite crazy that what we are looking at is, like in some of the Latin American cities, they have been looking at things like, everything has to go, has to be answering the questions, how is this improving efficiency and equity. So they are looking at, simultaneously looking at the three key principles that they are trying to embed in everything that they do. So our questions need to be to reveal those key principles.

And Canada has a real advantage in that we have a healthcare, a national healthcare policy which has been forgotten in many ways but which is based on five key principles. And if we could go back to those principles and start saying, where are these most fully realized in our system. Because those are the principles and ideals and values that we believe are part of Canadian identity and what makes us proud to be Canadian is those kinds of principles. So we need to have questions that ask what are those values and principles that we are proud to embody.

We also need to ask questions that are more along the lines of where do we actually see these things already working? So how can we -- We have brilliant examples in Canada and the U.S. and the U.K. and elsewhere, where the system is actually working well, where it is actually being much more efficient, much higher quality, much better sense of the determinants of health more broadly, connecting across these things, distributed network of control, self-realized. We have in every country brilliant examples of these and yet we keep getting in the way of them. So we need to bring out those, understand them more deeply, not as the parts but as what created them.

Stanley: I have an email question that has just come in, Brenda, and I am not quite sure if you can answer it, but I will pose it. How is that?

Zimmerman: Okay.

Stanley: This comes from Barry Evans and--

Zimmerman: Hi, Barry.

Stanley: --And I will read this for you. He says, "Assuming that in a complex system, small differences can create large affects, what do you think of the notion that important system-wide change can be brought upon by zooming in at the micro-level on relationship factors between healthcare professionals, for example, doctors, nurses, allied professionals and the patient and between different healthcare professionals and what actually emerges in this micro-context?"

Zimmerman: I think that that is one of the wonderful paradoxes of complex systems is that we have this patterns that repeat at all scales, the scale of invariance, they talk about it. So I absolutely believe that sometimes understanding at the micro-level is exactly what we need to understand at the macro-level. So I am with you Barry on that point. I think the challenge is not to get suckered by the description of the micro as we have to replicate that, the structure or form of that and we miss the underlying question, which is how did that form or structure get created at the micro-level.

That usually is a far more interesting question than replicating or ruling out, which is a complicated view of understanding change where you start something and then you try to replicate it as it happened at the micro-level and roll it up at all the different levels. So I think even though, if I am understanding your question correctly, Barry, that I absolutely believe that understanding things at the micro level is the way to do. We have to understand them differently.

Lipmanowicz: I understood Barry's question a little differently, Brenda, and that is, maybe I did not listen correctly, but that does not matter, and that is, I thought that Barry was talking about achieving change at the macro level by focusing at the micro level, by focusing on doing things on the bottom. Is that -- Would you care to react to that?

Zimmerman: Yes.

Lipmanowicz: Or maybe we are using the same words in a different way.

Zimmerman: Maybe I am not being very articulate at this point. I think that focusing -- The paradox is that we can change the whole system by changing what

happens at the micro level. That is the paradox of the complex system, is that changing things at the micro level of pattern of interactions will actually change the whole. And it is almost like the policy framework, therefore, needs to be one that is, creates a safe enough container that therefore the main aspects or the key components or simple rules, that those micro experiments and interactions can indeed grow and take off in the system.

And too often we have--   Our healthcare is naturally a complex system and then we superimpose on it on complicated systems, which prevent the micro from being able to impact the macro.

Lipmanowicz: Would you give an example?

Rykert: And Brenda, if I could direct you to the Brazil case for some of those examples because I think there are some brilliant ones right in there.

Zimmerman: Okay. So, one of the -- Brazil is an interesting country because it has very urban cities, very huge urban centers, which are quite open about sexuality in lots of places, *etcetera*, and other areas, which are quite remote in the country where it would be totally inappropriate to talk about sexuality in a public context. And why is this important? Because part of the Brazilian story is allowing the micro level reactions to the AIDS phenomenon and how they are going to cope with it in a context-specific way--

So I mean in one of these cities they had a guy who created this campaign to try to make prevention of AIDS fun, which sounds kind of crazy but that is what he did, and he created these series of ads and one of them, for example, had a coffee table that looking like a condom and had three beautiful women sitting around it with word bubbles above their heads that said, "Si, si, si". And the caption was, if you use this, they will be saying, "Si, si, si".   And they used the humor to try to get across the prevention message.

Meanwhile out in the rural area, where that message just simply would not happen, they then went and said, where do the illiterate, homeless people out in these areas, who do they communicate with and they found frequently it was the local nun or whatever and they went to her and found out how do you communicate with the people who come to see you and that you serve. And they found ways to communicate there, that they could understand time, of course, they could be quite accurate, precise about arriving at a particular place at a particular time because they read the sun.

So they started using communication for the AIDS medication based on symbols of the sun movement and things like that. They did not assume that illiterate people were stupid. They said, how do we communicate with them. So that is sort of like that sense of understanding at the local level how these patterns of interaction can shape the whole. But in both cases this a way to figure out how to communicate at the micro level and how to understand the micro level that could then change the whole, which was to change the infection rate and the spread of AIDS to this radically different conclusion than what the World Bank had predicted.

Lipmanowicz: So you are contrasting this to what would be the natural, complicated approach, which would be to have a national program--

Zimmerman: Right.

Lipmanowicz: -- That blankets the entire country with an efficient communication message, right?

Zimmerman: Right. That is right. Exactly. And part of the challenge is, in a complex system you can have coherence without consistency. And in a complicated system you have to have the coherence through the consistency because you coordinate across the parts, so you need to have a consistency. And we do this all the time in healthcare, trying to create the consistency. So back to Barry's question, I think what he is getting at is, if we use these micro, if we zoomed in on these micro and really understood that what they were doing was connecting with their natural context, they were understanding the local context within the key framework of these two, three, or four values or dimensions that you are trying to achieve.

Then you can allow for incredible diversity of responses and still have a coherent overall national approach.

Lipmanowicz: Yes. Maybe I chose to misinterpret it a little bit because what I was thinking about is another issue and namely that ...(inaudible) when one is thinking about changing policy or changing a system as large as the healthcare system, there is a tendency to feel that, well, nothing can happen unless big decisions are made at the top. And since that may be the difficult thing to accomplish, to convince or to get people at the top to change completely the way they have been operating. There is a tendency to be paralyzed. And so that is why there is another interesting part of that question, which is, how much actually can be accomplished maybe by not focusing--

Zimmerman: At the top --

Lipmanowicz: -- At the top, but focusing, let's do what can be done at the local level.

Zimmerman: Right.

Lipmanowicz: -- At the hospital level, at the district, at the individual doctor level, *etcetera*.

Zimmerman: And then you are always -- But, of course, complexity has always got paradoxes, right? So how do you allow for local autonomy? Or how do we have local autonomy and local autonomy and local creativity thrive and have a national coherence? And have a sense that we talking about something that, in Canada's case it is a national identity, that sense of being Canadian is so wedded to our key principles in healthcare.

Lipmanowicz: Isn't it the values and coherence that give the coherences?

Zimmerman: Yes. And so that is part of what we are challenging the policy makers to focus more at that level, to focus more on creating a broad enough framework but with key principles that you constantly have to go back and these are your touchstones that you have to be constantly vigilant about. So it is actually -- I guess one of the challenges in leadership in this kind of a system is, the challenge is if you do too much interference, you actually screw up the system. And we have seen this over and over again in the U.K. is definitely facing this whole problem, constantly changing the structures and each time they change the structures, they break down the relationships that were holding the informal structures together.

So how do you actually lead in a way that is getting out of the way of the natural processes and yet not abdicating responsibility or say there is no job for leadership. So that is a real tension in leadership these days. And we are seeing this play out in dueling stories I would say in both organizations and in political systems right now where the dueling systems are we still want to have the hero or the culprit to blame, which is the complicated view of the world, while at the same time we are getting far more sophisticated. And the undercurrent of conversations that I have with people all the time are nobody buys into that single point solution or single point idea and so we have to get more sophisticated in our way of presenting that narrative, that story. And that is a challenge for politicians, I think.

Lipmanowicz: Where does the issue of money and cost fit into your scenario?

Zimmerman: Well, one of the phenomenal things about the stories that we gather is that the cost and money is absolutely central to understanding the quality and the improvements to the system. And I think it goes back in -- Well, to use the Brazil example, for example, again, part of the reason the World Bank came to the logical and rational conclusions they did was because the way they phrased the questions about resources, implied that it was a zero sum game, implied that resources could not be found beyond the normal direct input to the system, whereas what they actually found was, they had incredible hidden resources so it looked like Brazil implemented a relatively cheap solution to what they, to the AIDS problem.

And what they were actually doing, they were creating, or actually just recognizing resources that were already there. Efficiency is part of quality. We know that in all sorts of different industries. I mean healthcare is just really slow to the mark in terms of understanding that cost and quality is not a trade-off. Cost and quality was, when I was getting my MBA, 20 years ago or whatever, more than that now, anyway, we were all given these sort of diagrams that you had to have trade-off between cost or quality.

In the seventies, that was proven, first in a lot of Japanese companies and then across North America and European companies, that was proven to be, if you change the question, which was how do we improve quality and radically reduce costs, all of a sudden they were able to make huge leaps on both sides. And I think we have not really wrestled with that sufficiently in healthcare so we continue to go back to the dichotomy, it is either or. So we don't look for the hidden resources; we don't look for discretionary energy. And we set these things up as contradictions rather than paradoxes that need to be embraced.

Lipmanowicz: Are there complicated forces in the system that are actually pushing people in that direction?

Zimmerman: Yes.

Lipmanowicz: Can you give me some examples?

Zimmerman: Part of that is we are far more sophisticated in explaining things in the complicated perspective. It just sounds more rational to say we have limited resources. We have to stick to the knitting. We have to focus on what we are good at. All those kinds of arguments are, they are hard to argue with because they--

Lipmanowicz: Because you hear them all the time.

Zimmerman: Hear them all the time. Right. They are the dominant narrative, the dominant rhetoric.

Lipmanowicz: I was thinking about something else, Brenda. I was thinking more in terms of the design of the system that is imposing some restrictions or in terms of maybe the budgets are arrived. I don't know what. I am talking more in terms of -- Do you understand what I am saying?

Zimmerman: Yes, I think so. So let me try.

Lipmanowicz: Can you think of some --

Zimmerman: If I don't respond directly, ask it again. One of the key differences between a complicated system and a complex system is where control resides. In a complicated system, it can reside at the top. It can be a hierarchical structure. In a complex system there absolutely may be hierarchy but the control needs to be distributed in order for it to have the capacity for it to respond to error, to adjust, *etcetera*. So we are learning this in patient safety, work, and medical errors and all that sort of thing.

But it is also important in terms of budget restrictions, *etcetera*. So that if we have a financial control system that is pre-determined and too rigid at the top and too short in its temporal frame, then the institutional and institution start to react to that and they start to play in this vicious cycle of overstating their needs for the next year, *etcetera*, not willing to make the compromises in the longer term because they don't have that capacity to have the sense of a container in which to make those decisions, right?

So we block out information flows. And one of the key things we know about complex systems is that information is a critical force in terms of making the distributed control effective. And the budget systems are inherently designed to limit information flows. We limit what we share because we play all the budget games, because that is the-- So we create huge barriers to that.

Lipmanowicz: But this is not specific to healthcare. I mean this has been --

Zimmerman: Oh, absolutely not.

Stanley: I was wondering if I might interject. Sorry, I am really sensitive to the conversation. I didn't really want to interrupt the flow. I was wondering if we might use the last section of our talk together to address a number of email questions that have come in.

Zimmerman: Sure.

Lipmanowicz: Absolutely.

Stanley: And maybe to sort of wrap up on that. And we have quite a number, Brenda, so get ready. Here is a question from Jerry Halberstadt who is in Onset, Massachusetts. He is with New Technology Publishing, Inc. And his question is, "One could read your paper as showing the primary importance of values and political will to solve a problem and not necessarily a complexity approach. In Brazil, AIDS was seen as a threat to people and helping people was seen as more important than certain givens, specifically that drug patents were more important than human life. Why can't a systems approach, or a complex approach, coupled with planning, yield good results if only the values and constraints are human rather than purely profit driven?"

Zimmerman: I am not sure if I completely understand the question, Jerry, so let me try to answer.   Yes, absolutely, values and the political will are playing out in the Brazil story. And there are dueling sets of values. There is the rational, economic values, which are real and they are not to be dismissed. And there are other values that the poor deserves what everyone else deserves and that sort of sense, the human life. The complex part of this, I should say the pure complexity science part of this is, was also that they were looking at questions that could embrace both sides. So they were looking at paradoxes. So a lot of the questions in the paper that you look at the Brazil case were paradoxical questions. I think that is part of it.

They also were focusing much more on the relationships and the parts that solve the problem. So, yes, values drove it. But there also was the shift in the focus of analysis was to relationships and connections and to what already works rather than to the parts and to superimpose a plan. So planning is not -- Planning still plays a role in complex systems. It is just that we don't expect our plans to play out the same way as we do in a complicated system. You have to plan with the sense that we are dealing with emergent systems and emergent properties and so the plan needs to have more of a sense of a container, of a continuing process of inquire rather than a draft of a blueprint or steps to follow.

I think there is quite a substantial difference between thinking about strategic planning as separating out formulation of strategy and implementation of strategy, which is a more complicated view of the world.

Lipmanowicz: Would it be fair to express it as, in the traditional planning you implement the plan, period, whereas in this mode that you are describing you implement the plan and then you look for what is happening in order to make changes to the plan all the time.

Zimmerman: You are constantly having to do that. But partly it is the planning process itself can be designed so it increases your capacity, better peripheral vision to be aware of patterns, to be aware of relationships, to be aware of emergent qualities, that sort of thing. So it is not a *que sera sera* phenomenon we are talking about here. It is not that we throw all planning out the window; it is the focusing of the analysis. The feedback loops are much tighter and the fact that part of strategic plan needs to end with questions because you are recognizing that you are forming strategy through the interactions, so it can't all be done with head, face first and then action.

I don't know whether you think that answers Jerry's question. I am sorry Jerry is not online here to respond here, but…

Stanley: Well, we will find a better way to hopefully involve our listeners.

Lipmanowicz: Well, Jerry, you should call.

Stanley: Well, he is listening. Unfortunately, he can't talk with us. Here is a question from John Lloyd who is an M.D. at Pittsburgh Regional Healthcare Initiative. He asks -- He says that he agrees with taking on complexity in healthcare in our questions, emergent solutions, *etcetera*. "How do we measure success of implemented complex solutions or our answers to complex questions? Examples of how success manifests itself and how to measure or at least recognize success and appreciating and dealing with complex problems in healthcare at the micro level." I hope that I did not mangle that question but, I am reading it verbatim.

Zimmerman: Okay, so the focus of the question is on—

Stanley: The first question was how do we measure success of implemented complex solutions or answers to complex questions?

Zimmerman: So it is interesting. We always have to wrestle with the issue or measurement, which is a real question to be challenged because we can challenge it in two ways, one is, Brian Goodwin talks about complexity science is really a science of qualities rather than a science of quantities. And so the whole concept of measurement then probably is something that needs to look at the qualities of the interactions that are happening. However, we could also talk about again, what we focus on measuring. If

we believe that we are trying to measure the success of a complex interaction -- Is that the way he phrased that Darren, in his first question?

Stanley: I am just looking at it again. "How do we measure success of implemented complex solutions or answers to complex questions?"

Zimmerman: Okay. Answers to complex questions -- So what you are doing here when have the kind of complex interactions that we suggest in this paper, you have to then sort of say, okay, if we are saying we want to have the system have more transparency in terms of where the resources are being used, we have to have information systems which will show that. And probably part of the challenge will be, the measurement will be, how many people are more aware of where the resources are distributed. How many people are more aware of where to access the system if we have got multiple points of access so the system we talk about with tele-health, *etc.*, at the end of the paper?

Maybe it is things like that what we can start to measure the connectedness of the effect of the system and the accessibility of the system. We have to take a look at measuring based on determinants of health. We would have measure on, if we are using the way we have sort of described it, we are sort of saying that the key of the social determinants of health need to be embedded in the solutions that we are talking about, then we had better be measuring against those things and looking at interactions.

Part of the challenge I think and part of the reason I am being a bit vague on this is I think we are still at pretty early days of understanding how do we measure when we are talking about a science of qualities. And yet the part of why I love the Brazil story was we could see measurable impact in terms of a few key things, like how many deaths, how many affected, *etcetera*. But in the very, very, short run you could not measure the direct cause and effect of those things. You could not measure that ad campaign or the specific thing of the nuns drawing the moons or suns on labels, *etcetera*. You could not measure the direct impact so it is -- I think that this is a question that I don't have a good answer for that we still need to continue to do research on.

Rykert: Just to change the subject. I know we are getting close to the end here and Darren is going to need a few minutes to wrap up. But just one more, kind of, to take us in a little different direction at the end here, in doing this work, specifically for the Romanow Commission, was there anything in your review of these things that personally

surprised you as you worked through some of the shiftings from complicated to complex and so on? And if so, what was that?

Zimmerman: Yes. I guess one of the things that surprised me was how, in spite of the fact that I had been talking about complexity for a long time, it is still very tempting to go back and explain things from a complicated perspective, that you still want to go back and explain it by the individual and how tempting it was to still go back and point the fingers. So that was an interesting piece for me on a very personal level in terms of, that pull is very much there.

I often feel like I am quite inarticulate at explaining some of the things that we understand from complexity. One of my dissertation supervisors used to say that he thought his key job was to give me space because I could not articulate what I knew. And I think that is part of what we are struggling and maybe that is part of what I struggled over the measurement question because we know that there are pieces out there that we can understand but we don't often have the language to quite wrap ourselves around it because the other rhetoric is so sophisticated and so elegant that it is seductive to get back in to talking that way.

Rykert: Okay. Well, Darren, and I thank you for that Brenda and I think that gives, sort of helps me, too, in my own struggles to adopt and use some of these and I am sure I am speaking for lots of other people on the call when I say that it is encouraging to hear even you struggling with these things from time to time. So, Darren, I am going to pass this over to you.

Stanley: Oh, wow, thank you.

Lipmanowicz: I just want to add one little comment on this. I think the analogy of language is actually an excellent one because it is to me, it reminds me of when you have a dominant language and you are trying to speak another language, a foreign language and how the main language keeps surfacing in your thinking and in your habits or if you haven't used--   And I think there is a bit of this, that we have all been educated and raised to think in complicated terms. This is the way our sentences are constructed and the way we read and so forth and it is very hard to get out of that. You fall back into it all the time.

Zimmerman: And I think that is one of the words that we struggle about is the word explain, even that language is to lay flat. It is to make flat. And what we are doing

in complex systems is trying to show multi-dimensions. So our measurements, so often, not only is it made flat but they get to one point.

Lipmanowicz: Single, yes.

Zimmerman: So how do we have a measurement system that allows for this deeper sense of the interdependence of these qualities and connections?

Lipmanowicz: For the richness of the system.

Zimmerman: -- Without sounding flaky, that is the challenge.

Lipmanowicz: Well, mind you, the other thing that you can say is that when it is there, you can see it.

Zimmerman: It is the resonance.

Lipmanowicz: Oh, yes, absolutely.

Stanley: Perhaps on that note, our sixty minutes has flown by rather quickly. And I guess it is my job as moderator to -- Well, it is not a job, it is a pleasure, actually, to thank all of you for joining us today, Brenda Zimmerman and Liz Rykert and Henri Lipmanowicz, thank you very, very much. And thank you to everybody else who was listening.

Zimmerman: Yes, thank you.

Stanley: It has been a pleasure. And I still have a number of questions that, unfortunately, did not get answered but we will hopefully find better ways of getting everybody's questions answered and we may work through that the next few days, actually. If you want to and you have not done so yet, you can obtain a copy of Brenda's report from the Plexus Institute Website. It is available on our home site. Some people might have some problems, however, so the direct site for the commission is www.healthcarecommission.ca.

Special Thanks

Plexus Institute wishes to extend a special thanks to Marcelle Bastianello for her kind and generous work to make Plexus Calls available to our members by providing transcripts of our conversations. Marcelle is President of Innovative Systems Associates in Newton, MA where she does consulting work and research primarily for business organizations. She also has been at the heart of pulling together members from the Plexus community and beyond to form our New England Plexus Fractal group. She can be reached at isaco@rcn.com.