

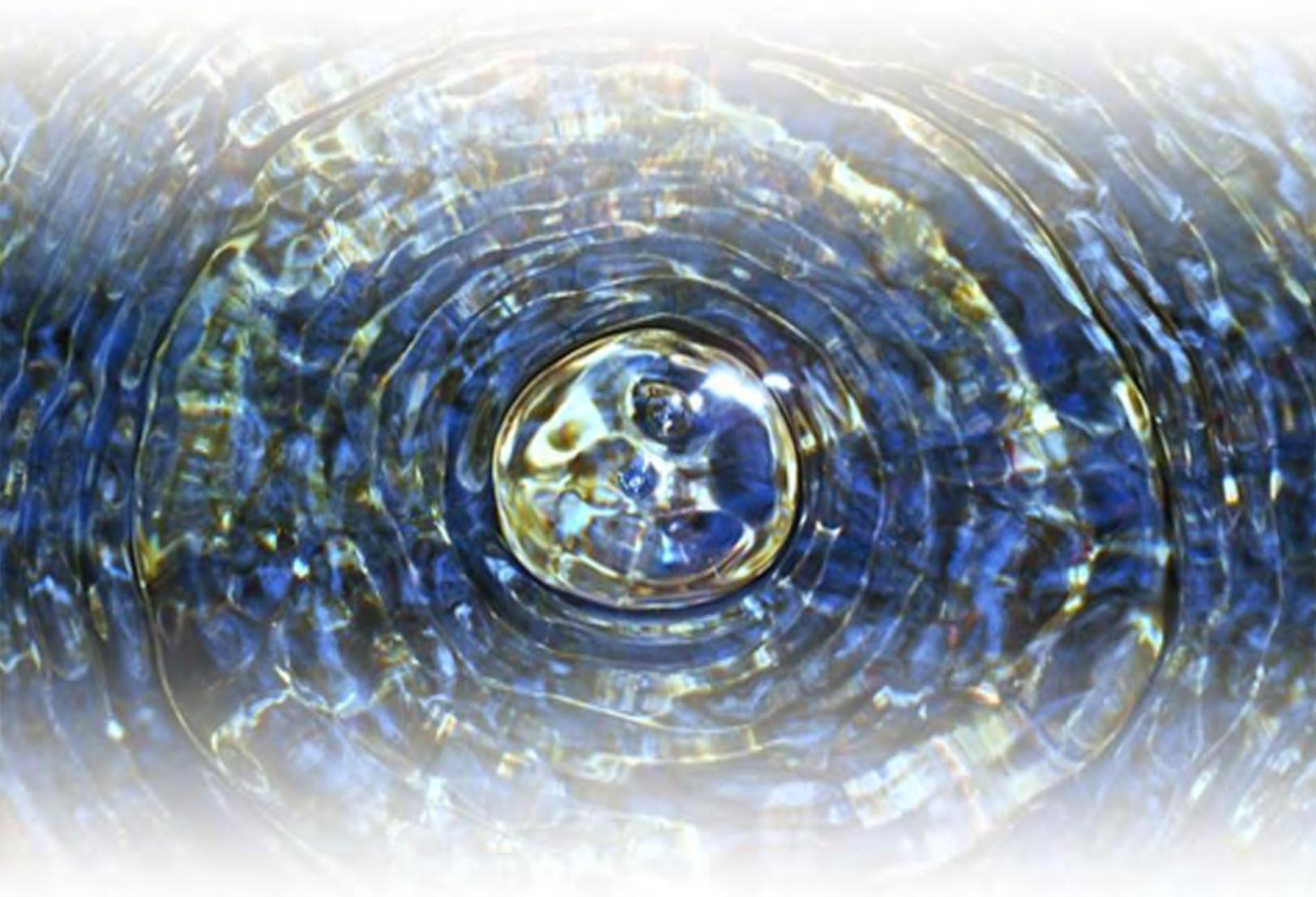


**USAID**  
FROM THE AMERICAN PEOPLE

## USAID COMPLEXITY EVENT

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OCTOBER 12, 2011  
WASHINGTON, DC



## EVENT BRIEF

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OCTOBER 2011

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## BACKGROUND

The last decade has seen an increased interest across the academic spectrum in complexity science or complexity thinking. Although there is variation in the way researchers conceptualize complexity, they share a common view that complex environments and complex problems are fundamentally different than those that are more ordered. That difference stems from the number of moving, interacting, and evolving parts in a complex system, which makes it hard to discern the patterns needed to connect cause and effect, or the regularities needed to develop reliable predictions. In these environments there is no guarantee that what worked before will work at another time or in another location, as the system will have changed, evolved, reconfigured. This suggests that development practices and tools that are based on linear connections between inputs and outputs will be of little use in complex settings.

USAID has supported development efforts in difficult and fast-changing environments throughout its 50 year history. However, with large and sustained engagements over the past decade in conflict and post-conflict countries, especially Iraq and Afghanistan, a higher proportion of USAID staff have direct experience designing, implementing, and evaluating development programs in unstable environments than at any time since the Vietnam era. With this experience have come questions; searching questions about whether the established development practices and procedures that work well in more stable and more peaceful countries are appropriate in less orderly places. And if conventional development approaches do not fit less conventional environments, what should take their place?

## INTRODUCTION

On October 12, 2011, the USAID Bureau of Policy, Planning, and Learning hosted the Complexity Event. As the proceedings of the day were varied in type, the Event Brief comes in two parts. Part One of the Brief reviews event sessions one and two, with synopses of each presentation developed from excerpts of the speakers' remarks. Part Two covers sessions three and four, which included a journey-mapping exercise, a report-out session, and responses from participants and panelists. Part Two highlights themes related to opportunities, challenges, and application.

For full presentations in screencasts and mp3 formats, please visit the website:  
<http://kdid.org/events/usaiddppl-complexity-event>

## **PART ONE**

### **Welcome**

*Tjip Walker (USAID/Bureau of Policy, Planning, and Learning/Office of Learning, Evaluation, and Research)*

The purpose of the Complexity Event was to come to an understanding of complexity theory and its implications for development practice. This was accomplished by bringing together experts to talk about concepts and insights, to help develop a shared vocabulary, to help participants figure out how to distinguish between complex and noncomplex situations, to inform USAID about the complexity concepts that can be used to the Agency's benefit; and to see whether or not these tools lend themselves to development work. The event was also an opportunity to share experiences from the field and to identify priorities for advancing complexity theory within the Agency.

### **Opening Remarks**

*Susan Reichle (USAID/Assistant Administrator/Bureau of Policy, Planning, and Learning)*

USAID recognizes that in 50 years of existence, the Agency has been active in complex environments for some time but has not been able to pause and think about how we work, where we work, and why we work in these environments. Complexity defines not only the environment in which we work, but it is the future because the “new” USAID is committed to learning and adjusting to our changing world.

The Development Response to Violent Extremism and Insurgency (VEI) Policy is one that drives operators and development practitioners working in these environments. When USAID is working in these types of complex environments, we need to program differently. Programming principles are different in complex environments because they are changing all the time and require assessing, reassessing, and close attention to ticking points. The focus should be on the drivers of extremism and insurgency—the push and pull factors that lead us to engage in those environments. Adaptability and flexibility in programming assistance to these areas are also important. We must always think locally and entrepreneurially because every situation is different; we cannot rely on life experience in crafting solutions for new situations.

As USAID is increasingly focused on innovating and learning, it is crucial for the Agency to begin to truly evaluate in order to have the evidence of why something does or does not work as we enter into these complex environments, enabling us to design and implement programs differently.

### **Connecting Extremism to Complexity: Seeing, Doing, and Adapting as Development Designers**

*Dave Kilcullen (Caerus Associates)*

To truly understand an issue, it is important to take a holistic view, looking at the many moving parts. If the new Development Response to Violent Extremism and Insurgency (VEI) Policy is going to work, we have to apply complex adaptive systems thinking to the problems that we are addressing. Should we look at drivers of conflict or catalysts of stability? The Cartesian approach does not get you anywhere in a conflict environment—the drivers are so connected that as soon as you try to understand one, or act on it, you change it and it changes all the others.

Cartesian analysis assumes that we are external to the system that we are analyzing, but this breaks down when we start looking at violence. We are in the Petri dish. If we neglect to observe all the external factors that affect the problem situation, we will not be able to accurately gauge the problem and create a solution. For instance, in the context of

maritime security, Somali piracy is a relatively simple technical issue, but in the development world it is a broader social, environmental, and economic problem – a big enmeshed system of which we are a part. Here is where complexity thinking comes in to try to understand the system.

Chris Wood

Complexity offers development work three separate ideas:

- (1) **Big data.** The use of wide area observation provides a basis for focusing on correlation rather than on predictive analysis and allows us to see how patterns in an area correlate with stability and instability.
- (2) **Deep dive.** Localized field research can generate signature recognition.
- (3) **Theoretical framing.** Framing can help identify which environmental factors are the most relevant in an analysis.

Concepts and Methods in Complexity Science	
Concepts	Methods
Non-linear Dynamics and Chaos	Non-linear Mathematics
Scaling	Evolutionary Computation and Genetic Algorithms
Evolution and Evolutionary Dynamics	Mathematical and Statistical Physics
Game Theory	Stochastic Processes
Networks	Agent based models
Theory of Computation	Machine learning
Emergence	Field Theory
Robustness and Resilience	Information Theory

Credit: David Krakauer, SF-USAIID Workshop, Feb 2011

## SESSION ONE: WHAT IS A COMPLEX SYSTEM AND HOW IS IT DIFFERENT?

The first session sought to provide an explanation of complexity theory. The specific focus of the session was the difference between complex systems and organized systems. The session introduced the concepts of complexity theory, explained some of the vocabulary of complexity, distinguished complex systems from other systems, and gave insights about the uses of complexity thinking.

### Presentations: Conceptualizing Complexity

Chris Wood (Santa Fe Institute)

“Conceptualizing Complexity: Concepts and Methods for Exploring Complex Adaptive Systems”

There is no such thing as complexity science. What there is, rather, is a set of phenomena observed in the world that have certain characteristics and certain properties—a set of scientific and intellectual concepts that have been developed to address those kinds of problems. There are a set of methods and approaches to investigating those kinds of phenomena.

Nature and human activity are organized in a spatial and temporal hierarchy. And depending on the questions you are asking, where you bore in on that hierarchy can vary quite dramatically. Evolutionary theory is fundamentally important to a complex system's view of human interaction

### Research News

## Strange Bedfellows

*It is hard to think of a more unlikely collaboration than one between physicists and economists, but this is exactly what is going on at a former convent in Santa Fe, New Mexico*

**THEY MAKE AN ODD COUPLE.** These two Nobel laureates, Philip Anderson is a condensed matter physicist who specializes in superconductivity; Kenneth Arrow is a theoretical economist who studies such things as how markets react to uncertainty. At first sight, you wouldn't expect them to have much in common, but you would be wrong.

Over the past 2 years, Anderson and Arrow have worked together in a venture that is one of the oddest couplings in the history of science—a marriage, or at least a serious affair, between economics and the physical sciences.

If this unlikely liaison bears fruit, the result could be a hybrid theory that imparts to economics some of the tools and techniques developed for such fields as physics and biology.

best science and economics schools in the country—places such as Princeton, Caltech, Stanford, and Chicago.

As might be expected, the economists and scientists have found that things get rather interesting when two such different cultures collide.

Richard Palmer, a physicist at Duke University, recalls that first meeting in September 1987: “I used to think physicists were the most arrogant people in the world,” he says. “The economists were, if anything, more arrogant.”

Both groups came into the meeting with skepticism and preconceived ideas, he recalls. The economists felt the physical scientists could not possibly help with their problems, and the physical scientists thought economics was a mess and there was not much you could do with it.



**Physicist and economist.** Anderson (left) and Arrow kicked off an unusual collaboration by inviting ten physical scientists and ten economists to meet in Santa Fe.

### Further Resources

- Gödel, Escher, Bach: An Eternal Golden Braid by Douglas R. Hofstadter
- Networks: An Introduction by M.E.J. Newman, Oxford
- The Origins of Evolutionary Innovations: A Theory of Transformative Change in Living Systems by Andreas Wagner, Oxford.
- The Nature of Computation by Christopher Moore and Stephen Mertens, Oxford.
- A Cooperative Species: Human Reciprocity and It's Evolution by Samuel Bowles and Herbert Gintis
- Complexity: A Guided Tour by Melanie Mitchell
- Microeconomics: Behavior, Institutions, and Evolution by Samuel Bowles

in a much more general way than simply biological evolution, because it is an important metaphor for cultural evolution. The relationships between cultural and biological evolution generate very important questions for contemporary research.



While there is no complexity science, there is a robust, interesting, provocative, and informative set of concepts, methods, and approaches that are valuable to the international development context.

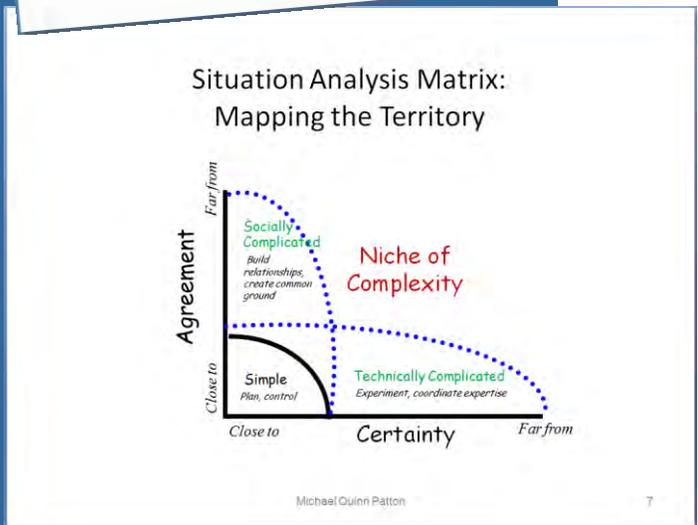
*Michael Quinn Patton (Utilization-Focused Evaluation)*  
“The Niche and Implications of Complexity”

Historically, the field of monitoring and evaluation (M&E) has been dominated by the assumption that you are supposed to end up where you thought you would at the outset of a project – and that, to implement programs, you should progress from intended strategy to deliberate strategy to realized strategy.

The Mintzberg framework, from Henry Mintzberg’s *Tracking Strategies*, shows how the real world unfolds, and then becomes a useful map for a complexity-based evaluation. The Mintzberg framework is applicable as we think about programming on the complexity side. We need approaches to evaluation that take into account the ways in which complex dynamic systems actually interact.

The map presumes part of our task is to help document the fact that during implementation, there is often a divergence from what people thought they were going to do at the outset of the project, as things emerge and things get left behind. It

is important to be conscious of these changes by paying attention to the actual complex dynamic systems in which development practitioners operate. To do this, we use a situation analysis matrix with two dimensions—the degree of certainty and the degree of agreement—to help distinguish simple, complicated, and complex situations.



### Further Resources

“A Leader’s Framework for Decision Making” by David J. Snowden and Mary E. Boone, *Harvard Business Review*, November, 2007  
*Built to Last* by Jim Collins  
*Getting to Maybe: How to Change the World*, Frances Westley, Brenda Zimmerman, Michael Q. Patton, Random House Canada, 2006.  
*Good to Great* by Jim Collins  
*Tracking Strategies: Towards a General Theory of Strategy Formation* by Henry Mintzberg, Oxford, 2008.

Development and humanitarian aid are dominated by certain mental models; we treat economics, social systems, political systems, and ecologies as if they are basic machines that we can analyze, determine their parts, and understand how they fit together perfectly. We try to tame complex problems by simplifying them so that they fit into our models, making them more manageable and therefore, solvable. We think that as long as we do the right thing, we can bring about the changes that we want in the world. Our concept of what is “right” is underpinned by assumptions that do not match the realities of development and humanitarian work.

There are quantitative and qualitative approaches to addressing complexity and while there are similarities—both talk about how hard problems are to describe, how hard systems are to create or recreate, degrees of organization, and cause and effect, among others—they often use very different language. Unfortunately, this disconnect can cause misleading qualitative interpretations of the findings of quantitative science.

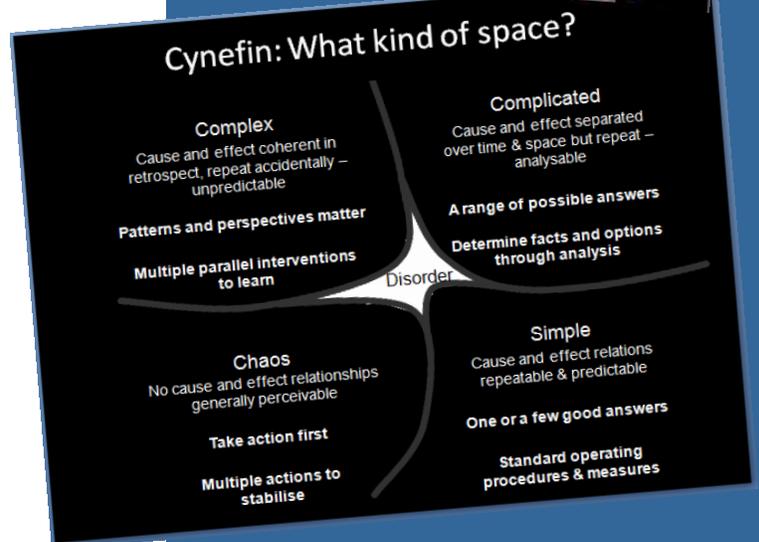
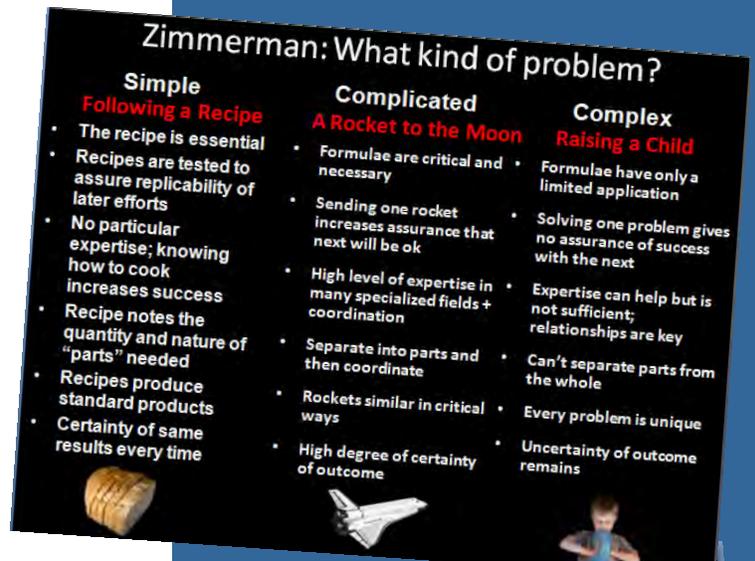
Four broad areas within complexity are particularly relevant to development: emergent systems, networks, behaviours, and dynamics and nature of change. The Cynefin framework is a managerial framework that uses the idea of cause and effect relationships varying in different contexts: simple, complicated, complex, chaos, and disorder.

Complexity systems research does not tell us “what to do” but presents ideas of “how to think” by providing a new interpretive framework and useful ideas and insights for furthering understanding.

### Moderated Discussion

Bill Frej (Santa Fe Institute)

All of us as development professionals, especially leading missions, know that complexity is a big part of what we do, but there are some recommendations that can help us better conceptualize complexity. First, build a systematic understanding of complex emergent problems through deep dive research. Second, involve those who matter most, especially the local population, in defining the results that matter most. Third, attempt



### Further Resources

- “A Leader’s Framework for Decision Making” by David J. Snowden and Mary E. Boone, Harvard Business Review, November, 2007
- Getting to Maybe: How to Change the World. Frances Westley, Brenda Zimmerman, Michael Q. Patton, Random House Canada, 2006.

multiple parallel experiments. Fourth, establish real time, strategic analysis and learning for operational feedback. Fifth, develop a theoretical framework to help in decision-making. Sixth, be open to fundamental adaptation of efforts along with changes in local actors and local conditions. Finally, reframe efforts as dynamic networks of multiple systems and multiple actors.

### **Can the concepts of complexity really contribute to foreign policy decision making?**

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*“Yes. And the reasons are (a) go slow, (b) be careful, and (c) not doing something for principled reasons is frequently a better strategy than trying to do something for ill-justified or not well-worked out reasons ... the impetus to do something is often the beginning of a set of actions that follow upon each other that are very, very difficult to stop once they're started and certainly very difficult to unwind.”* (Chris Wood)

*“Complexity concepts help you anticipate the dynamics that are going to come out of such a negotiated collaborative, interactive process in dynamic environments, and concepts tell you how to make sense out of what results from that. So I think complexity concepts can contribute centrally to understanding why this direction for foreign policy decision-making is the future.”* (Michael Quinn Patton)

*“Complexity [helps] describe the world as it actually is ... these ideas from the cutting edge of science can help us navigate and develop a deeper understanding of these phenomena ... The real question is how are we going to do it? ... We face a bit of a challenge because you've got complexity scientists, [and then] policymakers, and how do you bring those two communities together? I think the starting point has to be policymakers actually agreeing that they need to change their way of decision-making and that evidence in science can be helpful.”* (Ben Ramalingam)

### **Does the US government bureaucracy that we work in stifle innovation? How can we change this?**

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*“[Complexity] begins with an assessment ... what are the strengths and weaknesses of how we've done things in the past—that baseline about what the barriers are, what the drivers are ... it becomes important then, to join evaluative thinking and complexity thinking, to do an analysis of the very kind that this complexity event is aimed at supporting ... and what are the barriers, including the bureaucratic barriers, to doing that?... It's not turning everything upside down, but finding the sweet spot of where these things interact. And that itself is a kind of complex analysis understanding process.”* (Michael Quinn Patton)

*“A lot of the time, the discourse on innovation within the development sector is based on private sector ideas. But the private sector fails 80 percent of the time in terms of taking new products to market ... So I think there's a bit of an issue around the incentive ... every bureaucracy essentially holds back innovation. So what you need to do is to get better at talking about failure. And I think there's another point here that ... innovation comes from networking the fringes. It's not necessarily going to happen here in Washington or in London. It's the last mile of our interventions. It's where microfinance came out of. It's where community-based feeding therapy came out of. It's the people on the ground that can see an opportunity to do something different.”* (Ben Ramalingam)

*“Innovation is either the most overused, meaningless buzzword in the vocabulary of modern business and government, or it's the single most important cognitive process that we don't understand deeply enough, that can make a difference in our future on the planet ... [We can think of] innovation as a search through possibility space where you array in as large a dimensional space as you have to, everything that's possible ... If you think about innovation in those terms, [you] open your organizations to a whole new way of thinking about what innovation can be and can mean ... the way you circumvent the bureaucratic impediments that inevitably occur in large organizations, is by developing a whole new way of thinking about something.” (Chris Wood)*

### **Why has it been so difficult for the international development community at large to embrace complexity as an important vehicle for their work?**

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*“One of the biggest issues is institutional, that you can have the space to engage in new ideas if you're fortunate [enough] and you've actually got an opportunity to pick a new idea and bring it into your mindset, into your workplace. But actually we're all drowning in information ... we're all trying to make decisions in very difficult circumstances and I think that the challenge, not just for complexity, but for any scientific endeavor, is to basically say, 'What are the problems that you're actually facing and what can science contribute to that to actually help you navigate these challenges?’” (Ben Ramalingam)*

*“Part of the challenge ... is to talk about where the opportunities are to use complexity thinking to illustrate what it would mean ... it is looking for those particular places that are ripe for implementing a complexity perspective ... doing it well in a few places that demonstrate its applicability to help people get more comfortable in the transition process about what this is going to mean, [and this] will move you towards a potential organizational tipping point.” (Michael Quinn Patton)*

*“Not only do the lessons of thinking about complex systems suggest that we not try to wholesale change a system from the top down at the outset—rather, it encourages us to ask, 'What is the smallest, most focal, most localized action we could take that might have systematic effects more broadly?' Arguably, those are less invasive. They can be less costly. They can be more cooperative with the existing system as it exists.” (Chris Wood)*

### **In this new paradigm of complexity for international development, what does accountability mean?**

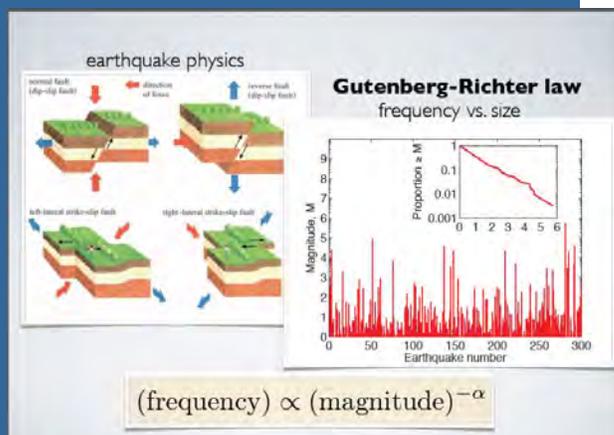
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*“Accountability means that you do a good job of documenting what the dynamics are that you're responding to, how you're responding. It means the Mintzberg framework: You know what you started out to do. You know what you did about what you started out to do. You know what you left behind and why. You know what you picked up and what emerged. You document that and first and foremost, accountability is about learning and adaptation and creating documentation about how that occurs.” (Michael Quinn Patton)*

*“Essentially, we're not saying we can be unaccountable ... We need to change the form of accountability to match the kind of system we're dealing with. So we need a more dynamic form of accountability. And this isn't just true in international aid; it's true across the board. Target-based systems have failed across Western public sector ... What we need to question is why, when the accountability frameworks have proved so abysmally suited to our world, do we continue to use them?” (Ben Ramalingam)*

## SESSION TWO: HOW DO THESE CONCEPTIONS OF COMPLEXITY HELP US THINK AND ACT?

Aaron Clauset



The second session expanded on session one through the introduction of tools important for engaging with complexity.

### Presentations: Tools to Engage with Complexity

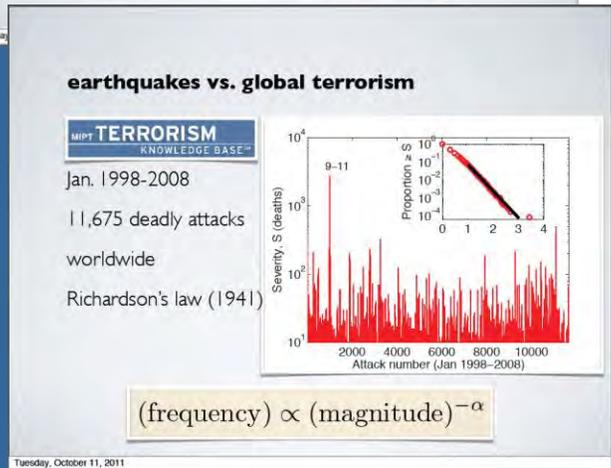
Aaron Clauset (University of Colorado/Boulder)

“Predictability and Unpredictability in Terrorism and Civil Wars”

Earthquakes are useful for comparing to terrorism and civil wars in that we try to predict the unpredictable in catastrophic events that have large economic, political, and social impacts. Although we know a great deal about the phenomena of earthquakes, we still cannot predict when they will occur. This same pattern also occurs in wars and terrorism.

Though the physics of earthquakes is largely known, the processes that generate the pattern of terrorism and insurgency are largely unknown, dynamic, complex systems.

What complexity brings to this discussion is trying to determine what aspects of these processes are predictable and what aspects are inherently unpredictable. It is hard to build a one-size-fits-all policy to deal with civil wars and terrorism. Instead, we need to take a highly contextualized point of view by learning the local dynamics and understanding local processes. Complexity theory allows us to get away from the “myth of proportional responses.”



In science, learning is important, while policy is much more oriented to the engineering approach. In order to change this, we must embrace the scientific method of experimentation and the ability to fail and learn something about why we failed.

### Further Resources

- “Developmental dynamics of terrorist groups,” Aaron Clauset and K.S. Gleditsch
- “A novel explanation of the power-law form of the frequency of severe terrorist events,” Aaron Clauset, M. Young and K.S. Gleditsch, *Peace Economics, Peace Science and Public Policy* (2010)
- “The strategic calculus of terrorism,” Aaron Clauset, L. Heger, M. Young & K.S. Gleditsch *Cooperation & Conflict* (2010)
- “A generalized aggregation-disintegration model for the frequency of severe terrorist attacks,” Aaron Clauset, F.W. Wiegel, *Journal of Conflict Resolution* (2010)
- “Power-law distributions in empirical data,” Aaron Clauset with C.R. Shalizi & M.E.J. Newman, *SIAM Review* (2009)
- “On the frequency of severe terrorist attacks,” Aaron Clauset, M. Young & K.S. Gleditsch, *Journal of Conflict Resolution* (2007)

Rob Ricigliano (University of Wisconsin/Milwaukee)

“Tools for Grappling with Complexity: Systems Mapping and Feed Forward”

Improving how development actors manage complexity starts by improving assessment. Good assessment is comprehensive, comprehensible, and portable. Two tools accomplish both of the goals of comprehensiveness and comprehensibility: Systems Mapping and Feed Forward. Systems mapping is a way to integrate a lot of data in a way that produces a memorable narrative. Feed Forward is the way to push key insights from a systems map on to planners, implementers, and evaluators in order to increase the likelihood of good feedback.

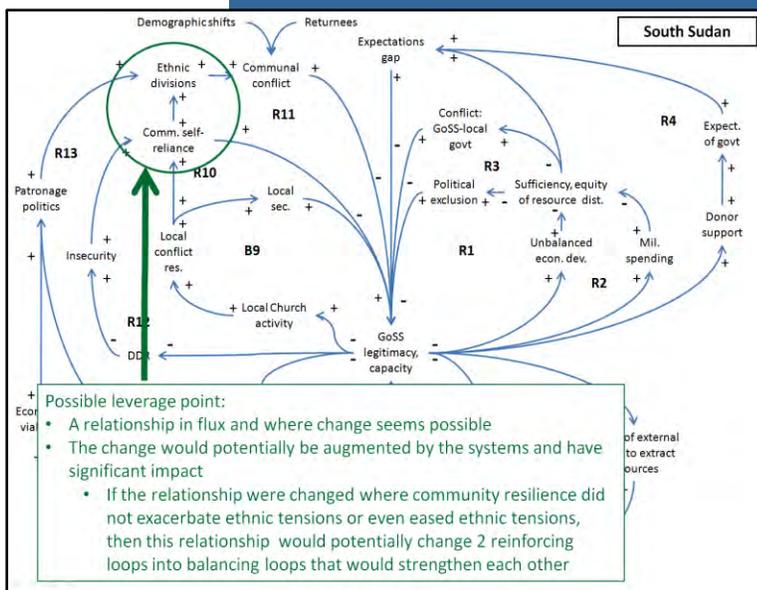
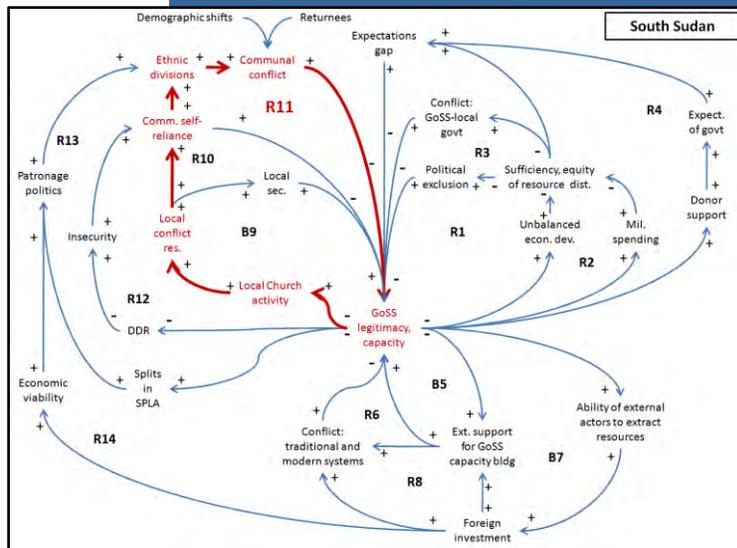
Complex systems pose many challenges for traditional development practice. One problem in particular is that we produce assessment tools to fit specific programming responses, and this is what drives our assessment.

With traditional planning and assessment processes, we think that in order to maximize our effectiveness we have to get as close as we possibly can to what we know and how it might apply. However, this is not the case. The assessment should be, rather, an “MRI” of the context that we are engaging in, driving what we are doing in programming. Another problem is our obsession with the idea of adding up; we want to believe that if we multiply one program that worked by a thousand, it will generate a thousand times the impact, but that is not how it works. Instead, we need to work with the energy within the system itself, making small impacts, impacts that the system will amplify rather than undermine.

The key to figuring out how to focus our programming and resources in the areas that are going to make the biggest difference is to find the leverage points. Points of leverage create the most amount of change with the least amount of effort. By monitoring and evaluating these and learning, we will be able to find out if the map we have created of the system is correct, and if our programming is right for it.

Alexa Courtney (Caerus Associates)  
 “Designing for Development”

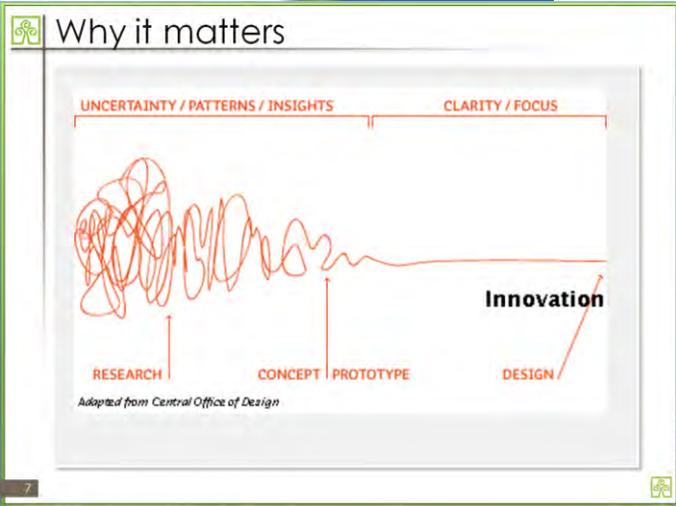
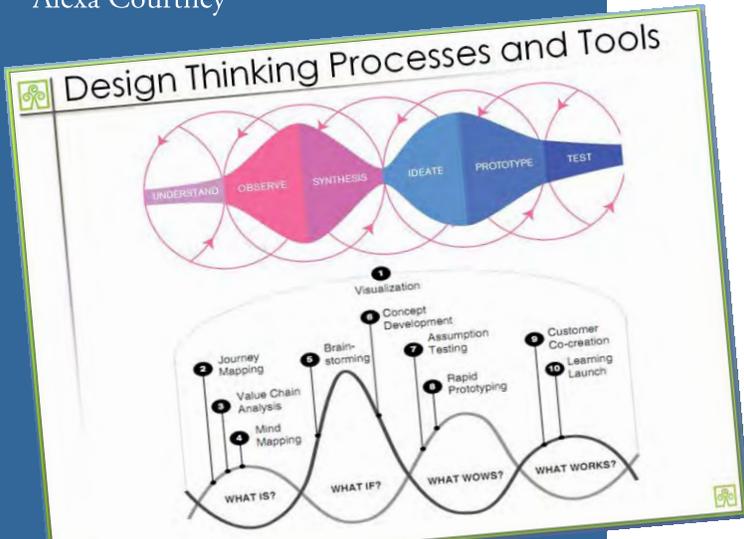
Design thinking is about the creation of future realities, the facilitation of change, and a process to surface emergent ideas. It is a repeatable problem framing and solving protocol that can be learned and applied. The power of design is that it combines traditional analytical tools with imaginative and creative tools that really deal in the currency of possibility. Design thinking is also a toolkit—a methodological process—that emphasizes better ways to communicate and test ideas through visualization, process mapping, systems thinking, and prototyping, among other core components.



Further Resources

Making Peace Last, Rob Ricigliano, Paradigm, 2011.

Alexa Courtney



Design thinking is a synthesis of experimentation and idea refinement that helps you move from what can seem like a very chaotic environment to tracing out some of the dynamics of complexity. Defining the problem is the real challenge in design thinking, but it ultimately helps you understand how to more accurately frame and engage the problem, test assumptions, and experiment in the environment.

### USAID Responses

*Katherine Nichols (USAID/Bureau of Policy, Planning, and Learning/Office of Strategic and Program Planning)*

Responding to Aaron Clauset's finding that infrastructure and politics of conflict become entrenched, we need to ask how can we counteract these trends? Where have we done so successfully? In terms of Rob Ricigliano's presentation, a lot of the principles that were really aptly highlighted are things that a lot of us do and have done for decades every day in the field, and it is a wonderful categorization of them: adaptive programming, assessment, and analysis.

We do this every day in the field, but how can we do a better job of communicating it and linking it up with the very highest level of policy, decision-making, and especially budgeting? In the Office of Strategic and Program Planning, we are working with the new Country Development Cooperation Strategy process to apply tools like those that Ricigliano mentioned to creative, effective design.

*Stacia George (USAID/Bureau for Democracy, Conflict, and Humanitarian Assistance/Office of Transition Initiatives)*

In OTI, we have learned many lessons through the challenges that come with implementing systems mapping models or looking at networks. As a result, we have evolved our program cycle models to be more adaptive, particularly in terms of strategy, by beginning with broader strategies that allow for reassessment later on. After a period of three to six months, and every three months thereafter, we will reanalyze and reassess our models to examine what has been successful and what needs to be updated.

### Further Resources

**Designing for Growth: A Toolkit for Managers** by Jeanne M. Liedtka, Tim Ogilvie

We are currently formalizing that process into a quarterly program performance review conducted alongside our local staff. These discussions rely on very local knowledge and analysis of what is happening on the ground. We are looking to better incorporate that local knowledge into what we do.

We are also asking more questions about how we as an agency get better about accepting failure as not failure, but rather as a part of the process. Historically, we have always preferred to base our projects on evaluations and evidence and get nervous if everything is not laid out from the beginning. Instituting the types of modeling and analysis we are talking about today will require a major shift in mentality. The challenge will be to justify to our partners and the policy community that it is okay to start off not knowing where we will end up three years from now. We know what we are aiming for, but we recognize the importance of adapting our strategy as we go through the program cycle.

## PART TWO

### WHAT ARE THE IMPLICATIONS AND OPPORTUNITIES FOR DEVELOPMENT PRACTICE? WHAT ARE THE NEXT STEPS?

#### Plenary Discussion: Development Officers as System Designers: How Might a Complexity Perspective Improve Development?

*Richard Tyson (Caerus Associates/Helsinki Group)*

Design is the practice of creating useful experiences; it is less about designing things and more about shaping consequences. Useful experiences are defined by the journey people take to accomplish things in their lives. Design reframes how we look at creating consequences for those journeys. Complexity makes at least three separate demands on design for development. The first demand involves insight—seeing dynamic patterned forces in development contexts, instead of just facts, averages, or regressions. The second is a modified theory of action and theory of change, involving more real-time data, program portfolios, agile development, iterative programs, and rapid cycles. The third is the institution of new tools, processes, and practices—a shift in how practitioners think and work.

“At the end of the day when you get to the planning stage, it’s very difficult to get away from some of the solutions you’ve come up with before and really reverting back to what you know, the tools you have, and the things that are easier to do ... How do you get beyond that?”

“[There is a process] for doing things but ... that process may or may not be in fact aligned with how things need to get done.”

“[A theme] that resonated very strongly was breadth of perspective, and this was in terms of stakeholders, actors, donors, peers, and influences. Let’s hear more versions of the story, if you will. Let’s widen the pool of people whom we speak to.”

“More diverse teams, people from different disciplines, backgrounds, diversity of tools, and approaches in the design may help us create more flexible or adaptive programs in general.”



“We need to be more open to influences from the outside [and] realize we’re operating within a global environment.”



“Elevate, incentivize, and integrate learning. This is certainly something the Agency [has been] trying to deal with a lot in the past few years and incorporate learning into our program design ... also, incentivizing learning has to do with getting control again to embrace the possibility of failure.”

“Whatever we take away from our evaluations and assessments of programs, we should definitely incorporate into our work as we continue. That’s sort of a rolling basis.”

“Design for learning, flexibility, and adaptability. Go back, design, implement, go back.”

## Synthesis

Following the plenary discussion, participants engaged in a journey-mapping exercise to help them think about what complexity really means for development. Rapporteurs chosen from each breakout group then presented the journey maps and offered a synthesis of their groups’ insights. Complexity and Design experts reflected on USAID officers’ journey maps and addressed specific needs that surfaced in session three. USAID stakeholders expressed observations from the day:

- [Larry Garber](#) (Deputy Assistant to the Administrator/Bureau of Policy, Planning, and Learning)
- [Neil Levine](#) (Bureau for Democracy, Conflict, and Humanitarian Assistance/Office of Conflict Management and Mitigation)
- [Sepideh Keyvanshad](#) (Bureau of Policy, Planning, and Learning/Office of Policy)
- [Dan Corle](#) (Bureau for Democracy, Conflict, and Humanitarian Assistance/Office of Program, Policy and Management)
- [Annica Wayman](#) (Bureau of Policy, Planning, and Learning/Office of Science and Technology)

## Emergent Themes

### *Opportunities*

There was considerable interest in, and need for, continuing this conversation on complexity, but to broaden it by including people in other fields, like health.

There was also recognition of what else is out there and that issues of complexity are not limited to conflict/post-conflict situations. Participants recognized the difficulties associated with bringing this kind of thinking into our work because it runs counter to embedded procedures of planning, contracting, assessment frameworks, tools, and indicators.

### *Application*

Participants showed enthusiasm about what might be part of an emerging toolkit:

1. The Mintzberg tracking model
2. Systems mapping
3. Design thinking

They felt that the following resources would be necessary if complexity were to be taken seriously:

- Tools to do deep dive research
- Ways to visualize
- Staff dedicated to complexity
- More time to spend on understanding situations before acting
- Cross-bureau designs
- Room to develop a complimentary set of guidance operating in complex environments that covers planning, design, implementation, monitoring and evaluation

### Challenges

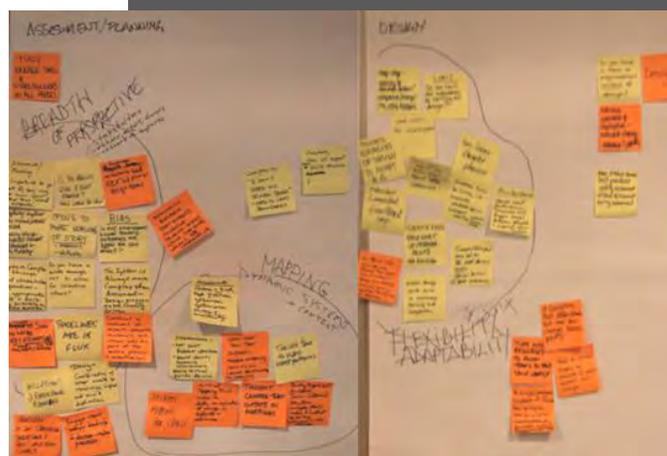
Applying complexity thinking requires facilitating change within USAID, already a complex system in and of itself. The first step involves getting primarily DC-based actors to recognize the role they play in complex global systems, or in Dave Kilcullen's words, to see themselves as inside the Petri dish. As in most changes to any bureaucratic structure, we will have to examine the ways that incentives provided through the Agency encourage or discourage learning and adaptability. This is difficult when we are dealing with Congress and their emphasis on predictability.

“Very often, the program length and steps happens in a very specific timeframe that is not related to the gestation of problems on the ground ... there's a disconnect between the reality on the ground and how programs get framed.”

“Given all of these known unknowns, unknown unknowns [we need] to be comfortable with the uncertainty and [we need] to be flexible.”

“[We need to] become more open and engaged as a system. Someone pointed out that we are a closed system. Most government agencies are [closed systems] but in our work and be a more open system.”

“We need to be more able to acknowledge the possibility of failure ... and a way to do that is to embrace risk more – to be more innovative to actually move beyond the way we usually do business and move towards different ways of program design, different ways of evaluation assessment.”



## Closing Remarks

*Tjip Walker (USAID/Bureau of Policy, Planning, and Learning/Office of Learning, Evaluation and Research)*

The day ended with an urge from Dr. Tjip Walker to continue the conversation. No promises were made, but the interest generated by the event and the questions provoked by the presentations were promising for the continuation of a lively discussion of applying complexity theory to the future of USAID.

“We want to make sure there are not disincentives to creativity ... institutionalize experimentation and then learning from those successes or failures as the case may be.”

“Underlying models need to move away from static processes.”

“We need to be more involved on site and on the ground, doing the work rather than just reporting on it.”

“No matter what you do, you’re part of the problem situation ... [you are] in the Petri dish. Both the program and the designer are part of the complexity of the social situation, and if you don’t model your own relationship to the situation, then you’re missing the idea.”



“We really need to develop different mechanisms for complex problems, different ways of contracting, more flexibility, more resources, of course, and also, more decision making in terms of where we put our money or where we [take] our work.”



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#### *Disclaimer*

The views expressed in this publication do not necessarily reflect the views of the U.S. Agency for International Development or the U.S. Government.

## APPENDIX A: EVENT AGENDA

Agenda	
<b>Preliminaries</b>	
8:30 – 9:15	<i>Welcome</i> <i>Objectives, road map of the day, introductions of experts</i> <ul style="list-style-type: none"> <li>Tjip Walker, PPL/LER</li> </ul>
	<i>Opening Remarks</i> <ul style="list-style-type: none"> <li>Susan Reichle, AA/PPL</li> </ul>
	<i>Connecting Extremism to Complexity: Seeing, Doing, and Adapting as Development Designers</i> <ul style="list-style-type: none"> <li>Dave Kilcullen, Caerus Associates</li> </ul>
<b>Session 1: What is a complex system and how is it different?</b>	
9:15 – 10:15	<i>Presentations: Conceptualizing complexity</i> <ul style="list-style-type: none"> <li>Chris Wood, Santa Fe Institute</li> <li>Michael Quinn Patton, Utilization-Focused Evaluation</li> <li>Ben Ramalingam, Overseas Development Institute</li> </ul>
10:15 – 10:45	<i>Moderated Discussion</i> <ul style="list-style-type: none"> <li>Bill Frej, formerly Diplomat-in-Residence, Santa Fe Institute and USAID Mission Director</li> </ul>
10:45 – 11:05	<i>Break</i>
<b>Session 2: How do these conceptions of complexity help us think and act?</b>	
11:05 – 12:25	<i>Presentations: Tools to engage with complexity</i> <ul style="list-style-type: none"> <li>Aaron Clauset, University of Colorado</li> <li>Rob Ricigliano, University of Wisconsin</li> <li>Alexa Courtney, Caerus Associates</li> </ul> <i>USAID Responses:</i> <ul style="list-style-type: none"> <li>Katherine Nichols, PPL/SPP</li> <li>Stacia George, DCHA/OTI</li> </ul>
<b>Lunch</b>	
12:25 – 13:15	<i>Lunch</i>
<b>Session 3: What are the implications/opportunities for development practice?</b>	
13:15 – 15:30	<i>Plenary Discussion: Development Officers As System Designers: How might a complexity perspective improve development?</i> <ul style="list-style-type: none"> <li>Richard Tyson, Caerus Associates/Helsinki Group</li> </ul>
	<i>Parallel Small Group Sessions: Designing New Ways to Understand, Engage, Learn and Adapt in Complex Environments</i> <ul style="list-style-type: none"> <li><i>Facilitators: Tjip Walker, Alexa Courtney, Richard Tyson, Melissa Patsalides, Kirby Reiling</i></li> </ul>
	<i>Break</i>
<b>Session 4: Next Steps</b>	
15:30 – 16:25	<i>Summarizing the Small Groups</i> <ul style="list-style-type: none"> <li>Breakout groups synthesize their insights and present journey maps in plenary</li> </ul>
	<i>Presenters' Response</i> <ul style="list-style-type: none"> <li>Complexity and design experts reflect on USAID officers' journey maps and address specific needs surfaced in session 3.</li> </ul>
16:25 – 17:55	<i>Observations from USAID Stakeholders</i> <ul style="list-style-type: none"> <li>Larry Garber, DAA/PPL, Moderator</li> <li>Neil Levine, DCHA/CMM</li> <li>Sepideh Keyvanshad, PPL/P</li> <li>Dan Corle, DCHA/PPM</li> <li>Annica Wayman, PPL/ScT</li> </ul>
<b>Closing</b>	
16:55 – 17:00	<i>Closing Remarks and Commitments</i> <ul style="list-style-type: none"> <li>Tjip Walker</li> </ul>

## APPENDIX B: SPEAKER BIOGRAPHIES

### **Dr. Aaron Clauset**

Prof. Aaron Clauset sits on the faculty of Computer Science at the University of Colorado at Boulder and the Colorado Biofrontiers Institute. He received his PhD in Computer Science from the University of New Mexico and was an Omidyar Fellow at the prestigious Santa Fe Institute.

Clauset's scientific research is broad and multidisciplinary, drawing on the tools of Computer Science, Physics and Statistics to develop advanced computational methods for studying, modeling and forecasting the dynamics of complex social and biological systems. He is an internationally recognized expert on complex networks, the mathematics of rare events, the global dynamics of terrorism and war, and complex systems. His work has appeared in prestigious scientific venues like *Nature*, *Science*, *JACM*, *STOC*, *AAAI*, *SIAM Review*, *Physical Review Letters*, and the *Journal of Conflict Resolution*, and has been covered in the popular press by the *Wall Street Journal*, *The Economist*, *Discover Magazine*, *New Scientist*, *Miller-McCune*, *the Boston Globe* and *The Guardian*. Clauset's blog titled "Structure + Strangeness" can be found here: <http://www.cs.unm.edu/~aaron/blog/>.

### **Alexa Courtney**

Alexa Courtney is Vice President of Caerus Associates and a recognized thought leader and practitioner with over nine years of policy and field experience in the development field of conflict mitigation and peacebuilding. She has been honored by DevEx and Chevron Corporation as one of forty international development leaders under forty in Washington, DC, recognized for demonstrated leadership and impact on development results and by *The Diplomatic Courier* and *Young Professionals in Foreign Policy* as one of the top ninety-nine rising foreign policy leaders under thirty-three. As a former Conflict Specialist and Senior Civil-Military Advisor with USAID, she led the assessment and design of multiple conflict prevention and stabilization programs throughout South Asia. Upon leaving federal service, USAID awarded her a special award for innovation in "Irregular Development" for foresight in identifying the need for the Agency to adjust its regular development model, adopt innovative concepts, and launch a civilian approach to counterterrorism and counterinsurgency. Ms. Courtney holds a B.A. in Sociology and International Studies from Yale University, and a M.S. from the University of London's School of Oriental and African Studies (SOAS) in the Political Economy of Violence, Conflict and Development. She is a former Fulbright Scholar and a term member on the Council on Foreign Relations.

### **Bill Frej**

William M. Frej, retired Career Minister in the United States Senior Foreign Service, served from 2010-2011 as the Santa Fe Institute's first Diplomat in Residence, a diplomatic appointment under USAID, where he focused on the interrelationships between complexity science and terrorism, conflict, stabilization and long-term sustainable development. Mr. Frej worked for USAID for the past twenty-four years in both overseas and Washington, DC assignments. Most recently, he served as the USAID Mission Director to Afghanistan from May 2009 to July 2010. In August 2010, he was appointed as USAID's first Diplomat in Residence at the Santa Fe Institute. In his last U.S.-based assignment, he served as the first Director for Development Issues at the National Security Council in the White House in 2002 and 2003. Prior to this appointment, he held the position of Director of the Office of Market Transition in the Europe and Eurasia Bureau, USAID Washington in 2000-2002.

### **Larry Garber**

Larry Garber is Deputy Assistant Administrator in the Bureau of Policy, Planning, and Learning (PPL) at USAID, where he supervises the Offices of Science & Technology and Learning, Evaluation, and Research. During the first several months of 2010, Mr. Garber led a small team, which conceptualized and stood up the PPL Bureau, and from June-August 2010 he served as the Bureau's Acting Assistant to the Administrator.

From October 2010-July 2011, Mr. Garber was detailed to the Africa Bureau, where he served as the Agency point person for the Referendum on Southern Sudan independence, and supervised the Office's Southern African Affairs and Development Planning. And from March-August 2011, Mr. Garber led an intra-agency Middle East Strategic Planning Group, which recommended a reframing of Agency programmatic approaches in response to developments in the Middle East and North Africa region. Mr. Garber was a senior policymaker for USAID in Washington from 1993-99, including serving nine months as the Acting Assistant Administrator for the Bureau of Policy and Program Coordination. He was Director of USAID's West Bank and Gaza Mission from 1999-2004.

Before rejoining USAID in November 2009, Mr. Garber served as the Chief Executive Officer of the New Israel Fund, which aims to strengthen Israel's democracy by supporting programs that safeguard civil and human rights, bridge social and economic gaps, foster tolerance for all inhabitants, and enable different forms of religious practice to thrive. From 1982-93, Mr. Garber worked with the National Democratic Institute, the International Human Rights Law Group, and Steptoe and Johnson law firm. He also has served as a consultant on election-related matters for the Organization of American States, United Nations, and Organization of Security and Cooperation in Europe.

Mr. Garber teaches as an adjunct at the Washington College of Law and has written extensively on issues relating to human rights, democratization, election monitoring, and Palestinian political and economic development. He is the author of the 1984 publication, "Guidelines for International Election Observing," and co-editor of "The New Democratic Frontier: A Country-by-Country Assessment of the 1990 Elections in Central and Eastern Europe." During 2007-08, Mr. Garber was a member of a six-person National Academies of Science expert panel, which prepared the publication "Improving Democracy Assistance: Building Knowledge Through Evaluations and Research."

Mr. Garber received a bachelor's degree from Queens College in 1976 and a joint law degree and master's degree in international affairs from Columbia University in 1980.

### **Dr. David Kilcullen**

Dr. Kilcullen is the founding President and CEO of Caerus Associates LLC, a strategic design consultancy with a focus on the overlapping problems of conflict, climate change, energy, health and governance. He also serves as an advisor to NATO and a consultant to the U.S. and allied governments, international institutions, industry and NGOs, in conflict and post-conflict environments and the developing world. Dr. Kilcullen is also an Adjunct Professor at the School of Advanced International Studies, Johns Hopkins University.

Dr. Kilcullen served in Australia's Office of National Assessments, then with the U.S. State Department. He first served as Chief Strategist in the Office of the Coordinator for Counterterrorism and then as Special Adviser for Counterinsurgency to the Secretary of State. He served in the Iraq War as Senior Counterinsurgency Adviser to General David Petraeus during the successful 2007 "surge" and in Afghanistan as Counterinsurgency Adviser to the NATO International Security Assistance Force during 2009-2010. He was a member of the White House review of Afghanistan-Pakistan strategy in 2008, and he has advised the highest levels of the Bush and Obama administrations.

Dr. Kilcullen's academic background is in the political anthropology of conflict in traditional societies. His doctoral dissertation, completed in 2000, is a study of the impact of insurgency on political development, and it draws on extended residential fieldwork with guerrillas, militias and local people in remote parts of Indonesia, New Guinea and East Timor. He is a Fellow of the Royal Geographical Society, regularly teaches and presents at academic institutions and industry conferences worldwide, and he is the author of numerous scholarly articles and books, including *The Accidental Guerrilla* (2009), *Counterinsurgency* (2010) and *Out of the Mountains* (forthcoming in 2011), all from Oxford University Press.

#### **Dr. Michael Quinn Patton**

Michael Quinn Patton is an independent organizational development and evaluation consultant. He is former President of the American Evaluation Association. He is the only recipient of both the Alva and Gunnar Myrdal Award from the Evaluation Research Society for "outstanding contributions to evaluation use and practice" and the Paul F. Lazarsfeld Award for lifetime contributions to evaluation theory from the American Evaluation Association. The Society for Applied Sociology honored him with the 2001 Lester F. Ward Award for Outstanding Contributions to Applied Sociology. He was the Gwen Iding Brogden Distinguished Lecturer at the 2008 National Conference on Systems of Care Research for Children's Mental Health.

He is the author of five evaluation books including a 4th edition of *Utilization-Focused Evaluation* (2008) and 3rd edition of *Qualitative Research and Evaluation Methods* (2002). These books have been used in over 500 universities worldwide. He is also author of *Creative Evaluation* (1987); *Practical Evaluation* (1982); and *Culture and Evaluation* (1985). He has co-authored a book on the dynamics of social innovation with two Canadians drawing on complexity theory and systems thinking: *Getting to Maybe: How the World is Changed* (Random House, 2006). His latest book is *Developmental Evaluation: Applying Complexity Concepts to Enhance Innovation and Use* (Guilford Press, 2011).

#### **Ben Ramalingam**

Ben Ramalingam is a freelance consultant and writer specializing in international development and humanitarian issues. He is currently writing a book on complexity sciences and international aid which will be published by Oxford University Press. He also writes and edits a blog on the same theme entitled "Aid on the Edge of Chaos" which can be found here: <http://aidontheedge.info/>. Ramalingam is currently working on a number of consultancy assignments on issues ranging from resilience, state fragility and innovations. He also chairs the strategy group of the new Humanitarian Innovation Fund, a unique cross-donor mechanism he helped to design and set up, which focuses on strengthening operational R&D in disaster responses. In his previous role as head of research and development at ALNAP, Ramalingam led a team of researchers, communications specialists and consultants in a range of innovative projects aimed to improve humanitarian performance through learning and accountability. Before joining ALNAP, Ramalingam was deputy director of the Humanitarian Futures Program at Kings College and led the knowledge and learning program at ODI. Prior to joining the development sector, he worked in strategy consulting and investment banking. Ramalingam currently holds honorary positions at the London School of Economics, and the Overseas Development Institute, and the Institute of Development Studies.

### **Susan Reichle**

Susan Reichle is the Assistant to the Administrator for USAID's Bureau of Policy, Planning, and Learning (PPL). She assumed this role in August 2010. PPL is USAID's leader for evidence-based policy development, strategic-planning coordination, donor engagement and a dedicated focus on using science and technology to solve development problems. Ms. Reichle was previously the Senior Deputy Assistant Administrator for the Bureau for Democracy, Conflict, and Humanitarian Assistance (DCHA).

Ms. Reichle is a career Senior Foreign Service officer who joined USAID in 1991. She served in Haiti, Nicaragua and Russia as a democracy officer specializing in conflict and transition issues and returned from the field in 2009 after serving as the Mission Director at the U.S. Embassy in Colombia. As Mission Director, she oversaw the management of an annual budget of \$200 million and was part of one of the largest country teams of any embassy in the world. Prior to leaving Colombia, she received several awards from the Colombian government recognizing USAID's contribution under her leadership.

Immediately prior to going to Colombia four years ago, she was the Deputy Coordinator in the Department of State's newly created Office of the Coordinator for Reconstruction and Stabilization (S/CRS). In June 2004, Ms. Reichle was selected as a distinguished graduate of the National War College at the National Defense University. She also received the Colonel William R. Higgins Award for writing "Lessons Learned from U.S. Democracy Promotion in Russia."

In addition to her Masters Degree in National Security from the National War College, Ms. Reichle has received two Masters Degrees from the University of Pennsylvania in International Development Appropriate Technology and Government Administration. She received her B.A. in International Relations from James Madison University.

### **Robert Ricigliano**

Mr. Ricigliano is the Director of the Institute of World Affairs at the University of Wisconsin, Milwaukee, where he teaches International Mediation and Peacebuilding through the Department of Communication and is the Coordinator of the Certificate in Peace Studies and Conflict Resolution. He is also a former Executive Director of the Conflict Management Group and served as an Associate Director of the Harvard Negotiation Project at Harvard Law School.

Mr. Ricigliano's recent work has focused on applying systems theory to developing practical tools for sustainable peacebuilding. He is working with both USAID and the Department of Defense on projects to integrate systems analysis into their assessment and planning processes. He has worked with U.S. Interagency teams to do assessments of Cambodia (2009) and Mindanao (2010). In addition, Mr. Ricigliano has worked with officials all over the world to help resolve conflict. He has worked with political parties in the new Iraqi Parliament and has been involved in peacebuilding interventions in the Democratic Republic of Congo, Afghanistan, Cambodia, Russia, Georgia, Colombia, South Africa, and elsewhere. Mr. Ricigliano has trained diplomats and other government officials from Africa, Europe, Asia, and North America.

### **Richard Tyson**

Richard Tyson is the Founder and Managing Partner of the resilience think tank Helsinki Group and the Innovation Strategy Partner in the brand-led growth firm Velo. Mr. Tyson advises leadership teams on innovation and resilient organization in the public and private sector. His work focuses on the design of innovation programs that make progress-through-innovation practical and effective. He has worked for leading innovation consulting firms including Stone Yamashita, Doblin, Inc., and Monitor Group where he led strategic planning engagements for Fortune 500,

government, and NGO clients. He is a regular speaker on innovation and resilience and an adjunct professor at New York City's School of Visual Arts Master's program in Products of Design. He also serves as an advisor to the United Nations Global Pulse, an innovation initiative of the UN focused on creating real-time understanding of risk and vulnerability. He has worked closely with executive and government leaders to bring innovation to market in the US, Europe, Asia, South America and the Middle East. Mr. Tyson studied philosophy, design, and social theory at Harvard College, Whitman College, and the New School for Social Research.

#### **Dr. S. Tjip Walker**

Dr. S. Tjip Walker is a Senior Policy Analyst in the Policy, Planning, and Learning Bureau's Office of Learning, Evaluation, and Research at USAID. He leads Agency efforts to promote organizational learning, including more consistent and effective use of research and evaluation to support strategy development and project design. Dr. Walker also leads efforts to adapt evaluation techniques to complex environments.

Previously, Dr. Walker served the Technical Lead within USAID's Office of Conflict Management and Mitigation (CMM) where he coordinated CMM's analytical leadership across the programmatic spectrum from identifying at risk countries through early warning, to diagnosing conflict dynamics through assessment, to designing effective conflict programming, to monitoring and evaluating their impact. His particular focus was on early warning, improving conflict assessment methods, and programming to address fragility—all in an effort to prevent conflicts from occurring.

Dr. Walker holds an MPA from the John F. Kennedy School at Harvard University, a Ph.D. in political science from Indiana University, and a life-long commitment to harnessing analysis to improve development practice.

#### **Dr. Chris Wood**

Dr. Wood received his Ph.D. from Yale University in 1973. Following a postdoctoral appointment at Walter Reed Army Institute of Research in Washington DC, he returned to Yale as a faculty member with joint appointments in the Departments of Psychology, Neurology, and Neurosurgery. Dr. Wood left Yale in 1989 to lead the Biophysics Group at Los Alamos National Laboratory, a position he held until becoming the Santa Fe Institute's Vice President in 2005. At Los Alamos, Dr. Wood's group was responsible for a wide range of biophysical and physical research, including protein crystallography, quantum information, and human brain imaging. During 2000-2001, Dr. Wood served as interim director of the National Foundation for Functional Brain Imaging, a collaboration involving Harvard / Massachusetts General Hospital, University of Minnesota, and a number of academic and research institutions in New Mexico devoted to the development and application of advanced functional imaging techniques to mental disorders. Dr. Wood's research interests include imaging and modeling the human brain, computational neuroscience, and biological computation.