Building Shared Understanding of Wicked Problems

Interview by **Karen Christensen**

CogNexus Institute founder Jeff Conklin explains why the Age of Design requires a new approach to problem solving that is built on a foundation of shared understanding.

You believe that we are in the midst of a shift from the Age of Science to the Age of Design. Please explain.

In the Age of Science, the job of Science was to describe the universe. Once we had created a good description of the natural world, we could begin to exercise control, and the path was opened for technology – the art of harnessing, controlling and transforming our world. In the last century, organizations have borrowed heavily from the ethos of Science and technology: the goals of 'management science' were to describe (or predict) the future and control it. In the Age of Science, facts legitimized decisions – indeed, they were the only acceptable basis for decisions and actions. The goal of problem solving was to find the right answer, and the problems to which organizations devoted themselves were generally 'tame' ones: they may have been complicated and involved hundreds of people and years of effort, but the problems themselves were not wicked. The problem definition was well understood (i.e., 'build a bridge across the widest river in the world'), the stakeholders were few, the constraints stable, and in the end, there was a concrete result that solved the problem. In this fading epoch, organizations rewarded individuals for predicting and controlling their environment; people worked separately, using a linear process, to gather all the facts so that they might formulate the right answer and deliver it for implementation.

Those days are gone. In the emerging paradigm, the Age of Design, something new is happening, and those who excelled in the former paradigm are no longer succeeding as they once did. In place of prediction and control, we seem to have nothing but chaos; in place of individual efforts, the problem-solving process is now clearly social; in place of basing decisions on facts, we base them on stories that give us a more coherent sense of meaning. In place of finding the 'right answer', we seek to gain a shared understanding of possible solutions. The skills and knowledge that were so important in the Age of Science are still

important, but they are no longer sufficient. The focus of our activities has shifted to creation.

Whereas description is about what is, creation is about what might be. It is an organization's ability to learn and innovate that now provides the greatest competitive advantage. Employees are being asked to throw off the shackles of past ways of thinking and doing, to think for themselves and invent new ways to increase customer satisfaction or decrease costs. In the Age of Design, getting something done depends on your social skills and your network, both formal and informal. Unfortunately, we are babes in the woods in the Age of Design, and the nature of our tool set is quite primitive.

Discuss the relation between 'problem understanding' and 'solution formulation'.

When I first started out, the implicit assumption was that problems were stable and well defined, and most of the work in any major project involved coming up with the solution. The process of working out a solution was understood to be fundamentally linear – a sequence of steps which, if followed, would result in a successful outcome. Today, there is increasing awareness that a shared understanding of a given problem cannot be taken for granted, and that the absence of buy-in about a problem's definition, scope and goals can kill a project just as surely as faulty implementation.

Organizations are beginning to embrace the idea that these two aspects of projects – problem understanding and solution formulation – are not distinct phases, but rather different kinds of conversations that must be woven together from beginning to end. Problem structuring is a critical aspect of the design process that takes into account the diversity of goals, assumptions and meanings among stakeholders. At the heart of this new understanding of organizational life is the recognition that project work is fundamentally social, and that communication among stakeholders must be managed and nurtured in order for the social network to cohere into a functioning entity. What is missing from our 'social network tool kit' is an environment or 'container' in which stakeholders can collectively step back to see the big picture.

You believe that the two most intense forces impacting organizations today are wicked problems and social complexity. Please explain.

When design theorist **Horst Rittel** first started writing about wicked problems, he characterized them as having 10 or 11 properties, which I think can be pared down to six essential ones (see **Figure One**). But in our post-modern world, things have become even more complex, and problems now take shape within a social framework that agrees that something is a problem. For a long time, there's been a model – a pre-understanding – that what organizations needed to do was 'identify the problem' and then systematically work to develop a solution and appropriate implementation. What Rittel said is, it's just not that easy. Problem understanding is actually the more important and evasive part of the process.

The social complexity aspect of it is that you have different stakeholders with strongly-held beliefs about what the problem is. Dealing with wicked problems is not at all a matter of coming up with the best answer; rather, it's about engaging stakeholders in a robust and healthy process of making sense of the problem's dimensions. The current situation with respect to global warming and energy policy is a great example: people from the developed world have one set of views about what needs to be done, and the developing world has a completely different set of views. Nobody 'owns' the problem, nor has a clear idea of how to work out the answers. Because of social complexity, solving such a wicked problem is fundamentally a social process. This same kind of dynamic exists in a microcosm in most organizations around their critical strategic problems. As a first step, the distinction that the problem you are facing is wicked can help you get a handle on the fact that it will require a different style of leadership and a different approach.

You have said that "when you combine wicked problems and social complexity, you get fragmentation." Please explain.

Fragmentation is a condition in which the stakeholders in a situation see themselves as more separate than united. The fragmented pieces are, in essence, the perspectives, understandings and intentions of the collaborators, all of whom are convinced that their version of the problem is correct. As we approach the end of the first decade of the new millennium, it is clear that the forces of fragmentation are increasing, challenging our ability to create coherence, and causing more and more projects to flounder and fail. The antidote to fragmentation is shared understanding and shared commitment.

How do you define 'shared understanding'?

The 'Holy Grail' of effective collaboration is creating shared understanding, which is a precursor to shared commitment. If you accept that the crux of effective action is agreeing on what the problem is, then the challenge for organizations is coming to a shared understanding about what their particular dilemma is. Plenty has been written about how to get people 'on board' and create buy-in for a strategy; but the business of how to craft shared understanding – a deep and robust understanding of the circumstances – hasn't been well understood. Shared understanding means that the stakeholders understand each other's positions well enough to have intelligent dialogue about their different interpretations of the problem, and to exercise collective intelligence about how to solve it.

The best way to grasp shared understanding is to consider what happens when it is missing. If you think about where teams or projects have failed, you often realize that what was missing was a shared understanding about what the process was going to be, or what the fundamental problem was to begin with, or the dimensions of the problem. There may have been a lack of shared understanding about roles and responsibilities, or there might have been a specific issue around which there was a lack of understanding. There are many aspects to shared understanding,

Six Characteristics of Wicked Problems Figure One

1. **You don't understand the problem until you have developed a solution.**
   Every solution that is offered exposes new aspects of the problem, requiring further adjustments to the potential solutions. There is no definitive statement of 'the problem': these problems are ill-structured and feature an evolving set of interlocking issues and constraints.

2. **There is no stopping rule.**
   Since there is no definitive 'the problem', there is also no definitive 'the solution'. The problem-solving process ends when you run out of resources such as time, money or energy, not when an optimal solution emerges.

3. **Solutions are not right or wrong.**
   They are simply 'better/worse' or 'good enough/not good enough'. The determination of solution quality is not objective and cannot be derived from following a formula.

4. **Each is essentially unique and novel.**
   No two wicked problems are alike, and the solutions to them will always be custom designed and fitted. Over time we can acquire wisdom and experience about the approach to wicked problems, but one is always a beginner in the specifics of a new wicked problem.

5. **Every solution is a 'one-shot operation'.**
   Every attempt has consequences. This is the 'Catch 22' of wicked problems: you can't learn about the problem without trying solutions, but every solution is expensive and has lasting consequences that may spawn new wicked problems.

6. **There is no given alternative solution.**
   A host of potential solutions may be devised, but another host are never even thought of. Thus it is a matter of creativity to devise potential solutions, and a matter of judgement to determine which should be pursued and implemented.

and there is no shortcut to creating it. Any way you slice it, it entails heavy lifting, and you have to roll up your sleeves and have the hard conversations in order to expose where shared understanding is missing.

What is 'dialogue mapping'?

This is the approach that my colleagues and I use to generate shared understanding, and while it is no silver bullet, it entails a very basic trick that has proven very effective: shared display. Basically, when you put something on display in the middle of a group of stakeholders as a shared representation amongst them, it enhances the group's ability to focus and make sense of what they're doing. As the conversation unfolds, it is mapped by a skilled 'dialogue mapper', who builds a visual representation of the conversation. That representation is either on a flip chart or a white board, or it is projected from a computer software that handles these kinds of diagrams. In any case, the map is being reinforced in a way that everyone in the conversation is paying attention to it. As soon as a group orients itself to a shared display, the specifics of the situation induce a higher level of shared understanding.

Shared display is perhaps the most important and under-recognized advance in collaborative technology in the last couple of decades, and it's easy to do thanks to the availability of cheap computer display projectors. In my view, there is no reason not to have somebody doing some kind of shared display at any meeting of significance – especially if you're trying to solve a problem through design. The tendency, unfortunately, is to use PowerPoint, which is an anti-collaborative force. The key is to get out of the model of someone presenting something and use the display as a way of capturing all the input and making sense of it together. You can do this using Word or Excel, or more advanced tools such as Rittel's Issues Based Information System (IBIS), which is what I use.

How does the Internet factor into building shared understanding?

With the Web, we have the opportunity to create a new class of tools that allow people to come together and exchange information and views in a way that can incrementally build a big picture of a complex problem. The problem with the existing tools is that most discussion forums, e-mail groups, blogs and all the media that we have for publishing policy discourse have a tendency to over-simplify the issues, and that polarizes people. If we don't figure out a way to scale up and have rich, multi-stakeholder dialogues, the forces of over-simplification and polarization will be the death of us. There is some interesting work being done at MIT and there's a tool called Debate Mapper from the UK; a whole set of tools are emerging as prototypes of a system where people can engage with their full knowledge. Instead of quick, easy answers and pushes for evidence, the idea is to push for rationality and transparency, and for a kind of careful, rigorous, informed reasoning on a large scale that is very rare. We need to be able to do this on a global scale. For me, this defines the challenge for the next decade of research in collaborative technology.

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You believe that most of today's problems have a significant 'wicked' component, even if it doesn't appear at the outset. Please explain.

One criticism of the notion of wicked problems is that you can't do a diagnostic that identifies a problem as 'definitely wicked'. There are degrees of wickedness. What is clear is that the notion of business-as-usual that we inherited from the industrial era is a manufacturing-based, linear process-oriented approach, and if you are locked into that view, you will miss out on all the deeper problems. That's what a lot of the attention to innovation is really about: it's about being able to get outside of the limited framework of business-as-usual and sense and reflect on the bigger situation. Any time you do that in today's environment, you're looking at a wicked problem, because you're confronting fundamental problems of identity: who is our company? What is our direction? What is our market? Who is our customer? These fundamental issues are always present, but it's very easy to avoid them by focusing on immediate problems that are more tractable.

Two common organizational coping mechanisms are routinely applied to wicked problems: *studying* the problem and *taming* it. Please discuss.

While studying a novel and complex problem is natural and important, it is an approach that will run out of gas quickly if the problem is wicked. Pure study amounts to procrastination, because little can be learned about a wicked problem by objective data gathering and analysis. Wicked problems demand an opportunity-driven approach: they require making decisions, doing experiments, launching pilot programs, testing prototypes, and so on. One corporation I worked with, struggling to decide between two very different strategic paths for the future, studied and discussed the two options for so long that, by the time they implemented their choice, the chosen option was no longer viable.

Taming a wicked problem is a very natural and common way of coping with it. Instead of dealing with the full wickedness of the problem, people simplify it in various ways to make it more manageable and solvable. There are several ways people do this:

1. **Lock down the problem definition.** Develop a description of a related problem that you can solve, and declare that to be the problem. Specify objective parameters by which to measure the solution's success.
2. **Cast the problem as 'just like' a previous problem that has been solved.** Ignore or filter out evidence that complicates the picture.
3. **Give up on trying to find a good solution.** Just follow orders, do your job and try not to get in trouble.
4. **Declare that there are just a few possible solutions,** and focus on selecting from among them. A specific way to do this is to frame the problem in 'either/or' terms, such as 'Should we attack Iraq OR let the terrorists take over the world?'

While it may seem appealing in the short run, attempting to tame a wicked problem will always fail in the long run. The problem will simply reassert itself, perhaps in a different guise, as if nothing had been done; or worse, the tame solution will exacerbate the problem.

What first steps can people take to better handle wicked problems?

There is no quick fix – no glib formula about 'Seven Steps to Crush Social Complexity'. The physics of fragmentation are obscured by a cultural condition of resignation and denial. In my work, I've seen this manifested in many forms – sometimes as outright panic, sometimes as a vague sense of futility. This condition of 'organizational pain' is so chronic that, like low-grade back pain, it has faded into the background of the organizational experience and is assumed to be inevitable. The condition is not 'wicked problems' or 'social complexity' – these are causes of the condition. Once this chronic condition is seen and understood, in my experience, a huge compassion emerges for what we are up against when we go to work every day.

Our education and experience have prepared us to see and solve tame problems, which is why wicked problems sneak up on us and create so much chaos. In times of stress, the natural human tendency is to find fault with others. If we step back and take a systemic view, we can see that the issue is not whose fault the mess is – the issue is our collective failure to recognize the recurring and inevitable dynamics of the mess. ***R***

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